

MEMORANDUM

To: State Water Control Board Members

From: Brandon D. Kiracofe, DEQ-Valley Regional Office

Date: December 29, 2015

Subject: Reissuance of VPDES Permit No. VA0004138, Dominion – Bremo Power Station
Fluvanna County

Background

On January 15, 2015, DEQ received an application from Virginia Electric and Power Company for the reissuance of Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0004138 for discharges from the Dominion – Bremo Power Station to the James River in Fluvanna County. Addendums to the application were received on February 2, 2015, July 6, 2015, August 12, 2015, October 8, 2015, and December 9, 2015. The applicant proposes to discharge once-through condenser cooling water, stormwater, and industrial wastewater which includes wastewater from dewatering activities to facilitate the closure of three coal ash ponds and the metal cleaning waste treatment basin at the facility.

The closure of the West Ash Pond, East Ash Ponds, and North Ash Pond is being performed pursuant to a 2015 United States Environmental Protection Agency final Rule that regulates the disposal of coal combustion residuals. The long-term management of these impoundments including the closure, post-closure, and groundwater monitoring will be addressed by the solid waste program in accordance with the Virginia Solid Waste Management Regulations and the EPA rule through issuance of a solid waste permit. Existing groundwater monitoring, corrective action and/or risk assessment plans currently in effect under the VPDES permit will remain in effect until such time that they are superseded by a groundwater monitoring program pursuant to a solid waste permit for closure and/or post-closure.

The permit limits for the discharge of once-through condenser cooling water are based on a flow of 157.6 MGD. The permit limits for the discharge of wastewaters from dewatering activities are based on a flow of 10.2912 MGD.

The application was provided to the US Fish and Wildlife Service, National Marine Fisheries Services, EPA, Department of Game and Inland Fisheries, and Department of Conservation and Recreation on January 27, 2015.

Notice of the proposed permit action and public hearing was published in the *Daily Progress* on October 30, 2015 and November 6, 2015. Notice of the proposed permit action and public hearing was also published in the *Fluvanna Review* on November 5, 2015 and November 12, 2015. DEQ sent the public notice to the Fluvanna County Administrator, Chairman of the Board of Supervisors, Thomas Jefferson Planning District Commission, and Rivanna River Basin Commission on October 30, 2015. DEQ also sent the draft permit, draft fact sheet, and public notice to the US Fish and Wildlife Service, National Marine Fisheries Service, and EPA on October 30, 2015.

Public Hearing

DEQ held the public hearing at 7:00 p.m. on December 1, 2015, at Central Elementary School in Palmyra, Virginia. Mr. Robert Dunn served as the hearing officer. DEQ also provided an informational session prior to the hearing so that questions could be asked and answered prior to the hearing. Approximately 60 people attended the public hearing. Fifteen citizens provided oral comments during the public hearing.

Summary of Comments and DEQ Response

During the 45-day public comment period of the draft permit which ended on December 14, 2015, there were 631 commenters. Attachment B provides summaries of the comments received during the comment period and DEQ responses to those comments. Where possible, comments were grouped and summarized according to issue. Attachment C is a listing of the commenters.

Draft Permit Changes

For the sake of clarity, the version of the proposed permit which was public noticed for review and comment on October 30, 2015, is hereafter referred to as the Initial Draft Permit (“Initial Draft”). The version of the proposed permit being presented to the State Water Control Board for consideration is hereafter referred to as the Revised Draft Permit (“Revised Draft”). Changes to the Initial Draft were made following the public comment period and are presented in Attachment A. The Revised Draft in its entirety is presented in Attachment D.

Recommendation

The staff recommendation will be presented at the State Water Control Board meeting on January 14, 2016.

Staff Contact Information

Should you have any questions or require additional information please contact the following DEQ-Valley Regional Office staff.

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Attachments:

Attachment A – Changes to Draft Permit
Attachment B – Summary of Comments and DEQ Responses
Attachment C – Commenter Listing
Attachment D – Revised Draft Permit
Attachment E – Revised Fact Sheet
Attachment F – Letter from the Honorable A. Donald McEachin

Attachment A
VPDES Permit No. VA0004138 – Dominion – Bremono Power Station
Changes to Draft Permit

Cover Page	Holman Creek was added as the receiving stream for Outfall 009
Part I.A.6	Footnote “a” was changed by stating that Outfall 003 shall contain only “stormwater not exposed to industrial activity” instead of “stormwater not associated with a regulated industrial activity where monitoring would be required.”
Part I.A.8	Footnote “a” was changed by stating that Outfall 006 shall contain only “stormwater not exposed to industrial activity” instead of “stormwater not associated with a regulated industrial activity where monitoring would be required.”
Part I.A.9	<ul style="list-style-type: none"> • The West Ash Pond and Metal Cleaning Waste Treatment Basin were added in the description of Outfall 504. • More stringent limits for Antimony, Arsenic, Cadmium, Chromium III, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, and Chloride were included as shown in Table 1. • The monitoring frequency for pH, TSS, Oil and Grease, Antimony, Arsenic, Cadmium, Chromium III, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, Chloride, and Hardness was changed from 1/Week to 3/Week with weekly reporting of results. • Monthly monitoring was added for Free Cyanide, Aluminum, Barium, Beryllium, Boron, Cobalt, Iron, Molybdenum, and Vanadium. • Footnote “h” was added to describe “3/Week” monitoring. • Footnote “i” was added to specify the composite period for the parameters identified with a monitoring frequency of “1/Month”. • Footnote “j” was added to reference the requirements in Part I.G.22.
Part I.A.10	A maximum flow rate of 10.2912 MGD has been established for the total flows from internal outfalls 501, 502, 503, 504 and 505 for the process wastewater from dewatering activities.
Part I.A.11	<ul style="list-style-type: none"> • Outfall 009 was added as a stormwater not exposed to industrial activity outfall. • The formatting of the item was changed. • Footnote “a” was changed by stating that Outfall 007, 008 and 009 shall contain only “stormwater not exposed to industrial activity” instead of “stormwater not associated with a regulated industrial activity where monitoring would be required.”
Part I.C	<ul style="list-style-type: none"> • The QLs for Antimony, Arsenic, Cadmium, Chromium III, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, and Chloride were changed as shown in Table 2.
Part I.E	<ul style="list-style-type: none"> • Part I.E.1.a has been changed to require the WET monitoring be performed as near to full plant operating conditions as reasonably possible, which matches the language that is included for the instream monitoring in Part I.G.13. • The testing schedule in Part I.E.1.f has been changed to require the 1st quarterly monitoring be performed in the first full calendar quarter following permit reissuance, the subsequent quarterly monitoring be performed every calendar quarter following the previous quarter until there are a minimum of 4 quarters tested, the 1st annual monitoring be performed the first full calendar year following the 4 completed quarterly tests, and the subsequent annual monitoring be performed every calendar year following the 1st annual testing period.

Part I.G.3	<ul style="list-style-type: none"> The words “taken for compliance with this permit” have been added to the end of the sentence in Part I.G.3.a. The last sentence in Part I.G.3.d has been reworded as follows: “List the type and quantity of wastes, fluids, and pollutants characterized in Part I.G.2 that are stored at this facility.”
Part I.G.5	Outfalls 501, 502, 503, 504, and 505 have been added to this condition to clarify that the Concept Engineering Report Requirement applies to the treatment units that will be used to treat the process wastewater from dewatering activities.
Part I.G.7	A six-month compliance schedule has been included in the permit to meet the Reliability Class II requirements.
Part I.G.10	<p>In order to be consistent with draft VPDES permit No. VA0002071 for Dominion – Possum Point Power Station, this special condition has been changed to:</p> <p><i>Additional Chlorine Limitations and Monitoring Requirements</i></p> <ol style="list-style-type: none"> <i>Neither free available nor total residual chlorine may be discharged via Outfall 001 from any single generating unit for more than two hours in any one day, unless the permittee demonstrates to DEQ that discharge for more than two hours is required for macroinvertebrate control. If the permittee is dechlorinating, the two hour requirement is nullified.</i> <i>Simultaneous multi-unit chlorination is permitted.</i> <i>Monitoring for free available and/or total residual chlorine shall only be required when the permittee is chlorinating.</i>
Part I.G.13	This special condition has been changed to require instream monitoring twice per year. The winter season is from January 1 – March 31 and the Summer Season is from June 1 – August 31. The report submittal dates have been changed as well.
Part I.G.14	This special condition has been changed to require that water quality criteria monitoring for Outfall 002 be initiated during the first full calendar quarter following notification of the West Treatment Pond operating in its final configuration and notification that no further discharge of process wastewater from dewatering activities is occurring from Outfall 002.
Part I.G.15	The following statement has been removed from this special condition, “The permittee shall sample once for each foot of drawdown, and, when the discharge no longer meets permit limits, the discharge shall cease and the rest of the lagoon contents shall be pumped and hauled to another, permitted facility for treatment and disposal.” This condition has also been changed to clarify that this condition applies to the Metal Cleaning Waste Treatment Basin, Sewage Treatment Plant, and West Treatment Pond.
Part I.G.20	This special condition has been changed to require notification within 7 days of Outfall 009 being put into service.
Part I.G.21	This special condition has been changed to reference Part I.G.21 b-g.
Part I.G.22	A Limitation Exceedance Special Condition was added to the draft permit to address any effluent limit and/or Whole Effluent Toxicity limit exceedances at Internal Outfalls 501, 502, 503, 504 and 505. Should the permittee become aware of an effluent limit exceedance the discharge shall be ceased and corrective action implemented.
Part I.G.23	A special condition limiting the draw down rate of the coal ash ponds has been added.
Part I.G.24	A special condition requiring notification of the North Ash Pond draw down has been added.
Part I.G.25	A special condition requiring PCBs monitoring of the West Treatment Pond discharge has been added.

Part I.H.1	Part I.H.1.f.(1) has been changed to add “raw river water” as an allowable non-stormwater discharge.
Attachment B	The sample type for Ammonia-N, Chloride, and Hardness in Attachment B has been changed to “grab or composite”.

Table 1: Changes in Permit Limits in Part I.A.9 for Process Wastewater from Dewatering Activities

Parameter	Draft Permit Presented During Public Notice		Revised Draft Permit	
	FROM		TO	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Total Recoverable Antimony (ug/L)	3,400	3,400	2,100	2,100
Total Recoverable Arsenic (ug/L)	500	740	290	530
Total Recoverable Cadmium (ug/L)	4.5	6.6	1.8	3.2
Total Recoverable Chromium III (ug/L)	500	730	120	220
Total Recoverable Chromium VI (ug/L)	24	35	18	34
Total Recoverable Copper (ug/L)	16	24	12	23
Total Recoverable Lead (ug/L)	73	110	19	35
Total Recoverable Mercury (ug/L)	2.0	3.0	1.5	2.8
Total Recoverable Nickel (ug/L)	130	190	31	57
Total Recoverable Selenium (ug/L)	29	43	9.6	18
Total Recoverable Silver (ug/L)	3.5	5.1	2.7	5.0
Total Recoverable Thallium (ug/L)	2.5	2.5	1.4	1.4
Total Recoverable Zinc (ug/L)	140	210	110	210
Chloride (mg/L)	1,300	1,900	450	820

Table 2: Changes in Quantification Levels (QLs) in Part I.C

Parameter	Draft Permit Public Noticed	Revised Draft Permit
	FROM	TO
Total Recoverable Antimony (ug/L)	3,400 ug/L	5.0 ug/L
Total Recoverable Arsenic (ug/L)	300 ug/L	5.0 ug/L
Total Recoverable Cadmium (ug/L)	2.6 ug/L	1.0 ug/L
Total Recoverable Chromium III (ug/L)	300 ug/L	5.0 ug/L
Total Recoverable Chromium VI (ug/L)	14 ug/L	5.0 ug/L
Total Recoverable Copper (ug/L)	9.4 ug/L	5.0 ug/L
Total Recoverable Lead (ug/L)	44 ug/L	5.0 ug/L
Total Recoverable Mercury (ug/L)	1.2 ug/L	0.1 ug/L
Total Recoverable Nickel (ug/L)	80 ug/L	5.0 ug/L
Total Recoverable Selenium (ug/L)	17 ug/L	5.0 ug/L
Total Recoverable Silver (ug/L)	2.0 ug/L	0.4 ug/L
Total Recoverable Thallium (ug/L)	2.5 ug/L	1.0 ug/L
Total Recoverable Zinc (ug/L)	84 ug/L	25 ug/L
Total Copper	1.0 mg/L	5.0 ug/L
Total Iron	1.0 mg/L	0.25 mg/L

Attachment B
VPDES Permit No. VA0004138 – Dominion – Bremono Power Station
Summary of Comments and DEQ Responses

Comments are group/organized according to issue where possible. For the sake of clarity, the version of the proposed permit which was public noticed for review and comment on October 30, 2015, is hereafter referred to as the Initial Draft Permit (“Initial Draft”). The version of the proposed permit being presented to the State Water Control Board for consideration is hereafter referred to as the Revised Draft Permit (“Revised Draft”).

1. Lack of Details and Information in Permitting Documentation

- **The draft permit fact sheet is incomplete in violation of 9VAC25-31-280. The draft permit fact sheet does not contain information on the quantity of wastes that are stored at the site, the actual rate at which the pollutants will be discharged to the James River, or the time period over which such discharges are expected to occur. It is unclear how long Dominion will be discharging dewatering wastewater.**
- **The proposed permits are inadequate in that the treatment systems for treating coal ash pond metals are only mentioned in general terms (mainly in the flow diagrams). It is not possible for the DEQ to adequately assess the effectiveness of treatment of wastewaters from a facility without being provided a detailed design and engineering analysis regarding the operation of the system and treatment efficiencies. Dominion is essentially asking the DEQ to permit a treatment system with no information regarding the system.**
- **There are no details to ensure that the harmful substances will be addressed prior to starting the dewatering process.**

Staff Response

The effluent limits in the Initial Draft for the discharge of process wastewater from dewatering activities were based on a maximum effluent flow of 10.2912 million gallons per day (MGD). The effluent limits were developed such that they are protective of water quality if the permittee were to discharge 10.2912 MGD every day over the 5-year term of the permit. While it is likely that the actual discharge of process wastewater from dewatering activities may not occur every day over the 5-year term of the permit and may be less than 10.2912 MGD, the use of this maximum flow value in the development of effluent limits results in more restrictive concentration limits than would otherwise be determined to be necessary.

In response to comments, the Revised Draft includes a maximum effluent flow limit of 10.2912 MGD for the discharge of process wastewater from dewatering activities.

Dominion has provided the estimates below for discharges of process wastewater during dewatering activities which has been included in the revised fact sheet. These estimates do not affect the calculation of effluent limits. The actual discharges may be less or greater than these values.

- 8.9 million gallons (MG) from the initial drawdown of the North Ash Pond over a period of 30 working days in 2016
- 8.1 MG from the initial drawdown of the East Ash Ponds over a period of 30 working days in 2016
- 129.5 MG from on-going dewatering activities in the North Ash Pond over a period of 270 working days in 2016
- 68.4 MG from on-going dewatering activities in the East Ash Ponds over a period of 270 working days in 2016
- 40.9 MG from on-going dewatering activities in the West Ash Pond over a period of 270 working days in 2016
- 102 MG from on-going dewatering activities in the North Ash Pond over a period of 270 working days in 2017

The Initial Draft established effluent limits for 17 parameters associated with the dewatering activities, 13 of which are for metals identified as constituents of concern for coal combustion residuals. In addition, the Initial Draft established effluent limits for Whole Effluent Toxicity on a monthly basis. The fact sheet describes the basis for the parameters selected for establishing effluent limits as well as rationale for the Whole Effluent Toxicity limits.

In response to comments, the Revised Draft includes monitoring at a frequency of 1/Month for Aluminum, Barium, Beryllium, Boron, Cobalt, Iron, Molybdenum and Vanadium which are parameters identified as constituents of concern for coal ash residuals for which there are no water quality criteria. While the Whole Effluent Toxicity sampling ensures that these parameters, as well as others that may cause toxicity, are accounted for in the sampling regime, sample results for these additional constituents will be helpful should toxicity be observed and for better understanding the full characteristics of the discharge.

Treatment options were outlined by the permittee in their Interim Period Concept Engineering Report (CER) provided with the October 6, 2015 Application Addendum. Until final effluent limits are established via this permitting process, the permittee is not able to select a final treatment design. Ultimately, a wastewater treatment system will need to be designed, installed, and operated to ensure compliance with final, approved effluent limits. Treatment options identified in the CER include settling, filtration, and chemical treatment. The CER indicates that in order to verify the operational efficiency of the treatment systems, the systems will be monitored for turbidity (as a surrogate for TSS) and pH, with additional sampling performed as required for VPDES permit compliance. Additional or alternative treatment may be employed if determined necessary. The effluent limits are established to protect water quality and maintain beneficial uses of the receiving waters. The effluent limits establish the requirements for the permittee to meet; DEQ does not prescribe the methodology by which the permittee is to comply with effluent limits. The permittee is required to submit a final CER for DEQ approval describing the final selection of treatment technology to be employed to meet effluent limits.

In response to comments, the Revised Draft includes the following special condition to address concerns regarding any potential exceedance of effluent limits:

The permittee shall immediately cease the discharge upon becoming aware of an exceedance of an established effluent limit and/or Whole Effluent Toxicity limit at Outfall 501, 502, 503, 504, or 505. The permittee shall promptly notify DEQ, in no case later than 24 hours, after the discovery of the exceedance. Should an exceedance occur, the permittee shall initiate a review of the treatment operations and data to identify the cause(s) of the exceedance and initiate appropriate corrective action(s). Resumption of the discharge shall not occur until such time as an evaluation report is provided to DEQ and written authorization to resume the discharge is granted by DEQ.

2. Technology-Based Limits and Alternatives

- **DEQ has ignored available technology that can significantly reduce pollutant concentrations in wastewater at Brema Power Station.**
 - **The Clean Water Act requires technology-based effluent limits to be developed on a case-by-case basis. DEQ relied on the Power Plant Effluent Limit Guidelines in error – EPA’s newly promulgated effluent limits do not address arsenic and other toxic metals contained in the coal ash wastewater nor do they apply to activities, like draining and dewatering, that are outside the normal operation of coal ash impoundments. These activities were not contemplated by the new ELGs. DEQ cannot rely on state Water Quality Standards to the exclusion of available technology for reducing concentrations of pollutants. EPA’s promulgated effluent limits for flue gas desulfurization wastewater are illustrative of the availability of treatment technologies as applied to coal ash dewatering water.**

- **Economically achievable technology will significantly lower metals concentrations in water discharged from the coal ash ponds. A treatment technology evaluation was provided as an attachment with estimated costs to build, operate and dismantle.**
- **The draft permit, as written, does not comply with the Clean Water Act. The Clean Water Act requires the application of the best achievable technologies to treat wastewater before it may be discharged.**
- **Technology exists to reduce the levels lower than proposed permit limits. A higher level of treatment should be required.**
- **Dominion has made plenty of profit to cover the expense of disposing of this waste in a proper manner.**
- **The discharge should be treated to drinking water quality standards.**
- **DEQ should develop technology-based effluent limits like North Carolina.**

Staff Response

The facility is regulated by 40CFR Part 423, Federal Effluent Guidelines and Standards for the Steam Electric Power Generating Point Source Category. Updated Part 423 federal effluent guidelines (FEGs) were published by EPA as a final rule in the Federal Register on November 3, 2015.

The discharge of “legacy” wastewaters, as proposed by Dominion, are specifically addressed in the preamble to the FEGs, and are regulated as best available technology economically achievable (BAT) at 40CFR §423.13. The Preamble refers to legacy wastewaters as:

“...wastewater generated prior to the date determined by the permitting authority that is as soon as possible beginning November 1, 2018, but no later than December 31, 2023... Under this rule, legacy wastewater must comply with specific BAT limits, which EPA is setting equal to the previously promulgated BPT [best practicable control technology currently available] limits on TSS in the discharge of fly ash transport water, bottom ash transport water, and low volume waste sources.”

In establishing the BAT limits for legacy wastewaters in its final rule, EPA explicitly rejected technologies other than surface impoundments due to the lack of adequate data, and the way legacy wastewaters are handled at steam electric power generating plants. In considering BAT limits for legacy wastewaters, DEQ is not aware of data of sufficient or defensible robustness to supersede EPA’s rejection of technologies other than surface impoundments.

Technology-based treatment requirements (Best Professional Judgment) may be developed at the state level in the absence of applicable federal technology-based effluent limits (40CFR 125.3(c)). The Federal Regulations (40CFR 125.3(d)) further prescribe methodologies for setting technology-based limitations, which are the same factors EPA is required to consider in the development of FEGs. Under these regulations DEQ does not have the authority to arbitrarily prescribe treatment technology requirements without going through the appropriate evaluations, including factors such as cost benefit analyses and non-water quality environmental impact (i.e. energy requirements, etc.). Because the EPA has just undertaken this effort as described above, DEQ does not believe that the same exercise at the state level will yield different results. Consequently, while it may be possible to treat the effluent to drinking water quality, DEQ does not have the authority to impose this requirement on the permittee.

The Initial Draft included effluent limits for TSS (30 mg/L monthly average; 100 mg/L daily maximum), Oil & Grease (15 mg/L monthly average; 20 mg/L daily maximum), pH (minimum of 6 and maximum of 9 standard units) and utilization of a surface impoundment technology, which DEQ staff believes properly satisfies the 2015 FEG and BAT/BPT requirements.

As mentioned in comments received, FEGs for Arsenic, Mercury, Selenium, and Nitrate/nitrite were established by EPA to apply to discharges containing flue gas desulfurization (FGD) wastewaters. Comments were received recommending inclusion of effluent limits for Arsenic, Mercury, and Selenium as strict as the FEGs for FGD wastewaters, and to also be consistent with an NPDES permit issued by the North Carolina Department of Environment and Natural Resources (DENR) permit issued to Duke Energy Progress LLC for its L. V. Sutton Energy Complex (permit #NC0001422).

Application of the FEGs for Arsenic, Mercury, and Selenium are not germane to this case because FGD wastewaters have not been, and are not being, generated at the permitted facility. In addition, the DENR Fact Sheet for the Sutton Energy Complex cites a basis for the Mercury limit being a Statewide surface water impairment and Total Maximum Daily Load (TMDL) for Mercury. The receiving stream at the Bremono Power Station is not subject to a comparable mercury TMDL impairment designation. Therefore, DEQ does not consider it appropriate to apply a limit for Mercury using an impairment basis that is not germane to the outfall receiving stream. Finally, following promulgation of EPA's final rule, it is DEQ's understanding the DENR permit for the Sutton Energy Complex was issued based on a water quality-based, reasonable potential analysis approach. Consequently, interstate consistency would be achieved by not applying technology-based effluent limits for parameters other than TSS, Oil & Grease, and pH.

3. Maintaining Water Quality Standards and Protection of Beneficial Uses

- **The permit will not protect existing uses of the James River. Polluted discharges will be highly hazardous for aquatic life. Application of mixing zone concepts, in light of the toxicity analyses and the thresholds provided by Dr. Lemly, is inappropriate and not well documented.**
- **The draft permit allows discharge of arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc at hazardous levels for fish and aquatic life.**
- **The draft permit does not contain limits for barium, cobalt, manganese, and vanadium; DEQ should regulate these commonly occurring toxic constituents of coal ash.**
- **With the exception of thallium, all proposed discharge limits for coal ash pollutants are well above levels that are highly toxic to fish and wildlife.**
- **Dominion should be required to pre-treat the water at levels sufficient to protect fish and aquatic life.**
- **The long-term release of toxics as proposed will expose organisms to conditions where the accumulation of toxins is likely.**
- **The draft permit will negatively affect tourism, recreation, and business on the James River. The James River is a high-quality water resource with excellent smallmouth bass sport fishing, catfish for the table, rare and sensitive mussels, and abundant opportunities for recreation in and on the water.**
- **The James River is an enormously popular recreational venue for fisherfolk, kayakers, canoers, rafters, and swimmers. The annual Batteau Festival attracts thousands of followers every year to the stretch of the river that will be directly impacted by the polluted waters.**
- **The chronic water quality standards should be used as the effluent limits to assure the absolute protection of the James River ecosystems and fisheries.**
- **The limits in the draft permit are too high. They should not be higher than the water quality criteria or higher than similar wastewaters in other states. The effluent limits for arsenic are 30 times higher than what was considered to be "acceptable" in North Carolina.**
- **The state admits it does not have enough data to determine impacts to aquatic life.**
- **Persistent bioaccumulative toxics (PBTs) are not adequately modeled and restricted in the draft permit and/or detailed analysis of PBTs is not given in the fact sheet. The draft permit does not appear to account for the overall impact of the variety of recognized PBTs listed in the permit. Were models run for each individual PBT in order to understand the impacts to the James River? Several of the PBTs listed in the draft permit behave differently than the others.**
- **DEQ should disallow or further restrict the discharge of coal ash wastewater during low flow conditions when the impacts to the James River will be greatest.**

Staff Response

Discharges from Bremono Power Station have been ongoing for over 50 years. With the implementation of the effluent limits, the nature of the pollutants in Bremono's dewatering discharge and the quality of the wastewaters to be discharged during this upcoming permit term are not expected to be significantly different from what was discharged historically at Bremono Power Station when it was actively burning coal.

Permit limits are designed to be protective of the Virginia Water Quality Standards (WQS) which establish the beneficial uses of all waters in the Commonwealth and the narrative and numeric criteria necessary to ensure water quality is maintained and protected. Those beneficial uses include recreation, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life; wildlife; and the production of edible and marketable natural resources (e.g., fish and shellfish). These WQS are adopted as regulation (9VAC25-260 et. seq.), and represent the best available science to ensure protection of water quality. These WQS also allow for the use of mixing zones in evaluating limits for VPDES permits. The allowance for any mixing will result in "end of pipe" effluent limits above the water quality criteria applicable to the receiving stream.

The WQS include criteria to protect aquatic life from acute (1-hour) and chronic (4 day) exposures. The WQS also include criteria to prevent human health impacts from consumption of fish over a period of years. If the effluent limits that are based on acute and chronic criteria are attained then aquatic life in the receiving waters will be fully protected consistent with the WQS. Please see the staff response to comments #6 and #8 for further discussion of mixing in the James River.

DEQ has reviewed the report; "Technical and Toxicological Evaluation of Coal Ash Pond Dewatering Permit proposed for Bremono Bluff Power Station, Virginia" that was prepared by Dr. Lemly and provided by the Southern Environmental Law Center along with their comments on the draft permit. This report focused on a review of fifteen metals. EPA and Virginia water quality criteria designed to protect aquatic life have been established for 10 of these metals; arsenic, cadmium, copper, chromium (chromium III and chromium VI), lead, mercury, nickel, selenium, silver and zinc. Virginia also has water quality criteria designed to protect human health for thallium that are applicable in all waters and a barium criterion applicable in designated public water supplies. A summary of the staff comments regarding the review of this report is presented below. Staff's full review is contained in Attachment 1 to this Summary of Comments and DEQ Responses document.

- The report uses a minimum amount of available information to do a basic comparison of the effluent limits to concentrations identified in the report as water quality criteria. There are several limits to this simplified approach that affect the accuracy of the conclusions reported.
- The "high hazard" threshold (intended to be EPA water quality criteria/Virginia water quality criteria) used in the report for several of the values are incorrect, or are saltwater criterion values.
- When compared to the correct Virginia water quality chronic criteria concentrations, the "high hazard" threshold used in the report is equal to the criterion for two metals, lower than the correct criterion for seven metals, and higher than the correct criterion for three metals.
- The report compares the criterion concentration for the most toxic form of chromium (chromium VI) to the higher draft permit limits that apply to the less toxic chromium III. This is incorrect and inflates the difference between the correct values.
- The sources of the "high hazard" threshold values used in the report for cobalt, manganese, thallium and vanadium are unknown and they cannot be evaluated.
- The report considers the criterion concentration as a threshold representing "high hazard" when in fact the chronic criterion should prevent any potential for any significant toxic effects. Chronic criteria are designed to protect spawning, reproduction, growth and development of early life stages as well as prevent any lethal effect to young or adult aquatic life.

- Most of these inconsistencies tend to overestimate any differences between the criteria and the draft permit limits. The report does not account for any potential for dilution of the discharge when entering a receiving water.

Water quality criteria are designed to protect aquatic life are based on a careful, systematic collection of all toxicity information available for the toxic substance. Following established guidelines, these data are carefully reviewed to determine which toxicity data are from acceptable scientific studies, conducted using established protocols and which have been determined to provide acceptable, unambiguous toxicity data suitable for calculating water quality criteria.

Both acute and chronic criteria are based on all available toxicity data and are designed to protect almost all of the species for which good quality toxicity information is available. EPA develops draft water quality criteria, subjects them to internal and external peer reviews and then subjects them to public comment periods, adjusting the criteria as needed based on public comments and again subjecting them to public comments and possibly additional adjustments before issuing them as final, recommended national water quality criteria. States are expected to propose these criteria for adoption as state water quality criteria and the state again subjects these proposed criteria public for review and comment. In this way, water quality criteria are developed by trained environmental scientists and technicians, using standardized protocols. The draft criteria are subjected to internal and external peer reviews, and then subjected to several, repeated rounds of public review and comments on both the national level and on the state level, oftentimes adjusting the criteria based on public comments. In this way, once a water quality criterion is officially adopted, the criterion represents the best scientific consensus of allowable concentrations of the potentially toxic substance that will prevent lethal effects as well as less serious effects such as reduced growth or reproduction. Water quality criteria are designed to be protective and waters with concentrations at or lower than the chronic criterion concentration should ensure a healthy diverse community of aquatic life.

Acute criteria provide protection to aquatic life from severe toxic effects that can cause death, generally when exposed for two to four days. At a minimum, acute criteria are designed to protect all but the 5% most sensitive species from any lethal toxic effects. Even the most sensitive species may suffer some impairment but not death if exposed to the acute criterion. In some cases, a criterion is lowered to protect even the most sensitive species if it is determined to be an important species. The acute criterion is designed to protect both adult and early life stages from lethal toxicity.

Chronic criteria provide protection against long-term exposures that could cause adverse effects on reproduction and/or growth of early life stages of aquatic life: Chronic criteria are designed to protect against less severe, non lethal toxic effects such as reduced growth or reduced reproductive success which might occur over prolonged periods of exposure. The chronic criterion is based on long term toxicity tests starting with very early life stages of aquatic life; eggs, embryos, larval stages and other early life forms. Often, these early life stages are more sensitive than the adults or juveniles and toxic effects are observed at lower concentrations. By using the toxicity sensitivity of these early life forms as the basis for the chronic criterion, the criterion is designed to take into consideration spawning and reproduction, development of eggs and growth of larval and juvenile fish and other aquatic life. If the chronic criterion is not exceeded for extended periods of time, then spawning and reproduction should be protected.

In response to comments, the Revised Draft includes monitoring at a frequency of 1/Month for Aluminum, Barium, Beryllium, Boron, Cobalt, Iron, Molybdenum and Vanadium. This monitoring is to be performed concurrently with the Whole Effluent Toxicity monitoring so that data are available for analysis in the event that the Whole Effluent Toxicity tests indicate toxicity.

There are 16 persistent bioaccumulative toxic (PBT) chemicals and 4 PBT chemical compound categories which are covered by EPA's Toxics Release Inventory Program. Of those chemicals and chemical compound categories, mercury and lead are the only ones known to be present at detectable levels in the process wastewater from dewatering activities. Effluent limits for mercury and lead were developed to ensure that water quality criteria are maintained and were included in the Initial Draft for the discharge of process wastewater from dewatering activities.

DEQ establishes effluent limits to protect instream water quality criteria which can be exceeded, on average, once every three years. The effluent limits were calculated using once in ten year drought river flows, maximum effluent flows, 97% percentile effluent concentrations and conservative hardness assumptions ensuring that aquatic life water quality criteria should be maintained even during extreme low flow conditions in the James River. The return interval for all of these conservative assumptions occurring simultaneously is far longer than the once per three years exceedance rate allowed by the WQS regulation.

With regard to the statement that DEQ does not have enough data to determine impacts to aquatic life, the discussion above provides extensive information on the WQS and the protections of aquatic life from the established acute and chronic water quality criteria. In addition, DEQ took an unprecedented conservative approach in assigning effluent limits as discussed in the staff response to comment #17. Please see the staff response to comments #4, #6, #7, and #8, for further discussion of aquatic life use in the James River and mixing of the effluent with the James River.

4. **Concerns that the permit does not adequately protect fish and shellfish, nor does it adequately protect nesting or migrating birds, notably eagles.**
- **What will happen to the thriving aquaculture industry once consumers learn that the rockfish, oysters, and crabs they are enjoying were caught downstream from a toxic waste faucet?**
 - **The James River is a high-quality water resource providing excellent smallmouth bass sport fishing and catfish for the table.**
 - **There should be comprehensive testing of fish species and benthic flora. People eat the fish.**
 - **Both our local Bald Eagle population and the visiting Bald Eagles need clean water, populated with fish and welcoming to the waterfowl to survive.**
 - **Accumulation of toxins in aquatic organisms is likely, and is not addressed.**

Staff Response

As discussed in the staff response to comment #3, water quality criteria are based on all available, reliable toxicity information for a wide variety of diverse species of aquatic life, and because the most sensitive species drive the calculation of the criteria, all organisms typically thrive when WQS are maintained. It is assumed that species that have never been used in toxicity tests with the substance have sensitivities within the range of the tested species. All of the tested species act as surrogates for untested species. It is assumed that any species of special importance such as those listed as threatened and endangered species, but which are not in the toxicity dataset will share a level of sensitivity close to one of the tested species. Because of this, it is either assumed or demonstrated, based on the species considered during criteria development, that threatened and endangered species will also be protected by a nationally recommended water quality criterion. In order for this to not be true, the species in question would have to be significantly more sensitive than the most sensitive species tested, and this would be very unlikely. Water quality criteria developed in this way are protective and will ensure a healthy, diverse aquatic community in waterbodies meeting these criteria. Waters with a concentration of a toxic metal at the chronic criterion level indicate a protected waterbody, with no reason to suspect any adverse effects.

Most of the toxic pollutants associated with coal ash are metals and generally speaking, in the aquatic environment, aquatic organisms are much more sensitive to the toxic effects of metals than humans are. If aquatic life is protected, humans will also be protected. Potential exposure to humans from metals found in a water body could come from eating fish that might have become contaminated. Most metals do not bioconcentrate in fish tissue to any significant levels that could pose a health risk to human consumers. Fish bioconcentration factors for most metals are very low so fish contamination rarely poses any potential risk to human consumers. When a metal is in a discharge at a level that could pose a potential fish consumption risk a permit limit is included. For example, thallium is one metal that could have a potential for some risk to humans under certain conditions. Thallium can concentrate in fish at a higher rate than most other metals. The bioconcentration factor recommended for thallium is 116 while for most other metals bioconcentration factors are generally under 50. Thallium can be more toxic than most other metals. The water quality criterion for thallium being applied to this draft permit is designed to ensure that the very low concentration of thallium in the receiving stream will prevent the contamination of fish to a level of potential risk to human consumers.

It is very rare that actual adverse effects on wildlife and birds can be attributed to water pollution, except when geographic conditions force animal populations to become highly concentrated around a contaminated localized source of water, e.g., in arid regions. In Virginia, this type of situation would be highly unlikely as there are plentiful sources of clean fresh water. DEQ has no evidence that this could be a potential problem at this site.

Given that the nature of pollutants in Bremono's dewatering discharge are not expected to be significantly different from what has been discharged historically at the power station through the decades when it was actively burning coal, and considering that metals, in general, do not significantly bioconcentrate, the effluent limits ensure that fish tissue and water quality will not be impacted by the proposed discharge.

5. Concerns raised about the ecosystem broadly, public health, and drinking water supplies

- **This waste contains carcinogens and heavy metals, which the utility wants to treat and release into major tributaries of the Chesapeake Bay at a rate of 172 million gallons per day. While this may be the quickest and cheapest option to get rid of coal ash problems this plan could inflict decades of hardship on a major ecosystem and our state's largest source of drinking water.**
- **The James River serves as a drinking water source for millions via water intakes for public water systems.**
- **Impacts to the proposed James River Water Authority raw water intake and existing PWS intakes further downstream should be considered.**
- **Coal ash wastewater in Stokes County, NC has been revealed to contain significant levels of Bromine, which produced trihalomethanes in drinking water downstream. This must be evaluated for this discharge.**
- **The effluent concentration limits for metals are too high compared to human toxicity levels.**
- **What will be the long term impacts to public health?**

Staff Response

The WQS regulation identifies and designates certain stream segments as Public Water Supply (PWS) waters where additional criteria apply which have been calculated to protect human health from toxic effects through drinking water consumption. PWS waters are also subject to additional criteria to maintain acceptable taste, odor, and aesthetic quality of drinking water, and these criteria apply at the drinking water intake. However, since the James River in the vicinity of Bremono Power Station is not designated by the WQS as a PWS water, application of the PWS criteria is not germane nor warranted in this case.

The James River Water Authority has been issued a Virginia Water Protection permit from DEQ that authorizes the construction and operation of a new surface water withdrawal intake on the north bank of the James River, just upstream of the confluence with the Rivanna River, approximately 8.7 miles downstream of the Bremono Power Station. This is the nearest raw water intake downstream of Bremono Power Station. It is expected that the discharge of process wastewater associated with dewatering activities will be completed prior to the intake being constructed and put into operation.

The WQS regulation also establishes human health criteria for “All Other Surface Waters.” DEQ fully applied these “all other” human health criteria in its evaluation. Waste load allocations based on aquatic life were compared to those based on human health, with the more stringent of the allocations utilized. This resulted in proposed human health-based effluent limits for Antimony and Thallium. For all other pollutant parameters, DEQ’s analyses found the aquatic life waste load allocations to be more stringent than those for human health. DEQ staff believes the proposed effluent limits have been properly evaluated and applied to be protective of human health and aquatic life, and will maintain all existing beneficial uses of the receiving stream.

- 6. The modeling for the discharge is not well understood. None of the supporting materials with the permit provide details regarding the model used to understand the impact to the James River. Was the model static or dynamic? Does it include continuous flows from the discharge or pulses with intermittent discharge flows? How does the proposed discharge address critical conditions in the James River during low flow periods? The modeling for the proposed discharges should be made available for public review and dissemination. Enough detail about the model software and the assumptions made should be provided so either DEQ and/or a 3rd party can replicate the modeling to determine if it was properly done. There is currently no indication that this has been done.**

Staff Response

DEQ’s mixing zone modeling uses well-established mixing zone concepts that are consistent with EPA’s Technical Support Document for Water Quality-based Toxics Control (<http://www3.epa.gov/npdes/pubs/owm0264.pdf>). A copy of DEQ’s Guidance Memo No. 00-2011, Guidance on Preparing VPDES Permit Limits, is available online at <http://www.deq.virginia.gov/Portals/0/DEQ/Water/Guidance/002011.pdf> and the modeling software associated with the guidance is available by contacting DEQ staff. A discussion of the process used to calculate effluent limits is included in the fact sheet along with the results of the modeling. DEQ uses a steady state model with conservative inputs for receiving stream flow (10 year drought conditions), discharge flow (maximum flows), effluent hardness, etc. This combination of conservative assumptions results in effluent limits which are protective of water quality under any conditions reasonably expected to occur. DEQ provided a briefing on the modeling procedures and other draft permit conditions to the Southern Environmental Law Center and the James River Association on November 19, 2015 and offered additional assistance in reviewing the modeling results.

7. Antidegradation of State Waters

- **The draft permit fails to comply with Virginia’s Tier 2 Antidegradation Policy at 9VAC25-260-30.A.2.**
- **DEQ must justify any lowering of water quality in the James River as necessary for important economic or social development under Virginia’s Antidegradation Policy.**

Staff Response

The Initial Draft included effluent limits that are consistent with DEQ’s application of the Antidegradation Policy contained in 9VAC25-260-30.A.2. Effluent limits are established that allocate no more than 25% of the unused assimilative capacity for toxic criteria and no more than 10% of the unused assimilative capacity for human health criteria under a combination of extreme conditions (i.e. 10-year drought flow, maximum effluent flow, 97th% effluent concentration, etc.), that are expected to

occur much less frequently than the once in 3-year exceedance interval allowed by the WQS. By limiting the waste load allocations to a small percentage of the remaining assimilative capacity under such a conservative combination of conditions, DEQ assures that there is no significant lowering of water quality under any conditions reasonably expected to occur.

8. The Mixing Zone is Too Long

- **The draft permit does not comply with the Clean Water Act and implementing regulations because VDEQ improperly relies on a “Complete Mix Assumption” even though DEQ’s own analyses show that complete mixing of the coal ash pollution with the James River will not occur for 9 to 11 miles downstream during low flow conditions.**
- **DEQ must demonstrate that any mixing area downstream of the discharges from the Bremono Power Station will comply with Virginia’s regulations governing mixing zones.**

Staff Response

The Initial Draft included no established regulatory mixing zone. The proposed discharge was evaluated consistent with the mixing zone concepts established in EPA’s Technical Support Document for Water Quality-based Toxics Control (<http://www3.epa.gov/npdes/pubs/owm0264.pdf>) and DEQ’s Guidance Memo No. 00-2011; Guidance on Preparing VPDES Permit Limits (<http://www.deq.virginia.gov/Portals/0/DEQ/Water/Guidance/002011.pdf>) and it was determined that a complete mix assumption would not prevent movement of or cause lethality to passing and drifting aquatic organisms. The application of the Antidegradation Policy as discussed in comment #7 further restricted waste load allocations and ensured compliance with all WQS.

Although the limits included in the Initial Draft were protective of water quality, DEQ has reevaluated the mixing assumptions in response to public concerns about the distance to a completely mixed condition.

In response to comments, the Revised Draft includes effluent limits that are based upon a regulatory mixing zone allowed in 9VAC25-260-20 that is 2,000 feet in length (5 times the river width). At this distance the effluent has mixed with less than 4% of the river at flows associated with the protection of aquatic life (1Q10 and 7Q10) and less than 8% of the river at flows associated with the protection of human health (30Q5 and harmonic mean). All water quality criteria will be met at the edge of the regulatory mixing zone under the conservative combination of conditions discussed in comment #7.

- 9. DEQ should evaluate the possibility of cumulative and/or synergistic impacts as a function of combination of metals, salts, and high temperature discharges. The combined thermal and toxic effluents will be 167 MGD, which will be 43% of low flow at 7Q10 (389 MGD). At elevated temperatures, the metals contained in the discharges of coal ash water may be even more toxic than at normal stream temperatures.**

Staff Response

The possibility of cumulative and/or synergistic impacts is addressed by the Whole Effluent Toxicity limits applied to the coal ash dewatering discharge. The Initial Draft included four monthly bioassays to limit acute and chronic toxicity for two species. The toxicity of most metals generally correlates to water hardness rather than temperature. The effluent limits were developed using very conservative hardness values and are expected to be fully protective of the receiving stream.

10. Ineffective Limits and Associated Monitoring

- **The draft permit does not contain an effective monitoring regime. The permit must require more frequent and more representative monitoring and reporting. Monthly average limits should be made weekly average limits, with continuous or daily monitoring and weekly reporting. 24-hour composite sampling should be required for the discharge of wastewater from the coal ash impoundments.**
- **Self-monitoring and self-reporting of the discharges is not adequate.**
- **There is no instream verification biological or chemical monitoring.**
- **DEQ must apply sufficient monitoring terms, including baseline monitoring and ambient monitoring of water quality, sediments, aquatic communities, and fish tissue to ensure that the James River and human health are protected.**
- **The draft permit should require flow to be measured and not estimated.**
- **Limits need to be established on the actual outfalls to the James River and not just on the internal outfalls. The proposed permit for the Bremono Station contains internal outfalls (500 series) with effluent limits for coal ash pond metals; however, the permitting of these outfalls for these constituents is insufficient for the regulation of coal ash pond metals. Only the adequate permitting of external outfalls can achieve this goal. Approval of the proposed permit modifications would allow Dominion to discharge coal ash pond closure wastewaters in certain outfalls where no verification would be required for coal ash pond metals. Specifically, the external outfalls include Outfalls 002, 003, 004, and 006 at Bremono Power Station.**

Staff Response

The Revised Draft includes enhanced monitoring and reporting above that contained in the Initial Draft. Specifically, the Revised Draft establishes monitoring for effluent limited parameters associated with dewatering at a frequency of three days per week (3 Days/Week), with a minimum of 48 hours between sampling events. Additionally, the permittee is required to contract to receive test results within four business days of sampling and to report the results to DEQ no later than the close of business Friday of the week following sample collection. This increase in sampling frequency also had the effect of lowering the monthly average effluent limits. This is due to the nature of the statistical computations used in establishing effluent limits whereby the increased sampling frequency improves the confidence interval. Lastly, the Revised Draft includes monitoring at a frequency of 1/Month for Aluminum, Barium, Beryllium, Boron, Cobalt, Iron, Molybdenum and Vanadium which are parameters identified as constituents of concern for coal ash residuals for which there are no water quality criteria. While the Whole Effluent Toxicity sampling ensures that these parameters, as well as others that may cause toxicity, are accounted for in the sampling regime, sample results for these additional constituents will be helpful should toxicity be observed and for better understanding the full characteristics of the discharge.

The VPDES program is a self-monitoring program under the Clean Water Act. The DEQ performs inspections of facilities and collects samples from the facility as necessary. VPDES permittees are also required to submit monthly Discharge Monitoring Reports to DEQ. These monitoring reports contain summaries of the facility's self-monitoring results, and are reviewed by the DEQ's compliance staff. In addition, DEQ is committed to following up on any inquiries or complaints we receive regarding the facility's operation.

Background in-stream water quality conditions were established for antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc using DEQ's probabilistic monitoring data collected at nearly 100 sites in the same James River Hydrologic Unit Code (HUC) where the subject facility is located. Probabilistic monitoring is the sampling of randomly selected sites on Virginia's rivers and streams, and is used to provide accurate statewide and regional assessments of the chemical, physical, and biological conditions of Virginia's freshwater resources. These background in-stream conditions were utilized in the calculation of effluent limits in the Revised Draft and resulted in more stringent limits than would have otherwise been calculated.

Staff does not believe ambient monitoring of sediment, water, fish tissue and aquatic communities is necessary. As discussed in the staff response to comments #3, #4, #6, #7, and #8, the effluent limits have been established using very conservative assumptions to protect and maintain the WQS. Accordingly, effluent monitoring to demonstrate compliance with the established effluent limits will serve to gage the potential impact of the discharge on the aquatic environment. Additionally, this permitting action addresses dewatering activities required for closure. Closure of these impoundments is governed by and addressed by the 2015 EPA Final Rule on the Disposal of Coal Combustion Residuals and applicable provisions of the Virginia Solid Waste Management Regulations. Closure and post-closure care under those requirements will include groundwater monitoring, associated surface water monitoring, and other measures. The requirements of a solid waste permit will continue to ensure that the facility is not causing any impacts to surface water.

Based on the nature of the discharges authorized at the facility, staff considers an effluent flow sample type of “estimate” to be appropriate.

DEQ has applied the effluent limits for the dewatering wastewater discharges at internal Outfalls 501, 502, 503, 504, and 505 rather than at the external Outfalls 002, 003, 004, and 006. Meeting effluent limits at the internal outfalls will protect and maintain water quality at any of the external outfalls identified as discharge options, while providing Dominion with the flexibility needed to achieve closure by the required deadline.

11. Ash Pond Discharge Volume Limits to Protect Against Toxic Discharges & Dam Integrity

- **The draft permit does not place limits on the volume of wastewater and the amount of toxic chemicals within it that are discharged to the James River. Limits on the volume of discharge from the coal ash ponds are needed to protect the water quality of the James River and the integrity of the dams that are holding back high volumes of coal ash and polluted water. DEQ must limit the volume of water that may be discharged at any time and the total loading of pollution to the James River.**
- **The volume of discharge will likely be overwhelming as the permitted allowable discharge is essentially unlimited.**

Staff Response

The effluent limits in the Initial Draft for the discharge of process wastewater from dewatering activities were developed to be protective of water quality if the permittee were to discharge 10.2912 MGD every day over the 5-year term of the permit, which is very unlikely.

In response to comments, the Revised Draft includes a maximum effluent flow limit of 10.2912 MGD for the discharge of process wastewater from dewatering activities.

In addition, after consultation with the Department of Conservation and Recreation, the Revised Draft includes a special condition that requires the drawdown rate of any coal ash pond to not exceed 6 inches/day to maintain the integrity of the dams, unless approved in writing by the Department of Conservation and Recreation Dam Safety Program.

12. Quantification Levels

- **The minimum quantification levels (QL) specified in the draft permit do not provide the analytical sensitivity necessary to properly evaluate waterborne concentrations of coal ash pollutants and their toxic hazard to aquatic life.**
- **Values less than the QL are recorded as zero.**

Staff Response

Limits based on the protection of aquatic life include both a monthly average and a daily maximum. It is important to note that both of these limits are equivalent in that they both characterize the data distribution necessary to maintain water quality. The daily maximum value is the 97th percentile of the individual samples and the monthly average is the 97% percentile of the number of samples in the monthly average determination from the same data set. The limits are redundant in that they are both equally protective of water quality. In the case of averaging values less than the quantification level DEQ treats these values as if they were zero. Treating these values otherwise would put the agency in the position of enforcing a result which was not truly quantified. With the inclusion of the daily maximum limits characterizing the same data set, water quality should be protected regardless of whether or not the monthly average includes <QL results.

In response to comments, the Revised Draft includes lower QLs to reflect actual laboratory capabilities.

13. Whole Effluent Toxicity

- **Whole Effluent Toxicity tests are invalid since the evaluation parameters for the chronic test state “report the LC₅₀ for each chronic test at the 48-hour point”.**
- **The chronic test should be 28-day flow-through tests.**
- **The “growth period” in the Whole Effluent Toxicity tests is invalid. A “growth” metric is invoked as an assessment parameter for a 7-day “chronic” exposure period for young *Pimephales promelas*, yet, the stipulated reporting period for the permit is 48 hours, which is an “acute” exposure period, not chronic.**

Staff Response

The chronic test required by the Initial Draft is a 7-day test determining the No Observed Effect Concentration (NOEC) for survival and growth. The 48-hour LC₅₀ is reported in addition to NOEC in order to calculate an acute-to-chronic ratio if needed. Short term chronic toxicity tests are commonly used in NPDES permitting. The EPA guidance manual cited below was promulgated by reference and is approved under Clean Water Act section 304(h). The draft permit requires use of approved testing and reporting required in 40 CFR 136.3, Table IA: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, EPA 821-R-02-013, October 2002* <http://www.epa.gov/cwa-methods/chronic-toxicity-freshwater-wet-methods>.

Few Whole Effluent Toxicity laboratories in the United States have the ability to perform the long duration chronic tests, and even fewer have the ability to perform flow-through tests. One Whole Effluent Toxicity laboratory in Virginia has the equipment to do flow-through tests, but does not run them nor is the laboratory certified by the Virginia Environmental Laboratory Accreditation Program to perform the flow-through tests for permit compliance. The short-term (4-7 day) chronic tests have been shown to provide sufficient indication of toxicity for survival and growth.

The survival and growth effects for *Pimephales promelas* are determined at 7 days by the NOEC statistics, as stated in the draft permit. The 48-hour acute LC₅₀ endpoint that is to be reported is for survival at 2 days, but the NOEC for survival is determined at 7 days for the chronic test using *Pimephales promelas* as per the method specifications.

14. Dominion should cease discharge if limits are exceeded and the discharge should not resume until the limits can be met.

Staff Response

In response to comments, the Revised Draft includes the following special condition:

The permittee shall immediately cease the discharge upon becoming aware of an exceedance of an established effluent limit and/or Whole Effluent Toxicity limit at Outfall 501, 502, 503, 504, or 505. The permittee shall promptly notify DEQ, in no case later than 24 hours, after the discovery of the exceedance. Should an exceedance occur, the permittee shall initiate a review of the treatment operations and data to identify the cause(s) of the exceedance and initiate appropriate corrective action(s). Resumption of the discharge shall not occur until such time as an evaluation report is provided to DEQ and written authorization to resume the discharge is granted by DEQ.

15. Further review of the draft permit on page 27 #19 notes that exceedances of 90 mg/L TSS in one day or 30 mg/L over a 7 day rolling average requires that Dominion contact DEQ within 24 hours. JROC would like to request that an additional requirement be added to the permit such that when these thresholds are passed (90 mg/L & 30 mg/L) the discharge is immediately shut off until measured concentrations go below those thresholds. It is easy to imagine a windy day that turns up all of the coal ash into the effluent, and given that the particles are where the majority of the contaminants are, JROC finds it wise to stop the discharge until those hazardous particles have settled back to the bottom of the pond. Again, because the flow is not mandatory due to the lack of influent, we do not see this as a significant burden to the permittee and we would like to see this requirement added to the permit.

Staff Response

Part I.G.19 of the Initial Draft applied to the Metal Cleaning Waste Treatment Basin and not to the coal ash ponds. The discharge from the Metal Cleaning Waste Treatment Basin is authorized to occur either via Internal Outfall 202 to the West Ash Pond or via Internal Outfalls 504 or 505. Before a discharge to the James River could occur, Dominion would be required to demonstrate that a discharge that includes wastewater from the Metal Cleaning Waste Treatment Basin meets the limits in Part I.A.9 for process wastewater from dewatering. As discussed above, a special condition has been added to the Revised Draft requiring Dominion to immediately cease the discharge upon becoming aware of an exceedance of an established effluent and/or Whole Effluent Toxicity limit at Outfall 501, 502, 503, 504, or 505.

16. PCB monitoring should require the use of Method 1668 to be consistent with the TMDL monitoring and to ensure PCBs are not discharged.

Staff Response

EPA Method 608 is an EPA-approved methodology for analyzing PCB and organochlorine pesticide concentrations. It meets DEQ's quantifiable level requirements and is widely used to analyze pollutant concentrations in industrial and municipal wastewater effluents. Method 1668 has not been EPA approved and is not an appropriate method to demonstrate compliance with Part I.G.9 of the draft permit.

The basis for this prohibition is the Steam Electric Guidelines 40 CFR Part 423, which contains the following "technology-based" limit for PCBs: "There shall be no discharge of polychlorinated biphenyl compounds such as those used for transformer fluid." The origin of this prohibition can be found in the 1974 development document for Effluent Limitation Guidelines and New Source Performance Standards for the Steam Electric Power Generating Point Source Category and was based solely on the use of technology for spill prevention and containment to prevent spills of PCB-containing oil at utilities and to prevent such oils from entering the stormwater discharge. The zero discharge prohibition is narrow in

scope and based on a specific analytical capability, consistent with EPA Method 608. Discussions with EPA Region III confirm that Method 608 is appropriate for determining compliance with this federal effluent guideline.

In response to comments, the Revised Draft includes separate PCB monitoring using EPA Method 1668 for Outfall 002 during the period following notification of the West Treatment Pond operating in its final configuration and notification that no further discharge of process wastewater from dewatering activities is occurring from Outfall 002. The results of this monitoring will be utilized in future TMDL development.

17. There is a dramatic difference in the wastewater profiles between the Possum Point and Brema Stations. This leads to the possibility that the wastewater streams at both facilities may not have been adequately characterized.

Staff Response

DEQ recognizes the difficulty in characterizing the wastewater that will be generated during the dewatering process before the dewatering activities commence. That was one of the reasons that DEQ utilized the approach discussed on pages 2 and 3 in Appendix E of the fact sheet for identifying and evaluating constituents of potential concern associated with the removal of waters from the coal ash ponds. This approach included establishing water quality based limits for certain parameters regardless of whether or not the existing data for the facility demonstrated a reasonable potential to exceed the water quality criteria. This approach also included establishing Whole Effluent Toxicity limits to address certain parameters in the absence of an applicable Virginia numeric water quality criterion.

18. Comments/Requests from the United States Fish and Wildlife Service (USFWS)

Thank you for giving us an opportunity to review the materials pertaining to the above referenced and for answering our questions along the way. As you know, we are concerned about how this permit may impact freshwater mussels known to occur in the James River watershed, including the federally listed endangered James spiny mussel (*Pleurobema collina*) and three species that are currently being reviewed for listing under the Endangered Species Act: the yellow lance (*Elliptio lanceolata*), Atlantic pigtoe (*Fusconaia masoni*), and green floater (*Lasmigona subviridis*).

We support DEQ's efforts to limit the concentrations of pollutants present in wastewater that will be discharged from the ash ponds as they are dewatered and permanently closed. However, we are concerned that the proposed limits may not be adequately protective of aquatic life, including the four species of mussel listed above. Central to this concern is the fact that there is no limit on the total volume of water that can be discharged and therefore the total loading of metals is unlimited. Given the complex nature of this permit, we request that the comment period be extended by 30 days so that we can further review the materials provided. We may have additional concerns once we better understand what is being proposed and how it might impact our trust resources.

Staff Response

9VAC25-31-290 requires public notice to be sent to federal and state agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, State Historic Preservation Officers, including any affected states and any state agency responsible for plan development under § 208(b)(2), § 208(b)(4) or § 303(e) of the CWA and the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The natural resource agencies are on a required mailing list that is distributed per 9VAC25-31-290.C.1.f and is submitted at the same time public notice is submitted to newspaper. This mailing list is distributed every 2 weeks. The mailing list is the mechanism by which EPA (for minor permits), DGIF, VIMS, USFWS, NMFS, Corps of Engineer, and adjacent states are notified of upcoming VPDES permit actions. DEQ is to provide additional information if those entities request them and to address their comments.

DEQ provided electronic access to the draft permit, fact sheet, and application on October 30, 2015. The mailing list was distributed on November 2, 2015. Comments were received from USFWS on December 14, 2015, and are addressed below.

In response to comments, the Revised Draft includes a maximum effluent flow limit of 10.2912 MGD for the discharge of process wastewater from dewatering activities.

The constituents of concern for coal combustion residuals are addressed in the draft permit through a combination of elements, including established pollutant effluent limits, monitoring requirements, and Whole Effluent Toxicity limits to address potential toxicity. Please see the staff response to comments #3 and #4 for information regarding the WQS and the toxicological information used in establishing the water quality criteria for protecting against acute and chronic toxicity to aquatic life as well as protection of human health.

VPDES permits are designed to be protective of the WQS, which establish the beneficial uses of all waters in the Commonwealth and the narrative and numeric criteria necessary to ensure water quality is maintained and protected. The draft permit has been prepared in accordance with all appropriate statutes, regulations, guidelines and policies to protect the receiving waters. As discussed in the staff response to comments #3, #4, #6, #7, and #8, the effluent limits have been established using very conservative assumptions to protect and maintain the WQS.

DEQ has followed the requirements for notification established in law and regulation. Consistent with this standard operating practice, it is the agency's decision that the 45-day public comment period was adequate and an extension is not necessary.

19. Comments/Requests from the Virginia Department of Game and Inland Fisheries (DGIF)

We received your 20 November 2015 notification of the proposed modification to the Dominion – Bremono Power Station Virginia Pollutant Discharge Elimination System (VPDES) permit (VA0004138). The VPDES permit modification addresses the industrial wastewater and stormwater discharges associated with closure of coal ash ponds located at the Station.

To better evaluate the potential impacts of this discharge to fish and wildlife resources under our jurisdiction, we request clarification of the proposed effluent volumes, chemistry, and constituents, and of their ecotoxicology. We also request explanation of how the proposed monitoring protocols would: (1) document existing baseline concentrations of the discharge constituents at end-of-pipe and in the receiving waters, and (2) adequately evaluate impacts to the environment resulting from the discharge.

Thank you for the opportunity to comment on this draft permit. We would appreciate clarification of these topics to facilitate our review of potential impacts to wildlife resources that may accrue from the proposed discharges.

Staff Response

9VAC25-31-290 requires public notice to be sent to federal and state agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, State Historic Preservation Officers, including any affected states and any state agency responsible for plan development under § 208(b)(2), § 208(b)(4) or § 303(e) of the CWA and the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The natural resource agencies are on a required mailing list that is distributed per 9VAC25-31-290.C.1.f and is submitted at the same time public notice is submitted to newspaper. This mailing list is distributed every 2 weeks. The mailing list is the mechanism by which the EPA (for minor permits),

DGIF, VIMS, USFWS, NMFS, Corps of Engineer, and adjacent states are notified of upcoming VPDES permit actions. DEQ is to provide additional information if those entities request them and to address their comments.

The mailing list was distributed on November 2, 2015. DGIF requested information on the Breomo Power Station draft permit on November 20, 2015. DEQ provided electronic access to the draft permit, fact sheet, and application on November 20, 2015. Comments were received from DGIF on December 14, 2015, and are addressed below.

Information on the expected volumes to be discharged can be found in the staff response to comment #1. The constituents of concern for coal combustion residuals are addressed in the draft permit through a combination of elements, including established pollutant effluent limits, monitoring requirements, and Whole Effluent Toxicity limits to address potential toxicity. Please see the staff response to comments #3 and #4 for information regarding the WQS and the toxicological information used in establishing the water quality criteria for protecting against acute and chronic toxicity to aquatic life as well as protection of human health.

VPDES permits are designed to be protective of the WQS, which establish the beneficial uses of all waters in the Commonwealth and the narrative and numeric criteria necessary to ensure water quality is maintained and protected. The draft permit has been prepared in accordance with all appropriate statutes, regulations, guidelines and policies to protect the receiving waters. Monitoring to demonstrate compliance with the established effluent limits will serve to gauge the potential impact of the discharge on the aquatic environment. Staff does not believe additional monitoring of the discharge or ambient environment is necessary. As discussed in the staff response to comments #3, #4, #6, #7, and #8, the effluent limits have been established using very conservative assumptions to protect and maintain the WQS.

20. Comments/Requests from the Virginia Department of Conservation and Recreation

Division of Planning and Recreation Resources

The Department of Conservation and Recreation (DCR), Division of Planning and Recreational Resources (PRR), develops the *Virginia Outdoors Plan* and coordinates a broad range of recreational and environmental programs throughout Virginia. These include the Virginia Scenic Rivers program; Trails, Greenways, and Blueways; Virginia State Park Master Planning and State Park Design and Construction.

We have reviewed the Dominion application for the Breomo Power Station regarding the closure of the coal ash ponds. Please note that the river is regularly used, year round, by recreational boaters and paddlers as it is an established blueway; in addition, this section of the James qualifies for scenic river designation. The project is also approximately 40-mile upriver of DCR's Powhatan State Park in Goochland County.

Division of Natural Heritage

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the James River – Brema Stream Conservation Unit (SCU) is within the project area. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The James River – Brema SCU has been given a biodiversity ranking of B4, which represents a site of moderate significance. The natural heritage resources associated with this site is:

Lasmigona subviridis

Green floater

G3/S2/NL/LT

The Green floater, a rare freshwater mussel, ranges from New York to North Carolina in the Atlantic Slope drainages, as well as the New and Kanawha River systems in Virginia and West Virginia (NatureServe, 2009). In Virginia, there are records from the New, Roanoke, Chowan, James, York, Rappahannock, and Potomac River drainages. Throughout its range, the Green floater appears to prefer the pools and eddies with gravel and sand bottoms of smaller rivers and creeks, smaller channels of large rivers (Ortman, 1919) or small to medium-sized streams (Riddick, 1973). Please note that this species has been listed as state threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

In addition, the Atlantic pigtoe (*Fusconaia masoni*, G2/S2/SOC/LT) and Virginia pigtoe (*Lexingtonia subplana*, G1Q/SH/NL/NL) have been historically documented within the project area. The Atlantic pigtoe is a medium-sized freshwater mussel which ranges from the Ogeeshee drainage in Georgia north to Virginia (NatureServe, 2009). In Virginia, this species is known from the James, Chowan and Roanoke River basins (NatureServe, 2009). The Atlantic pigtoe prefers clear, swift waters with gravel or sand and gravel substrates. Many populations from the main stem of larger rivers have disappeared and the species is becoming limited to the headwater areas of drainages in which it occurs. This could have implications for populations being able to reestablish after a localized, catastrophic event and for genetic exchange.

Threats to the Atlantic pigtoe include pollution, impoundments, clearcutting, and dredging (Gerberich, 1991). This species does not appear to be able to tolerate habitat changes and it appears to be very poor at recolonizing previously disturbed habitats (NatureServe, 2009). A recent study determined that the glochidia of the Atlantic pigtoe are extremely sensitive to pollution (Augsburger et al., 2003). Please note that this species is currently listed as threatened by the VDGIF and is also tracked as a species of concern by the United States Fish and Wildlife Service (USFWS); however, this designation has no official legal status.

The Virginia pigtoe is a state historic freshwater mussel. There are questions surrounding the Virginia pigtoe's taxonomic status, and its original description as a species may be based on partially-gravid Atlantic pigtoe (*Fusconaia masoni*). If it is a valid species, it is endemic to the James River drainage of Virginia (NatureServe, 2009).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

James River has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as a "Threatened and Endangered Species Water". The species associated with this T & E Water are the Brook floater (*Alasmidonta varicosa*, G3/S1/NL/LE), the Green floater and the Atlantic pigtoe.

To minimize impacts to the aquatic ecosystem, DCR supports the permit conditions requiring coal ash pond effluent including pore water meet water quality standards at the individual outfalls prior to release into the James River, development of an emergency spill and leak plan as part of the Stormwater Pollution Prevention Plan and low total suspended solids limits. Due to the legal status of the Green floater, Atlantic pigtoe, and Brook floater, DCR also recommends coordination with Virginia's regulatory authority for the management and protection of these species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity. Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDGIF maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Gladys Cason (804-367-0909 or Gladys.Cason@dgif.virginia.gov).

Staff Response

9VAC25-31-290 requires public notice to be sent to federal and state agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, State Historic Preservation Officers, including any affected states and any state agency responsible for plan development under § 208(b)(2), § 208(b)(4) or § 303(e) of the CWA and the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The natural resource agencies are on a required mailing list that is distributed per 9VAC25-31-290.C.1.f and is submitted at the same time public notice is submitted to newspaper. This mailing list is distributed every 2 weeks. The mailing list is the mechanism by which the EPA (for minor permits), DGIF, VIMS, USFWS, NMFS, Corps of Engineer, and adjacent states are notified of upcoming VPDES permit actions. DEQ is to provide additional information if those entities request them and to address their comments.

The mailing list was distributed on November 2, 2015. DCR requested information on the Dominion – Bremono Power Station draft permit on December 9, 2015. DEQ provided electronic access to the draft permit, fact sheet, and application on December 9, 2015. Comments were received from DCR on December 14, 2015, and are addressed below.

The effluent limits for the discharges of process wastewater from dewatering activities are not based on meeting the WQS prior to release into the James River. The effluent limits must be met at the individual outfalls; however, mixing with the James River has been utilized in the development of the effluent limits as discussed in the staff response to comments #6 and #8.

The constituents of concern for coal combustion residuals are addressed in the draft permit through a combination of elements, including the establishment of pollutant effluent limits, monitoring requirements, and Whole Effluent Toxicity limits to address potential toxicity. Please see the staff response to comments #3 and #4 for information regarding the WQS and the toxicological information used in establishing the water quality criteria for protecting against acute and chronic toxicity to aquatic life as well as protection of human health.

VPDES permits are designed to be protective of the WQS, which establish the beneficial uses of all waters in the Commonwealth and the narrative and numeric criteria necessary to ensure water quality is maintained and protected. The draft permit has been prepared in accordance with all appropriate statutes, regulations, guidelines and policies to protect the receiving waters. As discussed in the staff response to comments #3, #4, #6, #7, and #8, the effluent limits have been established using very conservative assumptions to protect and maintain the WQS.

Part I.G.3 of the Initial Draft required that the Operation and Maintenance Manual include procedures for reporting and responding to any spill/overflows/treatment works upsets. In addition, Part I.H.2.b(4) of the Initial Draft required that the Stormwater Pollution Prevention Plan clearly identify areas where potential spills and leaks that can contribute pollutants to stormwater discharges can occur and their corresponding outfalls.

The Initial Draft included monthly average total suspended solids limits of 30 mg/L and daily maximum total suspended limits of 45 mg/L.

- 21. The evaluation of threats to Threatened & Endangered species is inadequate. The Green Floater Mussel is listed as a threatened species under the Virginia Endangered Species Act and is known to exist in the James River in the area of the Brema Plant and in the downstream reach of the James River before complete mixing of the effluent with the James will occur, and where exceedances of ambient water quality criteria to protect aquatic species will occur within an as-yet-undefined portion of the James River. Additionally, the Federally Endangered James Spiny mussel historically occurred in the James River. Yet DEQ failed to even confer with the state and federal resource agencies regarding the impacts of the discharges of toxic water from coal ash ponds on endangered species and their habitat in the James River prior to issuing the draft permit for public comment. The Atlantic sturgeon, a federally protected, endangered species, may use areas that could be affected by the discharge.**

Staff Response

Pursuant to the 2007 Memorandum of Understanding among DEQ, DGIF, DCR, and USFWS regarding threatened and endangered species coordination during the VPDES permitting process, DGIF and DCR are notified of the receipt of an application if notification is requested by those agencies. The agencies are informed of the annual list of permits that are scheduled for reissuance during the upcoming calendar year, and they identify the specific permits they would like to review. The notification is executed through either a coordination form and/or DCR's Natural Heritage Database. The Brema Power Station permit was identified as a candidate permit reissuance for review. The coordination with DGIF and DCR was conducted in accordance with applicable regulations and policies. In addition, DEQ hosted a conference call with USFWS, DGIF, and DCR on December 10, 2015 to discuss the derivation of the effluent limits for the discharge of processing wastewater from dewatering activities.

Please see the staff response to comments #18, #19, and #20 for additional information.

- 22. The fact sheet does not address the issue of the Chesapeake Bay TMDL and TSS (or sediment). 40 CFR 122.4(i) prohibits the discharge of pollutants to impaired waters without an allocation. The dewatering is a new discharge and would fall under this prohibition. –**

Staff Response

Virginia's Phase I Watershed Implementation Plan recognizes that waste load allocations for sediment loads will be set at technology levels since wastewater is an insignificant portion of the sediment load. As a further clarification, individual and general VPDES permits are considered consistent with the Chesapeake TMDL as long as the aggregated total suspended solids (TSS) loads for all individual and general permit facilities is less than the aggregate TSS waste load allocation in the Phase I Watershed Implementation Plan. The Brema discharges are not new; they are a continuation of discharges that have

occurred for decades. Further, by looking at a single James River discharger as an example, it can be demonstrated that there is more than adequate TSS waste load allocation available under the TMDL. The Henrico WWTP has a waste load allocation based on a design flow of 75 MGD and an effluent TSS concentration of 30 mg/L. The actual TSS effluent limit for Henrico WWTP is 8 mg/L so there is an excess TSS waste load allocation of $(75 \text{ MGD})(30-8 \text{ mg/l})(3.785) = 6,245 \text{ kg/d}$ available from just one facility.

23. Public Notice, Notification, and Review

- **Most people are not aware of the situation and there are no requirements to inform the public or downstream communities when Dominion will dewater the coal ash ponds.**
- **Concerns over the notification procedures used by VADEQ.**
- **DEQ needs a more robust notification process.**

Staff Response

All notifications and notices have been provided in accordance with applicable state laws and regulations, policies, and practices. Specifically, 9VAC25-31-290 C.2, states that public notice shall be given by publication once a week for two successive weeks in a newspaper of general circulation in the area affected by the discharge. Additionally, Section 8.01-324 of the Code of Virginia establishes criteria for which newspapers may be used for legal notices and publication. Staff utilized the established criteria outlined in Section 8.01-324 of the Code of Virginia when selecting *The Daily Progress* for publication of the legal notice. Public notice was published on October 30, 2015 and November 6, 2015 in *The Daily Progress*. In addition, public notice was published in the *Fluvanna Review* on November 5, 2015 and November 12, 2015. The public comment period totaled 45 days, establishing a period for providing written comment before the public hearing that exceeds the minimum requirements and a shortened period for providing written comment after the public hearing. The comment period for this permitting action closed on December 14, 2015. All notifications and notices have been provided in accordance with applicable state laws and regulations.

Pursuant to Section 62.1-44.15:01 of the State Water Control Law, the public notice is to be mailed to the chief elected official and chief administrative officer and planning district commission. By letter dated October 30, 2015, DEQ notified the Fluvanna County Administrator, Chairman of the Fluvanna County Board of Supervisors, and Thomas Jefferson Planning District Commission on October 30, 2015.

24. Opposition to the Permit and Requests for Extension of Comment Period

- **The permitting action and process appears to be rushed. Why is there such a rush?**
- **Opposition to Dominion's application to drain contaminated water from coal ash ponds directly into the James River.**
- **Request from Senator A. Donald McEachin to extend the comment period 60 days.**
- **Because of the complexity of the issue and the volume of technical information, comment period should be extended. The draft permit and fact sheet are several hundred pages, and the proposed dewatering action has never been undertaken in Virginia.**
- **Deny the permit and extend the comment period 60 days to review information, attend the hearing and obtain additional information from DEQ to inform public comments.**
- **Urge to deny the permit and extend the comment period 60 days to allow science to inform the potential impacts to the river and public health.**

Staff Response

DEQ has followed the requirements and procedures for public participation established in law and regulation, including requirements to process permitting actions in a timely manner. Consistent with this standard operating practice, it is the agency's decision that the 45-day public comment period was adequate and an extension is not necessary.

25. Coal Ash Pond Closure

- **The coal ash ponds must be excavated, and all contents must be stored in dry, lined storage away from bodies of water.**
- **Reject plans to dump coal ash waste from Possum and Breomo. Clean it up responsibly.**

Staff Response

This permitting action addresses dewatering activities required for closure but does not govern the method of closure of any of the surface impoundments on-site. Closure of these impoundments is governed by and addressed by the 2015 EPA Final Rule on the Disposal of Coal Combustion Residuals and applicable provisions of the Virginia Solid Waste Management Regulations. The closure of these impoundments will be addressed through a solid waste permit which will include provisions for closure, post-closure care, and groundwater protection.

26. Release of Coal Ash into Waters, Dumping of Toxic Waste

- **The James River has seen improvement in recent years. This will set back the improvements seen in the river.**
- **Stop giving Dominion a free pass to put its coal ash waste into our treasured waterways.**
- **Reject plans to dump coal ash waste from Breomo Power Station. Clean it up responsibly.**
- **The high metal concentrations in ash pond sediment will be allowed to be discharged.**

Staff Response

The laws, regulations and policies governing the existing and proposed discharges from the subject facility are the same that have, in many ways, been responsible for the improvements in water quality noted in the James River Basin. The Initial Draft, as well as the Revised Draft, was prepared in accordance with all applicable laws, regulations and policies to maintain the WQS applicable to the discharge receiving waters and all applicable beneficial uses.

27. Consideration of Other Water and Ash Disposal Alternatives

- **Dominion should be required to find another method of disposal for the coal ash wastewater.**
- **With all of the resources we have available to us, we need to think of healthier alternatives that will not put human and wildlife health at risk. Be the leaders you are - you have the responsibility to protect our land, animals, economy, and people - instead of doing what's easiest, do what you were appointed, elected, and chosen to do - lead to create a great place to live.**

Staff Response

There is no prohibition in state law or regulation against anyone applying for an individual wastewater discharge permit. If an application for a permit is submitted then DEQ has a legal responsibility to prepare a draft permit that would be protective of water quality.

28. Dominion should stop using coal at the Breomo Power Station.

Staff Response

Dominion ceased using coal for fuel at the Breomo Power Station in September 2013.

29. By allowing the discharge of toxics into the river, the draft permit is inconsistent with the 2014 Chesapeake Bay Agreement that Virginia signed.

Staff Response

The Chesapeake Bay Watershed Agreement, signed by Virginia, commits to “continuously improving practices and controls that reduce and prevent the effects of toxic contaminants below levels that harm aquatic systems and humans.” The draft permit has effluent limits based on the Water Quality Standards (9VAC25-260). The Water Quality Standards have been developed and refined over the course of decades of research to be protective of aquatic life and human health. Please see the staff response to comment #3 for additional information on the Water Quality Standards.

30. The fine that DEQ would charge (\$32,000 per day) if they violated the industry standards and ended up contaminating the river is less than the EPA charges per incident per day for lead removal (\$37,500 per day per incident).

Staff Response

DEQ penalties are set by the Code of Virginia at § 62.1-44.32, and to charge more would require statutory changes. EPA has approved DEQ’s penalty authority as substantially similar to theirs. DEQ penalties would be assessed on a per violation vs. per incident basis and could conceivably amount to more than \$37,500 per day (e.g. violation of more than one permit limit or requirement).

Comments 31 – 68 were received from the permittee during the public comment period

31. New daily intake and effluent temperature monitoring requirements have been included. The station’s air permit limits the number of hours that it can operate during a given year and, consequently, there may be a substantial number of days during any year during which the station will not operate. In addition, once the station is dispatched, it typically takes several hours to get the unit on-line and stabilized. Taking daily temperature measurements would be difficult during a “start-up” period that occurred late in the evening when staffing would be minimal and available staff would be working to bring the unit on-line. In light of the above, Dominion requests that the following footnote be added to Part I.A.1, “Daily measurements of intake and effluent temperature are not required on days when neither generating unit is operational for less than four hours.”

Staff Response

The footnote has not been added. Due to the lack of recent data for intake and effluent temperature, daily measurement of intake temperature is required on any day that an intake occurs and daily measurement of effluent temperature is required any day that a discharge occurs from Outfall 001 in order to more fully characterize intake and effluent temperatures under all operating conditions.

32. pH limits of 6.0 (minimum) and 9.0 (maximum) have been included on internal Outfall 203. These are water quality-based limits for the protection of the receiving stream and are not necessary to ensure that the station’s sanitary wastewater receives adequate treatment. Dominion requests that these limits be removed.

Staff Response

The pH limits have not been removed from internal Outfall 203. 40CFR133.102(c) requires that the effluent values for pH shall be maintained within the limits of 6.0 to 9.0.

- 33. Dominion requests that process wastewaters from the West Ash Pond and Metals Pond be included as sources to internal Outfall 504. Adding these sources will allow us to manage all (or the majority) wastewater treatment at a single location on site. The other internal Outfalls (i.e. 501, 502, 503 and 505) could then be utilized to handle specific wastewaters associated with a particular pond should the need arise.**

Staff Response

Part I.A.9 of the Revised Draft has been changed to add the West Ash Pond and Metal Cleaning Waste Treatment Basin as sources to internal Outfall 504.

- 34. Dominion requests that the requirement for 1/Day sampling for Total Residual Chlorine at Outfall 002 be limited to 1/Day during weekdays.**

Staff Response

The monitoring requirement for Total Residual Chlorine at Outfall 002 has been not changed to 1/Day during weekdays. Due to the lack of recent data for Total Residual Chlorine and the fact that new treatment units will be utilized, daily monitoring for Total Residual Chlorine is required any day that a discharge occurs from Outfall 002.

- 35. Outfalls 007 and 008 are characterized in the permit as "stormwater *not exposed to industrial activity.*" By contrast, in Parts I.A.6 and I.A.8, Outfalls 003 and 006 are characterized as "stormwater *not associated with a regulated industrial activity.*" For consistency, Outfalls 007 and 008 should be characterized the same as Outfalls 003 and Outfall 006.**

Staff Response

Part I.A.11 of the Revised Draft has been changed to characterize Outfalls 003 and 006 the same as Outfalls 007 and 008, which is "stormwater not exposed to industrial activity".

- 36. Part I.E.1.a requires the collection of 24-hour flow-proportioned composite samples from Outfall 001 for use in Whole Effluent Toxicity tests. Outfall 001 consists of once-through cooling water. This water is withdrawn from the James River at a constant rate during operation of the station's generating units and would not be expected to change substantially in any given 24-hour period when the units are generating. Consequently, Dominion requests to use grab samples rather than 24-hour composite samples to satisfy the Whole Effluent Toxicity testing requirement. Use of a grab sample is also consistent with Appendix J (page 2) of the Fact Sheet, which states that "a grab sample is representative of the discharge at Outfall 001." Dominion also requests that when practicable the Whole Effluent Toxicity testing of Outfall 001 be required during periods when both units are on-line. The toxicity endpoints included in the permit are based on this mode of operation and inclusion of this requirement will align the Whole Effluent Toxicity testing requirements with the instream monitoring in I.G.13.**

Staff Response

The sample type for Whole Effluent Toxicity testing at Outfall 001 has not been changed to a grab sample. The fact sheet has been changed to reflect the 24-hour composite sample type. Part I.E.1.a of the Revised Draft has been changed to require the Whole Effluent Toxicity monitoring be performed as near to full plant operating conditions as reasonably possible, which matches the language that is included for the instream monitoring in Part I.G.13.

- 37. The schedule in Part I.E.1.f requires quarterly toxicity testing of Outfall 001 for a period of one year, followed by annual testing. The station's air permit limits the number of hours that it can operate during a given year and, consequently, there may be quarterly periods during which the station does not operate, or is not dispatched for a period long enough, to conduct all four required quarterly tests. One way to address this would be to include a testing schedule similar to that included in Part I.E.3.f for Outfall 002 (West Treatment Pond) with the monitoring beginning during the first full quarter following permit reissuance.**

Staff Response

The testing schedule in Part I.E.1.f of the Revised Draft has been changed to require the 1st quarterly monitoring be performed in the first full calendar quarter following permit reissuance, the subsequent quarterly monitoring be performed every calendar quarter following the previous quarter until there are a minimum of 4 quarters tested, the 1st annual monitoring be performed the first full calendar year following the 4 completed quarterly tests, and the subsequent annual monitoring be performed every calendar year following the 1st annual testing period.

- 38. 24-hour flow-proportioned samples are also required for use in Whole Effluent Toxicity tests with Outfall 002 (West Treatment Pond). Given the average and maximum flow rates for the wastewater to be treated in this pond (1.53/4.3 MGD) and the volume of the pond (19.87 MG), the estimated retention time is approximately between 4.6 to 13.4 days. Consequently, Dominion requests to use grab samples rather than 24-hour samples. The use of grab samples is also consistent with Appendix J (page 2) of the Fact Sheet, which states that "grab samples are considered representative for Outfall 002 in its final configuration."**

Staff Response

The sample type for Whole Effluent Toxicity testing at Outfall 002 (West Treatment Pond) has not been changed to a grab sample. The fact sheet has been changed to reflect the 24-hour composite sample type.

- 39. 24-hour flow-proportioned composite samples are required for use in Whole Effluent Toxicity tests of the internal 500 series outfalls. Appendix J (page 2) indicates that 4-hour composite samples are required "since that is the sample type for chemical parameters..." Dominion request's to use 4-hour composite samples for WET testing with these outfalls.**

Staff Response

The sample type for Whole Effluent Toxicity testing at the internal 500 series outfalls has not been changed to a 4-hour composite sample. The fact sheet has been changed to reflect the 24-hour composite sample type.

- 40. Dominion believes that the reference in Part I.E.4.f should be to I.E.4.c.**

Staff Response

The reference in Part I.E.4.f is correct and has not been changed.

- 41. Dominion requests that the words "once-through cooling" be inserted after "no" and before "water" in the first sentence of the third paragraph in Part I.F.4.**

Staff Response

The words "once-through cooling" have not been inserted after "no" and before "water" in the first sentence of the third paragraph in Part I.F.4.

- 42. Dominion requests that the words “taken for compliance with this permit” be added to the end of the sentence in Part I.G.3.a.**

Staff Response

The words “taken for compliance with this permit” have been added to the end of the sentence in Part I.G.3.a of the Revised Draft.

- 43. The last sentence of Part I.G.3.d could be interpreted very broadly to require Dominion to list the type and quantity of all wastes, fluids, and pollutants (e.g., chemicals) stored at the Brema Power Station regardless of whether they would be identified under Part I.G.2. Dominion requests that this sentence be reworded as follows: “List the type and quantity of the characterized materials stored at this facility.”**

Staff Response

The last sentence in Part I.G.3.d of the Revised Draft has been reworded as follows: “List the type and quantity of wastes, fluids, and pollutants characterized in Part I.G.2 that are stored at this facility.”

- 44. Dominion requests that Part I.G.3.g be removed. It is more applicable to municipal systems and has been deleted from other similar Dominion permits.**

Staff Response

Part I.G.3.g has not been removed from the permit.

- 45. Part I.G.7 is a new condition that requires that the sewage collection and treatment system meet Reliability Class II requirements of the Sewerage Collection and Treatment Regulations (9VAC25-790-490). To comply with this condition will require some upgrades to the existing STP. Dominion estimates that it will take between three to six months to complete this work. Therefore, Dominion requests that a six-month compliance schedule be included in the permit.**

Staff Response

A six-month compliance schedule has been included in the Revised Draft to meet the Reliability Class II requirements in Part I.G.7.

- 46. Part I.G.10 is the same as the current permit condition Part I.E.7 except that the second paragraph from the current condition appears to have been omitted. The condition does not make sense without the omitted paragraph. Please add the second paragraph from the existing permit.**

Staff Response

In order to be consistent with draft VPDES permit No. VA0002071 for Dominion – Possum Point Power Station, Part I.G.10 of the Revised Draft has been changed to:

10. Additional Chlorine Limitations and Monitoring Requirements

- a. Neither free available nor total residual chlorine may be discharged via Outfall 001 from any single generating unit for more than two hours in any one day, unless the permittee demonstrates to DEQ that discharge for more than two hours is required for macroinvertebrate control. If the permittee is dechlorinating, the two hour requirement is nullified.*
- b. Simultaneous multi-unit chlorination is permitted.*
- c. Monitoring for free available and/or total residual chlorine shall only be required when the permittee is chlorinating.*

- 47. The schedule for conducting in-stream thermal monitoring in Part I.G.13 requires that the monitoring be performed during the months of February and July. The station's air permit limits the number of hours that it can operate during a given year and consequently, it may not be possible to comply with this condition without forcing the station to operate. Consequently, Dominion requests the following windows for the winter and summer testing periods: Winter (January 1 – March 31) and Summer (June 1 – August 31). This will provide flexibility to better ensure that Dominion is able to perform the testing during the critical periods of concern. NOTE: Dominion believes that the last reporting deadline in this schedule should be October 31, 2020 rather than July 31, 2020.**

Staff Response

Part I.G.13 of the Revised Draft has been changed to require instream monitoring be performed from January 1 – March 31 and June 1 – August 31 of each year. The report submittal dates have been changed as well.

- 48. Part I.G.14 requires that water quality criteria monitoring for Outfall 002 be initiated no later than one year following the West Treatment Pond beginning operation in its final configuration. For toxicity testing under Part I.E.3.f, the testing is not to begin until (1) the West Treatment Pond begins operation in its final configuration and (2) DEQ is notified that no further discharge of process wastewater from dewatering activities is occurring from Outfall 002. Dominion believes that the same dual requirements should apply to the initiation of water quality criteria monitoring for Outfall 002.**

Staff Response

Part I.G.14 of the Revised Draft has been changed to require that water quality criteria monitoring for Outfall 002 be initiated during the first full calendar quarter following notification of the West Treatment Pond operating in its final configuration and notification that no further discharge of process wastewater from dewatering activities is occurring from Outfall 002.

- 49. Part I.G.15 is consistent with the language in the industrial section of DEQ's Permit Manual 2014 (IN-3 A.21) except that it includes the following additional requirement: "The permittee shall sample once for each foot of drawdown, and, when the discharge no longer meets permit limits, the discharge shall cease and the rest of the lagoon contents shall be pumped and hauled to another, permitted facility for treatment and disposal." This additional language is specific for sewage treatment lagoons and closure of those facilities under Virginia's Sewage Collection and Treatment Regulations (9VAC25-790-450). DEQ Guidance Memorandum No. 05-2005 provides guidance related to the slow drawdown of lagoons to ensure that "effluent limits specified in the VPDES permit for the facility are not violated" and it is our understanding from discussions with DEQ staff that the one foot per day drawdown rate is being included in the permits for municipal facilities with lagoons. Dominion does not maintain or operate a sewage lagoon at the Bremono Power Station. Consequently, Dominion requests that this additional language be deleted from Part I.G.15.**

Staff Response

The following statement has been removed from Part I.G.15 of the Revised Draft, "The permittee shall sample once for each foot of drawdown, and, when the discharge no longer meets permit limits, the discharge shall cease and the rest of the lagoon contents shall be pumped and hauled to another, permitted facility for treatment and disposal." Part I.G.15 of the Revised Draft has also been changed to clarify that this condition applies to the Metal Cleaning Waste Treatment Basin and the Sewage Treatment Plant. The drawdown of the Metal Cleaning Waste Treatment Basin was addressed in Part I.G.19 of the Initial Draft. Closure of the coal ash ponds will be addressed under a solid waste permit and drawdown of the coal ash ponds is addressed under Part I.G.23 which has been added to the Revised Draft.

- 50. Dominion requests to have 14 days to make the notifications required under Part I.G.20. This should have no real impact to the environment while providing Dominion additional compliance certainty.**

Staff Response

Part I.G.20 has not been changed.

- 51. Dominion believes that the reference in Part I.G.21.a should be to Part I.G.21 b-g. Please revise.**

Staff Response

Part I.G.21.a of the Revised Draft has been changed to reference Part I.G.21 b-g.

- 52. Dominion requests to add "raw river water" as an allowable non-stormwater discharge in Part I.H.1.f.(1).**

Staff Response

Part I.H.1.f.(1) of the Revised Draft has been changed to add “raw river water” as an allowable non-stormwater discharge.

- 53. Dominion requests that the sample types for ammonia as NH₃-N, chloride, and hardness In Attachment B be changed to grab from composite.**

Staff Response

The sample type for Ammonia-N, Chloride, and Hardness in Attachment B of the Revised Draft has been changed to “grab or composite”.

- 54. Fact Sheet: Appendix A, page 1 – Dominion recently submitted an addendum to the application to recognize that an additional non-industrial stormwater outfall (proposed Outfall 009) will be constructed as a result of the West Ash Pond closure. This outfall will discharge to Holman Creek and should be included in this section.**

Staff Response

Appendix A of the revised fact sheet has been changed to include the new stormwater Outfall 009.

- 55. Fact Sheet: Appendix A, page 3 – Under New Outfalls, please include the new stormwater Outfall 009.**

Staff Response

Appendix A of the revised fact sheet has been changed to include the new stormwater Outfall 009.

- 56. Fact Sheet: Appendix A, page 8 – Under heading OUTFALL 006: The last sentence of the second paragraph says that during the period of ash dewatering, “there will be permit limits and monitoring requirements at Outfall 006.” Please clarify that the permit limits and monitoring requirements will be applied at the internal 500 series outfalls, which may then be discharged to Outfall 006.**

Staff Response

Appendix A of the revised fact sheet has been changed to reflect this clarification.

- 57. Fact Sheet: Appendix A, page 9 – In the second paragraph, please remove the second sentence in the second paragraph under OUTFALL 003 – EAST ASH PONDS that states... “discharges continuously apparently from ground water contributions.” The discharge from Outfall 003 is precipitation dependent and, consequently, there are periods when there is not a continuous discharge from this outfall.**

Staff Response

Because the discharge from the East Ash Ponds occurs through the former surface decant structure and appears to be precipitation dependent, Appendix A of the revised fact sheet has been changed to remove the second sentence in the second paragraph under OUTFALL 003 – EAST ASH PONDS.

- 58. Fact Sheet: Appendix A, page 9 – In the figure on this page, the East Ash Pond area #3 is characterized as a wetland area. This area is not jurisdictional and Dominion requests that “wetlands area” be removed from the figure.**

Staff Response

Appendix A of the revised fact sheet has been changed to remove “wetlands area” from the figure.

- 59. Fact Sheet: Appendix A, page 9 – The last sentence in the first paragraph states that “No discharge from the East Ash Ponds to an external outfall may occur until the limits in Part I.A.9 of the permit become effective.” In order to recognize the existence in the area of stormwater runoff directed to Outfall 003, along with potential seepage within the drainage feature along the toe of the berm, Dominion requests that this sentence be modified as follows: “No discharge of dewatering water from the East Ash Pond to an external outfall may occur until the limits...become effective.”**

Staff Response

Appendix A of the revised fact sheet has been changed to revise the referenced sentence to, “No discharge of process wastewater from dewatering activities from the East Ash Ponds to an external outfall may occur until the limits in Part I.A.9 of the permit become effective.”

- 60. Fact Sheet: Appendix A, page 10 – Please add the following as wastewater sources to the North Ash Pond: dewatering and contact stormwater from the West Ash Pond. These sources of wastewater are consistent with wastewaters authorized for introduction to the North Ash Pond and were authorized under the Notice of Planned Changes – Revision 2 (September 1, 2015).**

Staff Response

Appendix A of the revised fact sheet has been changed to add dewatering water and contact stormwater from the West Ash Pond as wastewater sources to the North Ash Pond.

- 61. Fact Sheet: Appendix A, page 10 – Fifth paragraph under OUTFALL 004 – NORTH ASH POND: Dominion requests that “treated” be deleted from this sentence. Dominion will employ treatment as necessary to ensure compliance with the discharge limits.**

Staff Response

Staff could not find the word “treated” on page 10 of Appendix A, so no changes were made to the fact sheet in response to this request.

- 62. Fact Sheet: Appendix B, page 1 – In the fifth paragraph, please recognize the inclusion of the non-contact stormwater outfall (proposed Outfall 009). The “second map” should also be revised to recognize this outfall.**

Staff Response

Appendix B of the revised fact sheet has been changed to include the new stormwater Outfall 009.

- 63. Fact Sheet: Appendix H, page 1 – Second bullet Thermal Mixing Zone – Dominion Bear Garden Power Station: The location of Outfall 001 for the Bear Garden Power Station is shown on page 4 (not 3) of Appendix B.**

Staff Response

Appendix H of the revised fact sheet has been changed to reference page 4 of Appendix B.

- 64. Fact Sheet: Appendix J, page 1 – The rationale for Acute versus Chronic Toxicity Testing bullet number three refers to Outfalls 002, 003, 004 and 006 at combined Stage II with a flow of 10.2912 MGD. Dominion believes this bullet should refer to internal outfalls 501, 502, 503, 504 and 505.**

Staff Response

Appendix J of the revised fact sheet has been changed to refer to internal Outfalls 501, 502, 503, 504, and 505.

- 65. Fact Sheet: Appendix J, page 2 – Same as comment #61 above for bullet number three under Sample Type.**

Staff Response

Appendix J of the revised fact sheet has been changed to refer to internal Outfalls 501, 502, 503, 504, and 505.

- 66. Fact Sheet: Appendix J, page 3 – Under “WET Limits for Stage II flow of 10.2912 MGD,” the Whole Effluent Toxicity limit is given as 1.0 TUa. The Whole Effluent Toxicity limit given in the draft permit in Section I.E.4.b is NOAEC = 100%.**

Staff Response

The Acute Whole Effluent Toxicity limit in Appendix J of the revised fact sheet has been changed to NOAEC = 100%.

- 67. Fact Sheet: Appendix L, page 1 – Part I.A.1: Bullet three related to copper limits should be removed. Dominion has provided data to demonstrate that these limits are not required.**

Staff Response

Staff could find no reference in Appendix L – Part I.A.1 to copper limits, so no changes were made to the fact sheet.

68. Fact Sheet: General – Dominion understands that DEQ intends for the VPDES permit to cover designated point source discharges during both the interim and final configuration of the ash ponds (i.e., pre- and post-closure). Dominion also understands that any other surface impacts incidental to the design and function of the earthen berms around the ponds will be addressed through the closure and post-closure care requirements of the pending solid waste permit under the Virginia Solid Waste Management Act and associated regulations. Dominion supports this approach.

Staff Response

This permitting action addresses dewatering activities required for closure. Closure of these impoundments is governed by and addressed by the 2015 EPA Final Rule on the Disposal of Coal Combustion Residuals and applicable provisions of the Virginia Solid Waste Management Regulations. Closure and post-closure care under those requirements will include groundwater monitoring, associated surface water monitoring, and other measures. The requirements of a solid waste permit will continue to ensure that the facility is not causing any impacts to surface water.

Attachment 1

Staff Response to:

Technical and Toxicological Evaluation of Coal Ash Pond Dewatering Permit proposed for Bremo Bluff Power Station, Virginia

Submitted as an attachment of the comment letter provided by Southern Environmental Law Center on December 10, 2015, and also submitted as Attachment E of the comment letter provided by Southern Environmental Law Center on December 14, 2015.

DEQ has reviewed the report; “Technical and Toxicological Evaluation of Coal Ash Pond Dewatering Permit proposed for Bremono Bluff Power Station, Virginia” that was prepared by Dr. Lemly and provided by the Southern Environmental Law Center along with their comments on the proposed permit limits for a Dominion Power permit. This report focused on a review of fifteen metals. EPA and Virginia water quality criteria designed to protect aquatic life have been established for 10 of these metals; arsenic, cadmium, copper, chromium (chromium III and chromium VI), lead, mercury, nickel, selenium, silver and zinc. Virginia also has water quality criteria designed to protect human health for thallium that are applicable in all waters and a barium criterion applicable in designated public water supplies.

The first goal of the review was to determine the source of the “high hazard” threshold concentration that was identified in the report as the starting point in the reports assessment. The report identified these as being EPA nationally recommended water quality criteria and/or water quality criteria adopted by Virginia, however not all of them are. Of the fifteen “high hazard” threshold concentrations used in Table 1, only those for chromium VI, and mercury are accurate and represent Virginia’s water quality chronic criteria for freshwater. The report used recommended EPA water quality chronic criteria concentrations for cadmium, chromium VI (the Cr VI criterion is lower than the Cr III criterion, so this is a conservative value for total chromium), lead, and mercury as a “high hazard” threshold. However, Virginia has updated the older EPA criteria and has adopted revised water quality criteria for cadmium, nickel, and lead. Virginia’s criteria for these three metals should be used, and all metals criteria that should be adjusted for hardness should be adjusted to the hardness of the James River at Bremono Bluff, which is reported to average 62.5 mg/L of CaCO₃. Virginia’s regulatory water quality criteria are shown below for the metals for which Virginia has adopted criteria. The criteria are shown for a hardness of 62.5 of CaCO₃. (* indicates Virginia’s criteria was updated from older EPA criteria).

Metal	Virginia’s Acute Criterion (µg/L)	Virginia’s Chronic Criterion (µg/L)	Report’s “High Hazard” threshold value (µg/L)
Arsenic	340	150	36
Cadmium*	2.3	0.78	0.25
Chromium VI	16	11	11
Chromium III	390	50	
Copper	8.6	6.0	1.45
Lead*	65	7.4	2.5
Mercury	1.4	0.77	0.77
Nickel*	120	14	8.2
Selenium	20	5	2
Silver	1.5		1.9
Zinc	79	79	81
	Virginia’s Human Health Criterion		
Barium	2,000 (drinking water only)		1,000
Thallium	0.24 (drinking water only) 0.47 (all other waters)		20

The report seems to have only identified and assessed chronic criteria and compared them to the draft permit limits for a daily maximum and ignored the acute criteria and the monthly average limits in the draft permit. It would have been more accurate to compare the short term (acute) criteria to the corresponding short term draft permit limits (daily maximum limits) and compared the long term (chronic) criteria concentrations to the long term draft permit limits (monthly averages). If this had been done the differences between the criteria and the permit limits would have been less than the report indicates. Also, because the draft permit limits include limits for both chromium III and VI, the report should have compared the correct criterion to the correct draft permit limit. Instead, the report compared the higher permit limit proposed for chromium III to the lower criterion of chromium VI.

Because of the significant differences between many of the report's "high hazard" threshold values and the criteria, an effort was made to accurately identify the actual source of the "high hazard" concentrations used in Dr. Lemly's report. The findings are summarized below.

Copper: The report identifies the high hazard threshold used for copper to be the EPA 2007 biotic ligand model (BLM) which requires site-specific values for; temperature, pH, dissolved organic carbon, calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity, but it does not specify what values were used for these parameters to calculate the BLM copper criterion. It is impossible to know if the value of 1.45 µg/L for copper is accurate or appropriate for this point in the river. Virginia uses a hardness based calculation for the freshwater copper chronic criterion, which is 6.0 µg/L copper for a hardness of 62.5 mg/L for this site.

Arsenic, Nickel, Silver, and Zinc: The report used EPA's saltwater acute/chronic criteria instead of the correct freshwater acute/chronic criteria for the "high hazard" thresholds for arsenic, nickel, silver, zinc. The proper freshwater criteria are shown below.

<u>Metal</u>	<u>Freshwater Chronic Criterion</u>	<u>Saltwater Chronic Criterion (used in the report incorrectly)</u>
Arsenic	150 µg/L	36 µg/L
Nickel	14 µg/L	8.2 µg/L
Zinc	79 µg/L	81 µg/L

<u>Metal</u>	<u>Freshwater Acute Criterion</u>	<u>Saltwater Chronic Acute (used in the report incorrectly)</u>
Silver	1.5 µg/L	1.9 µg/L

Barium: The "high hazard" threshold identified in the report for barium (1,000 µg/L) is an old recommendation for treated drinking water. The current recommendation is 2,000 µg/L and Virginia has adopted a criterion of 2,000 µg/L that is applicable to designated public water supplies. However, the receiving water is not a designated water supply so this is not applicable.

Selenium: The high hazard threshold concentration used in the report of 2 µg/L for selenium is an older, EPA draft recommendation but the most recent draft recommendation for selenium in rivers is 3.1 µg/L. Virginia and EPA's current chronic criterion for selenium is 5 µg/L.

Cobalt, Manganese, Thallium, and Vanadium: The report identifies the source of the "high hazard" screening concentrations for cobalt, manganese, thallium, and vanadium for these four metals as EPA water quality criteria but EPA has not established recommended water quality criteria for the protection of aquatic life for these four metals. The actual source of the "high hazard" threshold concentrations cannot be determined for cobalt, manganese, thallium, and vanadium. Without knowing where these concentrations came from, DEQ cannot assess the significance of these values.

The hazard assessment approach used in the report

In Dr. Lemly's report, Table 1 shows a list of metals with concentrations Dr. Lemly identified as a "high hazard", which he identifies as concentrations that "exceed acute or chronic toxic levels". These "high hazard" concentrations are divided by two to produce a "moderate hazard" and divided again by two to produce a "low hazard" concentration. This is Dr. Lemly's own method of trying to assess various concentrations of potentially toxic substances. This method of simple division by two to differentiate between "high", "moderate" or "low" hazard levels is arbitrary and has no relationship to demonstrated toxicity, nor can it be related to any quantifiable level of potential risk. The chronic criterion concentration is already protective and represents a "no risk" assessment value of significant toxic effects to the aquatic community. Using half of an already "no risk" concentration or one quarter of the "no risk" level does not provide any significant toxicological extra value or protection. Although the report identifies the concentrations used to set the "high hazard" threshold concentration as being EPA water

quality criteria, some are but some are not. When the “high hazard” concentration in Table 1 is not the same as a chronic criterion, many of the values used in the report are lower than the actual applicable criterion.

When the “high hazard” concentration used in the report’s assessment is based on an established chronic criterion concentration, the hazard assessment procedure used in the report treats these as a threshold between moderate and high hazards. This is a misrepresentation of the basis of these well established chronic water quality criteria. At the concentration of the chronic criterion, there should be very little or no potential for toxic effects. The chronic criterion is a concentration that is considered to be protective of aquatic life and concentrations at these chronic criteria values do not represent any significant risk to aquatic life (i.e., no lethal effects and no adverse effects on spawning or reproduction, or growth). However, the report treats these chronic criteria as “high hazard” values. It would be more accurate to recognize the chronic criterion as the protective concentration that it represents and treat that criterion as a threshold between “no hazard”, with concentrations higher than the chronic criterion but lower than the acute criterion as having “low hazard”. This is because at concentrations below the chronic criterion, no adverse effects on the aquatic community is expected (i.e., no deaths or adverse effects on reproduction, growth or development of early life stages of fish or invertebrates). Chronic criteria are designed to provide this high level of protection based on a careful assessment of everything known about the toxicity of the chemical at the time the criterion was developed and adopted.

The report treats any value above a chronic criterion as a sign that adverse toxic effects are expected to be imminent and widespread. More realistically, at concentrations above the chronic criterion but below the acute criterion; some reductions in reproductive success or growth could occur if any of the local species are actually among the more sensitive species known in the entire national database. But, no deaths would be expected as long as the acute criterion is not exceeded.

The main difficulty with the approach taken in the report is that the assessment treats the permit limits as though these concentrations will be the concentrations that aquatic life in the James River will be exposed to for enough time for the exposure to cause toxic effects. This could be several days if the high threshold value is the same as a true chronic criterion. The report ignores the fact that the discharge will be diluted by the much higher volume of flow in the river.

A more detailed review of the individual metals’ “high hazard” threshold concentration used in Dr. Lemly’s assessment is shown below.

Arsenic: Table 1 shows a “high” value of 36 µg/L.

EPA’s and Virginia’s water quality criteria for the protection of aquatic life in freshwater for arsenic is 340 µg/L acute criterion (as a one hour average) and 150 µg/L chronic criterion (as a four day average).

EPA last updated their arsenic criteria in 1995, and the most sensitive species in the toxicity database was affected at 874 µg/L in an acute test, and at 891 µg/L in a chronic test. The “high hazard” concentration of 36 µg/L is only 4.1 % of the lowest toxic value in the data base for arsenic. EPA’s criteria for arsenic do not identify 36 µg/L as a criterion or as a toxic threshold.

Barium: Table 1 shows a “high” value of 1000 µg/L.

Virginia has not adopted an aquatic life based water criterion for barium and EPA does not have any recommended water quality criteria for barium for the protection of aquatic life.

In 1976, EPA published a recommendation of 1,000 µg/L in domestic water supplies. This appears to be the source of the high hazard concentration. EPA’s Drinking Water Program now recommends 2,000 µg/L as an allowable maximum contaminant level for barium in finished drinking water and Virginia has adopted this as a criterion for the protection of human health and this applies only at designated public water supplies.

Cadmium: Table 1 shows a “high” value of 0.25 µg/L.

EPA’s current water quality criteria for the protection of aquatic life in freshwater for cadmium would be 2.0 µg/L acute and 0.25 µg/L chronic at a hardness of 100 mg/L as shown in an example in EPA’s “National Recommended Water Quality Criteria-Aquatic Life Criteria Table”, available on EPA’s website that can be found here <http://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>.

This is identified as the source of the 0.25 µg/L used in the report as a high hazard concentration. The situation with cadmium is complicated in that Virginia’s water quality criteria for cadmium are different from EPA’s current criteria recommendations. Virginia’s water quality criteria for the protection of aquatic life in freshwater for cadmium are 2.3 µg/L acute and 0.78 µg/L at a hardness of 62.5 mg/L. Virginia’s existing criteria must be used in setting permit limits. To complicate the issue further, on December 1, 2015, EPA began the public process of revising their national recommended criteria for cadmium, also updating the criteria with more recent toxicity information. EPA’s new draft cadmium chronic criteria in freshwater would be 0.51 µg/L at a hardness of 62.5 mg/L for the James River. So, for cadmium there are a number of concentrations that could be used to assess this situation, but only the current Virginia criteria can be used to set permit limits.

Chromium: Table 1 shows a “high” value of 11 µg/L.

Virginia’s chronic water quality criterion for the protection of aquatic life in freshwater for chromium VI is 11 µg/L (the same as EPA’s criterion) and this is identified as the source of the “high” concentration in Table 1. The chromium VI criteria are not adjusted for hardness. Virginia’s chronic water quality criterion for the protection of aquatic life in freshwater for chromium III is 50 µg/L at a hardness of 62.5 mg/L (the same as EPA’s criterion). As noted elsewhere, the report incorrectly compares the lower, chronic criterion for chromium VI to the draft permit limits for the less toxic chromium III.

Cobalt: Table 1 shows a “high” value of 16 µg/L.

Virginia has not adopted a surface water criterion for cobalt and EPA does not have any recommended water quality criteria for cobalt for the protection of aquatic life. The source of the value of the “high” value of 16 µg/L is unidentified.

Copper: Table 1 shows a “high” value of 1.45 µg/L.

The source of this is identified as the 2007 EPA biotic ligand model for copper. The various concentrations of the various parameter inputs are not shown, so it is not possible to independently ascertain if the value of 1.45 µg/L is appropriate for the James River conditions at Bremono Bluff. Virginia’s chronic water quality criterion for the protection of aquatic life in freshwater for copper is 6.0 µg/L at a hardness of 62.5 mg/L. Virginia is proposing to adopt the biotic ligand model for copper as an alternate criteria for copper in freshwater, but until the State Water Control Board officially adopts this amendment and EPA approves it, the biotic ligand model cannot be used to establish legal permit limits in Virginia.

Lead: Table 1 shows a “high” value of 2.5 µg/L.

EPA’s Current water quality criteria for lead would be 65 µg/L acute and 2.5 µg/L at a hardness of 100 as shown in an example in EPA’s “National Recommended Water Quality Criteria-Aquatic Life Criteria Table”, available on EPA’s website that can be found here <http://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>. This seems to be the source of the 2.5 µg/L identified as a high hazard concentration. Virginia’s water quality criteria for lead are different from EPA’s criteria. EPA’s criteria were developed in 1980, but Virginia updated these criteria in the mid 1990s by adding additional, more recent toxicity to the database for lead and recalculated the freshwater lead criteria. Virginia’s chronic water quality criterion for the protection of aquatic life in freshwater for lead is 6.0 µg/L at a hardness of 62.5 mg/L.

Manganese: Table 1 shows a “high” value of 790 µg/L.

Virginia has not adopted a surface water criterion for manganese and EPA does not have any recommended water quality criteria for manganese for the protection of aquatic life. The source of the value of the “high” value of 790 µg/L is unidentified.

Mercury: Table 1 shows a “high” value of 0.77 µg/L.

This value equals Virginia’s and EPA’s chronic water quality criterion for the protection of aquatic life in freshwater.

Nickel: Table 1 shows a “high” value of 8.2 µg/L.

EPA’s, and Virginia’s water quality chronic criterion for saltwater is 8.2 µg/L. If this is the source of this value, then it is inappropriate to use a saltwater criterion to assess potential effects on freshwater aquatic life. Virginia’s water quality criterion for the protection of aquatic life in freshwater for nickel at a hardness of 62.5 mg/L is 14 µg/L.

Selenium: Table 1 shows a “high” value of 2 µg/L.

EPA’s 2014 draft criteria for selenium is identified as the source of this value, but the 2014 draft recommended 4.8 µg/L for flowing waters and 1.3 µg/L in lakes and reservoirs. The most recent draft criteria for selenium were published in 2015 and this recommended 3.1 µg/L for flowing waters and 1.2 µg/L in lakes and reservoirs. EPA has not finalized their recommended criteria for selenium at this time. Virginia’s chronic water quality criterion for the protection of aquatic life in freshwater for selenium is 5 µg/L.

Silver: Table 1 shows a “high” value of 1.9 µg/L.

EPA’s, and Virginia’s acute water quality criterion for saltwater is 1.9 µg/L. If this is the source of this value used in the report, then it is inappropriate to use a saltwater criterion to assess potential effects on freshwater aquatic life. EPA’s and Virginia’s acute water quality criterion for the protection of aquatic life in freshwater for silver at a hardness of 62.5 mg/L is 1.5 µg/L.

Thallium: Table 1 shows a “high” value of 20 µg/L.

Virginia has not adopted a surface water criterion for thallium and EPA does not have any recommended water quality criteria for thallium for the protection of aquatic life. The source of the value of the “high” value of 20 µg/L is unidentified.

Vanadium: Table 1 shows a “high” value of 80 µg/L.

Virginia has not adopted a surface water criterion for vanadium and EPA does not have any recommended water quality criteria for vanadium for the protection of aquatic life. The source of the value of the “high” value of 80 µg/L is unidentified.

Zinc: Table 1 shows a “high” value of 81 µg/L.

EPA’s and Virginia’s chronic water quality criterion for saltwater is 81 µg/L. If this is the source of this value used in the report, then it is inappropriate to use a saltwater criterion to assess potential effects on freshwater aquatic life. EPA’s and Virginia’s chronic water quality criterion for the protection of aquatic life in freshwater for silver at a hardness of 62.5 mg/L is 79 µg/L.

Attachment C
VPDES Permit No. VA0004138 – Dominion – Bremo Power Station
Commenter Listing

This table lists the commenters who submitted comments during the public comment period.

Name / Organization
The Honorable A. Donald McEachin, 9 th District Senator
Aaron Parr
Adam Tremper / James River Outdoor Coalition
Adam Freeman
Adam Wilson
Ailsa Long
Alan Sturgis
Alex Funke
Alex Schettine
Alexandra Rooke
Allan Thomson
Allison Brooks
Amanda Michel
Amanda Phillips
Amelia Kirby
Amelia Williams
Amie Kollatz
Amory Fischer
Amy Gould
Amy Miller
Amy Pearsall
Amy Waters
Amy Yeargan
Andrew Geyer
Andrew Hawkins
Andy Backowski
Angela Ward
Ann Furniss
Anne Davis
Anne Gibbons
Anne McKeithen
Anne Pole
Anne Weems
Annie MacPhee Miller
April L. Hooks

April Moore
April Rice
Arthur Kay
Ashley Bishop
Ashley Miller
Ashley Pollock
Barbara Williamson
Becca Amos
Becky Calvert
Ben Moore / Riverside Outfitters
Ben May
Ben Hawkins
Ben Williamson
Beth Greenberg
Beth Ike
Beth Roach
Bethany Cardone
Bhagya Nair
Bill Cranor
Bill Hutt
Bill Swarm
Bill Trout
Bill Vanzetta
Bill Whittaker
Blake Hastings
Blue Stubblefield
Blythe Penn
Bob Burch
Bobby Efird
Brad Baskette
Brad Hierstetter / Bay Catfish Advocates
Brad McLane / Southern Environmental Law Center
Bradford McLane
Bradley Knopf
Brandon Closson
Brantley Tyndall
Brenda Goodman
Brenda Hyson
Brendan Burke
Bret Williams
Brett Hillman / United States Fish and Wildlife Service

Brian Alexander
Brian Coffield / Virginia Canals and Navigation Society
Brian Mutchler
Bridget Westoven
Britt Altizer
Bruce Callis Jr
Bruce Kaiser
Bryce Roberts
C. Allen
Callie Furlong
Cameron Ralston
Carmen Dailey
Carol Moates
Carole Todd
Caroline Daniel
Carolyn Crighton
Carolyn Schuyler
Carrie Allen
Carrie Hood
Cary Moy
Cathy C. Taylor / Dominion
Catherine LeMay-Phillips
Cathy Brunick
Cecilia Dan
Charity Ave-Lallemant
Charity Moschopulos
Charles Graf
Charles Martin Holsinger
Charles Turner
Charles V. Ware
Charlie Connell
Cheryl Atkinson
Cheryl Marschak
Chip Atkins
Chris French
Chris Griffin
Chris Holbach
Chris Hull
Chris Kresge
Chris Lumpkin
Chris Lynch

Chris Quidort
Chris Siess
Chris Vasi
Christiane Riederer Von Paar
Christie Bondurant
Christie Lum
Christina Cowan
Christina Daniel Bonini
Christina Mclachlan
Christina Newton
Christine Franck
Christine Llewellyn
Christine L. Harrison
Christine Payden-Travers
Christy Maschal
Claire Tuite
Clay Corry
Clifton G Yarbrough
Clint Peters
Colleen Garrison
Corey Schmidt
Cortney Allen
Cory LeBeck
Craig Dunbar
Craig Hadley
Craig Metcalfe
Cristen Chafin
Crystal Whitley
D. Hunter Armstrong
Dan Nelson
Dana Krauskopf
Dana Pardi
Darian Brown
Dave Jones
David Brunson
David Campbell
David Deese
David F. Jones
David Fary
David Hurley
David Nutter

David O'Bryan
David Raine
David Reid
David Ross
Dayle Purington
Debbie Slack
Deborah Wooten
Dennis Throckmorton
Diana Abbott
Diana Vincelli
Diane Brown
Diane Stephenson
Don Kaupp
Don Winter
Dorothy Rilee
Doug Pickrel
Doug Wallace
Dr. Daniel Shaye / James River Association
Dr. James Baum
Dr. Jamie Clark
Edward Savage
Eileen Zamagni
Elaine Tucker-Haviland
Eleanor M. Amidon
Elena Henderson
Elisabeth Pethybridge
Elise Jenkins
Eliza Spell
Elizabeth Gibbs
Elizabeth Mauck
Elizabeth Mushenheim
Elizabeth Nicholas / Waterkeepers Chesapeake
Elizabeth Sartoris
Ellen Krechtler
Elli Morris
Emeline Phipps
Emily Comer
Emily Geyer
Emily Tabb
Eric Halverson
Eric Albright

Eric Eisele
Erica Gatti
Erin J. Hickey
Ernie Aschenbach / Virginia Department of Game and Inland Fisheries
Erin Jett
Evan Stepowany
Frances Kerr
Fred Lavy
Frederick Hoogakker
Frieda M. Davis
Gail Timberlake
Galen Staengl
Garah Luff
Garett A. Sobotka
Gary Craig / Richmond BMX
Gene Ambrose
George Bialkowski
George Paine
George Spagna
Glenn Short
Graham Bullen
Grant Caldwell
Gray Puryear
Greg Hulcher
Gregory Buppert, Southern Environmental Law Center
Herschel L. Finch / Warren County Izaak Walton League
Heidi Rugg
Hank Helmen
Harriet Hirsch
Hillary Hutchison
Ian Boniface
Ian Patrick
Irene Gaines
Irma Whedbee
Isabel Eljaiek
Isaac Hull
Jacob Fulp
Jacob Shank
Jacqueline Crowley
James Albert
James Elliott

James River Outdoor Coalition
James Stitcher
James Tinker
Jamie Clark
Jamison Davis
Jan Wiley
Janal Lindner
Jane March
Janet Eddy
Janet Paisley
Janissa Rose
Jarred VandeMark
Jason Berry
Jason Goldsmith
Jason Stender
Jay Tubb
Jeff & Shirley Lavin
Jeff Elliott / Foothill Guide Service
Jeffrey Bock
Jeffrey Bussells
Jeffrey Hinkins
Jeffrey Lockhart
Jeffrey White
Jen Skrzypek
Jenna Glendenning
Jennifer Byrne
Jennifer Moore
Jennifer Rockwell
Jennifer L Horn
Jenny Jenkins
Jerry Green
Jesse McCauley
Jessica Arons
Jessica Bowen
Jessica Carey
Jessica Sims
Jim Civitarese
Jim McCord
Jim Schettine
Joanna Salidis
Joey Mensh

Joey Parent
Johanna Minich
John A. Cruickshank / Piedmont Group of the Sierra Club
John Allen
John Anthony DeMaio
John Broughton
John Buckley
John C. Forsythe
John Coates
John Eustis
John F Gorman
John Mays
John McPeek
John Moser
John Nobile
John Reeves
John Thackston
Johnathan Long
Jonah Holland
Jonathan Roy
Joseph DeLoria
Joseph Glombiak
Joseph Mirabile
Josh Evans
Josh Rooke
Joshua Rogers
Josiah Taylor
Judith Sanders
Judy Hailey
Judy Hinch
Judy Thomas
Julie Chang
Julie Grace Philp
Julie Mosey
Justin Anderson
Justin Sarafin
Kale Warren
Kate O'Hagan
Katharine Hunter
Katherine B. Duffy
Katherine Godin Mitchell

Katherine Podlewski
Kathleen McLane
Kathryn Meacham
Kathryn Sabean
Kathryn Stoneman
Kathy O'Dowd
Kati Hornung
Katie Roy
Katie Gosses
Katie Lemmert
Katrina Hamilton
Kay Flanagan
Kaylin Kaupish
Kelly Lemon
Kelly Powers
Kelly Tsow
Kelly V Place
Kenda Hanuman
Ken Hohman
Kenny Stancil
Kevin Daley
Kevin Gallagher
Kevin Orlosky
Kitt West
Kristin Thomas
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Kristy Severin
Kurt Knight
Kyle Burnette / Beyond Boundaries
Kyle Moore
Kymerly Messersmith
L. Dwayne Sudduth
Lance J. LaFortune
Laura Farmer
Laura Greenleaf
Laura Henry-Stone
Laura Livesay
Lauren Stevens
Lauren Tull
Lauren Turner McDonald
Laurie Beasley

Leah Shepherd
Lee Stewart
Leigh Kirchner
Leigh Kirchner
Lena Lewis
Lena Seville
Leslie Back
Leslie Madden
Leslie Rubio
Lester W. Brown III
Linda Berg
Linda Canino
Linda Layne
Lindsay Sterling
Lisa Bain
Lisa Knight
Lloyd Parcell
Lloyd Vye
Lobo Marino
Logan Buerlein
Lois Lommel
Lorraine Abarca
Louis Nguyen
Luke Stevens
Luke Swenson
Lydia Anne Armistead
Lynn Wilson
M. Burgess
M. L. Regelson
Madeline Roberts
Madge Bemiss
Malee Garcia
Mallory Decker
Mara Hyman
Marc Felton
Margaret Bonsee
Margaret Harrison
Margaret Kidd
Margaret S Vaughn
Mariah Dudley
Marisa Kai Vest

Mark Canada
Mark Director
Mark Kapcan
Mark Mumford
Mark Northam
Marlene Paul
Marshall Painter
Martha Ellen Wingfield
Martha James
Mary Beth Mains
Marybeth Thompson
Mary Dowell
Mary Graf
Mary Grogan
Mary Hampton Cook
Mary-Helen Sullivan
Massey Whorley
Matt Carozza
Matt Hughes
Matt Perry
Matthew Hall
Matthew Montero
Matthew Oltmann
Matthew Rosenberg
Matthew Wild
Maverick Wayfarer
Maxwell Posner
Maxwell Wyndorf
Maya White-Lurie
Meg Shepherd
Megan Girbert
Melinda VanDevelder
Melissa Hull
Melissa Johnson
Melissa Lesh
Melissa Smith
Melody Cochran
Melody Kaufman
Meredith Ackroyd
Meredith Albright
Merrill Geier

Merritt Stephens
Michael (last name unknown)
Michael Kozakewicz
Mike Lang
Mike Mather
Mike Moran
Mike Ostrander / Discover the James
Mike Sims
Mike Ward / The Bass College
Miles Kimbrough
Mitch Athearn
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Name and Address Unreadable
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Nancy Ball
Nancy Fowler / Friends of the James River Park
Nancy Plaxico
Nancy Wood
Nat Draper
Natalie Patino-Wright
Natasha Atkins
Nathan Loop
Nettle Lile
Nick Derosa
Nick Kuriger
Nicolas Hite
Nora Morris
Page Fagalde
Paige Goodpasture
Pamela Harrington
Pat Okerlund
Patricia Larch
Patricia VonOhlen

Patrick Calvert / Upper James Riverkeeper
Patrick Flaherty
Patti Jo Knight
Paul Gross
Paula Chow
Peg Lockwood
Peggy Giles
Peggy Harris
Peter Dreyer
Peter Stutts
Peter W. Smith
Peter Weems
Phil Cunningham
Phil Mattes
Phil Shannon
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Puck Byrne
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Rachel Kelleher
Rachele Bullen
Raymond Smith
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Rebecca Ledingham
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Rebecca St. Clair
Reid Shepherd
Rhonda Hening Davis
Rhonda Ligon
Richard Gerheart
Richard Owens
Richard McLane II
Richard Sorensen
Richard Taschler
Ricky Simpson
Riley Gorman
Rob Choi
Rob Crampton
Robb Moore

Robbie Rhur / Virginia Department of Conservation and Recreation
Robbi Savage / Rivanna Conservation Society
Robert Davenport
Robert Leggett
Robert Loeser
Robert Schumacher
Robert Shippee
Robin Broder
Robin Eshleman
Roderick Burke
Rogard Ross
Roger Schickedantz
Roger Black
Ronnie Gannon
Rosa Roncales
Rose Dubuque
Ross Evans
Ross Moorefield
Roxanne Wackenhuth
Russell Koscj
Ruth Benger
Ryan Hill
Sally Anderson
Sam Cavanaugh
Samantha Barnes
Samuel Bleicher
Sandy Beebe
Sandy Harrington
Sara Fahringer
Sarah G Stewart / Richmond Regional Planning District Commission
Sarah Kennedy
Sarah Montijo
Sarah Sanford
Scott Anderson
Scott Dysart
Scott Henley
Shannon Brennan
Shannon Harrison
Shannon Lynn Fahey
Shayna Cooke
Sheri Langham

Sherrie Good
Sophia DiPersio
Spencer Miller
Stacy Abbott
Stacy Hines
Stephanie Bertram
Stephen Ensign
Stephen Lockhart
Steve Young
Steven Bruckner
Steven Carter-Lovejoy
Steven Dailey
Sue DeJesus
Summer Schultz
Susan Cable
Susan Eanes
Susan Goode
Susan Lamson
Susan Loop
Suzanne Keller
Suzanne Michels
Suzanne Owens
Sydney Pulliam
Talia Moser
Tatiane Pena
Taylor Purcell
Tee Clarkson
Teresa Cole
Therese Hellerman
Thomas Crockett
Thomas Tucker
Tina Bujno
Tina Horowitz
Tom Thompson
Tom Hoffman
Tomasz Choroszuca
Tony Adams / Float Fishermen of Virginia
Tory Hendelman
Trevor Frost
Tricia Pearsall
Trisha Draege

Tyler Ladner
Vernon Wong
Vicki Roach
Vincent Revene
Vincent Young
Virginia Cowles
Virginia Felipe-Morales
Virginia Germino
Virginia Piper
W. Federico
Warren Ahrens
Whitney Whiting / Blue Ridge Environmental Defense League
William DuLaney
William Nicar
William L. Herring
William Penniman
William R. Burgess
William Yates
Wilma Bradbeer
Yuri Norrell
Zach Perkins
Zachary Fox

Additional comments were received after 11:59 pm on December 14, 2015. The additional comments were reviewed by staff.

Dominion – Bremo Power Station, VPDES Permit No. VA0004138
Attachment D - Revised Draft Permit
December 29, 2015

Attachment D
VPDES Permit No. VA0004138 – Dominion – Bremo Power Station
Revised Draft Permit



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit No. VA0004138

Effective Date:
Expiration Date:

AUTHORIZATION TO DISCHARGE UNDER THE
VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM
AND
THE VIRGINIA STATE WATER CONTROL LAW

In compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto, the following owner is authorized to discharge in accordance with the information submitted with the permit application, and with this permit cover page, Part I - Effluent Limitations and Monitoring Requirements, and Part II – Conditions Applicable To All VPDES Permits, as set forth herein.

Owner: **Virginia Electric and Power Company**
Facility Name: **Dominion – Bremono Power Station**
County: **Fluvanna**
Facility Location: **1038 Bremono Road, Bremono Bluff**

The owner is authorized to discharge to the following receiving stream:

Stream: James River (Outfalls 001-004 and 006-008)
Holman Creek (Outfall 009)
River Basin: James River (Middle)
River Subbasin: N/A
Section: 10
Class: III
Special Standards: None

Amy T. Owens, Regional Director
Valley Regional Office

Date:

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from Outfall 001 (Once-Through Condenser Cooling Water).

This discharge shall be limited and monitored as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD) ^a	NL	NA	NA	NL	1/Day	Calculated
pH (standard units)	NA	NA	6.0	9.0	1/Month	Grab
Total Residual Chlorine (TRC)(mg/L) ^{b,c}	0.0099	NA	NA	0.02	1/Day	Grab
Heat Rejection (x10 ⁹ BTU/Hr) ^d	NA	NA	NA	1.62	1/Month	Calculated
Temperature (°C)	NL	NA	NA	NL	1/Day	IS
Intake Temperature (°C)	NL	NA	NA	NL	1/Day	IS

NL = No Limitation, monitoring required NA = Not Applicable IS = Immersion Stabilization

- a. There are no wastewater treatment facilities. The permit is based on a once-through condenser cooling water flow of 157.6 MGD.
- b. See Part I.C for additional monitoring instructions.
- c. When chlorine is not applied the daily maximum shall be reported as "NR" meaning not required. See Part I.G.10 for additional monitoring instructions.
- d. See Part I.G.13 for additional monitoring instructions.
- e. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from internal Outfall 101 (Traveling Screen Backwash).

This discharge shall be limited and monitored as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>

Internal Outfall 101 shall contain only river water from the screen backwash. No monitoring of this outfall is required.

- a. There shall be no discharge of process wastewater from this outfall.
- b. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from internal Outfall 203 (Discharge from the Sewage Treatment Plant prior to discharge into the Stormwater Management Pond).

This discharge shall be limited and monitored as specified below:

	<u>EFFLUENT CHARACTERISTICS</u>		<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
			<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD) ^a	NL			NA	NA	NL	1/Month	Estimate
pH	NA			NA	6.0	9.0	1/Month	Grab
BOD ₅ ^c	30 mg/L	4.9 kg/d	45 mg/L	7.4 kg/d	NA	NA	1/Month	Grab
Total Suspended Solids ^c	30 mg/L	4.9 kg/d	45 mg/L	7.4 kg/d	NA	NA	1/Month	Grab
E. coli (N/100 mL) ^b	126 Geometric Mean			NA	NA	NA	4/Month in any month of each calendar year 10 a.m. to 4 p.m.	Grab

NL = No Limitation, monitoring required NA = Not Applicable

4/Month in any month of each calendar year = 4 samples with at least 1 sample taken each calendar week, in any calendar month and reported with the December DMR due January 10th of every year

- a. The design flow of this treatment facility is 0.0432 MGD. See Part I.G.1 for additional requirements related to facility flows.
- b. See Part I.B for disinfection requirements.
- c. See Part I.C for additional monitoring instructions.
- d. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning with the permit's effective date and lasting until one of the conditions in Part I.G.19 is met or until internal Outfall 202 is retired, or until the permit's expiration date whichever occurs first, the permittee is authorized to discharge from internal Outfall 202. Internal Outfall 202 is only authorized to discharge to the West Ash Pond.

This discharge shall be limited and monitored as specified below:

	<u>EFFLUENT CHARACTERISTICS</u>		<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>		<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>		<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD) ^a	NL		NA	NA	NL		1/Month	Estimate
Total Suspended Solids (mg/L) ^b	30.0		NA	NA	100.0		1/Month	Grab
Oil and Grease (mg/L) ^b	15.0		NA	NA	20.0		1/Month	Grab
Total Iron ^b	1.0 mg/L	3.8 kg/d	NA	NA	1.0 mg/L	6.1 kg/d	1/Month	Grab
Total Copper ^b	1.0 mg/L	3.8 kg/d	NA	NA	1.0 mg/L	6.1 kg/d	1/Month	Grab

NL = No Limitation, monitoring required NA = Not Applicable

- a. The limits are based on a maximum 30-day average flow of 1.0146 MGD and a daily maximum flow of 1.6138 MGD.
- b. See Part I.C for additional monitoring instructions.
- c. Internal Outfall 202 will be retired following the closure of the Metals Cleaning Waste Treatment Basin.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from Outfall 002. Any discharge from the West Ash Pond to an external outfall must meet the requirements in Part I.A.9.

This discharge shall be limited and monitored as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD) ^a	NL	NA	NA	NL	2/Month	Estimate
pH (standard units)	NA	NA	6.0	9.0	2/Month	Grab
Total Suspended Solids (mg/L) ^b	30.0	NA	NA	100.0	2/Month	Grab
Oil & Grease (mg/L) ^b	15.0	NA	NA	20.0	2/Month	Grab
Total Residual Chlorine (TRC)(mg/L) ^{b,c}	0.036	NA	NA	0.072	1/Day	Grab
TKN (mg/L) ^b	NA	NA	NA	NL	1/Year	Grab
Nitrite-N + Nitrate-N (mg/L) ^b	NA	NA	NA	NL	1/Year	Grab
Total Nitrogen (mg/L) ^{b,f}	NA	NA	NA	NL	1/Year	Calculated
Total Phosphorus (mg/L) ^b	NA	NA	NA	NL	1/Year	Grab

NL = No Limitation, monitoring required NA = Not Applicable
2/Month = 2 samples taken during the calendar month, no less than 7 days apart
1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year

- a. The limits are based on a flow of 4.2912 MGD.
- b. See Part I.C for additional monitoring and reporting requirements.
- c. Effluent from the Stormwater Management Pond may be discharged through Outfall 002. TRC limits and monitoring apply if effluent from the Stormwater Management Pond is discharged through Outfall 002.
- d. Sampling for the parameters listed above may take place prior to commingling with treated process wastewater from internal Outfalls 501, 502, 503, 504, and 505.
- e. During the dewatering activities when Part I.A.9 is effective, process wastewater from internal Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 002.
- f. Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be derived from the results of those tests.
- g. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

6. During the period beginning with the permit's effective date and lasting until Outfall 003 is retired, or until the permit's expiration date, whichever comes first, the permittee is authorized to discharge from Outfall 003.
 - a. During the period prior to Part I.A.9 becoming effective, Outfall 003 shall contain only stormwater not exposed to industrial activity. There shall be no discharge of process wastewater from Outfall 003 prior to Part I.A.9 becoming effective.
 - b. During the dewatering activities when Part I.A.9 is effective, process wastewater from internal Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 003.
 - c. Outfall 003 will be retired following the completion of the dewatering activities at the facility.
 - d. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning with the permit's effective date and lasting until Outfall 004 is retired, or until the permit's expiration date, whichever occurs first, the permittee is authorized to discharge from Outfall 004. Any discharge from the North Ash Pond to an external outfall must meet the requirements in Part I.A.9.

This discharge shall be limited and monitored as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD) ^a	NL	NA	NA	NL	2/Month	Estimate
pH (standard units)	NA	NA	6.0	9.0	2/Month	Grab
Total Suspended Solids (mg/L) ^b	30.0	NA	NA	100.0	2/Month	Grab
Oil & Grease (mg/L) ^b	15.0	NA	NA	20.0	2/Month	Grab
Total Residual Chlorine (TRC)(mg/L) ^{b,c}	0.036	NA	NA	0.072	1/Day	Grab

NL = No Limitation, monitoring required NA = Not Applicable
2/Month = 2 samples taken during the calendar month, no less than 7 days apart

- a. The limits are based on a flow of 4.2912 MGD.
- b. See Part I.C for additional monitoring and reporting requirements.
- c. Effluent from the Stormwater Management Pond may be discharged through Outfall 004. TRC limits and monitoring apply if effluent from the Stormwater Management Pond is discharged through Outfall 004.
- d. Sampling for the parameters listed above may take place prior to commingling with treated process wastewater from internal Outfalls 501, 502, 503, 504, and 505.
- e. During the dewatering activities when Part I.A.9 is effective, process wastewater from internal Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 004.
- f. Outfall 004 will be retired following the completion of the dewatering activities at the facility.
- g. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

8. During the period beginning with the permit's effective date and lasting until the permit's expiration date, whichever comes first, the permittee is authorized to discharge from Outfall 006.
 - a. During the period prior to Part I.A.9 becoming effective, Outfall 006 shall contain only stormwater not exposed to industrial activity. There shall be no discharge of process wastewater from Outfall 006 prior to Part I.A.9 becoming effective.
 - b. During the dewatering activities when Part I.A.9 is effective, process wastewater from Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 006.
 - c. Following the dewatering activities, Outfall 006 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 006 during this period.
 - d. There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

9. During the period beginning with the permit’s effective date and lasting until completion of dewatering activities, or until the permit’s expiration date, whichever comes first, the permittee is authorized to discharge from internal Outfall 501 (process wastewater from dewatering activities in the West Ash Pond), Outfall 502 (process wastewater from dewatering activities in the North Ash Pond), Outfall 503 (process wastewater from dewatering activities in the East Ash Ponds), Outfall 504 (combination of process wastewaters from dewatering activities in the West Ash Pond, North Ash Pond, East Ash Ponds, and Metals Cleaning Waste Treatment Basin), and Outfall 505 (process wastewater from dewatering activities in the Metal Cleaning Waste Treatment Basin). Any process wastewater removed from the West Ash Pond, North Ash Pond, and East Ash Ponds for discharge purposes is considered to be process wastewater from dewatering activities. See Part I.G.19 for requirements regarding the decanting and dewatering of the Metal Cleaning Waste Treatment Basin.

This discharge shall be limited and monitored as specified below:

	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD) ^a	NL	NA	NA	NL	1/Day	Estimate
pH (standard units) ^{h,j}	NA	NA	6.0	9.0	3/Week	Grab
Total Suspended Solids (mg/L) ^{b,h,j}	30.0	NA	NA	100.0	3/Week	4 HC
Oil & Grease (mg/L) ^{b,h,j}	15.0	NA	NA	20.0	3/Week	4 HC
Total Recoverable Antimony (ug/L) ^{b,h,j}	2,100	NA	NA	2,100	3/Week	4 HC
Total Recoverable Arsenic (ug/L) ^{b,h,j}	290	NA	NA	530	3/Week	4 HC
Total Recoverable Cadmium (ug/L) ^{b,h,j}	1.8	NA	NA	3.2	3/Week	4 HC
Total Recoverable Chromium III (ug/L) ^{b,h,j}	120	NA	NA	220	3/Week	4 HC
Total Recoverable Chromium VI (ug/L) ^{b,h,j}	18	NA	NA	34	3/Week	4 HC
Total Recoverable Copper (ug/L) ^{b,h,j}	12	NA	NA	23	3/Week	4 HC
Total Recoverable Lead (ug/L) ^{b,h,j}	19	NA	NA	35	3/Week	4 HC
Total Recoverable Mercury (ug/L) ^{b,h,j}	1.5	NA	NA	2.8	3/Week	4 HC
Total Recoverable Nickel (ug/L) ^{b,h,j}	31	NA	NA	57	3/Week	4 HC
Total Recoverable Selenium (ug/L) ^{b,h,j}	9.6	NA	NA	18	3/Week	4 HC
Total Recoverable Silver (ug/L) ^{b,h,j}	2.7	NA	NA	5.0	3/Week	4 HC
Total Recoverable Thallium (ug/L) ^{b,h,j}	1.4	NA	NA	1.4	3/Week	4 HC
Total Recoverable Zinc (ug/L) ^{b,h,j}	110	NA	NA	210	3/Week	4 HC
Chloride (mg/L) ^{b,h,j}	450	NA	NA	820	3/Week	4 HC
Ammonia-N (mg/L) ^{b,h,j}	9.6	NA	NA	14	3/Week	4 HC
Hardness (mg/L as CaCO ₃) ^{h,i}	NL	NA	NA	NL	3/Week	4 HC
Cyanide, Free (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Aluminum (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Barium (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Beryllium (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Boron (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Cobalt (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

9. Continued from previous page

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Total Recoverable Iron (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Molybdenum (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Total Recoverable Vanadium (ug/L) ⁱ	NL	NA	NA	NL	1/Month	4 HC
Acute Whole Effluent Toxicity, Ceriodaphnia dubia (%) ^{c,j}	NA	NA	100	NA	1/Month	24 HC
Chronic Whole Effluent Toxicity, Ceriodaphnia dubia (TUc) ^{c,j}	NA	NA	NA	6.25	1/Month	24 HC
Acute Whole Effluent Toxicity, Pimephales promelas (%) ^{c,j}	NA	NA	100	NA	1/Month	24 HC
Chronic Whole Effluent Toxicity, Pimephales promelas (TUc) ^{c,j}	NA	NA	NA	6.25	1/Month	24 HC

NL = No Limitation, monitoring required NA = Not Applicable 4 HC = 4- hour Composite 24 HC = 24- hour Composite

- a. The limits are based on a flow of 10.2912 MGD.
- b. See Part I.C for additional monitoring instructions.
- c. See Part I.E for additional monitoring instructions.
- d. The discharges from internal Outfalls 501, 502, 503, 504, and 505 are authorized to discharge to the Stormwater Management Pond and West Treatment Pond and through Outfalls 002, 003, 004, and/or 006.
- e. Ash dewatering water (pore water within the coal combustion residuals mass) and contact stormwater (stormwater that has contacted the coal combustion residuals) are process wastewater from dewatering activities.
- f. Compliance with the limits above may be demonstrated with or without additional treatment.
- g. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- h. Sampling for the parameters identified with a monitoring frequency of “3/Week” for Internal Outfalls 501, 502, 503, 504, and 505 shall occur at least three (3) days per week with a minimum of 48 hours between sampling events. A sampling week extends Sunday through Saturday. The permittee shall contract to receive results for parameters identified with a monitoring frequency of “3/Week” within four business days of taking the sample. Results of the weekly sampling shall be reported to DEQ no later than the close of business Friday of the week following sample collection. This reporting requirement does not substitute for, or alter, Part II.C concerning the monthly reporting of monitoring results with the Discharge Monitoring Report.
- i. The composite period for the parameters identified with a monitoring frequency of “1/Month” for Internal Outfalls 501, 502, 503, and 505 shall occur within the composite period for the Whole Effluent Toxicity monitoring.
- j. See Part I.G.22 for additional requirements.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

10. During the period beginning with the discharge of process wastewater from dewatering activities through internal Outfalls 501, 502, 503, 504, and 505 and lasting until the discharge of process wastewater from dewatering activities ceases, or until the permit's expiration date, whichever comes first, the permittee is authorized to discharge from Outfall 999^a.

This discharge shall be limited and monitored as specified below:

	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>			
	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow, MGD	NL	NA	NA	10.2912	1/Month	Calculated

NL = No Limitation, monitoring required NA = Not Applicable

- a. Outfall 999 is not an existing discharge point. It is a means of reporting total flow discharged through internal Outfalls 501, 502, 503, 504, and 505 during the dewatering activities for the North Ash Pond, East Ash Ponds, West Ash Pond, and Metal Cleaning Waste Treatment Basin. The limits are based on a flow of 10.2912 MGD.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS – FINAL CONFIGURATION

11. Upon completion of construction of Outfalls 007, 008, and 009 and lasting until the permit's expiration date, the permittee is authorized to discharge from Outfalls 007, 008, and 009.
 - a. Outfalls 007, 008, and 009 shall contain only stormwater not exposed to industrial activity.
 - b. There shall be no discharge of process wastewater from these outfalls.
 - c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

B. ADDITIONAL TRC AND E. COLI LIMITATIONS AND MONITORING REQUIREMENTS – Outfall 203

1. TRC shall be monitored at the outlet of each operating chlorine contact tank, 1/Day by grab sample.
2. No more than 3 samples for TRC taken at the outlet of each operating chlorine contact tank, shall be less than 1.0 mg/L for any one calendar month.
3. No TRC sample collected at the outlet of any operating chlorine contact tank, shall be less than 0.6 mg/L.
4. If chlorine disinfection is not used, E. coli shall be limited and monitored by the permittee as specified below:

	<u>Discharge Limit</u>	<u>Monitoring Requirements</u>	
	<u>Monthly Average</u>	<u>Frequency</u>	<u>Sample Type</u>
E. coli (N/100 mL)	126 (Geometric Mean)	4/Month* Between 10 a.m. and 4 p.m.	Grab

*4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week

This E. coli requirement, if applicable, shall substitute for the TRC and E. coli requirements specified above and elsewhere in this permit.

C. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - ADDITIONAL INSTRUCTIONS

1. The quantification levels (QLs) shall be less than or equal to the following concentrations:

<u>Effluent Characteristic</u>	<u>QL</u>
BOD ₅	2 mg/L
Total Suspended Solids	1.0 mg/L
Total Residual Chlorine	0.10 mg/L
Ammonia-N	0.20 mg/L
Oil & Grease	5.0 mg/L
Chloride	10 mg/L
Total Recoverable Antimony	5.0 µg/L
Total Recoverable Arsenic	5.0 µg/L
Total Recoverable Cadmium	1.0 µg/L
Total Recoverable Chromium III	5.0 µg/L
Total Recoverable Chromium VI	5.0 µg/L
Total Recoverable Copper	5.0 µg/L
Total Recoverable Lead	5.0 µg/L
Total Recoverable Mercury	0.1 µg/L
Total Recoverable Nickel	5.0 µg/L
Total Recoverable Selenium	5.0 µg/L
Total Recoverable Silver	0.4 µg/L
Total Recoverable Thallium	1.0 µg/L
Total Recoverable Zinc	25 µg/L
Total Copper	5.0 µg/L
Total Iron	0.25 mg/L

The QL is defined as the lowest concentration used to calibrate a measurement system in accordance with the procedures published for the method. It is the responsibility of the permittee to ensure that proper quality assurance/quality control (QA/QC) protocols are followed during the sampling and analytical procedures. QA/QC information shall be documented to confirm that appropriate analytical procedures have been used and the required QLs have been attained. The permittee shall use any method in accordance with Part II.A of this permit.

2. Compliance Reporting

- a. Monthly Average – Compliance with the monthly average limitations and/or reporting requirements for the parameters listed in Part I.C.1 shall be determined as follows: All concentration data below the QL used for the analysis shall be treated as zero. All concentration data equal to or above the QL used for the analysis shall be treated as it is reported. An arithmetic average shall be calculated using all reported data for the month, including the defined zeros. This arithmetic average shall be reported on the Discharge Monitoring Report (DMR) as calculated. If all data are below the QL used for the analysis, then the average shall be reported as "<QL". If reporting for quantity is required on the DMR and the reported monthly average concentration is <QL, then report "<QL" for the quantity. Otherwise use the reported concentration data (including the defined zeros) and flow data for each sample day to determine the daily quantity and report the monthly average of the calculated daily quantities.
- b. Daily Maximum – Compliance with the daily maximum limitations and/or reporting requirements for the parameters listed in Part I.C.1 shall be determined as follows: All concentration data below the QL used for the analysis shall be treated as zero. All concentration data equal to or above the QL used for the analysis shall be treated as reported. An arithmetic average shall be calculated using all reported data, including the defined zeros, collected within each day during the reporting month. The maximum value of these daily averages thus determined shall be reported on the DMR as the Daily Maximum. If all data are below the QL used for the analysis, then the maximum value of the daily averages shall be reported as "<QL". If reporting for quantity is required on the DMR and the reported daily maximum concentration is <QL, then report "<QL" for the quantity. Otherwise use the reported daily average concentrations (including the defined zeros) and corresponding daily flows to determine daily average quantities and report the maximum of the daily average quantities during the reporting month.
- c. Single Datum – Any single datum required shall be reported as "<QL" if it is less than the QL used for the analysis. Otherwise the numerical value shall be reported.
- d. The permittee shall report at least the same number of significant digits as the permit limit for a given parameter. Regardless of the rounding convention used (i.e., 5 always rounding up or to the nearest even number) by the permittee, the permittee shall use the convention consistently, and shall ensure that consulting laboratories employed by the permittee use the same convention.
- e. Nutrient reporting – For TP, all daily concentration data below the quantification level (QL) for the analytical method used shall be treated as half the QL. All daily concentration data equal to or above the QL for the analytical method used shall be treated as it is reported.

For TN, if none of the daily concentration data for the respective species (i.e., TKN, Nitrates/Nitrites) are equal to or above the QL for the respective analytical methods used, the daily TN concentration value reported shall equal one half of the largest QL used for the respective species. If one of the data is equal to or above the QL, the daily TN concentration value shall be treated as that data point is reported. If more than one of the data is above the QL, the daily TN concentration value shall equal the sum of the data points as reported.

D. GROUNDWATER MONITORING PLAN (GWMP)

The permittee shall continue sampling and reporting in accordance with the GWMP approved on September 11, 2013. The purpose of this plan is to determine if the system integrity is being maintained and to indicate if activities at the site are resulting in violations of the Board's Groundwater Standards. The approved plan is an enforceable part of the permit. Any changes to the plan must be submitted for approval to the DEQ-Valley Regional Office.

If monitoring results indicate that any unit has contaminated the groundwater, the permittee shall submit a corrective action plan within 60 days of being notified by the DEQ-Valley Regional Office. The plan shall set forth the steps to be taken by the permittee to ensure that the contamination source is eliminated or that the contaminant plume is contained on the permittee's property. In addition, based on the extent of contamination, a risk analysis may be required. Once approved, this plan and/or analysis shall be incorporated into the permit by reference and become an enforceable part of this permit.

Existing groundwater monitoring, corrective action and/or risk assessment plans currently in effect under this VPDES Permit shall remain in effect until such time that they are superseded by groundwater monitoring plan requirements issued pursuant to the Virginia Solid Waste Management Regulations (VSWMR) (9VAC20-81-10 *et seq.*). The permittee shall be notified when groundwater monitoring in accordance with this provision has been superseded and within 90 days of such notification, shall submit an updated groundwater monitoring plan to reflect groundwater monitoring that will continue in accordance with the paragraph below.

Where a unit will continue to operate and is not subject to the VSWMR for closure or post-closure, groundwater monitoring shall continue in accordance with this VPDES Permit and the approved groundwater monitoring plan.

E. WHOLE EFFLUENT TOXICITY (WET) REQUIREMENTS

1. Biological Monitoring - Outfall 001

- a. In accordance with the schedule in Part I.E.1.f, the permittee shall conduct quarterly acute and chronic toxicity tests using 24-hour flow-proportioned composite samples of final effluent collected from Outfall 001. The monitoring shall be conducted as near to full plant operating conditions as reasonably possible.

The acute tests shall be a 48-Hour Static Acute test using *Ceriodaphnia dubia* and a 48-Hour Static Acute test using *Pimephales promelas*. Each test shall be performed with a minimum of 5 dilutions, derived geometrically, with a minimum of 4 replicates per dilution and a minimum of 5 organisms per replicate for calculation of a valid No Observed Adverse Effect Concentration (NOAEC). The NOAEC should be determined by hypothesis testing. The LC₅₀ should also be determined, noted, and submitted in the required test report. Tests in which control survival is less than 90% are not acceptable. Any retest of an unacceptable test must be performed within the same testing period as the unacceptable test.

The chronic tests shall be a Chronic 3-Brood Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* and a Chronic 7-Day Static Renewal Survival and Growth Test using *Pimephales promelas*. Each test shall be performed with a minimum of 5 dilutions, derived geometrically, in order to determine the No Observed Effect Concentration (NOEC) for survival and reproduction or growth. Results which cannot be determined (i.e. a "less than" or "zero" NOEC value) are not acceptable, and a retest requiring further dilution must be performed. Any retest of an unacceptable test must be performed within the same testing period as the unacceptable test. Such "less than" or "zero" results must be submitted and will be regarded as evidence of effluent toxicity. Express the results as chronic Toxicity Units (TU_c) by dividing 100/NOEC. Report the LC₅₀ for each chronic test at the 48-hour point, and the IC₂₅, if calculable, with the NOECs in the required test report.

- b. During the term of the permit, the permittee may provide additional samples to address data variability. These data shall be reported and may be included in the evaluation of effluent toxicity. Test procedures and reporting shall be in accordance with the WET testing methods cited in 40 CFR 136.3.
- c. The test dilutions shall be able to determine compliance with the following endpoints:
 - (1) Acute NOAEC of 100%
 - (2) Chronic NOEC of 79%, equivalent to 1.27 TU_c
- d. The test data will be evaluated statistically for reasonable potential at the conclusion of the permit term. The data may be evaluated sooner if requested by the permittee, or if toxicity has been noted. Should DEQ evaluation of the data indicate that a limit is needed, a WET limit and compliance schedule may be required and the toxicity tests of Part I.E.1.a may be discontinued upon written notification from DEQ. If the data indicate that no limit is needed, the permittee shall continue acute and chronic toxicity testing of the outfall as specified in Part I.E.1.f.
- e. The permit may be modified, or revoked and reissued to include pollutant specific limits in lieu of a WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.
- f. The permittee shall supply 1 copy of a comprehensive test report for each test type and species for the toxicity tests specified in Part I.E.1.a in accordance with the following schedule:

<u>Monitoring Period</u>	<u>Testing Period</u>	<u>Report Submittal Dates</u>
1 st Quarter	In the first full calendar quarter following permit reissuance	By the 10 th day of the month following the testing period
Quarterly thereafter	Every calendar quarter following the previous quarter until there are a minimum of 4 quarters tested	By the 10 th day of the month following the testing period
1 st Annual	The first full calendar year following the 4 completed quarterly tests	By the 10 th day of January following the testing period
Annually thereafter	Every calendar year following the 1 st annual testing period	By the 10 th day of January following the test period

2. Biological Monitoring - Outfalls 002 and 004

- a. In accordance with the schedule in Part I.E.2.f, the permittee shall conduct separate annual acute and chronic toxicity tests using 24-hour flow-proportioned composite samples of final effluent collected from Outfall 002 and Outfall 004. These samples may be collected prior to commingling with treated wastewater from internal Outfalls 501, 502, 503, 504, and 505. These requirements no longer apply at Outfall 004 once Outfall 004 is retired or at Outfall 002 once the West Treatment Pond is operating in its final configuration, no further discharge of process wastewater from dewatering activities is occurring from Outfall 002, and Part I.E.3 becomes effective.

The acute test shall be a 48-Hour Static Acute test using *Ceriodaphnia dubia*. Each test shall be performed with a minimum of 5 dilutions, derived geometrically, for calculation of a valid LC₅₀ and corresponding acute Toxic Units (TU_a). For DMR reporting, the TU_a shall be calculated by dividing 100/LC₅₀. Tests in which control survival is less than 90% are not acceptable. Any retest of an unacceptable test must be performed within the same testing period as the unacceptable test. The chronic tests shall be a Chronic 3-Brood Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia*. Each test shall be performed with a minimum of 5 dilutions, derived

geometrically, in order to determine the No Observed Effect Concentration (NOEC) for survival and reproduction. Results which cannot be determined (i.e. a "less than" or "zero" NOEC value) are not acceptable, and a retest requiring further dilution must be performed. Any retest of an unacceptable test must be performed within the same testing period as the unacceptable test. Such "less than" or "zero" results must be submitted and will be regarded as evidence of effluent toxicity. Express the results as chronic Toxicity Units (TU_c) by dividing 100/NOEC. Report the LC₅₀ for each chronic test at the 48-hour point, and the IC₂₅, if calculable, with the NOECs in the required test report.

- b. During the term of the permit, the permittee may provide additional samples to address data variability. These data shall be reported and may be included in the evaluation of effluent toxicity. Test procedures and reporting shall be in accordance with the WET testing methods cited in 40 CFR 136.3.
- c. The test dilutions shall be able to determine compliance with the following endpoints:
 - (1) Acute LC₅₀ of 100%, equivalent to 1.0 TU_a
 - (2) Chronic NOEC of 22%, equivalent to 4.55 TU_c
- d. The test data will be evaluated statistically for reasonable potential at the conclusion of the permit term. The data may be evaluated sooner if requested by the permittee, or if toxicity has been noted. Should DEQ evaluation of the data indicate that a limit is needed, a WET limit and compliance schedule may be required and the toxicity tests of Part I.E.2.a may be discontinued upon written notification from DEQ. If the data indicate that no limit is needed, the permittee shall continue acute toxicity testing of the outfall quarterly, as specified in Part I.E.2.e.
- e. The permit may be modified, or revoked and reissued to include pollutant specific limits in lieu of a WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.
- f. The permittee shall supply 1 copy of a comprehensive test report for each test type and species specified in Part I.E.2.a in accordance with the following schedule:

<u>Monitoring Period</u>	<u>Testing Period</u>	<u>Report Submittal Dates</u>
1 st Annual	February 1 – December 31, 2016	January 10, 2017
2 nd Annual	January 1 – December 31, 2017	January 10, 2018
3 rd Annual	January 1 – December 31, 2018	January 10, 2019
4 th Annual	January 1 – December 31, 2019	January 10, 2020

3. Biological Monitoring - Outfall 002 (West Treatment Pond) Final Configuration

- a. In accordance with the schedule in Part I.E.3.f, the permittee shall conduct quarterly acute and chronic toxicity tests using 24-hour flow-proportioned composite samples of final effluent collected from Outfall 002.

The acute tests shall be a 48-Hour Static Acute test using *Ceriodaphnia dubia* and a 48-Hour Static Acute test using *Pimephales promelas*. Each test shall be performed with a minimum of 5 dilutions, derived geometrically, for calculation of a valid LC₅₀ and corresponding acute Toxic Units (TU_a). For DMR reporting, the TU_a shall be calculated by dividing 100/LC₅₀. Tests in which control survival is less than 90% are not acceptable. Any retest of an unacceptable test must be performed within the same testing period as the unacceptable test.

The chronic tests shall be a Chronic 3-Brood Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* and a Chronic 7-Day Static Renewal Survival and Growth Test using *Pimephales promelas*. Each test shall be performed with a minimum of 5 dilutions, derived geometrically, in order to determine the No Observed Effect Concentration (NOEC) for survival and reproduction or growth. Results which cannot be determined (i.e. a "less than" or "zero" NOEC value) are not acceptable, and a retest requiring further dilution must be performed. Any retest of an unacceptable test must be performed within the same testing period as the unacceptable test. Such "less than" or "zero" results must be submitted and will be regarded as evidence of effluent toxicity. Express the results as chronic Toxicity Units (TU_c) by dividing 100/NOEC. Report the LC₅₀ for each chronic test at the 48-hour point, and the IC₂₅, if calculable, with the NOECs in the required test report.

- b. During the term of the permit, the permittee may provide additional samples to address data variability. These data shall be reported and may be included in the evaluation of effluent toxicity. Test procedures and reporting shall be in accordance with the WET testing methods cited in 40 CFR 136.3.
- c. The test dilutions shall be able to determine compliance with the following endpoints:
 - (1) Acute LC₅₀ of 100%, equivalent to 1.0 TU_a
 - (2) Chronic NOEC of 21%, equivalent to 4.76 TU_c
- d. The test data will be evaluated statistically for reasonable potential at the conclusion of the permit term. The data may be evaluated sooner if requested by the permittee, or if toxicity has been noted. Should DEQ evaluation of the data indicate that a limit is needed, a WET limit and compliance schedule may be required and the toxicity tests of Part I.E.3.a may be discontinued upon written notification from DEQ. If the data indicate that no limit is needed, the permittee shall continue acute toxicity testing of the outfall quarterly, as specified in Part I.E.3.e.
- e. The permit may be modified, or revoked and reissued to include pollutant specific limits in lieu of a WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.
- f. The permittee shall supply 1 copy of a comprehensive test report for each test type and species for the toxicity tests specified in Part I.E.3.a in accordance with the following schedule:

<u>Monitoring Period</u>	<u>Testing Period</u>	<u>Report Submittal Dates</u>
1 st Quarter	In the first full calendar quarter following notification of the West Treatment Pond operating in its final configuration and notification that no further discharge of process wastewater from dewatering activities is occurring from Outfall 002	By the 10 th day of the month following the testing period
Quarterly thereafter	Every calendar quarter following the previous quarter until there are a minimum of 4 quarters tested	By the 10 th day of the month following the testing period
1 st Annual	The first full calendar year following the 4 completed quarterly tests	By the 10 th day of January following the testing period
Annually thereafter	Every calendar year following the 1 st annual testing period	By the 10 th day of January following the testing period

4. Whole Effluent Toxicity Limitations - Internal Outfalls 501, 502, 503, 504, and 505
- a. The Whole Effluent Toxicity limitations of Part I.A.9 are final limits beginning with the permit's effective date and lasting until completion of dewatering activities or until the permit's expiration date, whichever occurs first.
 - b. WET Limits:
 - (1) Acute WET limit NOAEC = 100%
 - (2) Chronic WET limit NOEC \geq 16%, equivalent to $TU_c \leq 6.25$
 - c. In accordance with the schedule in Part I.E.4.f, the permittee shall conduct monthly acute and chronic toxicity testing using 24-hour flow-proportioned composite samples of final effluent from Outfalls 501, 502, 503, 504, and 505. The effluents from internal Outfalls 501, 502, 503, 504, and 505 are authorized to discharge to the Stormwater Management Pond and West Treatment Pond and through Outfalls 002, 003, 004, and/or 006.

The acute tests shall be a 48-Hour Static Acute test using *Ceriodaphnia dubia* and a 48-Hour Static Acute test using *Pimephales promelas*. These acute tests are to be conducted using a minimum of 4 replicates, with 5 organisms each, for the control and 100% effluent. The NOAEC (No Observed Adverse Effect Concentration) shall be reported as either 100% or $< 100\%$ (less than 100%). The effluent will be in compliance if the survival of the test organisms in both the control and 100% effluent exposures equals or exceeds 90%. If the survival in the effluent is less than 90% and this value is significantly different from the control survival, as determined by hypothesis testing, the NOAEC is less than 100% and the effluent is not in compliance. Tests in which control survival is less than 90% are not acceptable. A retest of a non-acceptable test must be performed during the same compliance period as the test it is replacing.

The chronic tests shall be a Chronic 3-Brood Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* and a Chronic 7-Day Static Renewal Survival and Growth Test using *Pimephales promelas*. Each test shall be performed with a minimum of 5 dilutions, derived geometrically, in order to determine the No Observed Effect Concentration (NOEC) for survival and reproduction or growth. Results which cannot be determined (i.e. a "less than" or "zero" NOEC value) are not acceptable, and a retest requiring further dilution must be performed. Any retest of an unacceptable test must be performed during the same compliance period as the test it is replacing. Such "less than" or "zero" results must be submitted and will be regarded as evidence of effluent toxicity. The WET limit NOEC of 16% ($TU_c = 6.25$) must be represented by a dilution. Express the results as Chronic Toxicity Units (TU_c) by dividing $100/\text{NOEC}$. Report the LC_{50} for each chronic test at the 48-hour point, and the IC_{25} , if calculable, with the NOEC in the required test report. Test procedures and reporting shall be in accordance with the WET testing methods cited in 40 CFR 136.3.

- d. With DEQ approval, if after a minimum of four sets of tests have been reviewed, it is determined that acute tests with one of the species in Part I.E.4.a meets the criterion below, testing may be reduced to using only one species:

Survival of $\geq 90\%$ of the organisms of a particular species in 100% effluent in each of the tests considered.

With DEQ approval, if after a minimum of four sets of tests have been reviewed, it is determined that chronic tests with one of the species in Part I.E.4.a meets the criterion below, testing may be reduced to using only one species:

Survival of $\geq 80\%$ of the organisms in 100% effluent in each of the tests considered, and the secondary NOEC endpoint for reproduction or growth is an NOEC = 100% effluent.

- e. The permit may be modified or revoked and reissued to include pollutant-specific limits in lieu of a WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant-specific limits must control the toxicity of the effluent.
- f. The permittee shall supply 1 copy of the of a comprehensive test report for each test type and species specified in Part I.E.4.a in accordance with the following schedule as the discharge from dewatering activities continues:

<u>Monitoring Period</u>	<u>Testing Period</u>	<u>Report Submittal Dates</u>
1 st Month	The first calendar month following the applicability of Part I.A.9	By the 10 th day of the month following the testing period
Monthly thereafter	Every calendar month following the previous month until the discharges cease	By the 10 th day of the month following the testing period

F. COOLING WATER INTAKE STRUCTURE REQUIREMENTS

1. Interim §316(b) Best Technology Available (BTA) – The permittee shall implement interim Best Technology Available (BTA) measures to minimize impingement and entrainment (I&E) mortality and adverse impacts. The following interim BTA measures are to be employed throughout the term of this permit:
 - a. Maintain intake velocities of less than or equal to 0.5 ft/sec at the river intake structures; and
 - b. Maintain the current configuration of the two tunnels between the trash rack structure and the screen house.
2. Impingement and Entrainment Control Technology Preventative Maintenance – The O&M Manual for the permitted facility shall include a description of procedures and a regular schedule for preventative maintenance of all impingement and entrainment (I&E) control technologies and measures, and shall include a description of mitigation protocols and practices to implement should a water withdrawal event occur while an I&E technology or measure is off-line. The Operations & Maintenance (O&M) Manual shall be updated to incorporate the information required by this condition by no later than 90 days following the effective date of this permit All I&E control technologies and measures shall be maintained in effective operating condition. The permittee shall maintain documentation of maintenance and repairs of I&E control technologies and measures, including, but not limited to: the date(s) of regular maintenance, date(s) of discovery of areas in need of repair or replacement, date(s) for repairs, and date(s) the control technologies returned to full function.
3. Alternate Schedule for Submittal of 40 CFR §122.21(r) Information – The permittee shall, by no later than 270 days prior to the expiration date of this permit, submit to the DEQ-Valley Regional Office all applicable information described in 40CFR §122.21(r).
4. Visual or Remote Inspections – The permittee shall conduct visual inspections or employ remote monitoring devices during the period any cooling water intake structure is in operation. Inspections shall be conducted no less frequently than weekly to ensure that any technologies operated to comply with impingement mortality and entrainment requirements, any additional measures necessary to protect listed threatened and endangered species and designated critical habitat, and other standards for minimizing adverse environmental impact as established in this permit, are maintained and operated to function as designed.

Inspection documentation shall include at a minimum:

- a. Date, time, and location of the inspection or remote monitoring period;
- b. The name(s) and signature(s) of the inspector(s);
- c. A description of water withdrawal volumes or rates occurring at the time of the inspection;

- d. Where available, head loss across the intake screen(s);
- e. If adverse weather conditions exist, a description of the adverse weather conditions; and
- f. Any technologies needing maintenance, repair, or replacement.

The requirement to conduct visual or remote inspections is waived when no water is withdrawn through all cooling water intake structures during an entire inspection period. For each cooling water intake structure, the permittee shall document the date(s) when no water is withdrawn through the respective intake structure.

When adverse weather conditions prevent visual inspections or remote monitoring from being safely conducted during a given inspection period, the visual inspection or remote monitoring requirements may be waived provided the permittee prepares documentation explaining the reasons why a visual inspection or remote monitoring could not be safely conducted. Adverse weather conditions are those that are dangerous or create inaccessibility for personnel, and may include such events as local flooding, high winds, electrical storms, or situations that otherwise make an inspection impracticable, such as drought or extended frozen conditions.

Any deficiencies found during a visual inspection or remote monitoring event shall be corrected as soon as possible, but no later than 30 days following discovery, unless permission for a later date is granted by DEQ in writing.

All documentation relating to visual inspections or remote monitoring, or the inability to safely conduct such monitoring due to adverse weather conditions, shall be signed and certified in accordance with Part II.K of this permit and shall be made available to DEQ personnel for review during facility inspections or no later than 30 days following receipt of a request by DEQ.

5. Annual Certification Statement Requirements – The permittee shall annually prepare a written statement certifying either: a) operations of any unit at the permitted facility that impacts cooling water withdrawals or operation of any cooling water intake structure have been substantially modified, or b) no substantial changes have occurred in the operations of any unit at the permitted facility that impacts cooling water withdrawals or operation of any cooling water intake structure.

If substantially modified operations have occurred, the permittee must provide with the annual certification statement a summary of those changes. In addition, the permittee must submit revisions to the information required at 40 CFR §122.21(r) with the next application for reissuance of this permit.

Certification statements shall be signed in accordance with Part II.K of this permit and submitted to the DEQ-Valley Regional Office by no later than each February 10 for the period covering the preceding calendar year.

6. Measures to protect Federally-listed Threatened or Endangered (T&E) species, designated critical habitat, and fragile species or shellfish – The permittee shall operate each cooling water intake structure and cooling system in a manner designed to minimize incidental take, reduce or remove more than minor detrimental effects to Federally-listed threatened, endangered, or fragile species and designated critical habitat, including prey base.

The permittee shall prepare, on a calendar year basis, a report providing an assessment of the implementation progress, and/or the efficiency/effectiveness of the I&E control measures. The report shall include a compilation of all federally-listed threatened or endangered species found to have been impinged or entrained during the reporting year, including the total number and type of organisms (listed by taxa), and life stage cycle (egg, larva, juvenile, adult) impacted by injury or death. The assessments and compiled data shall be submitted to the DEQ-Valley Regional Office by no later than each February 10 for the preceding calendar year.

7. Federal Endangered Species Act Compliance – Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act.

G. OTHER REQUIREMENTS AND SPECIAL CONDITIONS

1. 95% Capacity Reopener (Outfall 203) – A written notice and a plan of action for ensuring continued compliance with the terms of this permit shall be submitted to the DEQ-Valley Regional Office when the monthly average influent flow to the wastewater treatment facility reaches 95 percent of the design capacity authorized in this permit for each month of any three consecutive month period. The written notice shall be submitted within 30 days and the plan of action shall be received at the DEQ-Valley Regional Office no later than 90 days from the third consecutive month for which the flow reached 95 percent of the design capacity. The plan shall include the necessary steps and a prompt schedule of implementation for controlling any current or reasonably anticipated problem resulting from high influent flows. Failure to submit an adequate plan in a timely manner shall be deemed a violation of this permit.
2. Materials Handling/Storage – Any and all product, materials, industrial wastes, and/or other wastes resulting from the purchase, sale, mining, extraction, transport, preparation, and/or storage of raw or intermediate materials, final product, by-product or wastes, shall be handled, disposed of, and/or stored in such a manner and consistent with Best Management Practices, so as not to permit a discharge of such product, materials, industrial wastes, and/or other wastes to State waters, except as expressly authorized.
3. Operation and Maintenance (O&M) Manual Requirement – The permittee shall maintain a current O&M Manual for the treatment works that is in accordance with Virginia Pollutant Discharge Elimination System Regulations, 9VAC25-31 and (for sewage treatment plants) Sewage Collection and Treatment Regulations, 9VAC25-790.

The O&M Manual and subsequent revisions shall include the manual effective date and meet Part II.K.2 and Part II.K.4 Signatory Requirements of the permit. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to DEQ personnel for review during facility inspections. Within 30 days of a request by DEQ, the current O&M Manual shall be submitted to the DEQ-Valley Regional Office for review and approval.

The O&M Manual shall detail the practices and procedures which will be followed to ensure compliance with the requirements of this permit. This manual shall include, but not necessarily be limited to, the following items, as appropriate:

- a. Permitted outfall locations and techniques to be employed in the collection, preservation, and analysis of effluent, stormwater, and sludge samples taken for compliance with this permit;
- b. Procedures for measuring and recording the duration and volume of treated wastewater discharged;
- c. Discussion of Best Management Practices, if applicable;
- d. Procedures for handling, storing, and disposing of all wastes, fluids, and pollutants characterized in Part I.G.2 that will prevent these materials from reaching state waters. List the type and quantity of wastes, fluids, and pollutants characterized in Part I.G.2 that are stored at this facility;
- e. Discussion of treatment works design, treatment works operation, routine preventative maintenance of units within the treatment works, critical spare parts inventory and record keeping;
- f. Plan for the management and/or disposal of waste solids and residues;
- g. Hours of operation and staffing requirements for the plant to ensure effective operation of the treatment works and maintain permit compliance;
- h. List of facility, local, and state emergency contacts; procedures for reporting and responding to any spills/overflows/treatment works upsets; and
- i. Procedures for documenting compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts.

4. Certificate to Construct (CTC) / Certificate to Operate (CTO) Requirement (Outfall 203) – The permittee shall, in accordance with the DEQ Sewage Collection and Treatment Regulation (9VAC25-790), obtain a CTC and a CTO prior to constructing and operating the wastewater treatment works. Noncompliance with the CTC or CTO shall be deemed a violation of the permit.
5. Concept Engineering Report (CER) Requirement (Outfalls 001, 002, 003, 004, 006, 101, 202, 501, 502, 503, 504, and 505) – Prior to constructing any wastewater treatment works, the permittee shall submit a CER to the DEQ-Valley Regional Office. DEQ approval shall be secured prior to constructing any wastewater treatment works. The permittee shall construct the wastewater treatment works in accordance with the approved CER. No later than 14 days following completion of construction of any project for which a CER has been approved, written notification shall be submitted to the DEQ-Valley Regional Office certifying that, based on an inspection of the project, construction was completed in accordance with the approved CER. The written notification shall be certified by a professional engineer licensed in the Commonwealth of Virginia or signed in accordance with Part II.K of this permit. The installed wastewater treatment works shall be operated to achieve design treatment and effluent concentrations. Approval by DEQ does not relieve the owner of the responsibility for the correction of design and/or operational deficiencies. Noncompliance with the CER shall be deemed a violation of this permit.
6. Sludge Management Plan (SMP) Requirement (Outfall 203) – The permittee shall conduct all sewage sludge use or disposal activities in accordance with the SMP approved with the reissuance of this permit. Any proposed changes in the sewage sludge use or disposal practices or procedures followed by the permittee shall be documented and submitted for DEQ approval 90 days prior to the effective date of the changes. Upon approval, the SMP becomes an enforceable part of the permit. This permit may be modified or, alternatively, revoked and reissued to incorporate limitations/conditions necessitated by substantive changes in sewage sludge use or disposal practices.
7. Reliability Class (Outfall 203) – By July 15, 2016, the permitted treatment works shall meet Reliability Class II.
8. Debris collected on the intake trash racks (as opposed to the traveling screen backwash) shall not be returned to the waterway.
9. Polychlorinated Biphenyls – There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid. Compliance with this requirement will be determined using EPA Method 608 (as referenced in 40 CFR Part 136).
10. Additional Chlorine Limitations and Monitoring Requirements
 - a. Neither free available nor total residual chlorine may be discharged via Outfall 001 from any single generating unit for more than two hours in any one day, unless the permittee demonstrates to DEQ that discharge for more than two hours is required for macroinvertebrate control. If the permittee is dechlorinating, the two hour requirement is nullified.
 - b. Simultaneous multi-unit chlorination is permitted.
 - c. Monitoring for free available and/or total residual chlorine shall only be required when the permittee is chlorinating.
11. Oil Storage Groundwater Monitoring Reopener – As this facility currently manages ground water in accordance with 9VAC25-90-10 et seq., Oil Discharge Contingency Plans and Administration Fees for Approval, this permit does not presently impose groundwater monitoring requirements in conjunction with the oil storage facilities. However, this permit may be modified or, alternatively, revoked and reissued to incorporate groundwater monitoring not required by the ODCP regulation.

12. Thermal Mixing Zone –The permittee shall comply with the Water Quality Standards for temperature outside the approved thermal mixing zone. The approved mixing zone is defined as 40% of the width of the James River, as measured from the north bank extending from the John H. Cocke Memorial Bridge downstream to Spicer’s Island, approximately 5 ½ miles downstream of the cooling water discharge (Outfall 001).
13. Instream Monitoring – Within 60 days of the effective date of the permit, the permittee shall submit to the DEQ-Valley Regional Office for approval a revised Thermal Mixing Zone Monitoring Plan. Monitoring of the thermal mixing zone shall be conducted twice per year in accordance with the approved monitoring plan. The monitoring shall be conducted as near to full plant operating conditions as reasonably possible and the monitoring results shall be presented as a temperature plot with three degree centigrade isotherms. Monitoring and reporting shall be conducted in accordance with the following schedule:

<u>Testing Period</u>	<u>Report Submittal Dates</u>
January 1 – March 31, 2016	June 30, 2016
June 1 – August 31, 2016	November 30, 2016
January 1 – March 31, 2017	June 30, 2017
June 1 – August 31, 2017	November 30, 2017
January 1 – March 31, 2018	June 30, 2018
June 1 – August 31, 2018	November 30, 2018
January 1 – March 31, 2019	June 30, 2019
June 1 – August 31, 2019	November 30, 2019
January 1 – March 31, 2020	June 30, 2020
June 1 – August 31, 2020	November 30, 2020

14. Water Quality Criteria Monitoring – The permittee shall monitor the effluent at Outfall 001 (Once-Through Condenser Cooling Water) for the substances noted in Attachment A of the permit and at Outfall 002 (West Treatment Pond) for the substances noted in Attachment B of this permit according to the indicated analysis number, quantification level, sample type and frequency. Monitoring for Outfall 001 shall be initiated after the start of the third year following the permit’s effective date. Using Attachment A as the reporting form, the data shall be submitted with the next permit reissuance application which is due at least 180 days prior to the expiration date of this permit. Monitoring for Outfall 002 shall be initiated during the first full calendar quarter following notification of the West Treatment Pond operating in its final configuration and notification that no further discharge of process water from dewatering activities is occurring from Outfall 002. Using Attachment B as the reporting form, the data shall be submitted with the next permit reissuance application which is due at least 180 days prior to the expiration date of this permit. Monitoring and analyses shall be conducted in accordance with 40 CFR Part 136 or alternative EPA approved methods. Methods other than those specified in Attachments A and B may be used with prior notification to and approval from DEQ. It is the responsibility of the permittee to ensure that proper QA/QC protocols are followed during the sample gathering and analytical procedures. DEQ will use these data for making specific permit decisions in the future. This permit may be modified or, alternatively, revoked and reissued to incorporate limits for any of the substances listed in Attachments A and B.
15. Treatment Works Closure Plan (Metals Cleaning Waste Treatment Basin, Sewage Treatment Plant, and West Treatment Pond) – If the permittee plans an expansion or upgrade to replace the existing treatment works, or if the facility is permanently closed, the permittee shall submit to the DEQ-Valley Regional Office a closure plan for the existing treatment works. The plan shall address the following information as a minimum: Verification of elimination of sources and/or alternate treatment scheme; treatment, removal and final disposition of residual wastewater and solids; removal/demolition/disposal of structures, equipment, piping and appurtenances; site grading, and erosion and sediment control; restoration of site vegetation; access control; fill materials; and proposed land use (post-closure) of the site. The plan should contain proposed dates for beginning and completion of the work. The plan must be approved by the DEQ prior to implementation. Once approved, the plan shall become an enforceable part of this permit and

closure shall be implemented in accordance with the approved plan. No later than 14 days following closure completion, the permittee shall submit to the DEQ-Valley Regional Office written notification of the closure completion date and a certification of closure in accordance with the approved plan.

16. Reopeners – This permit may be modified or, alternatively, revoked and reissued:
- a. If any approved waste load allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes waste load allocations, limits or conditions on the facility that are not consistent with the permit requirements; or
 - b. To include new or alternative nutrient limitations and/or monitoring requirements, should:
 - (1) The State Water Control Board adopt nutrient standards for the water body receiving the discharge, or
 - (2) A future water quality regulation or statute require new or alternative nutrient control; or
 - c. If any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act is more stringent than any requirements for sludge use or disposal in this permit, or controls a pollutant or practice not limited in this permit.
17. Notification Levels – The permittee shall notify the DEQ-Valley Regional Office as soon as they know or have reason to believe:
- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
 - (1) 100 µg/L;
 - (2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and 1 mg/L for antimony;
 - (3) Five times the maximum concentration value reported for that pollutant in the permit application; or
 - (4) The level established by the Board.
 - b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
 - (1) 500 µg/L;
 - (2) 1 mg/L for antimony;
 - (3) Ten times the maximum concentration value reported for that pollutant in the permit application; or
 - (4) The level established by the Board.
18. Ash Pond Closure Stormwater Management – Best management practices (BMPs), structural and/or non-structural, shall be utilized by the permittee to minimize the impact of ash pond closure activities on stormwater quality. Ash pond closure activities may include, but are not limited to, the process of ash movement for off-site disposal, ash loading and unloading, any activity associated with the storage of ash prior to transport off-site, and vehicle tracking associated with the movement of ash.

The facility shall maintain a Stormwater Pollution Prevention Plan (SWPPP) that includes a description of the BMPs being implemented and a regular schedule for preventive maintenance of all BMPs where appropriate. All structural BMPs identified in the SWPPP shall be maintained in effective operating condition and shall be inspected for structural integrity and operational efficiency once per week during ash pond closure activities. Results of the weekly inspections and actions needed and performed in response to the weekly inspections shall be maintained with the SWPPP.

19. Metal Cleaning Waste Treatment Basin Decanting/Dewatering – The permittee shall notify the DEQ- Valley Regional Office upon commencing operations to draw down the water elevation in the Metal Cleaning Waste Treatment Basin in preparation of basin closure. Water removed from the basin surface shall be released at a controlled rate not to exceed one foot of basin surface elevation per day to minimize the discharge of any solids. An effluent grab sample for Total Suspended Solids (TSS) shall be taken and analyzed daily once the draw down process commences and shall continue until the limits in Part I.A.9 become effective. Upon either (a) obtaining a TSS sample greater than or equal to 90 mg/L or a rolling 7-day average TSS concentration greater than or equal to 30 mg/L (b) altering the surface of the settled material through trenching, boring, or other mechanical means to facilitate dewatering, or (c) using an on-site treatment unit to ensure compliance with the TSS values in (a) above, the monitoring requirements and effluent limits in Part I.A.9 of this permit shall become effective and remain effective until Outfall 202 is retired. The permittee shall provide written notification to the DEQ-Valley Regional Office no later than 24 hours following meeting the first occurrence of any of the provisions (a) through (c) of this special condition.
20. The permittee shall notify the DEQ-Valley Regional Office in writing of the following milestones within 7 days of the milestone being met:
 - a. Date when Outfall 003 is retired;
 - b. Date when Outfall 004 is retired;
 - c. Date when the West Treatment Pond is put into service in its final configuration;
 - d. Date when the Stormwater Management Pond is routed to the lined West Treatment Pond;
 - e. Date when Outfall 007 is put into service;
 - f. Date when Outfall 008 is put into service;
 - g. Date with Outfall 009 is put into service;
 - h. Date when the Metal Cleaning Waste Treatment Basin is closed;
 - i. Date when Outfall 006 no longer receives process wastewater from dewatering activities;
 - j. Date when Outfall 002 no longer receives process wastewater from dewatering activities.
21. Cooling Water and Boiler Additives – The use of any chemical additives not identified in the application, except chlorine, without prior approval is prohibited under this permit. Prior approval shall be obtained from the DEQ before any changes are made to the chemical and/or nonchemical treatment technology employed in the cooling water and/or boiler systems. Requests for approval of the change shall be made in writing and shall include the following information:
 - a. Describe the chemical and/or nonchemical treatment to be employed and its purpose; if chemical additives are used, provide the information in Part I.G.21 b-g;
 - b. Provide the name and manufacturer of each additive used;
 - c. Provide a list of active ingredients and percentage of composition;
 - d. Give the proposed schedule and quantity of chemical usage, and provide either an engineering analysis, or a technical evaluation of the active ingredients, to determine the concentration in the discharge;
 - e. Attach available aquatic toxicity information for each additive proposed for use;
 - f. Attach any other information such as product or constituent degradation, fate, transport, synergies, bioavailability, etc., that will aid the board with the toxicity evaluation for the discharge; and
 - g. An evaluation of the anticipated effects of the chemical additives on wastewater treatment and effluent quality.
22. Cease Discharge Requirements – The permittee shall immediately cease the discharge upon becoming aware of an exceedance of an established effluent limitation and/or Whole Effluent Toxicity limitation at internal Outfalls 501, 502, 503, 504, or 505. The permittee shall promptly notify DEQ, in no case later than 24 hours, after the discovery of the exceedance. Should an exceedance occur, the permittee shall initiate a review of the treatment operations and data to identify the cause(s) of the exceedance and initiate appropriate corrective action(s). Resumption of the discharge shall not occur until such time as an evaluation report is provided to DEQ and written authorization to resume the discharge is granted by DEQ.

23. Coal Ash Pond Drawdown Rate – The drawdown rate any coal ash pond shall not exceed 6 inches/day to maintain the integrity of the dams, unless approved in writing by the Department of Conservation and Recreation Dam Safety Program.
24. North Ash Pond Notification – The permittee shall notify the DEQ-Valley Regional Office at least 72 hours prior to the planned commencement of the discharge to draw down the water elevation in the North Ash Pond in preparation of pond closure. A second notification to the DEQ Valley Regional Office shall be provided within 24 hours of initiating the discharge to draw down the water elevation in the North Ash Pond.
25. Polychlorinated Biphenyls (PCBs) Monitoring – The permittee shall monitor the effluent at Outfall 002 for Polychlorinated Biphenyls (PCBs). The permittee shall conduct the sampling and analysis in accordance with the requirements specified below. At a minimum:
 - a. Monitoring and analysis shall be conducted in accordance with the most current version of EPA Method 1668 or other equivalent methods capable of providing low-detection level, congener specific results. Any equivalent method shall be submitted to the DEQ-Valley Regional Office for review and approval prior to sampling and analysis. It is the responsibility of the permittee to ensure that proper QA/QC protocols are followed during the sample gathering and analytical procedures. The sampling protocol shall be submitted to the DEQ-Valley Regional Office for review and approval prior to the first sample collection.
 - b. The permittee shall collect two (2) samples prior to the permit expiration date. Samples shall be completed following notification of the West Treatment Pond operating in its final configuration and notification that no further discharge of process water from dewatering activities is occurring from Outfall 002.
 - c. Each effluent sample shall consist of a minimum 2 liter volume. The sample type, either a grab or automated composite, shall be at the discretion of the permittee.
 - d. The data shall be submitted to the DEQ-Valley Regional Office by the 10th day of the month following receipt of the results. The permittee shall submit the results electronically. The submittal shall include the unadjusted and appropriately qualified individual PCB congener analytical results. Additionally, laboratory and field QA/QC documentation and results shall be reported. Total PCBs are to be computed as the summation of the reported, quantified congeners.

H. STORMWATER MANAGEMENT CONDITIONS

1. General Stormwater Special Conditions

a. Sample Type

For all stormwater monitoring required in Part I.A or other applicable sections of this permit, a minimum of one grab sample shall be taken. Unless otherwise specified, all such samples shall be collected from the discharge resulting from a storm event that occurs at least 72 hours from the previously measurable storm event (a "measurable storm event" is defined as a storm event that results in an actual discharge from the site). The required 72-hour storm event interval is waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted. The grab sample shall be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first three hours of the discharge, and the permittee shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable. If stormwater discharges associated with industrial activity commingle with process or non-process water, then where practicable permittees must attempt to sample the stormwater discharge before it mixes with the non-stormwater discharge.

b. Recording of Results

For each measurement or sample taken pursuant to the storm event monitoring requirements of this permit, the permittee shall record and report with the Discharge Monitoring Reports (DMRs) the following information:

- (1) The date and duration (in hours) of the storm event(s) sampled;
- (2) The rainfall total (in inches) of the storm event which generated the sampled discharge; and
- (3) The duration between the storm event sampled and the end of the previous measurable storm event.

c. Sampling Waiver

When a permittee is unable to collect stormwater samples required in Part I.A or other applicable sections of this permit within a specified sampling period due to adverse climatic conditions, the permittee shall collect a substitute sample from a separate qualifying event in the next period and submit these data along with the data for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

d. Representative outfalls – substantially identical discharges

If the facility has two or more outfalls that discharge substantially identical effluents, based on similarities of the industrial activities, significant materials, size of drainage areas, and stormwater management practices occurring within the drainage areas of the outfalls, the permittee may conduct monitoring on the effluent of just one of the outfalls and report that the observations also apply to the substantially identical outfall(s). The substantially identical outfall monitoring provisions apply to quarterly visual monitoring, benchmark monitoring and impaired waters monitoring. The substantially identical outfall monitoring provisions are not available for numeric effluent limits monitoring.

The permittee shall include the following information in the SWPPP:

- (1) The locations of the outfalls;
- (2) Why the outfalls are expected to discharge substantially identical effluents, including evaluation of monitoring data, where available; and
- (3) Estimates of the size of the drainage area (in square feet) for each of the outfalls.

e. Quarterly Visual Examination of Stormwater Quality

- (1) The permittee must perform and document a quarterly visual examination of a stormwater discharge associated with industrial activity from each outfall, except discharges exempted below. The examination(s) must be made at least once in each of the following three-month periods: January through March, April through June, July through September, and October through December. The visual examination shall be made during normal working hours. If no storm event resulted in runoff from the facility during a monitoring quarter, the permittee is excused from visual monitoring for that quarter provided that documentation is included with the monitoring records indicating that no runoff occurred. The documentation must be signed and certified in accordance with Part II.K of this permit.
- (2) Visual examinations must be made of samples collected in accordance with Part I.H.1.a (Sample Type). The examination must document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples.
- (3) The visual examination reports must be maintained on-site with the Stormwater Pollution Prevention Plan (SWPPP). The report must include the outfall location, the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the stormwater discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution), and probable sources of any observed stormwater contamination.

f. Authorized Non-Stormwater Discharges

- (1) The following non-stormwater discharges are authorized by this permit:
 - (a) Discharges from fire fighting activities;
 - (b) Fire hydrant flushings;
 - (c) Potable water including water line flushings;
 - (d) Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids;
 - (e) Irrigation drainage;
 - (f) Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with the approved labeling;
 - (g) Pavement wash waters where no detergents are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed);
 - (h) Routine external building washdown which does not use detergents;
 - (i) Uncontaminated groundwater or spring water;
 - (j) Foundation or footing drains where flows are not contaminated with process materials;
 - (k) Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but NOT intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown or drains); and
 - (l) Raw river water.
- (2) All other non-stormwater discharges are not authorized and shall either be eliminated or covered under a separate VPDES permit.

g. Releases of Hazardous Substances or Oil in Excess of Reportable Quantities

The discharge of hazardous substances or oil in the stormwater discharge(s) from the facility shall be prevented or minimized in accordance with the SWPPP for the facility. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill. This permit does not relieve the permittee of the reporting requirements of 40 CFR 110, 40 CFR 117 and 40 CFR 302 or § 62.1-44.34:19 of the Code of Virginia. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117 or 40 CFR 302 occurs during a 24-hour period:

- (1) The permittee is required to notify the Department in accordance with the requirements of Part II.G as soon as he or she has knowledge of the discharge;
- (2) Where a release enters a municipal separate storm sewer system (MS4), the permittee shall also notify the owner or the MS4; and
- (3) The SWPPP required by this permit must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

h. Water Quality Protection

The discharges authorized by this permit shall be controlled as necessary to meet applicable water quality standards. DEQ expects that compliance with the conditions in this permit will control discharges as necessary to meet applicable water quality standards.

i. Corrective actions

- (1) Data exceeding benchmark concentration values, if applicable
 - (a) If the benchmark monitoring result exceeds the benchmark concentration value for that parameter, the permittee shall review the SWPPP and modify it as necessary to address any deficiencies that caused the exceedance. Revisions to the SWPPP shall be completed within 30 days after an exceedance is discovered. When control measures need to be modified or added (distinct from regular preventive maintenance of existing control measures described in Part I.H.2.c (Maintenance), implementation shall be completed before the next anticipated storm event if possible, but no later than 60 days after the exceedance is discovered, or as otherwise provided or approved by the DEQ-Valley Regional Office. In cases where construction is

necessary to implement control measures, the permittee shall include a schedule in the SWPPP that provides for the completion of the control measures as expeditiously as practicable, but no later than three years after the exceedance is discovered. Where a construction compliance schedule is included in the SWPPP, the plan shall include appropriate nonstructural and temporary controls to be implemented in the affected portion(s) of the facility prior to completion of the permanent control measure. Any control measure modifications shall be documented and dated, and retained with the SWPPP, along with the amount of time taken to modify the applicable control measure or implement additional control measures.

- (b) Natural background pollutant levels. If the concentration of a pollutant exceeds a benchmark concentration value, and the permittee determines that exceedance of the benchmark is attributable solely to the presence of that pollutant in the natural background, corrective action is not required provided that:
 - (i) The concentration of the benchmark monitoring result is less than or equal to the concentration of that pollutant in the natural background;
 - (ii) The permittee documents and maintains with the SWPPP the supporting rationale for concluding that benchmark exceedances are in fact attributable solely to natural background pollutant levels. The supporting rationale shall include any data previously collected by the facility or others (including literature studies) that describe the levels of natural background pollutants in the facility's stormwater discharges; and
 - (iii) The permittee notifies the DEQ-Valley Regional Office on the DMR that the benchmark exceedances are attributable solely to natural background pollutant levels. Natural background pollutants include those substances that are naturally occurring in soils or groundwater. Natural background pollutants do not include legacy pollutants from earlier activity on the facility's site, or pollutants in run-on from neighboring sources which are not naturally occurring.

(2) Corrective actions

The permittee shall take corrective action whenever:

- (a) Routine facility inspections, comprehensive site compliance evaluations, inspections by local, state or federal officials, or any other process, observation or event result in a determination that modifications to the stormwater control measures are necessary to meet the permit requirements; or
- (b) There is any exceedance of an effluent limitation (including coal pile runoff), or TMDL wasteload allocation; or
- (c) The DEQ-Valley Regional Office determines, or the permittee becomes aware, that the stormwater control measures are not stringent enough for the discharge to meet applicable water quality standards.

The permittee shall review the SWPPP and modify it as necessary to address any deficiencies. Revisions to the SWPPP shall be completed within 30 days following the discovery of the deficiency. When control measures need to be modified or added (distinct from regular preventive maintenance of existing control measures described in Part I.H.2.c (Maintenance)), implementation shall be completed before the next anticipated storm event if possible, but no later than 60 days after the deficiency is discovered, or as otherwise provided or approved by the DEQ-Valley Regional Office. In cases where construction is necessary to implement control measures, the permittee shall include a schedule in the SWPPP that provides for the completion of the control measures as expeditiously as practicable, but no later than three years after the deficiency is discovered. Where a construction compliance schedule is included in the SWPPP, the plan shall include appropriate nonstructural and/or temporary controls to be implemented in the affected portion(s) of the facility prior to completion of the permanent control measure. The amount of time taken to modify a control measure or implement additional control measures shall be documented in the SWPPP.

Any corrective actions taken shall be documented and retained with the SWPPP. Reports of corrective actions shall be signed in accordance with Part II.K.

(3) Follow-up reporting.

If at any time monitoring results indicate that discharges from the facility exceed an effluent limitation or a TMDL wasteload allocation, or the DEQ-Valley Regional Office determines that discharges from the facility are causing or contributing to an exceedance of a water quality standard, immediate steps shall be taken to eliminate the exceedances in accordance with the above Part I.H.1.i.(2) (Corrective actions). Within 30 calendar days of implementing the relevant corrective action(s) an exceedance report shall be submitted to the DEQ-Valley Regional Office. The following information shall be included in the report: permit number; facility name, address and location; receiving water; monitoring data from this event; an explanation of the situation; description of what has been done and the intended actions (should the corrective actions not yet be complete) to further reduce pollutants in the discharge; and an appropriate contact name and phone number.

j. Additional Requirements for Salt Storage

Storage piles of salt or piles containing salt used for deicing or other commercial or industrial purposes shall be enclosed or covered to prevent exposure to precipitation. The permittee shall implement appropriate measures (e.g., good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile. All salt storage piles shall be located on an impervious surface. All runoff from the pile, and/or runoff that comes in contact with salt, including under drain systems, shall be collected and contained within a bermed basin lined with concrete or other impermeable materials., or within an underground storage tank(s), or within an above ground storage tank(s), or disposed of through a sanitary sewer (with the permission of the treatment facility). A combination of any or all of these methods may be used. In no case shall salt contaminated stormwater be allowed to discharge directly to the ground or to state waters.

2. Stormwater Pollution Prevention Plan

A SWPPP for the facility was required to be developed and implemented under the previous permit. The existing SWPPP shall be reviewed and modified, as appropriate, to conform to the requirements of this section. Permittees shall implement the provisions of the SWPPP as a condition of this permit. The SWPPP requirements of this permit may be fulfilled, in part, by incorporating by reference other plans or documents such as a spill prevention control and countermeasure (SPCC) plan developed for the facility under Section 311 of the Clean Water Act, or best management practices (BMP) programs otherwise required for the facility, provided that the incorporated plan meets or exceeds the plan requirements of Part I.H.2.b (Contents of the Plan). All plans incorporated by reference into the SWPPP become enforceable under this permit. If a plan incorporated by reference does not contain all of the required elements of the SWPPP of Part I.H.2.b the permittee shall develop the missing SWPPP elements and include them in the required plan.

a. Deadlines for Plan Preparation and Compliance

(1) The facility shall review and update the existing plan as expeditiously as practicable, but no later than 90 days from the effective date of the permit. Verification of compliance shall be provided, in writing, within 10 days of the above deadline.

(2) Measures That Require Construction

In cases where construction is necessary to implement measures required by the plan, the plan shall contain a schedule that provides compliance with the plan as expeditiously as practicable, but no later than 3 years after the effective date of this permit. Where a construction compliance schedule is included in the plan, the schedule shall include appropriate nonstructural and/or temporary controls to be implemented in the affected portion(s) of the facility prior to completion of the permanent control measure.

b. Contents of the Plan

The contents of the SWPPP shall comply with the requirements listed below and those in Part I.H.3. The plan shall include, at a minimum, the following items:

(1) Pollution Prevention Team

The plan shall identify the staff individuals by name or title who comprise the facility's stormwater pollution prevention team. The pollution prevention team is responsible for assisting the facility or plant manager in developing, implementing, maintaining, revising, and ensuring compliance with the facility's SWPPP. Specific responsibilities of each staff individual on the team shall be identified and listed.

(2) Site Description

The SWPPP shall include the following:

(a) Activities at the Facility

A description of the nature of the industrial activities at the facility.

(b) General Location Map

A general location map (e.g., USGS quadrangle or other map) with enough detail to identify the location of the facility and the receiving waters within one mile of the facility.

(c) Site Map

A site map identifying the following:

- (i) The boundaries of the property and the size of the property (in acres);
- (ii) The location and extent of significant structures and impervious surfaces (roofs, paved areas and other impervious areas);
- (iii) Locations of all stormwater conveyances including ditches, pipes, swales, and inlets, and the directions of stormwater flow (use arrows to show which ways stormwater will flow);
- (iv) Locations of all existing structural and source control measures, including BMPs;
- (v) Locations of all surface water bodies, including wetlands;
- (vi) Locations of potential pollutant sources identified under Part I.H.2.b.(3) (Summary of potential pollutant sources);
- (vii) Locations where significant spills or leaks identified under Part I.H.2.b.(4) (Spills and leaks) have occurred;
- (viii) Locations of the following activities where such activities are exposed to precipitation: fueling stations; vehicle and equipment maintenance and cleaning areas; loading and unloading areas; locations used for the treatment, storage or disposal of wastes; liquid storage tanks; processing and storage areas; access roads, rail cars and tracks; transfer areas for substances in bulk; and machinery;
- (ix) Locations of stormwater outfalls and an approximate outline of the area draining to each outfall, and location of municipal storm sewer systems, if the stormwater from the facility discharges to them;
- (x) Location and description of all non-stormwater discharges;
- (xi) Location of any storage piles containing salt used for deicing or other commercial or industrial purposes; and
- (xii) Locations and sources of runoff to the site from adjacent property where the runoff contains significant quantities of pollutants; and
- (xiii) Locations of all stormwater monitoring points.

(d) Receiving Waters and Wetlands

The name of all surface waters receiving discharges from the site, including intermittent streams, dry sloughs, and arroyos. Provide a description of wetland sites that may receive discharges from the facility. If the facility discharges through a municipal separate storm sewer system (MS4), identify the MS4 operator, and the receiving water to which the MS4 discharges.

(3) Summary of Potential Pollutant Sources

The plan shall identify each separate area at the facility where industrial materials or activities are exposed to stormwater. Industrial materials or activities include, but are not limited to: material handling equipment or activities, industrial machinery, raw materials, industrial production and processes, intermediate products, byproducts, final products, and waste products. Material handling activities include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. For each separate area identified, the description shall include:

(a) Activities in the area

A list of the industrial activities exposed to stormwater (e.g., material storage, equipment fueling and cleaning, cutting steel beams);

(b) Pollutants

A list of the pollutant(s) or pollutant constituents (e.g., crankcase oil-zinc, sulfuric acid, cleaning solvents, etc.) associated with each industrial activity. The pollutant list shall include all significant materials handled, treated, stored or disposed that have been exposed to stormwater in the three years prior to the date this SWPPP was prepared or amended. The list shall include any hazardous substances or oil at the facility.

(4) Spills and Leaks

The SWPPP shall clearly identify areas where potential spills and leaks that can contribute pollutants to stormwater discharges can occur and their corresponding outfalls. The plan shall include a list of significant spills and leaks of toxic or hazardous pollutants that actually occurred at exposed areas, or that drained to a stormwater conveyance during the three-year period prior to the date this SWPPP was prepared or amended. The list shall be updated if significant spills or leaks occur in exposed areas of the facility during the term of the permit. Significant spills and leaks include, but are not limited to, releases of oil or hazardous substances in excess of reportable quantities.

(5) Sampling Data

The plan shall include a summary of existing stormwater discharge sampling data taken at the facility. The summary shall include, at a minimum, any data collected during the previous permit term.

(6) Stormwater Controls

(a) Control measures shall be implemented for all the areas identified in Part I.H.2 b.(3)

(Summary of Potential Pollutant Sources) to prevent or control pollutants in stormwater discharges from the facility. Regulated stormwater discharges from the facility include stormwater runoff that commingles with stormwater discharges associated with industrial activity at the facility. The SWPPP shall describe the type, location and implementation of all control measures for each area where industrial materials or activities are exposed to stormwater. Selection of control measures shall take into consideration:

- (i) That preventing stormwater from coming into contact with polluting materials is generally more effective, and less costly, than trying to remove pollutants from stormwater;
- (ii) Control measures generally shall be used in combination with each other for most effective water quality protection;
- (iii) Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures;
- (iv) That minimizing impervious areas at the facility can reduce runoff and improve groundwater recharge and stream base flows in local streams (however, care must be taken to avoid ground water contamination);
- (v) Flow attenuation by use of open vegetated swales and natural depressions can reduce in-stream impacts of erosive flows;
- (vi) Conservation or restoration of riparian buffers will help protect streams from stormwater runoff and improve water quality; and
- (vii) Treatment interceptors (e.g., swirl separators and sand filters) may be appropriate in some instances to minimize the discharge of pollutants.

(b) Nonnumeric technology-based effluent limits.

The permittee shall implement the following types of control measures to prevent and control pollutants in the stormwater discharges from the facility, unless it can be demonstrated and documented that such controls are not relevant to the discharges (e.g., there are no storage piles containing salt).

(i) Good Housekeeping

The permittee shall keep clean all exposed areas of the facility that are potential sources of pollutants to stormwater discharges. Typical problem areas include areas around trash containers, storage areas, loading docks, and vehicle fueling and maintenance areas. The plan shall include a schedule for regular pickup and disposal of waste materials, along with routine inspections for leaks and conditions of drums, tanks and containers.

(ii) Eliminating and Minimizing Exposure

To the extent practicable, manufacturing, processing and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) shall be located inside, or protected by a storm-resistant covering to prevent exposure to rain, snow, snowmelt, and runoff. Note: Eliminating exposure at all industrial areas may make the facility eligible for the "Conditional Exclusion for No Exposure" provision of 9VAC25-31-120.E, thereby eliminating the need to have a permit.

(iii) Preventive Maintenance

The permittee shall have a preventive maintenance program that includes regular inspection, testing, maintenance and repairing of all industrial equipment and systems to avoid situations that could result in leaks, spills and other releases of pollutants in stormwater discharge from the facility. This program is in addition to the specific control measure maintenance required under Part I.H 2.c (Maintenance).

(iv) Spill Prevention and Response Procedures

The plan shall describe the procedures that will be followed for preventing and responding to spills and leaks, including:

- (A) Preventive measures, such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;
- (B) Response procedures, including notification of appropriate facility personnel, emergency agencies, and regulatory agencies, and procedures for stopping, containing and cleaning up spills. Measures for cleaning up hazardous material spills or leaks shall be consistent with applicable RCRA regulations at 40 CFR Part 264 and 40 CFR Part 265. Employees who may cause, detect or respond to a spill or leak shall be trained in these procedures and have necessary spill response equipment available. If possible, one of these individuals shall be a member of the Pollution Prevention Team;
- (C) Procedures for plainly labeling containers (e.g., "used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur; and
- (D) Contact information for individuals and agencies that must be notified in the event of a spill shall be included in the SWPPP, and in other locations where it will be readily available.

(v) Routine Facility Inspections

Facility personnel who possess the knowledge and skills to assess conditions and activities that could impact stormwater quality at the facility, and who can also evaluate the effectiveness of control measures shall regularly inspect all areas of the facility where industrial materials or activities are exposed to stormwater. These inspections are in addition to, or as part of, the comprehensive site evaluation required under Part I.H.2.d. At least one member of the Pollution Prevention Team shall participate in the routine facility inspections.

The inspection frequency shall be specified in the plan based upon a consideration of the level of industrial activity at the facility, but shall be a minimum of quarterly unless more

frequent intervals are specified elsewhere in the permit or written approval is received from the Department for less frequent intervals. At least once each calendar year, the routine facility inspection must be conducted during a period when a stormwater discharge is occurring.

Any deficiencies in the implementation of the SWPPP that are found shall be corrected as soon as practicable, but not later than within 30 days of the inspection, unless permission for a later date is granted in writing by the Director. The results of the inspections shall be documented in the SWPPP, and shall include at a minimum:

- (A) The inspection date and time;
- (B) The name and signature of the inspector(s);
- (C) Weather information and a description of any discharges occurring at the time of the inspection;
- (D) Any previously unidentified discharges of pollutants from the site;
- (E) Any control measures needing maintenance or repairs;
- (F) Any failed control measures that need replacement;
- (G) Any incidents of noncompliance observed; and
- (H) Any additional control measures needed to comply with the permit requirements.

(vi) Employee Training

The permittee shall implement a stormwater employee training program for the facility. The SWPPP shall include a schedule for all types of necessary training, and shall document all training sessions and the employees who received the training. Training shall be provided for all employees who work in areas where industrial materials or activities are exposed to stormwater, and for employees who are responsible for implementing activities identified in the SWPPP (e.g., inspectors, maintenance personnel, etc.). The training shall cover the components and goals of the SWPPP, and include such topics as spill response, good housekeeping, material management practices, control measure operation and maintenance, etc. The SWPPP shall include a summary of any training performed.

c. Maintenance

The SWPPP shall include a description of procedures and a regular schedule for preventive maintenance of all control measures, and shall include a description of the back-up practices that are in place should a runoff event occur while a control measure is off-line. The effectiveness of nonstructural control measure shall also be maintained by appropriate means (e.g., spill response supplies available and personnel trained, etc.).

All control measures identified in the SWPPP shall be maintained in effective operating condition and shall be observed at least annually during active operation (i.e., during a stormwater runoff event) to ensure that they are functioning correctly. Where discharge locations are inaccessible, nearby downstream locations shall be observed. The observations shall be documented in the SWPPP. If site inspections required by Part I.H.2.b.(6)(b)(v) (Routine Facility Inspections) or Part I.H.2.d (Comprehensive Site Compliance Evaluation) identify control measures that are not operating effectively, repairs or maintenance shall be performed before the next anticipated storm event. If maintenance prior to the next anticipated storm event is not possible, maintenance shall be scheduled and accomplished as soon as practicable. In the interim, back-up measures shall be employed and documented in the SWPPP until repairs or maintenance is complete. Documentation shall be kept with the SWPPP of maintenance and repairs of control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair or replacement, date(s) for repairs, date(s) that the control measure(s) returned to full function, and the justification for any extended maintenance or repair schedules.

d. Comprehensive Site Compliance Evaluation

The permittee shall conduct comprehensive site compliance evaluations at least once each calendar year. The evaluations shall be done by qualified personnel who possess the knowledge and skills to assess conditions and activities that could impact stormwater quality at the facility, and who can also evaluate the effectiveness of control measures. The personnel conducting the evaluations may be either facility employees or outside personnel hired by the facility.

(1) Scope of the Compliance Evaluation

Evaluations shall include all areas where industrial materials or activities are exposed to stormwater, as identified in Part I.H.2.b.(3) (Summary of potential pollutant sources). The personnel shall evaluate:

- (a) Industrial materials, residue or trash that may have or could come into contact with stormwater;
- (b) Leaks or spills from industrial equipment, drums, barrels, tanks or other containers that have occurred within the past three years;
- (c) Off-site tracking of industrial or waste materials or sediment where vehicles enter or exit the site;
- (d) Tracking or blowing of raw, final, or waste materials from areas of no exposure to exposed areas;
- (e) Evidence of, or the potential for, pollutants entering the drainage system;
- (f) Evidence of pollutants discharging to surface waters at all facility outfalls, and the condition of and around the outfall, including flow dissipation measures to prevent scouring;
- (g) Review of stormwater related training performed, inspections completed, maintenance performed, quarterly visual examinations, and effective operation of control measures, including BMPs;
- (h) Results of both visual and any analytical monitoring done during the past year shall be taken into consideration during the evaluation.

- (2) Based on the results of the evaluation, the SWPPP shall be modified as necessary (e.g., show additional controls on the map required by Part I.H.2.b.(2)(c); revise the description of controls required by Part I.H.2.b.(6) to include additional or modified control measures designed to correct problems identified). Revisions to the SWPPP shall be completed within 30 days following the evaluation, unless permission for a later date is granted in writing by the Director. If existing control measures need to be modified or if additional control measures are necessary, implementation shall be completed before the next anticipated storm event, if practicable, but not more than 60 days after completion of the comprehensive site evaluation, unless permission for a later date is granted in writing by the Department;

(3) Compliance Evaluation Report

A report shall be written summarizing the scope of the evaluation, name(s) of personnel making the evaluation, the date of the evaluation, and all observations relating to the implementation of the SWPPP, including elements stipulated in Part I.H.2 d.(1) (a) through (h) above. Observations shall include such things as: the location(s) of discharges of pollutants from the site; location(s) of previously unidentified sources of pollutants; location(s) of control measures that need to be maintained or repaired; location(s) of failed control measures that need replacement; and location(s) where additional control measures are needed. The report shall identify any incidents of noncompliance that were observed. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and this permit. The report shall be signed in accordance with Part II.K and maintained with the SWPPP.

- (4) Where compliance evaluation schedules overlap with routine inspections required under Part I H.2.b.(6)(b)(v) (Routine facility inspections), the annual compliance evaluation may be used as one of the routine inspections.

e. Signature and Plan Review

(1) Signature and location

The SWPPP, including revisions to the SWPPP to document any corrective actions taken as required by Part I.H.1.(i) (Corrective Actions), shall be signed in accordance with Part II.K, dated, and retained on-site at the facility covered by this permit in accordance with Part II.B.2. All other changes to the SWPPP, and other permit compliance documentation, shall be signed and dated by the person preparing the change or documentation.

(2) Availability

The permittee shall retain a copy of the current SWPPP required by this permit at the facility, and it shall be immediately available to the Department, EPA or the operator of an MS4 receiving discharges from the site at the time of an onsite inspection or upon request.

(3) Required Modifications.

The permittee shall modify the SWPPP whenever necessary to address any corrective actions required by Part I.H.1.i.(1)(Data exceeding benchmark concentration values) or Part I.H.1.i (Corrective actions). Changes to the SWPPP shall be made in accordance with the corrective action deadlines in Part I.H.1.(i)(1) and Part I.H.1(i), and shall be signed and dated in accordance with Part II.K (Signatory Requirements).

The Director may notify the permittee at any time that the SWPPP, control measures, or other components of the facility's stormwater program do not meet one or more of the requirements of this permit. The notification shall identify specific provisions of the permit that are not being met, and may include required modifications to the stormwater program, additional monitoring requirements, and special reporting requirements. The permittee shall make any required changes to the SWPPP within 60 days of receipt of such notification, unless permission for a later date is granted in writing by the Director, and shall submit a written certification to the Director that the requested changes have been made.

f. Maintaining an Updated SWPPP

(1) The permittee shall review and amend the SWPPP as appropriate whenever:

- (a) There is construction or a change in design, operation, or maintenance at the facility that has a significant effect on the discharge, or the potential for the discharge, of pollutants from the facility;
- (b) Routine inspections or compliance evaluations determine that there are deficiencies in the control measures, including BMPs;
- (c) Inspections by local, state, or federal officials determine that modifications to the SWPPP are necessary;
- (d) There is a spill, leak or other release at the facility; or
- (e) There is an unauthorized discharge from the facility.

(2) SWPPP modifications shall be made within 30 calendar days after discovery, observation or event requiring a SWPPP modification. Implementation of new or modified control measures (distinct from regular preventive maintenance of existing control measures described in Part I.H.2.b.(6)(b)(iii) (Preventative Maintenance) shall be initiated before the next storm event if possible, but no later than 60 days after discovery, or as otherwise provided or approved by the Director. The amount of time taken to modify a control measure or implement additional control measures shall be documented in the SWPPP.

(3) If the SWPPP modification is based on a release or unauthorized discharge, include a description and date of the release, the circumstances leading to the release, actions taken in response to the release, and measures to prevent the recurrence of such releases. Unauthorized releases and discharges are subject to the reporting requirements of Part II.G of this permit.

3. Sector-Specific SWPPP Requirements

In addition to the requirements of Part I.H.2, the SWPPP shall include, at a minimum, the following items:

a. Site Description

Site Map. The site map shall identify the locations of any of the following activities or sources that may be exposed to precipitation or surface runoff: storage tanks, scrap yards, general refuse areas; short and long term storage of general materials (including, but not limited to: supplies, construction materials, plant equipment, oils, fuels, used and unused solvents, cleaning materials, paint, water treatment chemicals, fertilizer, and pesticides); landfills; construction sites; and stock pile areas (such as coal or limestone piles).

b. Stormwater Controls

(1) Good Housekeeping Measures

- (a) Fugitive Dust Emissions. The permittee shall describe and implement measures that prevent or minimize fugitive dust emissions from coal and ash handling areas. The permittee shall minimize off-site tracking of coal dust and ash. Control measures to consider include installing specially designed tires, or washing vehicles in a designated area before they leave the site, and controlling the wash water.
- (b) Delivery Vehicles. The plan shall describe measures that prevent or minimize contamination of stormwater runoff from delivery vehicles arriving on the plant site. At a minimum the permittee shall consider the following:
 - (i) Develop procedures for the inspection of delivery vehicles arriving on the plant site, and ensure overall integrity of the body or container; and
 - (ii) Develop procedures to deal with leakage/spillage from vehicles or containers.
- (c) Fuel Oil Unloading Areas. The plan shall describe measures that prevent or minimize contamination of precipitation or surface runoff from fuel oil unloading areas. At a minimum the permittee shall consider using the following measures, or an equivalent:
 - (i) Use of containment curbs in unloading areas;
 - (ii) During deliveries, having station personnel familiar with spill prevention and response procedures present to ensure that any leaks and spills are immediately contained and cleaned up; and
 - (iii) Use of spill and overflow protection (e.g., drip pans, drip diapers, or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).
- (d) Chemical Loading/Unloading Areas. The permittee shall describe and implement measures that prevent or minimize the contamination of precipitation or surface runoff from chemical loading and unloading areas. At a minimum the permittee shall consider using the following measures (or their equivalents):
 - (i) Use of containment curbs at chemical loading and unloading areas to contain spills;
 - (ii) During deliveries, having station personnel familiar with spill prevention and response procedures present to ensure that any leaks or spills are immediately contained and cleaned up; and
 - (iii) Covering chemical loading and unloading areas, and storing chemicals indoors.
- (e) Miscellaneous Loading and Unloading Areas. The permittee shall describe and implement measures that prevent or minimize the contamination of stormwater runoff from loading and unloading areas. The permittee shall consider the following, at a minimum (or their equivalents):
 - (i) Covering the loading area;
 - (ii) Grading, berming, or curbing around the loading area to divert run-on; or
 - (iii) Locating the loading and unloading equipment and vehicles so that leaks are contained in existing containment and flow diversion systems.

- (f) Liquid Storage Tanks. The permittee shall describe and implement measures that prevent or minimize contamination of stormwater runoff from aboveground liquid storage tanks. At a minimum the permittee shall consider employing the following measures (or their equivalents):
 - (i) Use of protective guards around tanks;
 - (ii) Use of containment curbs;
 - (ii) Use of spill and overflow protection; and
 - (iv) Use of dry cleanup methods.
 - (g) Large Bulk Fuel Storage Tanks. The permittee shall describe and implement measures that prevent or minimize contamination of stormwater runoff from large bulk fuel storage tanks. At a minimum the permittee shall consider employing containment berms (or its equivalent). The permittee shall also comply with applicable state and federal laws, including Spill Prevention Control and Countermeasures (SPCC).
 - (h) Spill Reduction Measures. The permittee shall describe and implement measures to reduce the potential for an oil or chemical spill, or reference the appropriate section of their SPCC plan. The structural integrity of all aboveground tanks, pipelines, pumps and other related equipment shall be visually inspected as part of the routine facility inspection. All repairs deemed necessary based on the findings of the inspections shall be completed immediately to reduce the incidence of spills and leaks occurring from such faulty equipment.
 - (i) Oil bearing Equipment in Switchyards. The permittee shall describe and implement measures to prevent or minimize contamination of surface runoff from oil bearing equipment in switchyard areas. The permittee shall consider the use of level grades and gravel surfaces to retard flows and limit the spread of spills, and the collection of stormwater runoff in perimeter ditches.
 - (j) Residue Hauling Vehicles. All residue hauling vehicles shall be inspected for proper covering over the load, adequate gate sealing and overall integrity of the container body. Vehicles without load coverings or adequate gate sealing, or with leaking containers or beds shall be repaired as soon as practicable.
 - (k) Ash Loading Areas. The permittee shall describe and implement procedures to reduce or control the tracking of ash and residue from ash loading areas. Where practicable, clear the ash building floor and immediately adjacent roadways of spillage, debris and excess water before departure of each loaded vehicle.
 - (l) Areas Adjacent to Disposal Ponds or Landfills. The permittee shall describe and implement measures that prevent or minimize contamination of stormwater runoff from areas adjacent to disposal ponds or landfills. The permittee shall develop procedures to:
 - (i) Reduce ash residue which may be tracked on to access roads traveled by residue trucks or residue handling vehicles; and
 - (ii) Reduce ash residue on exit roads leading into and out of residue handling areas.
 - (m) Landfills, Scrapyards, Surface Impoundments, Open Dumps, General Refuse Sites. The plan shall address and include appropriate control measures to minimize the potential for contamination of runoff from landfills, scrapyards, surface impoundments, open dumps and general refuse sites.
- (2) Comprehensive Site Compliance Evaluation. As part of the evaluation, qualified facility personnel shall inspect the following areas on a monthly basis: coal handling areas, loading and unloading areas, switchyards, fueling areas, bulk storage areas, ash handling areas, areas adjacent to disposal ponds and landfills, maintenance areas, liquid storage tanks, and long term and short term material storage areas.

DEPARTMENT OF ENVIRONMENTAL QUALITY
 WATER QUALITY MONITORING

OUTFALL NO. 001

All analyses shall be in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

A listing of Virginia Environmental Laboratory Accreditation Program (VELAP) certified and/or accredited laboratories can be found at the following website:

<http://www.dgs.state.va.us/DivisionofConsolidatedLaboratoryServices/Services/EnvironmentalLaboratoryCertification/tabid/1059/Default.aspx>

Please be advised that additional water quality analyses may be necessary and/or required for permitting purposes.

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY
MISCELLANEOUS						
18496-25-8	Sulfide, dissolved ⁽⁴⁾	(3)	100		G or C	1/5 YR

 Name of Principal Executive Officer or Authorized Agent/Title

 Signature of Principal Executive Officer or Authorized Agent/Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. Sec. 1001 and 33 U.S.C. Sec. 1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)

Footnotes to Water Quality Monitoring Attachment A

- (1) Quantification level (QL) means the minimum levels, concentrations, or quantities of a target variable (e.g. target analyte) that can be reported with a specified degree of confidence in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

The quantification levels indicated for the metals are actually Specific Target Values developed for this permit. The Specific Target Value is the approximate value that may initiate a wasteload allocation analysis. Target values are not wasteload allocations or effluent limitations. The Specific Target Values are subject to change based on additional information such as hardness data, receiving stream flow, and design flows.

Units for the quantification level are micrograms/liter unless otherwise specified.

Quality control and quality assurance information (i.e. laboratory certificates of analysis) shall be submitted to document that the required quantification level has been attained.

- (2) Sample Type

G = Grab = An individual sample collected in less than 15 minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported. For grab metals samples, the individual samples shall be filtered and preserved immediately upon collection.

C = Composite = A 4-hour composite unless otherwise specified. The composite shall be a combination of individual samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period.

- (3) A specific analytical method is not specified; however, an appropriate method to meet the QL shall be selected from (i) any approved method presented in 40 CFR Part 136 or (ii) any alternative EPA approved method, provided that all analyses are in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.
- (4) Dissolved sulfide may be measured by the total sulfide analysis. The total sulfide analytical test QL shall be less than or equal to the dissolved sulfide method QL listed above. If the result of the total sulfide analysis is less than the analytical test QL, dissolved sulfide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

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All analyses shall be in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

A listing of Virginia Environmental Laboratory Accreditation Program (VELAP) certified and/or accredited laboratories can be found at the following website:

<http://www.dgs.state.va.us/DivisionofConsolidatedLaboratoryServices/Services/EnvironmentalLaboratoryCertification/tabid/1059/Default.aspx>

Please be advised that additional water quality analyses may be necessary and/or required for permitting purposes.

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY
METALS						
7440-36-0	Antimony, dissolved	(3)	8,400		G or C	1/5 YR
7440-38-2	Arsenic, dissolved	(3)	550		G or C	1/5 YR
7440-43-9	Cadmium, dissolved	(3)	3.9		G or C	1/5 YR
16065-83-1	Chromium III, dissolved ⁽⁶⁾	(3)	640		G or C	1/5 YR
18540-29-9	Chromium VI, dissolved ⁽⁶⁾	(3)	26		G or C	1/5 YR
7440-50-8	Copper, dissolved	(3)	14		G or C	1/5 YR
7439-92-1	Lead, dissolved	(3)	110		G or C	1/5 YR
7439-97-6	Mercury, dissolved	(3)	2.3		G or C	1/5 YR
7440-02-0	Nickel, dissolved	(3)	200		G or C	1/5 YR
7782-49-2	Selenium, total recoverable	(3)	32		G or C	1/5 YR
7440-22-4	Silver, dissolved	(3)	2.6		G or C	1/5 YR
7440-28-0	Thallium, dissolved	(3)	(4)		G or C	1/5 YR
7440-66-6	Zinc, dissolved	(3)	130		G or C	1/5 YR
PESTICIDES/PCBS						
309-00-2	Aldrin	608/625	0.05		G or C	1/5 YR
57-74-9	Chlordane	608/625	0.2		G or C	1/5 YR
2921-88-2	Chlorpyrifos (synonym = Dursban)	622	(4)		G or C	1/5 YR
72-54-8	DDD	608/625	0.1		G or C	1/5 YR
72-55-9	DDE	608/625	0.1		G or C	1/5 YR
50-29-3	DDT	608/625	0.1		G or C	1/5 YR
8065-48-3	Demeton (synonym = Dementon-O,S)	622	(4)		G or C	1/5 YR
333-41-5	Diazinon	622	(4)		G or C	1/5 YR
60-57-1	Dieldrin	608/625	0.1		G or C	1/5 YR
959-98-8	Alpha-Endosulfan (synonym = Endosulfan I)	608/625	0.1		G or C	1/5 YR
33213-65-9	Beta-Endosulfan (synonym = Endosulfan II)	608/625	0.1		G or C	1/5 YR
1031-07-8	Endosulfan Sulfate	608/625	0.1		G or C	1/5 YR

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CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY
72-20-8	Endrin	608/625	0.1		G or C	1/5 YR
7421-93-4	Endrin Aldehyde	608/625	(4)		G or C	1/5 YR
86-50-0	Guthion (synonym = Azinphos Methyl)	622	(4)		G or C	1/5 YR
76-44-8	Heptachlor	608/625	0.05		G or C	1/5 YR
1024-57-3	Heptachlor Epoxide	608/625	(4)		G or C	1/5 YR
319-84-6	Hexachlorocyclohexane Alpha-BHC	608/625	(4)		G or C	1/5 YR
319-85-7	Hexachlorocyclohexane Beta-BHC	608/625	(4)		G or C	1/5 YR
58-89-9	Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	608/625	(4)		G or C	1/5 YR
143-50-0	Kepone	8081 Extended/ 8270C/8270D	(4)		G or C	1/5 YR
121-75-5	Malathion	614	(4)		G or C	1/5 YR
72-43-5	Methoxychlor	608.2	(4)		G or C	1/5 YR
2385-85-5	Mirex	8081 Extended/ 8270C/8270D	(4)		G or C	1/5 YR
56-38-2	Parathion (synonym = Parathion Ethyl)	614	(4)		G or C	1/5 YR
1336-36-3	PCB, total	608/625	7.0		G or C	1/5 YR
8001-35-2	Toxaphene	608/625	5.0		G or C	1/5 YR
BASE NEUTRAL EXTRACTABLES						
83-32-9	Acenaphthene	610/625	10.0		G or C	1/5 YR
120-12-7	Anthracene	610/625	10.0		G or C	1/5 YR
92-87-5	Benzidine	625	(4)		G or C	1/5 YR
56-55-3	Benzo (a) anthracene	610/625	10.0		G or C	1/5 YR
205-99-2	Benzo (b) fluoranthene	610/625	10.0		G or C	1/5 YR
207-08-9	Benzo (k) fluoranthene	610/625	10.0		G or C	1/5 YR
50-32-8	Benzo (a) pyrene	610/625	10.0		G or C	1/5 YR
111-44-4	Bis 2-Chloroethyl Ether	625	(4)		G or C	1/5 YR
108-60-1	Bis 2-Chloroisopropyl Ether	625	(4)		G or C	1/5 YR
117-81-7	Bis-2-Ethylhexyl Phthalate (synonym = Di-2-Ethylhexyl Phthalate)	625	10.0		G or C	1/5 YR
85-68-7	Butyl benzyl phthalate	625	10.0		G or C	1/5 YR
91-58-7	2-Chloronaphthalene	625	(4)		G or C	1/5 YR
218-01-9	Chrysene	610/625	10.0		G or C	1/5 YR
53-70-3	Dibenz(a,h)anthracene	610/625	20.0		G or C	1/5 YR
95-50-1	1,2-Dichlorobenzene	602/624	10.0		G or C	1/5 YR
541-73-1	1,3-Dichlorobenzene	602/624	10.0		G or C	1/5 YR

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106-46-7	1,4-Dichlorobenzene	602/624	10.0		G or C	1/5 YR
91-94-1	3,3-Dichlorobenzidine	625	(4)		G or C	1/5 YR
84-66-2	Diethyl phthalate	625	10.0		G or C	1/5 YR
131-11-3	Dimethyl phthalate	625	(4)		G or C	1/5 YR
84-74-2	Di-n-butyl Phthalate (synonym = Dibutyl Phthalate)	625	10.0		G or C	1/5 YR
121-14-2	2,4-Dinitrotoluene	625	10.0		G or C	1/5 YR
122-66-7	1,2-Diphenylhydrazine	625/ 8270C/8270D	(4)		G or C	1/5 YR
206-44-0	Fluoranthene	610/625	10.0		G or C	1/5 YR
86-73-7	Fluorene	610/625	10.0		G or C	1/5 YR
118-74-1	Hexachlorobenzene	625	(4)		G or C	1/5 YR
87-68-3	Hexachlorobutadiene	625	(4)		G or C	1/5 YR
77-47-4	Hexachlorocyclopentadiene	625	(4)		G or C	1/5 YR
67-72-1	Hexachloroethane	625	(4)		G or C	1/5 YR
193-39-5	Indeno(1,2,3-cd)pyrene	610/625	20.0		G or C	1/5 YR
78-59-1	Isophorone	625	10.0		G or C	1/5 YR
98-95-3	Nitrobenzene	625	10.0		G or C	1/5 YR
62-75-9	N-Nitrosodimethylamine	625	(4)		G or C	1/5 YR
621-64-7	N-Nitrosodi-n-propylamine	625	(4)		G or C	1/5 YR
86-30-6	N-Nitrosodiphenylamine	625	(4)		G or C	1/5 YR
129-00-0	Pyrene	610/625	10.0		G or C	1/5 YR
120-82-1	1,2,4-Trichlorobenzene	625	10.0		G or C	1/5 YR
VOLATILES						
107-02-8	Acrolein	624	(4)		G	1/5 YR
107-13-1	Acrylonitrile	624	(4)		G	1/5 YR
71-43-2	Benzene	602/624	10.0		G	1/5 YR
75-25-2	Bromoform	624	10.0		G	1/5 YR
56-23-5	Carbon Tetrachloride	624	10.0		G	1/5 YR
108-90-7	Chlorobenzene (synonym = Monochlorobenzene)	602/624	50.0		G	1/5 YR
124-48-1	Chlorodibromomethane	624	10.0		G	1/5 YR
67-66-3	Chloroform	624	10.0		G	1/5 YR
75-27-4	Dichlorobromomethane	624	10.0		G	1/5 YR
107-06-2	1,2-Dichloroethane	624	10.0		G	1/5 YR

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CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY
75-35-4	1,1-Dichloroethylene	624	10.0		G	1/5 YR
156-60-5	1,2-trans-dichloroethylene	624	(4)		G	1/5 YR
78-87-5	1,2-Dichloropropane	624	(4)		G	1/5 YR
542-75-6	1,3-Dichloropropene	624	(4)		G	1/5 YR
100-41-4	Ethylbenzene	602/624	10.0		G	1/5 YR
74-83-9	Methyl Bromide (synonym = Bromomethane)	624	(4)		G	1/5 YR
75-09-2	Methylene Chloride (synonym = Dichloromethane)	624	20.0		G	1/5 YR
79-34-5	1,1,2,2-Tetrachloroethane	624	(4)		G	1/5 YR
127-18-4	Tetrachloroethylene (synonym = Tetrachloroethene)	624	10.0		G	1/5 YR
10-88-3	Toluene	602/624	10.0		G	1/5 YR
79-00-5	1,1,2-Trichloroethane	624	(4)		G	1/5 YR
79-01-6	Trichloroethylene (synonym = Trichloroethene)	624	10.0		G	1/5 YR
75-01-4	Vinyl Chloride	624	10.0		G	1/5 YR
ACID EXTRACTABLES						
95-57-8	2-Chlorophenol	625	10.0		G or C	1/5 YR
120-83-2	2,4 Dichlorophenol	625	10.0		G or C	1/5 YR
105-67-9	2,4 Dimethylphenol	625	10.0		G or C	1/5 YR
51-28-5	2,4-Dinitrophenol	625	(4)		G or C	1/5 YR
534-52-1	2-Methyl-4,6-Dinitrophenol	625	(4)		G or C	1/5 YR
104-40-51	Nonylphenol	ASTM D 7065-06	(4)		G or C	1/5 YR
87-86-5	Pentachlorophenol	625	50.0		G or C	1/5 YR
108-95-2	Phenol	625	10.0		G or C	1/5 YR
88-06-2	2,4,6-Trichlorophenol	625	10.0		G or C	1/5 YR
MISCELLANEOUS						
776-41-7	Ammonia as NH3-N	350.1	200		G or C	1/5 YR
16887-00-6	Chloride	(3)	(4)		G or C	1/5 YR
7782-50-5	Chlorine, Total Residual	(3)	100		G	1/5 YR
57-12-5	Cyanide, Free ⁽⁷⁾	ASTM 4282-02	10.0		G	1/5 YR
N/A	E. coli / Enterococcus (N/CML)	(3)	(4)		G	1/5 YR
18496-25-8	Sulfide, dissolved ⁽⁸⁾	(3)	100		G or C	1/5 YR
60-10-5	Tributyltin	(5)	(4)		G or C	1/5 YR

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CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY
471-34-1	Hardness (mg/L as CaCO ₃)	(3)	(4)		G or C	1/5 YR

 Name of Principal Executive Officer or Authorized Agent/Title

 Signature of Principal Executive Officer or Authorized Agent/Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. Sec. 1001 and 33 U.S.C. Sec. 1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)

Footnotes to Water Quality Monitoring Attachment B

- (1) Quantification level (QL) means the minimum levels, concentrations, or quantities of a target variable (e.g. target analyte) that can be reported with a specified degree of confidence in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

The quantification levels indicated for the metals are actually Specific Target Values developed for this permit. The Specific Target Value is the approximate value that may initiate a wasteload allocation analysis. Target values are not wasteload allocations or effluent limitations. The Specific Target Values are subject to change based on additional information such as hardness data, receiving stream flow, and design flows.

Units for the quantification level are micrograms/liter unless otherwise specified.

Quality control and quality assurance information (i.e. laboratory certificates of analysis) shall be submitted to document that the required quantification level has been attained.

- (2) Sample Type

G = Grab = An individual sample collected in less than 15 minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported. For grab metals samples, the individual samples shall be filtered and preserved immediately upon collection.

C = Composite = A 4-hour composite unless otherwise specified. The composite shall be a combination of individual samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period.

- (3) A specific analytical method is not specified; however, an appropriate method to meet the QL shall be selected from (i) any approved method presented in 40 CFR Part 136 or (ii) any alternative EPA approved method, provided that all analyses are in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.
- (4) The QL is at the discretion of the permittee. If the test result is less than the method QL, a "<[QL]" shall be reported where the actual analytical test QL is substituted for [QL].
- (5) Analytical Methods: Analysis of Butyltins in Environmental Systems by the Virginia Institute of Marine Science, dated November 1996 (currently the only Virginia Environmental Laboratory Accreditation Program (VELAP) accredited method).
- (6) Both Chromium III and Chromium VI may be measured by the total chromium analysis. The total chromium analytical test QL shall be less than or equal to the lesser of the Chromium III or Chromium VI method QL listed above. If the result of the total chromium analysis is less than the analytical test QL, both Chromium III and Chromium VI can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].
- (7) Free cyanide may be measured by the total cyanide analysis. The total cyanide analytical test QL shall be less than or equal to the free cyanide method QL listed above. If the result of the total cyanide analysis is less than the analytical test QL, free cyanide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].
- (8) Dissolved sulfide may be measured by the total sulfide analysis. The total sulfide analytical test QL shall be less than or equal to the dissolved sulfide method QL listed above. If the result of the total sulfide analysis is less than the analytical test QL, dissolved sulfide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

CONDITIONS APPLICABLE TO ALL VPDES PERMITS

A. Monitoring

1. Samples and measurements taken as required by this permit shall be taken at the permit designated or approved location and be representative of the monitored activity.
 - a. Monitoring shall be conducted according to procedures approved under Title 40 Code of Federal Regulations Part 136 or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this permit.
 - b. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will insure accuracy of measurements.
 - c. Samples taken shall be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.
2. Any pollutant specifically addressed by this permit that is sampled or measured at the permit designated or approved location more frequently than required by this permit shall meet the requirements in Part I.A.1.a through c above and the results of this monitoring shall be included in the calculations and reporting required by this permit.
3. Operational or process control samples or measurements shall not be taken at the designated permit sampling or measurement locations. Operational or process control samples or measurements do not need to follow procedures approved under Title 40 Code of Federal Regulations Part 136 or be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

B. Records

1. Records of monitoring information shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) and time(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years, the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Board.

C. Reporting Monitoring Results

1. The permittee shall submit the results of the monitoring required by this permit not later than the 10th day of the month after the required monitoring period, unless another reporting schedule is specified elsewhere in this permit. Monitoring results shall be submitted to:

Department of Environmental Quality
Valley Regional Office
P.O. Box 3000
Harrisonburg, Virginia 22801

2. Monitoring results shall be reported on a Discharge Monitoring Report (DMR) or on forms provided, approved or specified by the Department.
3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

D. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Board may require the permittee to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

E. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized Discharges

Except in compliance with this permit, or another permit issued by the Board, it shall be unlawful for any person to:

1. Discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances; or
2. Otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or to the use of such waters for domestic or industrial consumption, or for recreation, or for other uses.

G. Reports of Unauthorized Discharges

Any permittee who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance into or upon state waters in violation of Part II.F; or who discharges or causes or allows a discharge that may reasonably be expected to enter state waters in violation of Part II.F, shall notify the Department of the discharge immediately upon discovery of the discharge, but in no case later than 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the Department, within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this permit.

Discharges reportable to the Department under the immediate reporting requirements of other regulations are exempted from this requirement.

H. Reports of Unusual or Extraordinary Discharges

If any unusual or extraordinary discharge including a bypass or upset should occur from a treatment works and the discharge enters or could be expected to enter state waters, the permittee shall promptly notify, in no case later than 24 hours, the Department by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse affects on aquatic life and the known number of fish killed. The permittee shall reduce the report to writing and shall submit it to the Department within five days of discovery of the discharge in accordance with Part II.I.2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;
2. Breakdown of processing or accessory equipment;
3. Failure or taking out of service some or all of the treatment works; and
4. Flooding or other acts of nature.

I. Reports of Noncompliance

The permittee shall report any noncompliance which may adversely affect state waters or may endanger public health.

1. An oral report shall be provided within 24 hours from the time the permittee becomes aware of the circumstances. The following shall be included as information which shall be reported within 24 hours under this paragraph:
 - a. Any unanticipated bypass; and
 - b. Any upset which causes a discharge to surface waters.
2. A written report shall be submitted within 5 days and shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The Board may waive the written report on a case-by-case basis for reports of noncompliance under Part II.I if the oral report has been received within 24 hours and no adverse impact on state waters has been reported.

3. The permittee shall report all instances of noncompliance not reported under Parts II.I.1 or 2, in writing, at the time the next monitoring reports are submitted. The reports shall contain the information listed in Part II.I.2.

NOTE: The immediate (within 24 hours) reports required in Parts II.G, H and I may be made to the Department's Valley Regional Office at (540) 574-7892 (voice), (540) 574-7878 (fax), or online at <http://www.deq.virginia.gov/Programs/PollutionResponsePreparedness/MakingaReport.aspx>. For reports outside normal working hours, leave a message and this shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Services maintains a 24-hour telephone service at 1-800-468-8892.

J. Notice of Planned Changes

1. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
 - a. The permittee plans alteration or addition to any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:
 - (1) After promulgation of standards of performance under Section 306 of Clean Water Act which are applicable to such source; or
 - (2) After proposal of standards of performance in accordance with Section 306 of Clean Water Act which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal;
 - b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations nor to notification requirements specified elsewhere in this permit; or
 - c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
2. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

K. Signatory Requirements

1. Applications. All permit applications shall be signed as follows:
 - a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
 - c. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a public agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
2. Reports, etc. All reports required by permits, and other information requested by the Board shall be signed by a person described in Part II.K.1, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Part II.K.1;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
 - c. The written authorization is submitted to the Department.
3. Changes to authorization. If an authorization under Part II.K.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.K.2 shall be submitted to the Department prior to or together with any reports, or information to be signed by an authorized representative.
4. Certification. Any person signing a document under Parts II.K.1 or 2 shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

L. Duty to Comply

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the State Water Control Law and the Clean Water Act, except that noncompliance with certain provisions of this permit may constitute a violation of the State Water Control Law but not the Clean Water Act. Permit noncompliance is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this permit has not yet been modified to incorporate the requirement.

M. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. All permittees with a currently effective permit shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Board. The Board shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

N. Effect of a Permit

This permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, or any infringement of federal, state or local law or regulations.

O. State Law

Nothing in this permit shall be construed to preclude the institution of any legal action under, or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by Section 510 of the Clean Water Act. Except as provided in permit conditions on "bypassing" (Part II.U), and "upset" (Part II.V) nothing in this permit shall be construed to relieve the permittee from civil and criminal penalties for noncompliance.

P. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Sections 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law.

Q. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

R. Disposal of solids or sludges

Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering state waters.

S. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to Halt or Reduce Activity not a Defense

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

U. Bypass

1. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts II.U.2 and U.3.
2. Notice
 - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, prior notice shall be submitted, if possible at least ten days before the date of the bypass.
 - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.I.

3. Prohibition of bypass
 - a. Bypass is prohibited, and the Board may take enforcement action against a permittee for bypass, unless:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (3) The permittee submitted notices as required under Part II.U.2.
 - b. The Board may approve an anticipated bypass, after considering its adverse effects, if the Board determines that it will meet the three conditions listed above in Part II.U.3.a.

V. Upset

1. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of Part II.V.2 are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.
2. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The permittee submitted notice of the upset as required in Part II.I; and
 - d. The permittee complied with any remedial measures required under Part II.S.
3. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

W. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and the State Water Control Law, any substances or parameters at any location.

For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. Permit Actions

Permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Y. Transfer of Permits

1. Permits are not transferable to any person except after notice to the Department. Except as provided in Part II.Y.2, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued, or a minor modification made, to identify the new permittee and incorporate such other requirements as may be necessary under the State Water Control Law and the Clean Water Act.
2. As an alternative to transfers under Part II.Y.1, this permit may be automatically transferred to a new permittee if:
 - a. The current permittee notifies the Department at least 30 days in advance of the proposed transfer of the title to the facility or property;
 - b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
 - c. The Board does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part II.Y.2.b.

Z. Severability

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 circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

Dominion – Bremo Power Station, VPDES Permit No. VA0004138
Attachment E - Revised Fact Sheet
December 29, 2015

Attachment E
VPDES Permit No. VA0004138 – Dominion – Bremo Power Station
Revised Fact Sheet

VPDES PERMIT PROGRAM FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Major, Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9VAC25-260. Dominion-Bremo Power Station (BPS) previously generated electricity with steam produced by the combustion of coal. The station fuel was converted from coal to gas in May 2014. BPS now generates electricity with steam produced by the combustion of gas. Two gas-fired generating units are used. Unit 3's maximum capacity is 76 MW and Unit 4's maximum capacity is 168 MW according to the 2015 Application. BPS uses a once-through cooling water system with a shoreline cooling water intake structure. The discharge results from the operation of a steam electric power generating plant. This permit action consists of reissuing the permit with revisions to the permit requirements, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Mailing Address:
Dominion-Bremo Power Station
5000 Dominion Boulevard
Glen Allen, Virginia 23060
SIC Code: 4911 – Electric Generation

Location: 1038 Bremo Road, Bremo Bluff, Virginia 23022
2. Permit No. VA0004138
Existing Permit Expiration Date: July 31, 2015
3. Owner Contact: Cathy C. Taylor Title: Director, Electric Environmental Services
Telephone No: (804) 273-2929 Email: Cathy.c.taylor@dom.com
4. Application Complete Date: March 27, 2015
Permit Drafted By: Beverley W. Carver Date: October 23, 2015
DEQ - Valley Regional Office

Reviewed By: Brandon Kiracofe Date: October 26, 2015

Public Comment Period: October 30, 2015 to December 14, 2015
5. Receiving Stream Name: James River
River Mile: 001 (175.89), 002 (176.11), 003/004 (175.44), 006 (175.69)
Basin: James River (Middle) Subbasin: NA Section: 10 Class: III
Special Standards: None Public Water Supply: No *
Tidal Waters: No Impaired: Yes
Watershed Name: VAC-H20R: James River/Bear Garden Creek/South Creek
* Per VDH on January 27, 2015 - The nearest downstream raw water intake is proposed to be located 8.7 miles downstream of BPS. The name of the proposed waterworks is the James River Water Authority and the exact intake coordinates are to be determined.
6. Operator License Requirements per 9VAC25-31-200.C.: None
7. Reliability Class per 9VAC25-790: (Outfall 203-sewage treatment works): Class II (VDH concurrence received June 3, 2015)
8. Permit Characterization:
 Private Federal State POTW PVOTW
 Possible Interstate Effect Interim Limits in Other Document (attach copy of CSO)
9. Description of Wastewaters and Treatment Facilities: **APPENDIX A**
Total Number of Outfalls = 7 external, 4 internal

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

10. Management of Sludge/Debris:

- a. Sewage sludge from the sewage treatment plant serving internal Outfall 203 at this facility is pumped and hauled to Moores Creek Regional STP (VA0025518) in Albemarle County for further treatment and disposal. The Sludge Management Plan (SMP) for the sewage treatment plant will be approved with this reissuance of the permit.
- b. Coal Fly Ash is currently stored in the following impoundments:
 - West Ash Pond – 17 acres; 290 acre-feet; 19 foot dam; volume estimated at 220,000 ft³; has natural clay liner
 - North Ash Pond – 96 acres; 4300 acre-feet; 102 foot dam; has natural clay liner
 - East Ash Ponds – 10 acres; vegetated

The permittee is currently working on submittals to address the long-term management of the ponds including closure pursuant to the Virginia Solid Waste Management Regulations and solid waste permit for closure/post-closure.

- c. Metals sludge is stored in the Metal Cleaning Waste Treatment Basin.
- d. River Intake Screen – A trash rack is located at the James River in front of the BPS cooling water intake structure. Leaves and debris are removed from the trash rack and hauled offsite.
- e. Traveling Screen Debris – Debris and spray water which is backwashed from the traveling screens located in the Screen House is directed to Internal Outfall 101 which ultimately discharges through Outfall 001.

11. Discharge Location and Receiving Waters Information: **APPENDIX B**

12. Antidegradation Review and Comments per 9VAC25-260-30: James River: Tier: 2

The State Water Control Board's WQSs include an antidegradation policy (9VAC25-260-30) that must be applied to all permit actions. All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The James River in the immediate vicinity of the discharge is listed as impaired for PCBs in fish tissue. Impairment for PCBs in fish tissue is not applicable for designation as Tier 1. No other in-stream data are available that indicate water quality criteria (WQC) either have been violated or are barely met; therefore, the James River in the vicinity of the discharge is determined to be a Tier 2 water. Since the quality of Tier 2 waters is better than that required by the standards, no significant degradation of the existing quality will be allowed.

Because there was a proposed expansion and/or change in nature of the discharge for the combined Outfall 002/004 evaluation, the combined dewatering activities, and the final configuration, antidegradation baselines were calculated for the process wastewater discharges from Outfalls 002, 003, 004, and 006. The antidegradation baselines are presented in the MSTRANTI spreadsheet that can be found in Appendix G. The baselines were calculated for all toxic parameters as not more than 25% of the unused assimilative capacity of the criteria for the protection of aquatic life (acute and chronic) and not more than 10% for the protection of human health. The unused assimilative capacity is defined as the difference between existing water quality and the criterion for a specific pollutant.

Because there was no proposed expansion or change in the nature of the once-through condenser cooling water discharge, antidegradation baselines were not calculated for any toxic parameters at Outfall 001.

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27. Variances/Alternate Limits or Conditions per 9VAC25-31-280.B, 100.H, and 100.M:

Thermal Mixing Zone Evaluation – **APPENDIX H**

Application Waivers

The following application waivers were requested in the 2015 application:

Outfall	Form	Parameters	Justification for Requesting the Waiver
001	2C	24-hr composite samples, TRC	Flow through without treatment; therefore, grab samples are appropriate. Chlorine is not used and no biocides containing chlorine are used; therefore, TRC will not be monitored.
002	2C	24-hr composite samples	Retention time is > 24 hrs; therefore, grab samples are appropriate.
004	2C	All testing requirements	Essentially identical to Outfall 002 and testing for all Form 2C parameters are provided for Outfall 002.

The above listed application waiver approach has been accepted in the past. The waivers are approved and will not affect the preparation of a technically defensible permit.

28. Closure Plans and Demonstration of Financial Capability per 9VAC25-650-10: N/A – This facility does not serve private residences.

29. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1 – 1187.1-7: Is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level?
 Yes No

30. Nutrient Trading Regulation per 9VAC25-820:
 General Permit Required: Yes No

This facility is not required to maintain coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen (TN) and Total Phosphorus (TP) Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9VAC25-820) because it is not listed with a WLA in the Registration List in 9VAC25-820-70; nor does the permit authorize STP expansion that is subject to an offset or technology-based requirement.

31. Nutrient monitoring included per Guidance Memo No. 14-2011: Yes No

This facility is a Nonsignificant Discharger (all facilities not classified as Significant Dischargers as defined in the Nutrient Trading Watershed General Permit Regulation 9VAC25-820). Effluent sampling for TN and TP has not previously been completed and therefore has been included in the permit for Outfall 002.

32. Threatened and Endangered (T&E) Species Screening per 9VAC25-260-20B.8: This facility was listed on the 2014 and 2015 VPDES Permit review request list. T&E screening was performed using the Department of Conservation and Recreation (DCR) Natural Heritage website. The coordination form included in the Memorandum of Understanding along with the T&E screening was sent to the US Fish and Wildlife Service (USFWS), Virginia Department of Game and Inland Fisheries (DGIF) and Department of Conservation and Recreation (DCR) on May 13, 2014. Because of the upcoming CWIS rule, DCR, DGIF and FWS chose to delay comment on the permit pending receipt of the Thermal Mixing Zone evaluation and permit reissuance application which was due on February 1, 2015. The VPDES permit application was received on January 15, 2015. Part 125.98(h) of the CWIS rule allows for a 60 day review of the application before a draft permit can be issued. The application was sent to DCR, DGIF, FWS and the National Marine Fisheries Office on January 27, 2015 so the 60

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day application review period ended on March 27, 2015. Comments were received from DGIF on March 24, 2015 and were forwarded to the permittee. Comments from DCR were received on March 25, 2015 and were forwarded to the permittee.

Further discussion of the T&E process is included in **APPENDIX H (Thermal Mixing Zone Evaluation)** and **APPENDIX I (CWIS Evaluation)**.

33. Compliance Schedules per 9VAC25-31-250: A six-month compliance schedule has been included in Part I.G.7 of the permit to meet the Reliability Class II requirements for the sewage treatment facility.

34. Historical Record:

- Bremo Power Station was constructed in 1931 by the Virginia Public Service Company and has operated since 1944 under the Virginia Electric and Power Company (VEPCO).
- 1948 – A low water diversion wall in the James River was constructed and maintained under a permit originally issued by the Army Corps of Engineers.
- September 7-8, 1971 – SWCB staff conducted a Thermal Study at Bremo Power Station.
- October 1974 - Final Report – July 1972 – June 1974, “The Effects of Thermal Loading by the Bremo Power Station on a Piedmont Section of the James River, Volumes I and II”, was prepared for Virginia Electric and Power Company by Virginia Institute for Scientific Research, Richmond, Virginia
- January 11, 1975 – VPDES Permit No. VA0004138 was first issued.
- January 22, 1975 – Heat rejection calculation method was approved.
- December 10, 1975 – Winter/Summer Thermal Evaluation was submitted by the permittee.
- November 19, 1976 – Proposed Thermal Mixing Zone was submitted by the permittee and reviewed by SWCB staff.
- March 24, 1977 – The thermal mixing zones for VEPCO’s Bremo, Surry and Chesterfield Power Stations were approved by State Water Control Board Executive Approval No. 3205-S, 3206-S and 3207-S.
- December 29, 1977 – VEPCO questioned the need to monitor temperature of condenser cooling water where a mixing zone and a maximum heat rejection limit was included in the permit.
- May 23, 1978 – State Water Control Board Executive Secretary approved the staff’s recommendation that no modifications to the thermal mixing zones were required as a result of the new revised water quality standard temperature standard.
- December 21, 1978 – VPDES Permit No. VA0004138 was modified to include the Board approved thermal mixing zone. The permit also required continuous monitoring for Outfall 001 (condenser cooling water) temperature and specified that the maximum heat rejected to the waterway shall not exceed a maximum of 1.62×10^9 BTU/Hour.
- VPDES Permit No. VA0004138 was reissued on August 6, 2000.
- A Proposal for Information Collection (PIC) is required by 40 CFR Part 125.95(a)(1). The PIC must be submitted prior to data collection activities. A PIC was submitted on February 23, 2005 under a cover letter dated February 16, 2005. The PIC was reviewed and accepted by DEQ per letter dated July 29, 2005.

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- June 23, 2006 – DEQ received complaints from participants in the James River Batteau Festival. The fleet entered the thermal mixing zone at Bremo Bluff on a day when the river water level was very low. When the occupants got out of their canoes to get around the rocks they experienced water that was hotter than what they would have expected to be allowed. In response, Dominion stated that in the future they will coordinate with the festival organizers to ensure that a passage on river right will be open if there is low water in the future during the festival.
- VPDES Permit No. VA0004138 was reissued on August 7, 2005.
- July 9, 2007, EPA publishes in the Federal Register the Suspension of Regulations Establishing Requirement for Cooling Water Intake Structures at Phase II Existing Facilities.
- Dominion requested a major permit modification on September 12, 2007 as follows:
 - “As you are aware, on July 9, 2007 EPA published in the Federal Register the Suspension of Regulations Establishing Requirement for Cooling Water Intake Structures at Phase II Existing Facilities. The entire rule was suspended (40 CFR Parts 122 and 125) except for the provision in 125.90(b) for developing best professional judgment controls on a case-by-case basis.
 - We understand that the rule suspension by EPA on July 9, 2007 effectively suspends the existing 316(b) special condition language, including the Comprehensive Demonstration Study (CDS) submittal deadline, in our VPDES permit for Bremo. Therefore, pursuant to 9VAC25-31-390 A.3.a.(2), Dominion requests modification of the above referenced permit to delete Part I.E. Special Condition # 15 on 316(b), and substitute the language previously agreed upon by Dominion and DEQ.”
- VPDES Permit No. VA0004138 was modified on December 27, 2007. The rationale included in the basis for the modification was as follows:
 - Cooling Water Intake Structure. Substitution. The facility includes a cooling water intake structure governed by § 316(b) of the Clean Water Act which requires that the location, design, construction and capacity of the cooling water intake structures reflect the “best technology available for minimizing adverse environmental impact”. The environmental report on impingement and entrainment studies conducted at the facility indicated minimal or no adverse environmental impact. The special condition requires continued compliance with § 316(b) and submittal of new data that was recently collected in response to EPA’s Phase II requirements. Collected data and any changes to the intake structures or conditions will be reevaluated at each reissuance to monitor continued compliance with the requirement. The condition also includes a reopener, should further 316(b) related conditions become necessary once the EPA Phase II rule is finalized or a new BPJ determination is required.
- A Comprehensive Demonstration Study (CDS) was due by January 7, 2008 under the August 7, 2005 permit. The exact requirements are listed at 40 CFR Part 122.21(r)(2),(3) and (5), and in 40 CFR Part 125.95. A summary of the requirements can be found in DEQ Guidance Memo 05-2001 listed. The requirement to submit a CDS was removed during the December 27, 2007 permit modification.
- Part I.E.15 of VPDES Permit No. VA0004138 required that within one year of the modification date of the permit (by December 27, 2008) the permittee shall submit biological data collected consistent with that described in the February 16, 2005 Proposal for Information Collection. In a letter dated November 24, 2008 received on December 3, 2008, Dominion submitted a report entitled “Impingement Mortality Characterization Report – Bremo Power Station, June 2005 – May 2006”. A copy of this report was submitted a second time in the permit reissuance application submitted in January 2010.
- May 27, 2009 – DEQ Recon Inspection Report – Coal Fly Ash Impoundments

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- December 4, 2009 – A Memorandum of Agreement between VEPCO and Virginia Department of Game and Inland Fisheries was effective. The agreement provided for funding assistance over a 5 year period for DGIF’s mussel restoration program.
- VPDES Permit No. VA0004138 expired on July 31, 2010. The permit was administratively continued due to issues with the Cooling Water Intake Structure special condition language. The issues were resolved and the permit was reissued on August 13, 2010.
- A revised Groundwater Monitoring Plan (GWMP) was submitted on August 13, 2011. DEQ approved the GWMP on September 11, 2013.
- Part I.E.13 of the 2010 permit required that the permittee conduct a Best Technology Available (BTA) assessment of the CWIS. A report was to be submitted to DEQ for approval by August 13, 2011. The report was submitted on August 11, 2011. No technology improvements were recommended by the report which was based upon the draft federal 316(b) regulation. The report was approved by DEQ on November 9, 2011.
- On September 19, 2013, DEQ received notification from the permittee that the use of coal had been discontinued at BPS. There was a period when no power was produced while the conversion from coal to natural gas was taking place.
- The start-up date for Unit 3 firing natural gas was March 12, 2014. The start-up date for Unit 4 firing natural gas was March 25, 2014.
- The coal pile was removed in 2014 and the area was seeded with grass.
- Federal Effluent Guidelines, 40 CFR Parts 122 and 125; NPDES Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities became effective on October 14, 2014.
- December 11, 2014 – EPA Memorandum “Clean Water Act Section 316(b) Regulations for Cooling Water Intake Structures at Existing Facilities: NPDES Permitting Process When Federally-Listed Threatened and Endangered Species and/or Designated Critical Habitat Are or May be Present” from Deborah G. Nagle, Director, Water Permits Division.
- The permit reissuance application was received on January 15, 2015.
- The Draft Impingement Characterization Study Plan was prepared by HDR Engineering, Inc. on April 10, 2015.
- VPDES Permit No. VA0004138 expired on July 31, 2015. The permit was administratively continued.
- A Notice of Planned Changes was originally submitted by letter dated August 6, 2015. Revision 01 of the Notice of Planned Changes was submitted by letter dated August 26, 2015. The final Revision 02 of the Notice of Planned Changes was submitted by letter dated September 1, 2015 and was approved by DEQ by letter dated September 3, 2015.
- A permit application addendum dated August 6, 2015 was received on August 12, 2015.
- By letter dated October 5, 2015, DEQ was notified of mechanical dredging and sampling location changes associated with the ash pond closure. The sampling location changes are associated with the Notice of Planned Changes which was approved on September 3, 2015. Copies of the updated O&M Manual and SWPPP were provided.
- A revised application addendum was received on October 7, 2015.

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- Federal Effluent Guidelines, 40 CFR Parts 257 and 261; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule was promulgated on December 19, 2014 and became effective on October 14, 2015
- Federal Effluent Guidelines, 40 CFR Part 423; Steam Electric Power Generating Point Source Categories; Final Rule was promulgated on September 30, 2015 and becomes effective on November 29, 2015.
- By email dated October 20, 2015, DEQ was notified that the practice of sluicing coal ash from the West Ash Pond to the North Ash Pond ceased on October 17, 2015.
- By email dated October 20, 2015, DEQ was notified that the discharge from the Stormwater Management Pond was scheduled to be routed directly to Outfall 002 on October 22, 2015, bypassing the West Ash Pond.

APPENDIX A

DESCRIPTION OF WASTEWATERS AND TREATMENT FACILITIES

OUTFALL OVERVIEW:

BPS currently has 5 external outfalls which discharge to the James River. During closure activities for the North Ash Pond and the East Ash Ponds, Outfalls 004 and 003 will be retired and two new stormwater outfalls (Outfalls 007 and 008) will be constructed. The outfalls in order from the most upstream to most downstream are:

Outfall 002 (West Ash Pond) – The West Ash Pond currently receives wastewater from 3 internal outfalls:

- Internal Outfall 202 (Metal Cleaning Waste Treatment Basin)
- Internal Outfall 203 (Sewage Treatment Plant)
- Internal Outfall 204 (Stormwater Management Pond)

Outfall 001 (Once-Through Condenser Cooling Water) – receives wastewater from 1 internal outfall:

- Internal Outfall 101 (Traveling Screen Backwash)

Outfall 006 (Stormwater)

Outfall 004 (North Ash Pond) *

Outfall 003 (East Ash Pond)(Stormwater) *

* Outfall 004 discharges to a drainage ditch between the C&O railroad and BPS. Approximately 200 feet downstream, Outfall 003 discharges to the same drainage ditch. At this point Outfall 004 and 003 are comingled along with some stormwater from offsite. There is a brick arch culvert running under the railroad tracks to convey the combined discharges to the James River.

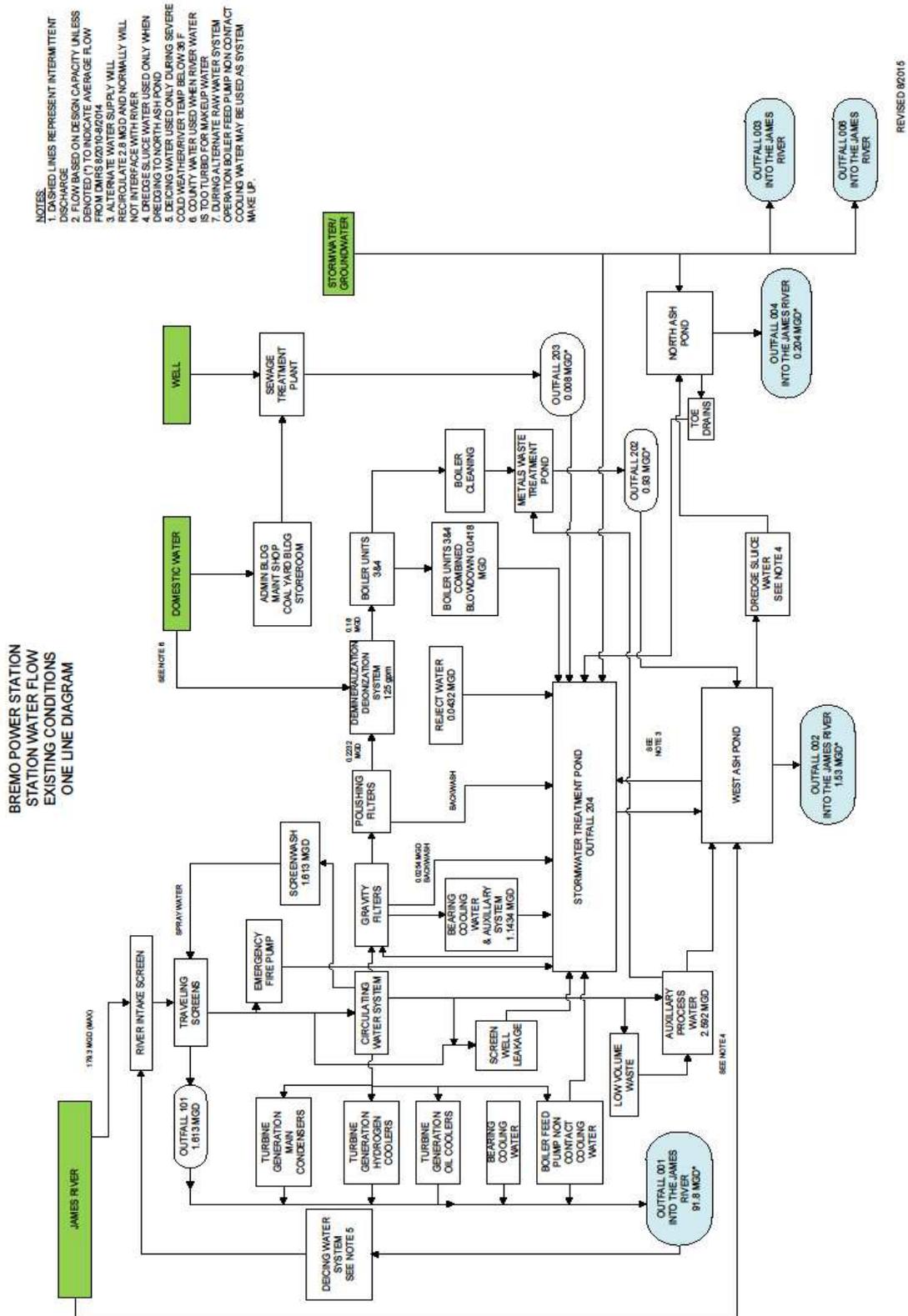
Pursuant to EPA's final coal combustion residuals rule promulgated on April 17, 2015, Dominion is pursuing closure of the ash ponds at BPS. To date, pre-closure activities have included the movement of ash from the West Ash Pond to the North Ash Pond as authorized under the previous permit, as well as the pumping of comingled decant water, dewatering water and stormwater from the West Ash Pond to the North Ash Pond. In order to begin closure of the existing ash ponds, all water must be discharged from the West Ash Pond, North Ash Pond, and East Ash Ponds. The discharges from the West Ash Pond, North Ash Pond, and East Ash Ponds during the dewatering activities must meet the limits established in Part I.A.9 of the permit which may require the use of interim treatment systems.

Dominion has provided the estimates below for discharges of process wastewater during dewatering activities. These estimates do not affect the calculation of effluent limits. The actual discharges may be less or greater than these values.

- 8.9 million gallons (MG) from the initial drawdown of the North Ash Pond over a period of 30 working days in 2016
- 8.1 MG from the initial drawdown of the East Ash Ponds over a period of 30 working days in 2016
- 129.5 MG from on-going dewatering activities in the North Ash Pond over a period of 270 working days in 2016
- 68.4 MG from on-going dewatering activities in the East Ash Ponds over a period of 270 working days in 2016
- 40.9 MG from on-going dewatering activities in the West Ash Pond over a period of 270 working days in 2016
- 102 MG from on-going dewatering activities in the North Ash Pond over a period of 270 working days in 2017

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Diagram of Existing Conditions



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Currently Retired Outfalls:

Outfall 005 – The Intake Screen Backwash was at one time discharged to the James River through Outfall 005. Outfall 005 was retired prior to 2005 when the traveling screen backwash flow was redirected to Outfall 001. The traveling screen backwash is now permitted as Internal Outfall 101 discharging through Outfall 001.

Internal Outfall 204 (Stormwater Management Pond) – Internal Outfall 204 currently discharges to the West Ash Pond ultimately discharging through Outfall 002. The previous permit contained limits for coal pile runoff at Outfall 204. Since the coal pile has been eliminated, monitoring at Outfall 204 is no longer required; therefore Outfall 204 has been retired at this reissuance.

Outfalls That Will Be Retired:

Outfall 004 (North Ash Pond) – The North Ash Pond contains a Discharge Structure with stop logs to control the rate of discharge. The discharge pipe from the North Ash Pond runs underneath the inactive East Ash Pond to the Outfall 004 monitoring location. When the North Ash Pond and East Ash Ponds are being dewatered, the permit allows discharge through Outfall 004. The North Ash Pond discharge structure will ultimately be dismantled and Outfall 004 will be retired.

Outfall 003 (Inactive East Ash Ponds) – The East Ash Ponds were previously closed in the 1980s before modern closure requirements were in place. The East Ash Ponds have a Discharge Structure which directs onsite and offsite stormwater through Outfall 003. Outfall 003 is currently classified as a stormwater outfall not exposed to industrial activity; therefore, Outfall 003 does not require any monitoring. When the North Ash Pond and East Ash Ponds are being dewatered, the permit allows discharge through Outfall 003. Once the dewatering activities are completed, toe drains will be constructed to direct any seepage from the East Ash Ponds to the Stormwater Management Pond. The East Ash Ponds discharge structure will ultimately be dismantled and Outfall 003 will be retired.

Internal Outfall 202 (Metal Cleaning Waste Treatment Basin) – Internal Outfall 202 for the Metal Cleaning Waste Treatment Basin currently discharges to the West Ash Pond. The permittee will be closing the Metal Cleaning Waste Treatment Basin during the term of the permit reissuance. As a result, internal Outfall 202 for the Metal Cleaning Waste Treatment Basin will be retired.

New Outfalls:

Outfalls 007 and 008 – Once closure of the North Ash Pond and East Ash Ponds is complete, new stormwater drainage systems will be created. Stormwater not exposed to industrial activity will be directed through two new outfalls (Outfalls 007 and 008) which will ultimately discharge to the James River in the same vicinity as the previously used Outfalls 003 and 004 did.

Outfall 009 – Once closure of the West Ash Pond is complete a new Outfall 009 for stormwater not exposed to industrial activity will discharge to Holman Creek.

Internal Outfalls 501, 502, 503, 504, and 505 – The dewatering wastewaters are to be managed to address the monitoring and effluent limitations established. The management of the dewatering wastewaters may include the use of interim treatment systems. The internal outfalls are designated as follows:

Outfall 501 - process wastewater from dewatering activities in the West Ash Pond

Outfall 502 - process wastewater from dewatering activities in the North Ash Pond

Outfall 503 - process wastewater from dewatering activities in the East Ash Ponds

Outfall 504 - combination of process wastewaters from dewatering activities in the North Ash Pond, West Ash Pond, East Ash Ponds, and Metal Cleaning Waste Treatment Basin

Outfall 505 - process wastewater from dewatering activities in the Metal Cleaning Waste Treatment Basin

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

It is staff's best professional judgment that the effluent limits be applied to the discharges of dewatering wastewaters (Internal Outfalls 501, 502, 503, 504, and 505) rather than being applied at Outfalls 002, 003, 004, and 006. Meeting effluent limits at the internal outfalls will protect and maintain water quality at any of the outfalls identified as discharge options, while providing Dominion with the flexibility needed to achieve closure by the required deadline.

PICTURES OF OUTFALLS FROM FILE RECORD:



Outfall 002 (West Ash Pond) sampling location; There is a Decant Structure with stop logs to control the water level in the pond.



Internal Outfall 202 (Metal Cleaning Waste Treatment Basin); This outfall rarely discharges. If needed, a pump is used to pump wastewater from the Metal Cleaning Waste Treatment Basin to the West Ash Pond.



Internal Outfall 203 (Sewage Treatment Plant)

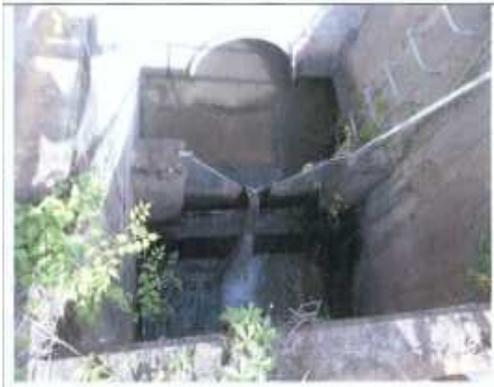


Stormwater Treatment Pond (formerly permitted as internal Outfall 204)

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<p>Outfall 001 (Once-Through Condenser Cooling Water)</p>	<p>Outfall 001</p>
	
<p>Outfall 006 stormwater drainage; The flood wall is on the left. On the right is the railroad tracks. James River is on other side of railroad tracks.</p>	<p>North Ash Pond; contains a concrete Decant Structure with stop logs to control pond water level.</p>
	
<p>North Ash Pond dam</p>	<p>Outfall 004 (North Ash Pond); The Outfall 004 pipe runs under the East Ash Pond and discharges into a polishing pond (in the background). From the polishing pond, the discharges goes to a concrete basin with a weir.</p>

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Outfall 004 North Ash Pond sampling point. The Outfall 004 discharge forms the headwaters of a drainage ditch running beside the railroad tracks which also receives the discharge from Outfall 003.



Western toe drain outlet for North Ash Pond. Dye testing in 2010 indicated that toe drain flow was routed to the stormwater treatment pond.



Eastern toe drain outlets for North Ash Pond. Dye testing in 2010 indicated that toe drain flow was routed to the stormwater treatment pond.



Outfall 003 Decant Structure (East Ash Ponds). East Ash Pond #3 is in the background.



East Ash Pond #1 is on the right. East Ash Pond #2 is to the left of East Ash Pond #1. The discharge pipe for Outfall 004 runs underneath East Ash Pond #2.



Outfall 003. There is a box with a weir at the bottom of the steps for sampling. The discharge enters a drainage ditch running beside the railroad tracks where it comes together with the Outfall 004 discharge. James River is in the background behind the railroad tracks.

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DESCRIPTION OF OUTFALLS AND TREATMENT:

OUTFALL 002 – WEST ASH POND

The West Ash Pond was placed into service in 1976. The surface is approximately 17.0 acres.

The discharge from the West Ash Pond was previously discharged to the James River through Outfall 002. Any discharge from the West Ash Pond to an external outfall must meet the requirements in Part I.A.9 of the permit.

The West Ash Pond currently receives wastewater from the following 3 sources:

- **Auxiliary Process Water**
- **Internal Outfall 202 – Metal Cleaning Waste Treatment Basin** - The Metal Cleaning Waste Treatment Basin is not lined. The basin receives metals cleaning waste generated from the cleaning of metal process equipment. Following treatment, which consists of pH adjustment and settling, the wastewaters are pumped to the West Ash Pond through Outfall 202. The basin was designed to hold 5,700,000 gallons of chemical and non-chemical metal cleaning wastewater.
 - The Metal Cleaning Waste Treatment Basin has an intermittent discharge. Prior to the conversion from coal to natural gas, the discharge occurred 2 to 3 times per year for 1 day per event. The basin is no longer used as originally designed. Water flow to the basin is minimized. In 2014, there was no discharge from the basin.
- **Internal Outfall 204 – Stormwater Management Pond (also known as the “Froggy Pond”)** - The 2010 permit included Internal Outfall 204 as a monitoring location because the coal pile runoff was directed to this pond. Coal has been removed from the facility so monitoring is no longer required at internal Outfall 204.

The Stormwater Management Pond receives wastewater from the following sources:

- Internal Outfall 203 – Sewage Treatment Plant (STP) - The design flow of the STP is 0.0432 MGD.
- Boiler Blowdown – Units 3 & 4
- Water Purification System
- Floor drains/Bearing Cooling Water
- Stormwater runoff
- Toe drain flow from North Ash Pond
- Toe drain flow from the East Ash Ponds will be directed to the Stormwater Management Pond in the future
- Treated dewatering water may be directed to the Stormwater Management Pond in the future.

Major modifications to the West Ash Pond are planned during the upcoming permit term as a result of the 2014 Coal Combustion Residuals (CCR) Rule.

The Metal Cleaning Waste Treatment Basin will be closed and the West Ash Pond will be clean closed (all ash removed) and a portion of the pond will be lined and repurposed as the West Treatment Pond.

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OUTFALL 001 – ONCE-THROUGH CONDENSER COOLING WATER

There are 2 sources of wastewater comprising Outfall 001:

- Once-Through Condenser Cooling Water - Water is withdrawn from the James River through two adjacent cooling water intake structures (CWISs), one for each generating unit. The CWISs are located 250 feet upstream of Outfall 001. The cooling water is neither chlorinated nor chemically altered by the addition of biocides, corrosion inhibitors, or other cooling water treatment additives. There are no cooling towers at BPS, and the heated discharge enters a tunnel leading underneath the railroad tracks to the Outfall 001 discharge to the James River. When in operation, the discharge is continuous.
- Internal Outfall 101 – Traveling Screen Backwash Water - Water withdrawn from the James River through the BPS cooling water intake structure is directed to the Screen House where the traveling screens are located. The traveling screens are backwashed to remove debris and/or fish. The spray water and debris/fish are discharged through internal Outfall 101 into the tunnel running underneath the railroad tracks which carries the Outfall 001 discharge to the James River. The Outfall 101 discharge is a continuous non-process waste stream. No chemicals are used and there is no chemical cleaning.

DESCRIPTION OF DEICING WATER SYSTEM:

An intake trash rack is located at the cooling water intake structure. The trash rack extends across the entire length of both intake structures and prevents debris and ice from entering the screen house.

There are two 5,000 gpm pumps located at Outfall 001 discharge. The pumps are elevated to prevent damage during flood conditions. During extremely cold periods of the year (river water temperatures below 36° F) approximately 10,000 gpm of the heated Outfall 001 effluent is pumped back to the station's cooling water intake structure and is sprayed on the intake trash rack to prevent accumulation of ice. This is approximately 8.6% of the total cooling water flow (116,000 gpm) for Units 3 and 4.

The thermal mixing zone begins at the John H. Cocke Memorial Bridge (River Mile 176.63) which is 0.74 river miles upstream of Outfall 001 (River Mile 175.89); therefore, the practice of spraying the heated water from Outfall 001 on the upstream CWIS is contained within the defined thermal mixing zone.

A detailed description of the Outfall 001 tunnel, Screen House and Cooling Water Intake Structure and intake trash rack and deicing water system is contained in Appendix I.

OUTFALL 006

Outfall 006 is currently classified as a stormwater outfall not exposed to industrial activity. The Outfall 006 drainage area consists of a grassy area of approximately 5.3 acres south of the flood wall but north of the primary railway (old Kanawha canal). The ash sluice lines and lime slurry line from the lime tank run through this drainage area to the West Ash Pond. Also located in this drainage area is the intake screen return line. Stormwater drains through this grassy area where there are no industrial activities and discharges directly into the James River.

During the closure activities, process wastewater from dewatering activities from internal Outfalls 501, 502, 503, 504 and 505 are authorized to discharge through Outfall 006.

Once the closure activities are completed, Outfall 006 will return to its original classification as a stormwater outfall not exposed to industrial activity.

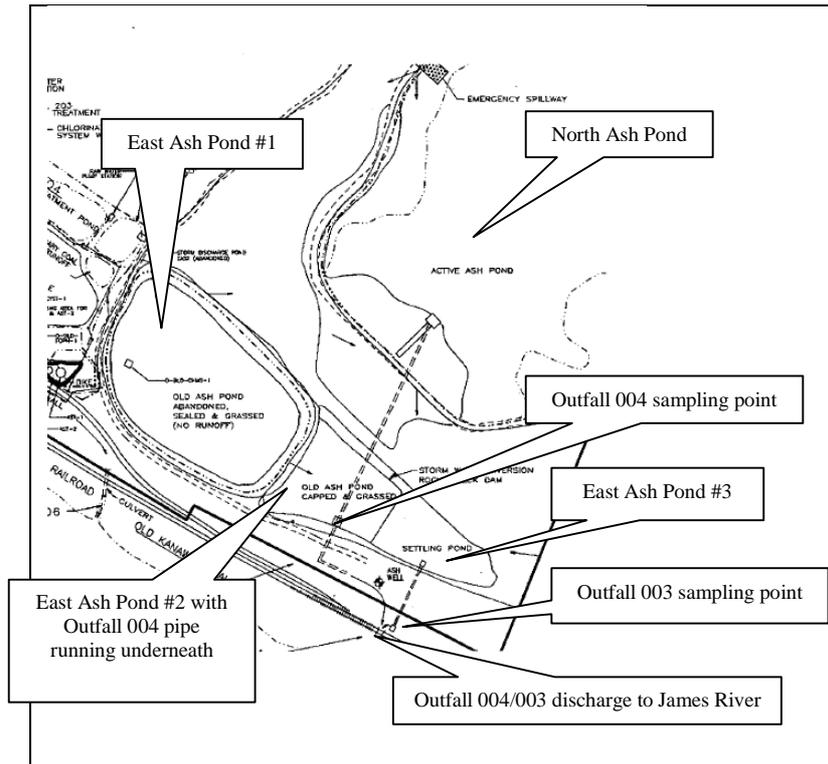
Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

OUTFALL 003 – EAST ASH PONDS

Outfall 003 is currently classified as a stormwater outfall not exposed to industrial activity. The Outfall 003 drainage area includes the most southeastern portion of the property and includes drainage south of the North Ash Pond and around the eastern and southern portion of the closed East Ash Ponds. The estimated drainage area is 27.15 acres.

The Outfall 003 decant structure was constructed for the East Ash ponds.

The East Ash Ponds include 3 distinct sections:



- East Ash Pond #1 – surface area approximately 10 acres, volume or mass undetermined. In service 1949 to 1976, 1981 to December 1983. No records regarding close-out process. Closed with clay cap; Currently covered with grass, vegetatively stabilized.
- East Ash Pond #2 – east and adjacent to East Ash Pond #1; a pipe runs under the East Ash Pond from the North Ash Pond conveying the Outfall 004 wastewater.
- East Ash Pond #3 – the most eastern pond. The decant structure for the East Ash Ponds is located here.

The East Ash Ponds were previously closed in the 1980s before modern closure requirements were in place. In response to the 2014 Coal Combustion Residuals Rule, all 3 of the East Ash Ponds will be closed using a modern cap.

During the closure activities, Outfall 003 will be authorized for use to discharge dewatering water that will be generated during closure activities. During this time there will be permit limits and monitoring requirements for Outfall 003. No discharge of process wastewater from dewatering activities from the East Ash Ponds to an external outfall may occur until the limits in Part I.A.9 of the permit become effective.

The East Ash Ponds discharge structure will ultimately be dismantled and Outfall 003 will be retired.

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OUTFALL 004 – NORTH ASH POND

The North Ash Pond was placed into service in 1984. The North Ash Pond is 96 acres, 4300 acre-feet; 102 foot dam, average 45 feet deep. The North Ash Pond has an earthen berm, and no constructed liner (only clay naturally present). After settling, wastewater discharges from the North Ash Pond through a decant tower with stop logs to control the pond level. A discharge pipe running underneath the inactive East Ash Pond delivers the effluent to a polishing pond with a baffled stilling well and stand pipe. This structure discharges to a Concrete Basin with a 90 degree V notch weir. The permit sampling point for the North Ash Pond (Outfall 004) is collected from the discharge flow over the V notch weir.

The Outfall 004 discharge forms the headwaters of a drainage ditch and is comingled with the Outfall 003 discharge. There is a brick arch culvert running underneath the railroad tracks to deliver the comingled 003/004 discharge to the James River.

The North Ash Pond receives the following sources of wastewater:

- Stormwater runoff
- Ash dredged from West Ash Pond until October 14, 2015
- Dewatering water and contact stormwater from the West Ash Pond

The ash dredged from the West Ash Pond is stored in the North Ash Pond, which is designed to store ash for the life of the plant. The North Ash Pond discharges to the James River via Outfall 004. Effluent water quality is maintained by providing adequate retention time to settle solids.

Because wastewater from Outfall 002 is used to hydraulically transport ash from Outfall 002 to Outfall 004, these two outfalls are considered substantially identical.

The North Ash Pond will be closed during the term of the reissued permit. During the closure activities, Outfall 004 will be authorized for use to discharge dewatering water that will be generated during closure activities. During this time there will be permit limits and monitoring requirements for Outfall 004. Any discharge from the North Ash Pond to an external outfall must meet the requirements in Part I.A.9 of the permit.

The North Ash Pond discharge structure will ultimately be dismantled and Outfall 004 will be retired.

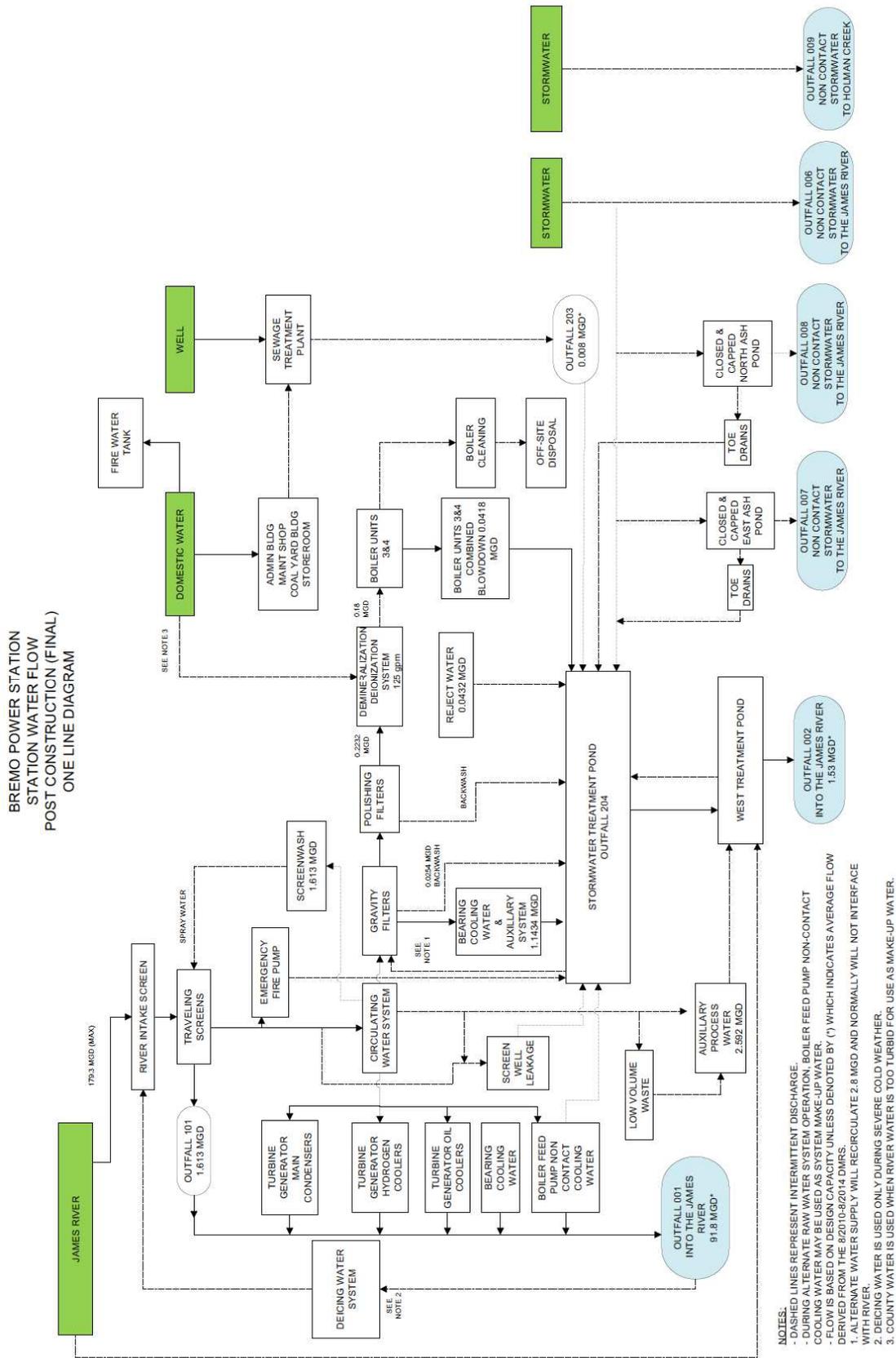
INTERNAL OUTFALLS 501, 502, 503, 504, AND 505

The dewatering wastewaters are to be managed to address the monitoring and effluent limitations established. The management of the dewatering wastewaters may include the use of interim treatment systems. The internal outfalls are designated as follows:

- Outfall 501 - process wastewater from dewatering activities in the West Ash Pond
- Outfall 502 - process wastewater from dewatering activities in the North Ash Pond
- Outfall 503 - process wastewater from dewatering activities in the East Ash Ponds
- Outfall 504 - combination of process wastewaters from dewatering activities in the North Ash Pond, West Ash Pond, East Ash Ponds, and Metal Cleaning Waste Treatment Basin
- Outfall 505 - process wastewater from dewatering activities in the Metal Cleaning Waste Treatment Basin

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

Diagram of Final Configuration Conditions



REVISED 11/2015

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

VPDES PERMIT RATING WORK SHEET

NPDES NO. **VA0004138**

Facility Name: **Dominion-Bremo Power Station**

City: **Bremo Bluff, VA**

Receiving Water: **James River**

Reach Number:

- Regular Addition
- Discretionary Addition
- Score change, but no status change
- No change in score from previous fact sheet

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

- 1. Power output 500 MW or greater (not using a cooling pond/lake)
 - 2. A nuclear power plant
 - 3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate
- YES; score is 600 (stop here) NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

- YES; score is 700 (stop here)
- NO (continue)

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	<u>NA</u>
2	Flows/Stream Flow Volume	<u>NA</u>
3	Conventional Pollutants	<u>NA</u>
4	Public Health Impacts	<u>NA</u>
5	Water Quality Factors	<u>NA</u>
6	Proximity to Near Coastal Waters	<u>NA</u>
TOTAL (Factors 1-6)		<u>NA</u>

S1. Is the total score equal to or greater than 80? Yes (Facility is a major) No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

No

Yes (Add 500 points to the above score and provide reason below:

New Score: 600
 Old Score: 600

APPENDIX B

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

BPS discharges to the James River just downstream from the community of Bremo Bluff in Fluvanna County.

Directly across the James River from BPS is the Dominion-Bear Garden Power Station which is authorized to discharge via VPDES Permit No. VA0090891. The Bear Garden permit has been developed for a 580 megawatt (MW) fossil fuel powered (Natural Gas with Oil Backup) steam electric generating power station.

The first map indicates the locations of the existing Outfalls 002, 101, 001, 202, 203,204, 006, 003, and 004.

During the closure process for the inactive East Ash Pond and North Ash Pond, Outfall 003 (East Ash Pond) and Outfall 004 (North Ash Pond) will be retired.

The second map indicates the outfall locations in the final configuration. This includes the addition of Outfalls 007, 008, and 009, and the removal of Outfalls 003 and 004.

The third map indicates the locations of some other features that were not shown on the first and second maps including:

- Location of Dominion Bear Garden Power Station (VA0090891) Outfall 001
- Location of the BPS Intake in relation to Outfalls 001 and 002
- Location of ECTI Intake across the James River from the BPS Intake
- Upstream ambient monitoring station at John H. Cocke Bridge

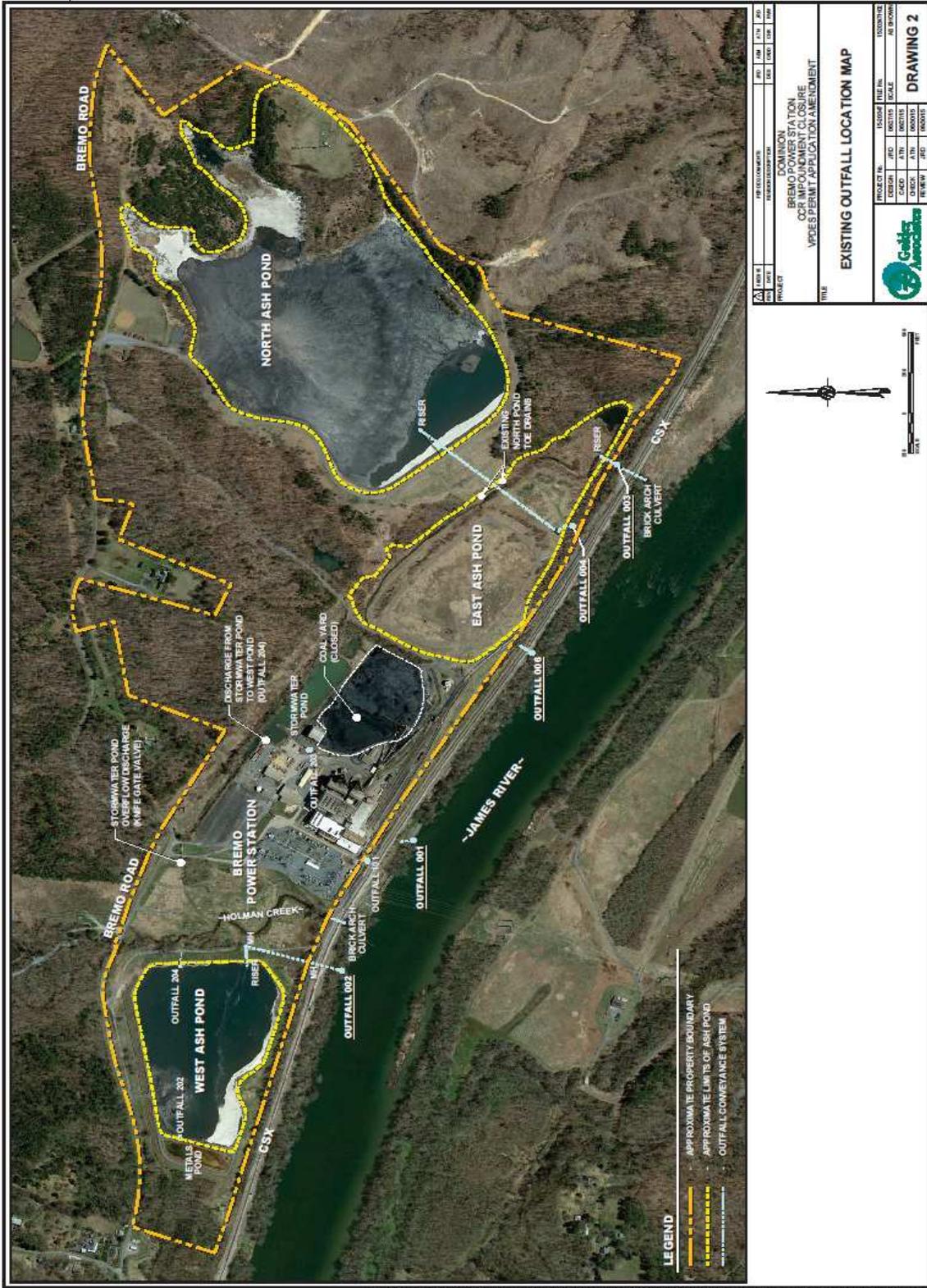
Relevant points of interest within the watershed of James River and in the vicinity of the subject discharge are shown on the Water Quality Assessments TMDL Review for the Middle James River Basin found on page 5 of this appendix.

A Flow Frequency Determination for James River, at the discharge point was provided by memo updated October 2, 2015. The flow frequencies are presented on pages 6 through 11 of this appendix.

Mixing zone analyses at the point of discharge per DEQ's mixing program (MIX.EXE) and are included on pages 12 to 15 of this appendix.

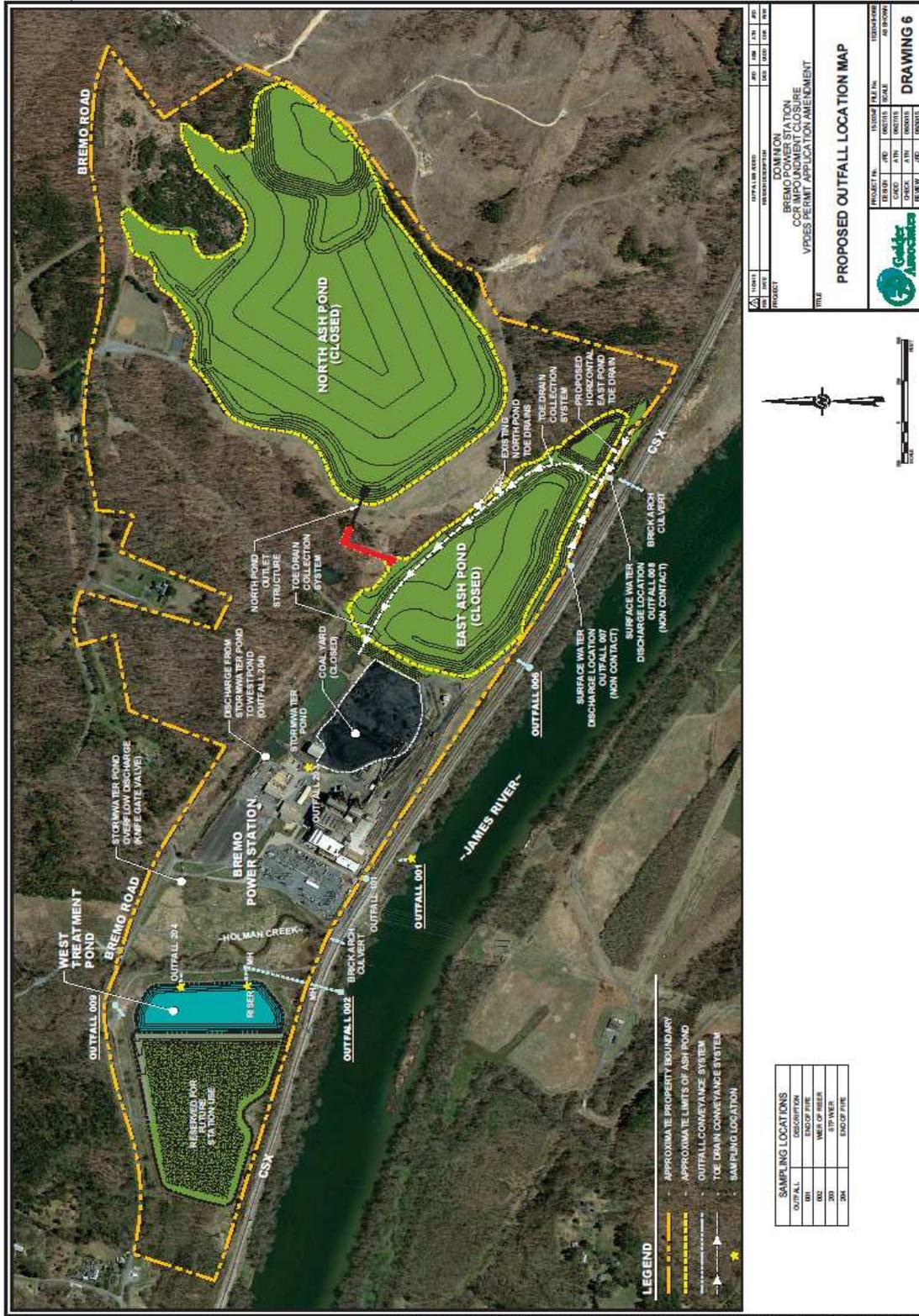
Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

Outfall Location Map – Existing Outfalls



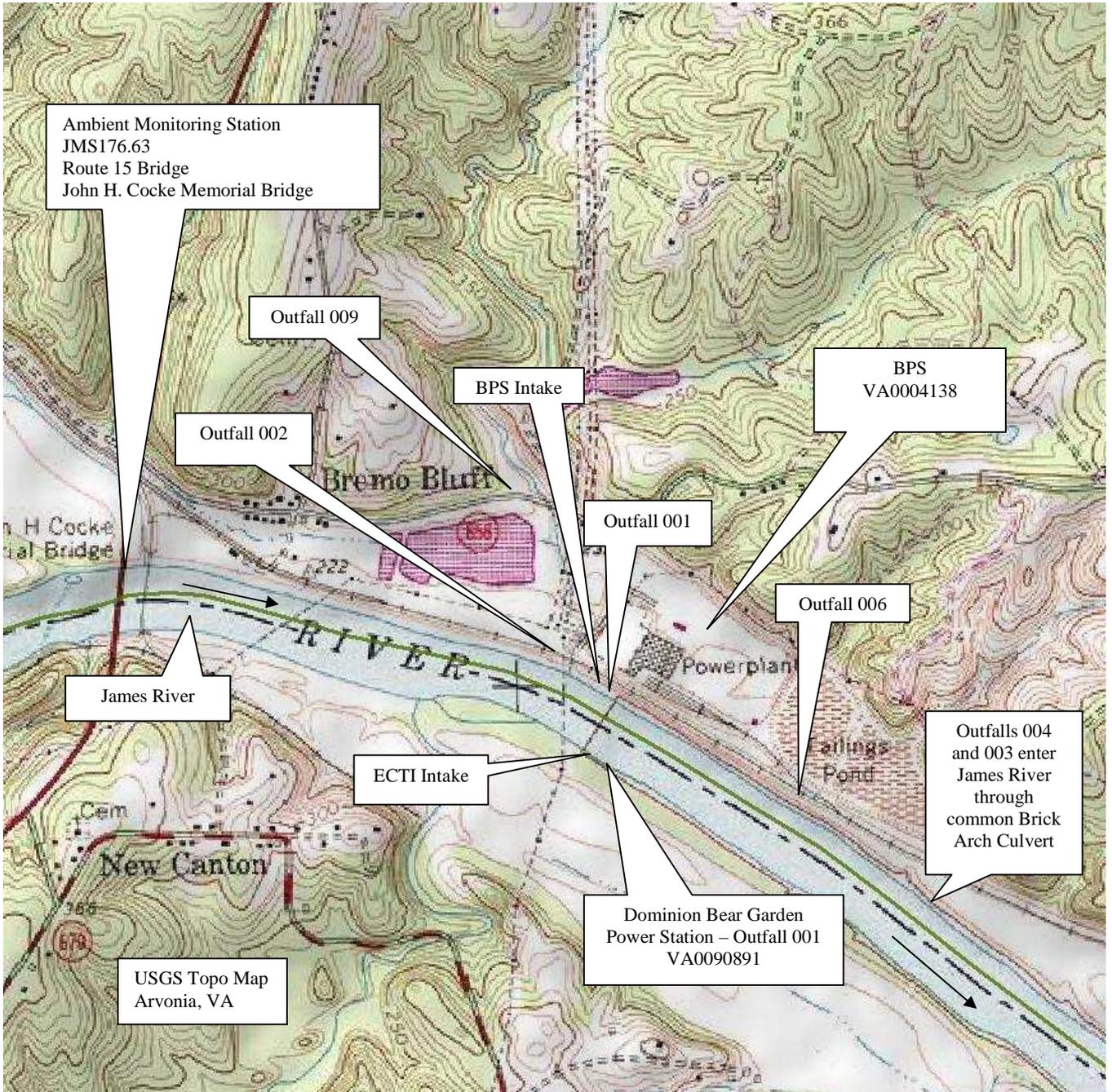
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Outfall Location Map – Final Configuration Outfalls



Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

Map of other features in relation to BPS outfalls



Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

WATER QUALITY ASSESSMENTS REVIEW						
MIDDLE JAMES RIVER BASIN						
1/28/2015						
IMPAIRED SEGMENTS						
SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER	
H03R-04-PCB	James River	233.49	159.02	74.47	PCB in Fish Tissue	
H20R-01-BAC	Bear Garden Creek	9.18	0.00	9.18	Fecal Coliform	
H20R-02-BEN	North Creek	3.95	.70	3.25	Benthic	
PERMITS						
PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0004138	Dominion - Bremo Power Station-001	James River	175.89	374230	0781721	VAC-H20R
VA0004138	Dominion - Bremo Power Station-002	James River	176.11	374232	0781727	VAC-H20R
VA0004138	Dominion - Bremo Power Station-004/003	James River	175.44	374215	0781743	VAC-H20R
VA0004138	Dominion - Bremo Power Station-006	James River	175.69	374221	0781704	VAC-H20R
VA0024147	Fork Union Military Academy	North Creek	3.52	374527	0781501	VAC-H20R
VA0057606	Omohundro Well WTP	Martin Creek X Trib	0.39	374621	0781739	VAV-H31R
VA0081639	Envoy at the Village	North Creek X-Trib	0.6	374528	0781540	VAC-H20R
VA0089559	Morris Well WTP	Martins Creek X-Trib	0.47	374654	0781621	VAV-H31R
MONITORING STATIONS						
STREAM	NAME	RIVER MILE	RECORD	LAT	LONG	
James River	2-JMS176.63	176.63	9/23/99	374416	0781809	
Rivanna River	2-RVN001.64	1.64	03/24/70	374550	0781106	
North Creek	2-NOR003.50	3.5	6/20/00	374527	0781501	
Unnamed Tributary of Nort	2-XXN000.02	0.02	6/20/00	374528	0781021	
Able Creek	2-ABL001.40	1.4	7/2003	374810	0781432	
Rivanna River	2-RVN001.55	1.55	5/13/04	374546	0781105	
North Creek	2-NOR000.20	0.02	6/2/99	374443	0781223	
North Creek	2-NOR003.28	3.28	6/2/99	374527	0781458	
North Creek	2-NOR003.59	3.59	6/20/00	374525	0781502	
PUBLIC WATER SUPPLY INTAKES						
OWNER	STREAM	RIVER MILE				
WATER QUALITY MANAGEMENT PLANNING REGULATION						
Is this discharge addressed in the WQMP regulation? No						
If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?						
PARAMETER	ALLOCATION					
WATERSHED NAME						
VAC-H20R James River/Bear Garden Creek/South Creek						

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

FLOW FREQUENCY DETERMINATION:

The 2016 permit will include the following external outfalls in order from the most upstream outfall to most downstream outfall; 002, 001, 006, 003/004 and 007/008 to the James River near Bremo Bluff, VA. During the closure activities, Outfalls 003 and 004 will be retired.

Stream flow frequencies are required at Outfalls 001, 002, 003, 004 and 006 in developing effluent limitations for the VPDES permit reissuance. Outfall 002 is upstream of all other discharges and intakes at this facility. Outfall 001 is located 0.22 river miles downstream of Outfall 002. Outfall 004 is 0.45 river miles downstream of Outfall 001. Outfall 006 is between Outfalls 002 and 004.

The annual average flow data are no longer provided in the gaging statistics normally used to make flow frequency determinations; therefore, the annual average flows presented below were obtained from the March 17, 2005 Flow Frequency Determination for this facility. The annual average flows are included to aid in the discussion of the entrainment requirements for the Cooling Water Intake Structure (CWIS) used by the facility.

A summary of the gages used in the FFD are listed below. The USGS gage on the James River at Scottsville, Virginia is located approximately 13 miles upstream of the Bremo Power Station. The Hardware and Slate Rivers are two tributaries that flow into the James River between the Scottsville gage and BPS.

USGS Gage Number	USGS Name	Statistical Period	Location
02029000	James River at Scottsville, VA	4/1/1980* – 3/31/2014	Albemarle County
02030000	Hardware River below Briery Run near Scottsville, VA	4/1/1939 – 3/31/2014	Fluvanna County upstream from the SR 637 bridge
02030500	Slate River near Arvonnia, VA	4/1/1926 – 3/31/2014	Buckingham County upstream from Route 676 bridge

* The USGS has operated a continuous record gage on the James River at Scottsville, VA (#02029000) since 1928. Flow regulation from Lake Moomaw/Gathright Dam began in December 1979 and affects the flow in the James River. Due to this, the statistical period of record utilized in calculating the flow frequency values at this gage was limited to 1980-2003. By doing this, fluctuations in river flow due to releases from Gathright Dam are taken into account.

The flow frequencies for the James River at Scottsville gage is presented below:

James River at Scottsville, VA (#02029000):

Drainage Area = 4581 mi²

1Q30 = 485 cfs	30Q5 = 820 cfs
1Q10 = 540 cfs	Harmonic Mean = 2310 cfs
7Q10 = 613 cfs	Annual Average = 5357 cfs
30Q10 = 742 cfs	

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The flows contributed by the Hardware River and Slate River were determined by projecting the flow at the respective gage to the mouth, where each river meets the James River. This was done by drainage area comparison. The flow frequencies are presented below:

Hardware River below Briery Run, near Scottsville, VA (#02030000):

Drainage Area = 116 mi²

1Q30 = 1.32 cfs	30Q5 = 12.5 cfs
1Q10 = 3.97 cfs	Harmonic Mean = 14.5 cfs
7Q10 = 3.58 cfs	Annual Average = 129 cfs
30Q10 = 6.70 cfs	

Hardware River at mouth:

Drainage Area = 138 mi²

1Q30 = 1.57 cfs	30Q5 = 14.9 cfs
1Q10 = 4.72 cfs	Harmonic Mean = 17.2 cfs
7Q10 = 4.26 cfs	Annual Average = 153 cfs
30Q10 = 7.97 cfs	

Slate River near Arvonnia, VA (#02030500):

Drainage Area = 226 mi²

1Q30 = 2.48 cfs	30Q5 = 19.3 cfs
1Q10 = 5.93 cfs	Harmonic Mean = 72.7 cfs
7Q10 = 7.44 cfs	Annual Average = 226 cfs
30Q10 = 12.3 cfs	

Slate River at mouth:

Drainage Area = 245 mi²

1Q30 = 2.69 cfs	30Q5 = 20.9 cfs
1Q10 = 6.43 cfs	Harmonic Mean = 78.8 cfs
7Q10 = 8.06 cfs	Annual Average = 245 cfs
30Q10 = 13.3 cfs	

The flow contributed by the intervening drainage area between the Scottsville gage and Outfall 002 was determined using the following 2 steps:

Step 1: Average the flows and drainage areas for the Hardware and Slate River gages, and make a “simulated reference gage”.

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Average of Hardware River and Slate River at mouth (“simulated reference gage”):

Drainage Area = $(138 + 245) \div 2 = 191 \text{ mi}^2$

1Q30	1.57	+	2.69	=	4.26	cfs	$\div 2 =$	2.13	cfs
1Q10	4.72	+	6.43	=	11.2	cfs	$\div 2 =$	5.60	cfs
7Q10	4.26	+	8.06	=	12.3	cfs	$\div 2 =$	6.15	cfs
30Q10	7.97	+	13.3	=	21.3	cfs	$\div 2 =$	10.6	cfs
30Q5	14.9	+	20.9	=	35.8	cfs	$\div 2 =$	17.9	cfs
Harmonic Mean	17.2	+	78.8	=	96.0	cfs	$\div 2 =$	48.0	cfs
Annual Average	153	+	245	=	398	cfs	$\div 2 =$	199	cfs

Step 2: The “simulated reference gage” was then used to determine the actual flow frequencies for the intervening drainage area by drainage area comparison. The intervening drainage area was determined by taking the drainage area at Outfall 002 and subtracting the drainage area at the Scottsville gage, and the drainage areas at the mouth of the Hardware and Slate Rivers, respectively ($5059 - 4581 - 138 - 245 = 95 \text{ mi}^2$).

Flow Contributed by Intervening Drainage Area:

Drainage Area = 95 mi^2

1Q30 =	1.06 cfs	30Q5 =	8.90 cfs
1Q10 =	2.78 cfs	Harmonic Mean =	23.9 cfs
7Q10 =	3.06 cfs	Annual Average =	99.0 cfs
30Q10 =	5.27 cfs		

James River immediately upstream of Bremo Power Station:

The flows in the James River immediately upstream of BPS were determined by adding the respective flows for the Scottsville gage, the flows at the mouth of the Hardware and Slate Rivers, and the flows for the intervening drainage area as shown below:

Drainage Area = 5059 mi^2

1Q30	$485 + 1.57 + 2.69 + 1.06 = 490$	cfs	X 0.6463 =	317	MGD
1Q10	$540 + 4.72 + 6.43 + 2.78 = 554$	cfs	X 0.6463 =	358	MGD
7Q10	$613 + 4.26 + 8.06 + 3.06 = 628$	cfs	X 0.6463 =	406	MGD
30Q10	$742 + 7.97 + 13.3 + 5.27 = 768$	cfs	X 0.6463 =	497	MGD
30Q5	$820 + 14.9 + 20.9 + 8.90 = 865$	cfs	X 0.6463 =	559	MGD
Harmonic Mean	$2310 + 17.2 + 78.8 + 23.9 = 2430$	cfs	X 0.6463 =	1570	MGD
Annual Average	$5357 + 153 + 245 + 99.0 = 5854$	cfs	X 0.6463 =	3783	MGD

The values immediately upstream of the BPS do not address any discharges, withdrawals, or springs located between the Scottsville gage and the BPS.

The 1Q10, 7Q10, 30Q10, 30Q5, and Harmonic Mean for the James River immediately upstream of the BPS are lower than those contained in the 2010 Fact Sheet. The 2010 Fact Sheet utilized USGS flow gage information through 2002. The 2016 Fact Sheet utilized USGS flow gage information through March 31, 2014.

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In order to calculate the flow frequencies at Outfalls 001, 002, 003 004, and 006, water withdrawals and long term average discharge flows were taken into account as summarized below:

COOLING WATER INTAKE WATER WITHDRAWAL INFORMATION

There are 2 cooling water intake structures to consider in the flow frequency determination:

1. BPS Cooling Water Intake Structure (CWIS) – The CWIS for BPS is located just downstream of Outfall 002 and upstream of Outfall 001 (refer to map in Appendix A).

The CWIS has a maximum intake capacity of 277 cfs (179 MGD). Source: BTA Analysis of CWIS, August 11, 2011.

The average intake flow for the years of 2011 – 2013 was 82 MGD.

The average intake flow for the years of 2010 – 2014 was 85 MGD.

The highest monthly average intake flow for the years of 2010 – 2014 was 114.5 MGD.

2. East Coast Transport, Inc. (ECTI) CWIS – The CWIS for ECTI is located across the James River from BPS downstream of Outfall 001 (refer to map in Appendix A).

The ECTI intake supplies the Tenaska Virginia Generating station in Fluvanna County (VA0090905), as well as the Dominion - Bear Garden Power Station in Buckingham County (VA0090891). Although the intake serving the Tenaska Virginia Generating Station is on the James River, the discharge from Tenaska Virginia Generating Station is to the Rivanna River and Middle Fork Cunningham Creek.

The maximum permitted withdrawal with these two facilities operating is 11,800 gallons per minute (17 MGD).

The average intake flow for the years of 2011 – 2013 was 5.98 MGD.

The average intake flow for the years of 2010 – 2014 was 5.2 MGD.

The highest monthly average intake flow for the years of 2010 – 2014 was 6.9 MGD.

DISCHARGER FLOW INFORMATION

For purposes of the FFD, the long term average discharge flow is used for the most conservative evaluation.

The discharge flows that affect the flow frequency determination are presented below:

1. BPS Outfall 002 (West Ash Pond) – Outfall 002 is upstream of all other discharges and intakes. The long term average flow for Outfall 002 is 1.53 MGD (Source: January 2015 permit application). To be conservative, the long term average discharge flow for Outfall 002 was not added to the flow frequencies in the FFD calculation since the Outfall 002 flows will change during the closure activities.
2. BPS Outfall 001 (Once-Through Condenser Cooling Water) – Outfall 001 is located 0.22 river miles downstream of Outfall 002. The BPS CWIS is located 250 feet upstream of Outfall 001. The long term average flow for Outfall 001 is 91.8 MGD (January 2015 permit application).
3. Dominion Bear Garden Power Station Outfall 001 – Outfall 001 for the Dominion Bear Garden Power Station is located downstream of Outfalls 002 and 001 for BPS and is also downstream of the ECTI and BPS intakes. Outfall 001 for the Bear Garden Power Station has a long term average flow of 0.433 MGD.

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CALCULATION OF FLOW FREQUENCIES FOR OUTFALL 002

Outfall 002 is upstream of all other discharges and intakes at this facility; therefore the flow frequencies calculated immediately upstream of the BPS are applicable for Outfall 002.

CALCULATION OF FLOW FREQUENCIES FOR OUTFALL 001 (Once-Through Condenser Cooling Water)

Outfall 001 is downstream of Outfall 002 (West Ash Pond) and is 250 feet downstream of the BPS cooling water intake structure.

As a conservative assumption, the maximum intake capacity for the BPS of 179 MGD was subtracted from the flow frequency values just upstream of the BPS. To be conservative, the long term average discharge flow of Outfall 002 was not added to the flow frequency values since the Outfall 002 flows will change as a result of the closure activities. The flow frequencies are shown below:

James River at Outfall 001:

1Q30	317	-	179	=	138 MGD
1Q10	358	-	179	=	179 MGD
7Q10	406	-	179	=	227 MGD
30Q10	497	-	179	=	318 MGD
30Q5	559	-	179	=	380 MGD
Harmonic Mean	1570	-	179	=	1391 MGD
Annual Average	3783	-	179	=	3604 MGD

CALCULATION OF FLOW FREQUENCIES FOR OUTFALL 004

Outfall 004 is located 0.45 river miles downstream of Outfall 001.

The CWIS flow at BPS and Outfall 001 (once through condenser cooling water) for BPS are considered to cancel each other out and are not included in the calculation for the flow frequency at Outfall 004. This was done because subtracting the maximum intake capacity of 179 MGD for the BPS CWIS and then adding the long term average flow for Outfall 001 of 91.8 MGD was not representative. This is consistent with the approach used in the 2010 Fact Sheet.

The ECTI maximum permitted withdrawal of 17 MGD has been subtracted from the flow frequency values and the long term average flow of 0.433 MGD from the Bear Garden Power Station has been added to the flow frequency values. This is consistent with the approach used in the 2010 Fact Sheet. To be conservative, the long term average flow for Outfall 002 was not added to the flow frequency calculation since the Outfall 002 flows will change during the closure activities. The flow frequencies are presented below.

James River at Outfall 004:
Drainage Area = 5059 mi²

1Q30	317	-	17	+	0.433	=	300 MGD
1Q10	358	-	17	+	0.433	=	341 MGD
7Q10	406	-	17	+	0.433	=	389 MGD
30Q10	497	-	17	+	0.433	=	480 MGD
30Q5	559	-	17	+	0.433	=	542 MGD
Harmonic Mean	1570	-	17	+	0.433	=	1553 MGD
Annual Average	3783	-	17	+	0.433	=	3766 MGD

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CALCULATION OF FLOW FREQUENCIES FOR OUTFALL 003

The discharge from Outfalls 003 and 004 are comingled in a channel leading to a brick arch culvert under the railroad tracks to the James River; therefore, the flow frequencies calculated for Outfalls 003 and 004 are identical.

CALCULATION OF FLOW FREQUENCIES FOR OUTFALL 006

Outfall 006 is located downstream of Outfalls 001 and 002 and upstream of Outfalls 003 and 004. A combination of Outfalls 002, 003, 004 and 006 will be utilized in the permit limit evaluation during the dewatering activities; therefore, the FFD for Outfall 004 and 006 are identical.

MIXING ZONE ANALYSES

DEQ's mixing zone analysis version 2.1 program (MIX.EXE) was utilized to determine the percentages of the total receiving stream flows available for mixing with the effluent. Mixing zone analyses were conducted for:

- Outfall 001
- Outfalls 002 and 004 combined flow of 4.2912 MGD
- Outfalls 002, 003, 004, and 006 combined flow of 10.2912 MGD during dewatering activities
- Outfall 002 after lining (West Treatment Pond, formerly the West Ash Pond) is complete and Outfalls 003 and 004 have been retired

The following discharge flows were utilized in the mixing evaluation:

Outfall 001(Once-Through Condenser Cooling Water)

The maximum 30-day average flow for Outfall 001 is 157.6 MGD based on DMR data from April 2012 to April 2015.

Outfall 002 and 004 Combined Discharge

In the 2010 Fact Sheet, Outfalls 002 (West Ash Pond) and 004 (North Ash Pond) were considered substantially identical outfalls since coal ash was periodically sluiced from the West Ash Pond to the North Ash Pond for final disposal. The evaluation is based on the combined flow from Outfalls 002 and 004 of 4.2912 MGD.

Outfalls 003 and 006

In the 2010 Fact Sheet, Outfalls 003 and 006 were characterized as stormwater outfalls not exposed to industrial activity. During the dewatering activities for the West Ash Pond, North Ash Pond and East Ash Ponds, Outfalls 003 and 006 may be used for discharge of the treated process wastewater from dewatering activities for internal Outfalls 501, 502, 503, 504 and 505. Once the closure activities are completed, Outfall 003 will be retired and Outfall 006 will return to its original designation as a stormwater outfall not exposed to industrial activity.

Internal Outfalls 501, 502, 503, 504, and 505 Combined Discharge

During the dewatering activities for the West Ash Pond, North Ash Pond, East Ash Pond, and Metal Cleaning Waste Treatment Basin, dewatering wastewaters may be treated at multiple interim treatment systems designated in the permit as internal Outfalls 501, 502, 503, 504 and 505. In order to allow for maximum flexibility, the permittee may discharge the dewatering wastewaters through Outfall 002, 003, 004, and/or 006 or to the Stormwater Management Pond or West Treatment Pond. The maximum combined flow discharged during this period is 10.2912 MGD.

MIX.EXE Evaluation

For purposes of evaluating toxicity, the flows for Outfalls 002 and 004 were combined. Outfalls 002 and 004 are considered substantially identical outfalls because ash sluice water from the West Ash Pond is transported to the North Ash Pond for final disposal. Because of the proximity of Outfalls 002 and 004, mixing will be evaluated using their combined effluent flows. This is consistent with the approach used in previous Fact Sheets.

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For purposes of evaluating toxicity during dewatering activities, the flows for internal Outfalls 501, 502, 503, 504, and 505 were combined. Internal Outfalls 501, 502, 503, 504, and 505 through Outfalls 002, 003, 004, and/or 006. Because of the dproximity of Outfalls 002, 003, 004, and 006 mixing will be evaluated using the combined effluent flow.

The results of the MIX.EXE evaluations are shown below.

Mix.exe Results for Outfall 001 (Once-Through Condenser Cooling Water)

Effluent Flow = 157.6 MGD
Stream 7Q10 = 227 MGD
Stream 30Q10 = 318 MGD
Stream 1Q10 = 179 MGD
Stream slope = 0.00083 ft/ft
Stream width = 400 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.5936 ft
Length = 53784.21 ft
Velocity = .5739 ft/sec
Residence Time = 1.0848 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 2.9482 ft
Length = 48281.52 ft
Velocity = .6243 ft/sec
Residence Time = .8951 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.3933 ft
Length = 57548.88 ft
Velocity = .5443 ft/sec
Residence Time = 29.3706 hours

Recommendation: A complete mix assumption is appropriate for this situation providing no more than 3.4% of the 1Q10 is used.

Virginia DEQ Mixing Zone Analysis Version 2.1

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Mix.exe Results for Outfall 002 and 004

Effluent Flow = 4.2912 MGD
Stream 7Q10 = 389 MGD *
Stream 30Q10 = 480 MGD *
Stream 1Q10 = 341 MGD *
Stream slope = 0.00083 ft/ft
Stream width = 400 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.6288 ft
Length = 53177.4 ft
Velocity = .579 ft/sec
Residence Time = 1.0631 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 2.9806 ft
Length = 47838.53 ft
Velocity = .6288 ft/sec
Residence Time = .8805 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.4304 ft
Length = 56809.09 ft
Velocity = .5498 ft/sec
Residence Time = 28.7011 hours

Recommendation: A complete mix assumption is appropriate for this situation providing no more than 3.48% of the 1Q10 is used.

Virginia DEQ Mixing Zone Analysis Version 2.1

*** Critical flows for Outfall 004 were used for the analysis.**

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Mix.exe Results for Outfall 002, 003, 004, or 006 During Combined Dewatering Activities

Effluent Flow = 10.2912 MGD
Stream 7Q10 = 389 MGD *
Stream 30Q10 = 480 MGD *
Stream 1Q10 = 341 MGD *
Stream 30Q5 = 542 MGD *
Stream HM = 1553 MGD *
Stream slope = 0.00083 ft/ft
Stream width = 400 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.6529 ft
Length = 52772.32 ft
Velocity = .5825 ft/sec
Residence Time = 1.0486 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.0028 ft
Length = 47539.66 ft
Velocity = .6319 ft/sec
Residence Time = .8708 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.4557 ft
Length = 56317.3 ft
Velocity = .5536 ft/sec
Residence Time = 28.2586 hours

Recommendation: A complete mix assumption is appropriate for this situation providing no more than 3.54% of the 1Q10 is used.

Mixing Zone Predictions @ 30Q5

Depth = 3.2266 ft
Length = 44742.53 ft
Velocity = .6624 ft/sec
Residence Time = .7818 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q5 may be used.

Mixing Zone Predictions @ Harmonic Mean

Depth = 6.0572 ft
Length = 26228.76 ft
Velocity = .9988 ft/sec
Residence Time = .3039 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire HM may be used.

Virginia DEQ Mixing Zone Analysis Version 2.1

*** used critical flows for Outfall 004 for analysis.**

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Mix.exe Results for Outfall 002 (West Treatment Pond) Final Operating Condition

Effluent Flow = 4.2912 MGD
Stream 7Q10 = 406 MGD *
Stream 30Q10 = 497 MGD *
Stream 1Q10 = 358 MGD *
Stream slope = 0.00083 ft/ft
Stream width = 400 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.6968 ft
Length = 52046.59 ft
Velocity = .5888 ft/sec
Residence Time = 1.0231 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.0433 ft
Length = 47005.99 ft
Velocity = .6375 ft/sec
Residence Time = .8535 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.5018 ft
Length = 55440.52 ft
Velocity = .5604 ft/sec
Residence Time = 27.4802 hours

Recommendation: A complete mix assumption is appropriate for this situation providing no more than 3.64% of the 1Q10 is used.

Virginia DEQ Mixing Zone Analysis Version 2.1

*** used critical flows for outfall 002 for analysis**

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APPENDIX C

EVALUATION OF THE EFFLUENT

OUTFALLS 001, 101, 202, and 203

EVALUATION OF DISCHARGES FROM OUTFALL 001 (Once-Through Condenser Cooling Water)

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

Outfall 001 (Once-Through Condenser Cooling Water)

Final Limits Maximum 30-day Average Flow: 157.6 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow (MGD)	1	NL	NL	1/Day	Estimate
-----	-----	Monthly Average	Daily Maximum	-----	-----
Total Residual Chlorine (TRC)(mg/L)*	2,3	0.0099	0.02	1/Day	Grab
Heat Rejection (x 10 ⁹ BTU/Hr)	2,4	NA	1.62	1/Month	Calculated
Temperature (°C)	2,5	NL	NL	1/Day	IS
Intake Temperature (°C)	2,5	NL	NL	1/Day	IS
-----	-----	Minimum	Maximum	-----	-----
pH	2	6.0 SU	9.0 SU	1/Month	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

IS = Immersion Stabilization

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9VAC25-31)
2. Water Quality Standards (9VAC25-260)
3. Federal Effluent Limitation Guidelines – Steam Electric Power Generating Point Source Category (40 CFR Part 423)
4. Thermal Mixing Zone Evaluation (See APPENDIX H)
5. Best Professional Judgment

*Testing will be required in any month that chlorine is applied to the system. Should chlorine not be applied, the appropriate entry on the DMR is “NR” (without the quotation marks) to indicate “Not Required.”

The discharge from Outfall 001 contains once-through condenser cooling water that is drawn from the James River. The facility does not employ cooling towers. A Thermal Mixing Zone has been established and annual monitoring of stream conditions is required (See APPENDIX G). The discharge is considered continuous for this evaluation.

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EFFLUENT LIMITATIONS GUIDELINES (ELGs)

The final rule dated September 30, 2015 that becomes effective on November 29, 2015 for the Steam Electric Power category was considered. No new ELGs were proposed for once-through condenser cooling water; therefore, the ELGs below reflect the existing effective rule.

Once-through cooling water is defined in the Steam Electric Power Generating Effluent Limitations Guidelines (ELGs) at 40 CFR Part 423.11.(g).

When necessary, the deicing water system returns approximately 10,000 GPM to the intake screen to prevent blockage of flows due to accumulation of ice. The practice of reusing this heated water does not violate the definition of once-through cooling water given at 40 CFR Part 423.11(g).

ELGs for Best Practicable Control Technology Currently Available (BPT) for Once Through Cooling Water in 40 CFR Part 423.12(b)(1), (2) and (6) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
Free Available Chlorine	0.5 mg/L	0.2 mg/L
-----	Minimum	Maximum
pH	6.0 SU	9.0 SU
Polychlorinated Biphenyl Compounds (PCBs)	There shall be no discharge of PCBs as those commonly used for transformer fluid.	

ELGs for Best Available Technology Economically Achievable (BAT) for once-through cooling water for any plant with a total rated electric generating capacity of 25 or more megawatts, in 40 CFR Part 423.13(b)(1) and (2) is as follows:

Parameter	Daily Maximum	Maximum Monthly Average
TRC*	0.20 mg/L	NA

* TRC not to be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macro invertebrate control. Simultaneous multi-unit chlorination is permitted.

EVALUATION OF THE EFFLUENT – CHLORINE

Waivers from providing testing results for chlorine (free or residual) with the application were granted because the applicant stated that chlorine is not used. Limits for TRC are included in the permit to allow the applicant the flexibility to utilize chlorine should the need arise.

Federal Effluent Guidelines (40 CFR 423.13(b)(1)) state that the quantity of pollutants discharged in once-through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once through cooling water times the maximum concentration of 0.2 mg/L. At the permitting authority’s discretion (Federal Effluent Guidelines (40 CFR 423.13(g)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraph 423.13(b)(1). It is staff’s best professional judgment that applying the maximum concentration of 0.2 mg/L to the discharge is appropriate and will allow comparison to the Virginia WQS for TRC which are established in concentration units.

In the 2010 permit, the TRC limits were based on the ELGs. In the 2016 permit, water-quality based TRC limits were calculated based on a default concentration of 20 mg/L in order to compare with the ELGs. The water quality based limits are more stringent than the Federal Effluent Guidelines and as such, the water quality based limits shall be applied.

Testing will be required in any month that chlorine is applied to the system. Should chlorine not be applied, the appropriate entry on the DMR is “NR” (without the quotation marks) to indicate “Not Required”.

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EVALUATION OF THE EFFLUENT – PCBS

The permit special condition that there shall be no discharge of PCBs transformer fluids has been carried forward from the previous permit.

EVALUATION OF CONVENTIONAL POLLUTANTS

The applicant submitted testing results for the conventional parameters BOD₅, TSS, and Oil & Grease. Because the discharge results from once-through cooling water drawn from the James River, there is no reason to believe any of these parameters or bacterial indicators (E. coli) are introduced or affected by the facility. Based on a review of the DMR results, the facility appears to be in compliance with the BAT requirements (40 CFR Part 423.12(b)(1)) and WQS for pH, and the pH limits of 6.0 SU to 9.0 SU have been carried forward from the previous permit.

EVALUATION OF NON-CONVENTIONAL POLLUTANTS

The basis of carrying forward the effluent limits of 1.62×10^9 BTU/Hour for heat rejection are included in Appendix D with the discussion of the Thermal Mixing Zone. In addition, monitoring for intake temperature and effluent temperature has been required at this reissuance.

EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Input parameters for instream WQC and WLAs

Stream: A Flow Frequency Determination for the receiving stream is included in Appendix B. Water quality data for mean hardness, temperature, and pH for the receiving stream were obtained from Ambient Water Quality Monitoring Station No. 2-JMS176.63 on the James River. The ambient station is located 0.52 river miles upstream of BPS.

Stream Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	62.5	mg/L
90 th Percentile Temperature =	26.86	° C
90 th Percentile Maximum pH =	8.03	SU
10 th Percentile Maximum pH =	7.06	SU

Background in-stream water quality conditions were established for antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc using DEQ's probabilistic monitoring data collected at nearly 100 sites in the same James River Hydrologic Unit Code (HUC) where the subject facility is located.

Discharge: Temperature and pH data were not necessary for parameters evaluated at this reissuance. Outfall 001 continuously discharges once-through condenser cooling water. Because the once-through condenser cooling water is not chemically altered by the addition of biocides, corrosion inhibitors, or other cooling water treatment additives, the effluent hardness is expected to be similar to the stream hardness; therefore, the mean stream hardness was used as the mean effluent hardness.

WQC and WLAs were calculated for all WQS parameters. Those WQC and WLAs are presented in the MSTRANTI spreadsheet that can be found in Appendix G. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- Antimony, Arsenic, Lead, Nickel, Zinc, Chromium III, Chromium VI, Copper, and Chloride: No limits were determined to be necessary.
- Sulfide: No data are available; therefore, monitoring is required. The results must be submitted using Attachment A of the permit. The monitoring is due with the permit reissuance application.

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PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh} , the WLA_{hh} was imposed as the limit.

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or $<$ the required Quantification Level (QL), and at least one detection level is \leq the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are $>$ the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	<1	a	B.1
Arsenic, dissolved	7440-38-2	1.0	<2	a	B.1
Cadmium, dissolved	7440-43-9	0.3	<0.3	a	A
Chromium III, dissolved	16065-83-1	0.5	<1 (Total Chromium)	a	B.1
Chromium VI, dissolved	18540-29-9	0.5	<5	a	B.1
Copper, dissolved	7440-50-8	0.5	6, 3, 3.55, 3.49, 2.58, <2.5	a,b,c,d	C.1
Lead, dissolved	7439-92-1	0.5	<1	a	B.1
Mercury, dissolved	7439-97-6	1.0	<0.2	a	A
Nickel, dissolved	7440-02-0	0.5	<5	a	B.1
Selenium, total recoverable	7782-49-2	2.0	<2	a	A
Silver, dissolved	7440-22-4	0.2	<0.2	a	A
Thallium, dissolved	7440-28-0	---	<0.3	a	A
Zinc, dissolved	7440-66-6	2.0	<10	a	B.1
PESTICIDES/PCBS					
Aldrin ^c	309-00-2	0.05	<0.05	a	A
Chlordane ^c	57-74-9	0.2	<0.2	a	A
Chlorpyrifos	2921-88-2	---	<2	a	A
DDD ^c	72-54-8	0.1	<0.05	a	A
DDE ^c	72-55-9	0.1	<0.05	a	A
DDT ^c	50-29-3	0.1	<0.05	a	A
Demeton	8065-48-3	---	<1	a	A
Diazinon	333-41-5	---	<1	a	A
Dieldrin ^c	60-57-1	0.1	<0.1	a	A
Alpha-Endosulfan	959-98-8	0.1	<0.05	a	A
Beta-Endosulfan	33213-65-9	0.1	<0.05	a	A
Alpha-Endosulfan + Beta-Endosulfan		---	<0.05	a	A
Endosulfan Sulfate	1031-07-8	0.1	<0.05	a	A
Endrin	72-20-8	0.1	<0.05	a	A
Endrin Aldehyde	7421-93-4	---	<0.05	a	A
Guthion	86-50-0	---	<1	a	A
Heptachlor ^c	76-44-8	0.05	<0.05	a	A
Heptachlor Epoxide ^c	1024-57-3	---	<0.05	a	A
Hexachlorocyclohexane Alpha-BHC ^c	319-84-6	---	<0.05	a	A
Hexachlorocyclohexane Beta-BHC ^c	319-85-7	---	<0.05	a	A
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	<0.05	a	A
Kepone	143-50-0	---	<10.3	a	A
Malathion	121-75-5	---	<1	a	A
Methoxychlor	72-43-5	---	<0.5	a	A
Mirex	2385-85-5	---	<0.5	a	A
Parathion	56-38-2	---	<1	a	A
PCB Total ^c	1336-36-3	7.0	<0.5	a	A
Toxaphene ^c	8001-35-2	5.0	<1	a	A

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BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	<10	a	A
Anthracene	120-12-7	10.0	<10	a	A
Benzidine ^C	92-87-5	---	<50	a	A
Benzo (a) anthracene ^C	56-55-3	10.0	<0.05	a	A
Benzo (b) fluoranthene ^C	205-99-2	10.0	<10	a	A
Benzo (k) fluoranthene ^C	207-08-9	10.0	<10	a	A
Benzo (a) pyrene ^C	50-32-8	10.0	<10	a	A
Bis 2-Chloroethyl Ether ^C	111-44-4	---	<10	a	A
Bis 2-Chloroisopropyl Ether	108-60-1	---	<10	a	A
Bis-2-Ethylhexyl Phthalate ^C	117-81-7	10.0	<10	a	A
Butyl benzyl phthalate	85-68-7	10.0	<10	a	A
2-Chloronaphthalene	91-58-7	---	<10	a	A
Chrysene ^C	218-01-9	10.0	<10	a	A
Dibenz(a,h)anthracene ^C	53-70-3	20.0	<10	a	A
1,2-Dichlorobenzene	95-50-1	10.0	<10	a	A
1,3-Dichlorobenzene	541-73-1	10.0	<10	a	A
1,4-Dichlorobenzene	106-46-7	10.0	<10	a	A
3,3-Dichlorobenzidine ^C	91-94-1	---	<10	a	A
Diethyl phthalate	84-66-2	10.0	<10	a	A
Dimethyl phthalate	131-11-3	---	<10	a	A
Di-n-Butyl Phthalate	84-74-2	10.0	<10	a	A
2,4-Dinitrotoluene	121-14-2	10.0	<10	a	A
1,2-Diphenylhydrazine ^C	122-66-7	---	<10	a	A
Fluoranthene	206-44-0	10.0	<10	a	A
Fluorene	86-73-7	10.0	<10	a	A
Hexachlorobenzene ^C	118-74-1	---	<10	a	A
Hexachlorobutadiene ^C	87-68-3	---	<10	a	A
Hexachlorocyclopentadiene	77-47-4	---	<10	a	A
Hexachloroethane ^C	67-72-1	---	<10	a	A
Indeno(1,2,3-cd)pyrene ^C	193-39-5	20.0	<10	a	A
Isophorone ^C	78-59-1	10.0	<10	a	A
Nitrobenzene	98-95-3	10.0	<10	a	A
N-Nitrosodimethylamine ^C	62-75-9	---	<10	a	A
N-Nitrosodi-n-propylamine ^C	621-64-7	---	<10	a	A
N-Nitrosodiphenylamine ^C	86-30-6	---	<10	a	A
Pyrene	129-00-0	10.0	<10	a	A
1,2,4-Trichlorobenzene	120-82-1	10.0	<10	a	A
VOLATILES					
Acrolein	107-02-8	---	<10	a	A
Acrylonitrile ^C	107-13-1	---	<5	a	A
Benzene ^C	71-43-2	10.0	<1	a	A
Bromoform ^C	75-25-2	10.0	<1	a	A
Carbon Tetrachloride ^C	56-23-5	10.0	<1	a	A
Chlorobenzene	108-90-7	50.0	<1	a	A
Chlorodibromomethane ^C	124-48-1	10.0	<1	a	A

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Chloroform	67-66-3	10.0	<1	a	A
Dichlorobromomethane ^C	75-27-4	10.0	<1	a	A
1,2-Dichloroethane ^C	107-06-2	10.0	<1	a	A
1,1-Dichloroethylene	75-35-4	10.0	<1	a	A
1,2-trans-dichloroethylene	156-60-5	---	<1	a	A
1,2-Dichloropropane ^C	78-87-5	---	<1	a	A
1,3-Dichloropropene ^C	542-75-6	---	<10	a	A
Ethylbenzene	100-41-4	10.0	<1	a	A
Methyl Bromide	74-83-9	---	<1	a	A
Methylene Chloride ^C	75-09-2	20.0	<4	a	A
1,1,2,2-Tetrachloroethane ^C	79-34-5	---	<1	a	A
Tetrachloroethylene	127-18-4	10.0	<1	a	A
Toluene	10-88-3	10.0	<1	a	A
1,1,2-Trichloroethane ^C	79-00-5	---	<1	a	A
Trichloroethylene ^C	79-01-6	10.0	<1	a	A
Vinyl Chloride ^C	75-01-4	10.0	<1	a	A
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	<10	a	A
2,4-Dichlorophenol	120-83-2	10.0	<10	a	A
2,4-Dimethylphenol	105-67-9	10.0	<0.05	a	A
2,4-Dinitrophenol	51-28-5	---	<10	a	A
2-Methyl-4,6-Dinitrophenol	534-52-1	---	<50	a	A
Nonylphenol	104-40-51	---	<50	a	A
Pentachlorophenol ^C	87-86-5	50.0	<20	a	A
Phenol	108-95-2	10.0	<10	a	A
2,4,6-Trichlorophenol ^C	88-06-2	10.0	<10	a	A
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	0.03	a	A
Chloride (mg/L)	16887-00-6	---	3.14 mg/L	a	C.1
TRC (mg/L)	7782-50-5	0.1 mg/L	20 (default value)	---	C.2
Cyanide, Free	57-12-5	10.0	<10 (Total)	a	A
Sulfide, dissolved	18496-25-8	100	No data. Testing required.	---	---
Hydrogen Sulfide	7783064	---	<1.0 mg/L	a	A
Tributyltin	60-10-5	---	Previously evaluated, no testing required.	---	---

The superscript "C" following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10⁻⁵.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:

a = Data from permit application 01.14.15
 b = Data from 2010 permit application
 c = Additional copper data received 9.10.15 and 9.16.15
 d= Additional copper data received 10.27.15

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

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STAT.EXE Results Output

<p><u>Arsenic, dissolved</u> Chronic averaging period = 4 WLAa = 350 WLAc = 370 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 2 Variance = 1.44 C.V. = 0.6 97th percentile daily values = 4.86683 97th percentile 4 day average = 3.32758 97th percentile 30 day average= 2.41210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 2</p>	<p><u>Chloride:</u> Chronic averaging period = 4 WLAa = 890 WLAc = 560 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 3.14 Variance = 3.54945 C.V. = 0.6 97th percentile daily values = 7.64093 97th percentile 4 day average = 5.22430 97th percentile 30 day average= 3.78700 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 3.14</p>
<p><u>Chromium III, dissolved</u> Chronic averaging period = 4 WLAa = 400 WLAc = 120 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 1 Variance = .36 C.V. = 0.6 97th percentile daily values = 2.43341 97th percentile 4 day average = 1.66379 97th percentile 30 day average= 1.20605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 1</p>	<p><u>Chromium VI, dissolved</u> Chronic averaging period = 4 WLAa = 17 WLAc = 26 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 5</p>

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STAT.EXE Results Output

<p><u>Copper, dissolved</u> Chronic averaging period = 4 WLAa = 8.9 WLAc = 14 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 6 Expected Value = 3.52 Variance = 4.46054 C.V. = 0.6 97th percentile daily values = 8.56562 97th percentile 4 day average = 5.85654 97th percentile 30 day average= 4.24530 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 6, 3, 3.55, 3.49, 2.58, 2.5</p>	<p><u>Lead, dissolved</u> Chronic averaging period = 4 WLAa = 68 WLAc = 18 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 1 Variance = .36 C.V. = 0.6 97th percentile daily values = 2.43341 97th percentile 4 day average = 1.66379 97th percentile 30 day average= 1.20605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 1</p>
<p><u>Nickel, dissolved</u> Chronic averaging period = 4 WLAa = 130 WLAc = 33 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 5</p>	<p><u>Total Residual Chlorine</u> Chronic averaging period = 4 WLAa = 0.02 WLAc = 0.027 Q.L. = 0.1 # samples/mo. = 30 # samples/wk. = 7</p> <p>Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.1210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 0.02 Average Weekly limit = 1.22141441350406E-02 Average Monthly Limit = 9.91242327735358E-03</p> <p>The data are: 20</p>

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STAT.EXE Results Output

Zinc, dissolved

Chronic averaging period = 4

WLAa = 82

WLAc = 190

Q.L. = 2

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 10

Variance = 36

C.V. = 0.6

97th percentile daily values = 24.3341

97th percentile 4 day average = 16.6379

97th percentile 30 day average = 12.0605

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 10

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EVALUATION OF DISCHARGES FROM INTERNAL OUTFALL 101 (Traveling Screen Backwash)

Basis for Permit Limits

Design Flow: NA

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
	1,2	Outfall 101 shall contain only river water from the screen backwash. There shall be no discharge of process wastewater from this outfall. No monitoring of this outfall is required.			

BASIS DESCRIPTIONS

1. Water Quality Standards (9VAC25-260)
2. Best Professional Judgment

EVALUATION:

Outfall 101 is an internal discharge point for Outfall 001. The traveling screens are backwashed with river water to remove debris and fish. The spray water and debris/fish are discharged through Outfall 101 into the Outfall 001 discharge tunnel. No discharge of process wastewater is authorized and no monitoring requirements are deemed necessary.

EVALUATION OF DISCHARGES FROM INTERNAL OUTFALL 202 (Metal Cleaning Waste Treatment Basin)

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

Daily Maximum Flow: 1.6138 MGD

Maximum 30-day Average Flow: 1.0146 MGD

Basis for Permit Limits

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		1/ Month	Estimate
-----	-----	Monthly Average		Daily Maximum		-----	-----
TSS (mg/L)	2	30.0		100.0		1/ Month	Grab
Oil & Grease (mg/L)	2	15.0		20.0		1/ Month	Grab
Total Copper	2	1.0 mg/L	3.8 kg/d	1.0 mg/L	6.1 kg/d	1/ Month	Grab
Total Iron	2	1.0 mg/L	3.8 kg/d	1.0 mg/L	6.1 kg/d	1/ Month	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9VAC25-31)
2. Federal Effluent Limitation Guidelines (Steam Electric Power Generating Point Source Category – 40 CFR Part 423)

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EFFLUENT LIMITATIONS GUIDELINES

The Metal Cleaning Waste Treatment Basin receives chemical and non-chemical metals cleaning waste generated from the cleaning of metal process equipment. Chemical metal cleaning waste and metal cleaning wastes are defined in the Steam Electric Power Generating ELGs at 40 CFR Part 423.11(c) and (d).

ELGs for Best Practicable Control Technology Currently Available (BPT) in 40 CFR Part 423.12(b)(5) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
TSS	100.0 mg/L	30.0 mg/L
Oil & Grease	20.0 mg/L	15.0 mg/L
Total Copper	1.0 mg/L	1.0 mg/L
Total Iron	1.0 mg/L	1.0 mg/L

ELGs for Best Available Technology (BAT) contained in 40 CFR Part 423.13(e) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
Total Copper	1.0 mg/L	1.0 mg/L
Total Iron	1.0 mg/L	1.0 mg/L

The applicant indicated in the 2015 Application Addendum dated October 6, 2015 that the maximum daily flow was 1.6138 MGD and the maximum 30-day average flow was 1.0146 MGD.

Loading limits for Total Copper and Total Iron were calculated as follows:

Monthly Average concentration = 1.0 mg/L

Monthly Average loading: $(1.0 \text{ mg/L})(1.0146 \text{ MGD})(3.785) = 3.8 \text{ kg/d}$

Daily Maximum concentration = 1.0 mg/L

Daily Maximum loading: $(1.0 \text{ mg/L})(1.6138 \text{ MGD})(3.785) = 6.1 \text{ kg/d}$

At the permitting authority's discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limit instead of the mass based limit specified in paragraph 423.12(b). It is staff's best professional judgment that applying the maximum concentrations and the average concentrations for TSS and Oil & Grease to the discharge will maintain and protect the water quality of the receiving stream. This approach has been carried forward from the previous permit. In addition, the monitoring results have been consistently at or below the QL for TSS and Oil & Grease.

Upon discharge of process wastewater from dewatering activities from the Metal Cleaning Waste Treatment Basin (see Part I.G.19 of the permit) and lasting until Outfall 202 is retired, the dewatering wastewaters are to be managed to address the monitoring and effluent limitations established in Appendix E. Although the monitoring and effluent limitations in Appendix E were developed to address dewatering activities for the coal ash impoundments, the monitoring and limitations are also considered to be protective in addressing dewatering activities for the Metal Cleaning Waste Treatment Basin. The management of the dewatering wastewaters may include the use of interim treatment systems. The discharge of dewatering wastewater from the Metal Cleaning Waste Treatment Basin is designated as internal Outfall 505. It is staff's best professional judgment that the effluent limits be applied to the discharge of dewatering wastewater rather than being applied at Outfall 202. Meeting effluent limits at internal Outfall 505 will protect and maintain water quality at any of the outfalls identified as discharge options, while providing Dominion with the flexibility needed to achieve closure by the required deadline.

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EVALUATION OF DISCHARGES FROM INTERNAL OUTFALL 203 (Sewage Treatment Plant)

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

Basis for Permit Limits

Outfall 203 - Design Flow: 0.0432 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		1/Month	Estimate
-----	-----	Monthly Average		Weekly Average		-----	-----
BOD ₅	2	30 mg/L	4.9 kg/d	45 mg/L	7.4 kg/d	1/Month	Grab
TSS	2	30 mg/L	4.9 kg/d	45 mg/L	7.4 kg/d	1/Month	Grab
E. coli (Geometric Mean) (N/100mL)	4	126 Geometric Mean		NA		4/Month in any month of each calendar year 10 a.m. to 4 p.m.* or 2/Week 10 a.m. to 4 p.m.**	Grab
-----	-----	Minimum		Maximum		-----	-----
pH	2	6.0		9.0		1/Month	Grab
Contact Chlorine (TRC)(mg/L)	3,4	1.0		NA		1/Day	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

4/Month in any month of each calendar year = 4 samples with at least 1 sample taken each calendar week, in any calendar month and reported with the December DMR due January 10th of every year.

2/Week = 2 samples taken during the calendar week, no less than 48 hours apart

* = Applicable only when chlorination is used for disinfection

** = Applicable if an alternative to chlorination is used for disinfection.

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9VAC25-31)
2. Federal Effluent Requirements (Secondary Treatment Regulation – 40CFR133)
3. Best Professional Judgment
4. Water Quality Standards
5. Guidance Memo No. 14-2011

DESCRIPTION OF EXISTING STP:

Sanitary wastewater is treated in a separate sewage treatment plant which discharges through internal Outfall 203 to the Stormwater Management Pond.

Design Flow: 0.0432 MGD

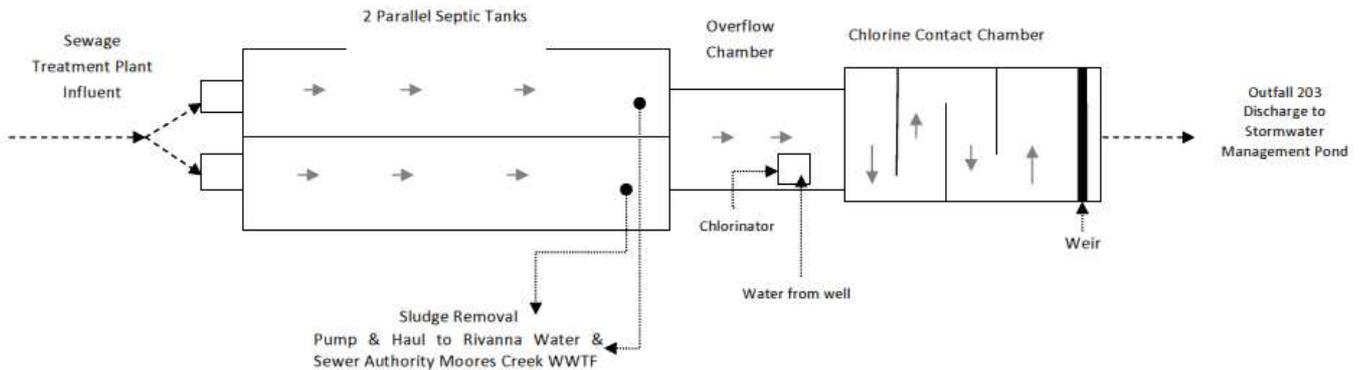
Average Flow: 0.008 MGD

The STP consists of two parallel septic tanks which provide primary treatment and sedimentation. Two centrifugal pumps deliver wastewater to one or both of two chlorine tablet feeders as determined by flow. Solids from the septic tanks and chlorine contact tank are pumped and hauled to Moores Creek Regional WWTF for further treatment and disposal. The effluent discharges intermittently from the chlorine contact tank to the Stormwater Management Pond.

The Virginia Department of Health concurred on a Reliability Class II classification for the STP on June 3, 2015.

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Diagram of STP



EVALUATION OF THE EFFLUENT – FEDERAL EFFLUENT GUIDELINES FOR SECONDARY TREATMENT: 40 CFR Part 133.102

The 30-day average for BOD₅ and TSS shall not exceed 30 mg/L.

The 7-day average for BOD₅ and TSS shall not exceed 45 mg/L.

The pH must be in the range of 6.0 – 9.0 SU

These secondary treatment limits apply to internal Outfall 203 for the sanitary WWTP.

EVALUATION OF THE EFFLUENT – BOD₅ AND TSS

The BOD₅ and TSS limits at Outfall 203 are based on the Secondary Treatment Regulations and were calculated as follows:

$$\text{Monthly Average: } (30 \text{ mg/L})(0.0432 \text{ MGD})(3.785) = 4.9 \text{ kg/d}$$

$$\text{Maximum Weekly Average: } (45 \text{ mg/L})(0.0432 \text{ MGD})(3.785) = 7.35 \text{ kg/d, round to } 7.4 \text{ kg/d}$$

The secondary treatment standards are technology standards and apply to the sanitary wastewater discharge prior to comingling with the industrial wastewater. There is no recent data confirming that the Outfall 203 discharge meets secondary treatment standards prior to discharge to the Stormwater Management Pond. DEQ has previously allowed Form 2C application sampling data for BOD₅, TSS, and pH at Outfall 002 to serve as an indication that the secondary treatment levels are achieved. Because the effluent from Stormwater Management Pond will no longer be routed to the West Ash Pond which provided additional treatment, effluent limits for BOD₅, TSS, and pH have been imposed at Outfall 203 at a frequency of 1/Month to confirm that secondary treatment levels are achieved by the STP.

EVALUATION OF THE EFFLUENT – DISINFECTION

Chlorine disinfection is utilized in the STP. When chlorination is utilized minimum contact TRC limits are required. In addition to the minimum TRC contact requirements, E. coli monitoring at a frequency of 4/Month sampling during at least 1 month in each calendar year of the permit term has been imposed to demonstrate compliance with the monthly geometric mean limit and to ensure adequate disinfection. This additional E. coli monitoring has been imposed in accordance with Guidance Memo No. 14-2003. If an alternative to chlorination is utilized, E. coli monitoring is required 2/Week to demonstrate compliance with the monthly geometric mean limit.

The STP does not include dechlorination. Monitoring and limits for TRC have been imposed at this reissuance at any outfall that receives effluent from the Stormwater Management Pond in order to ensure that the chlorine concentrations in any effluent that reaches the James River are protective of water quality.

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APPENDIX D

EVALUATION OF THE EFFLUENT

OUTFALLS 002, 003, 004, and 006

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

PARAMETER	BASIS FOR LIMITS	Final Limits		Combined Flow: 4.2912 MGD	
		EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow (MGD)	1	NL	NL	2/Month	Estimate
-----	-----	Monthly Average	Daily Maximum	-----	-----
TSS	3	30.0 mg/L	100.0 mg/L	2/Month	Grab
Oil & Grease (mg/L)	3	15.0	20.0	2/Month	Grab
Total Residual Chlorine (TRC)(mg/L)	2	0.036	0.072	1/Day	Grab
-----	-----	Minimum	Maximum	-----	-----
pH	2,3	6.0 SU	9.0 SU	2/Month	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

2/Month = 2 samples taken during the calendar month, no less than 7 days apart

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9VAC25-31)
2. Water Quality Standards (9VAC25-260)
3. Federal Effluent Limitation Guidelines (Steam Electric Power Generating Point Source Category – 40 CFR Part 423)

APPENDIX A lists all of the sources of wastewater which are directed to the West Ash Pond and North Ash Pond.

EFFLUENT LIMITATIONS GUIDELINES

Fly Ash and Bottom Ash are defined in the Steam Electric Power Generating ELGs at 40 CFR Part 423.11 (e) and (f).

ELGs for Best Practicable Control Technology Currently Available (BPT) for Fly Ash and Bottom Ash transport water in 40 CFR Part 423.12(b)(4) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
TSS	100.0 mg/L	30.0 mg/L
Oil & Grease	20.0 mg/L	15.0 mg/L

Low volume waste sources are defined in the Steam Electric Power Generating ELGs at 40 CFR Part 423.11 (b).

ELGs for Best Practicable Control Technology Currently Available (BPT) for low volume waste sources in 40 CFR Part 423.12(b)(3) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
TSS	100.0 mg/L	30.0 mg/L
Oil & Grease	20.0 mg/L	15.0 mg/L

pH – BPT limits are 6.0 to 9.0 SU for all discharges except once through cooling water in accordance with 40 CFR Part 423.12(b)(1). Testing results indicate that the applicant is currently in compliance with these limits.

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The four-year composite average for TSS is 18 mg/L. The ratio of this long term average to the monthly average limit is 60%. Based on this ratio, the monitoring frequency of 2/Month has been carried forward from the previous permit. Oil & Grease cannot be calculated because testing results over the last three years have always been less than QL. The monitoring frequency has been set at 2/Month at this reissuance based on past monitoring results.

The applicant stated that the low volume wastewater influent to the “Ash Sluice Water” consists of localized rinsing of ash from the boiler tubes, blasting/rinsing of clinkers, cleaning of FD fans, PA fans and ID fans, turbine cleaning, and other wastewaters identified as low volume waste.

Limits for low volume wastes are not applied to the Stormwater Management Pond because: 1) additional treatment for these parameters is provided; and 2) the Outfall 002 effluent has consistently met the limits for TSS and the concentration of Oil & Grease has always been below QL.

At the permitting authority’s discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limit instead of the mass based limit specified in paragraph 423.12(b). It is staff’s best professional judgment that applying the maximum concentrations and the average concentrations for TSS and Oil & Grease to the discharge will maintain and protect the water quality of the receiving stream. This approach has been carried forward from the previous permit.

EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Input parameters for WQC and WLAs

Stream: A Flow Frequency Determination for the receiving stream is included in Appendix B. Water quality data for mean hardness, temperature, and pH for the receiving stream were obtained from Ambient Water Quality Monitoring Station No. 2-JMS176.63 on the James River. The ambient station is located 0.52 river miles upstream of BPS.

Stream Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	62.5	mg/L
90 th Percentile Temperature =	26.86	°C
90 th Percentile Maximum pH =	8.03	SU
10 th Percentile Maximum pH =	7.06	SU

Background in-stream water quality conditions were established for antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc using DEQ’s probabilistic monitoring data collected at nearly 100 sites in the same James River Hydrologic Unit Code (HUC) where the subject facility is located.

Discharge: Temperature and hardness data were obtained from the 2015 application submitted by the permittee for Outfall 002. pH data were determined from DMR data.

Discharge Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	70.1	mg/L
90 th Percentile Temperature =	28.3	°C
90 th Percentile Maximum pH =	8.3	SU
10 th Percentile Maximum pH =	7.0	SU

WQC and WLAs were calculated for all WQS parameters. Those WQC and WLAs are presented in the MSTRANTI spreadsheet that can be found in Appendix G. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- TRC: Limits are required for TRC to address the discharge of chlorinated sanitary wastewater to the Stormwater Management Pond which ultimately may be discharged to either Outfall 002 and/or Outfall 004. The TRC limits and monitoring apply if effluent from the Stormwater Management Pond is being discharged through the specific outfall.

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PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh} , the WLA_{hh} was imposed as the limit.

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or $<$ the required Quantification Level (QL), and at least one detection level is \leq the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are $>$ the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	<1	a	B.1
Arsenic, dissolved	7440-38-2	1.0	4	a	C.1
Cadmium, dissolved	7440-43-9	0.3	<0.3	a	A
Chromium III, dissolved	16065-83-1	0.5	<1 (Total Chromium)	a	B.1
Chromium VI, dissolved	18540-29-9	0.5	<5	a	B.1
Copper, dissolved	7440-50-8	0.5	4	a	C.1
Lead, dissolved	7439-92-1	0.5	<1	a	B.1
Mercury, dissolved	7439-97-6	1.0	<0.2	a	A
Nickel, dissolved	7440-02-0	0.5	<5	a	B.1
Selenium, total recoverable	7782-49-2	2.0	<2	a	A
Silver, dissolved	7440-22-4	0.2	<0.2	a	A
Thallium, dissolved	7440-28-0	---	<0.3	a	A
Zinc, dissolved	7440-66-6	2.0	<10	a	B.1
PESTICIDES/PCBS					
Aldrin ^C	309-00-2	0.05	<0.05	a	A
Chlordane ^C	57-74-9	0.2	<0.2	a	A
Chlorpyrifos	2921-88-2	---	<2	a	A
DDD ^C	72-54-8	0.1	<0.05	a	A
DDE ^C	72-55-9	0.1	<0.05	a	A
DDT ^C	50-29-3	0.1	<0.05	a	A
Demeton	8065-48-3	---	<1	a	A
Diazinon	333-41-5	---	<1	a	A
Dieldrin ^C	60-57-1	0.1	<0.05	a	A
Alpha-Endosulfan	959-98-8	0.1	<0.05	a	A
Beta-Endosulfan	33213-65-9	0.1	<0.05	a	A
Alpha-Endosulfan + Beta-Endosulfan		---	<0.05	a	A
Endosulfan Sulfate	1031-07-8	0.1	<0.05	a	A
Endrin	72-20-8	0.1	<0.05	a	A
Endrin Aldehyde	7421-93-4	---	<0.05	a	A
Guthion	86-50-0	---	<1	a	A
Heptachlor ^C	76-44-8	0.05	<0.05	a	A
Heptachlor Epoxide ^C	1024-57-3	---	<0.05	a	A
Hexachlorocyclohexane Alpha-BHC ^C	319-84-6	---	<0.05	a	A
Hexachlorocyclohexane Beta-BHC ^C	319-85-7	---	<0.05	a	A
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	<0.05	a	A
Kepone	143-50-0	---	<10	a	A
Malathion	121-75-5	---	<1	a	A
Methoxychlor	72-43-5	---	<0.5	a	A
Mirex	2385-85-5	---	<0.5	a	A
Parathion	56-38-2	---	<1	a	A
PCB Total ^C	1336-36-3	7.0	<0.5	a	A
Toxaphene ^C	8001-35-2	5.0	<1	a	A

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	<10	a	A
Anthracene	120-12-7	10.0	<10	a	A
Benzidine ^C	92-87-5	---	<50	a	A
Benzo (a) anthracene ^C	56-55-3	10.0	<0.05	a	A
Benzo (b) fluoranthene ^C	205-99-2	10.0	<10	a	A
Benzo (k) fluoranthene ^C	207-08-9	10.0	<10	a	A
Benzo (a) pyrene ^C	50-32-8	10.0	<10	a	A
Bis 2-Chloroethyl Ether ^C	111-44-4	---	<10	a	A
Bis 2-Chloroisopropyl Ether	108-60-1	---	<10	a	A
Bis-2-Ethylhexyl Phthalate ^C	117-81-7	10.0	<10	a	A
Butyl benzyl phthalate	85-68-7	10.0	<10	a	A
2-Chloronaphthalene	91-58-7	---	<10	a	A
Chrysene ^C	218-01-9	10.0	<10	a	A
Dibenz(a,h)anthracene ^C	53-70-3	20.0	<10	a	A
1,2-Dichlorobenzene	95-50-1	10.0	<10	a	A
1,3-Dichlorobenzene	541-73-1	10.0	<10	a	A
1,4-Dichlorobenzene	106-46-7	10.0	<10	a	A
3,3-Dichlorobenzidine ^C	91-94-1	---	<10	a	A
Diethyl phthalate	84-66-2	10.0	<10	a	A
Dimethyl phthalate	131-11-3	---	<10	a	A
Di-n-Butyl Phthalate	84-74-2	10.0	<10	a	A
2,4-Dinitrotoluene	121-14-2	10.0	<10	a	A
1,2-Diphenylhydrazine ^C	122-66-7	---	<10	a	A
Fluoranthene	206-44-0	10.0	<10	a	A
Fluorene	86-73-7	10.0	<10	a	A
Hexachlorobenzene ^C	118-74-1	---	<10	a	A
Hexachlorobutadiene ^C	87-68-3	---	<10	a	A
Hexachlorocyclopentadiene	77-47-4	---	<10	a	A
Hexachloroethane ^C	67-72-1	---	<10	a	A
Indeno(1,2,3-cd)pyrene ^C	193-39-5	20.0	<10	a	A
Isophorone ^C	78-59-1	10.0	<10	a	A
Nitrobenzene	98-95-3	10.0	<1	a	A
N-Nitrosodimethylamine ^C	62-75-9	---	<10	a	A
N-Nitrosodi-n-propylamine ^C	621-64-7	---	<10	a	A
N-Nitrosodiphenylamine ^C	86-30-6	---	<10	a	A
Pyrene	129-00-0	10.0	<10	a	A
1,2,4-Trichlorobenzene	120-82-1	10.0	<10	a	A
VOLATILES					
Acrolein	107-02-8	---	<10	a	A
Acrylonitrile ^C	107-13-1	---	<10	a	A
Benzene ^C	71-43-2	10.0	<5	a	A
Bromoform ^C	75-25-2	10.0	<1	a	A
Carbon Tetrachloride ^C	56-23-5	10.0	<1	a	A
Chlorobenzene	108-90-7	50.0	<1	a	A

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Chlorodibromomethane ^C	124-48-1	10.0	<1	a	A
Chloroform	67-66-3	10.0	<1	a	A
Dichlorobromomethane ^C	75-27-4	10.0	<1	a	A
1,2-Dichloroethane ^C	107-06-2	10.0	<1	a	A
1,1-Dichloroethylene	75-35-4	10.0	<1	a	A
1,2-trans-dichloroethylene	156-60-5	---	<1	a	A
1,2-Dichloropropane ^C	78-87-5	---	<1	a	A
1,3-Dichloropropene ^C	542-75-6	---	<10	a	A
Ethylbenzene	100-41-4	10.0	<1	a	A
Methyl Bromide	74-83-9	---	<1	a	A
Methylene Chloride ^C	75-09-2	20.0	<4	a	A
1,1,2,2-Tetrachloroethane ^C	79-34-5	---	<1	a	A
Tetrachloroethylene	127-18-4	10.0	<1	a	A
Toluene	10-88-3	10.0	<1	a	A
1,1,2-Trichloroethane ^C	79-00-5	---	<1	a	A
Trichloroethylene ^C	79-01-6	10.0	<1	a	A
Vinyl Chloride ^C	75-01-4	10.0	<1	a	A
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	<10	a	A
2,4-Dichlorophenol	120-83-2	10.0	<10	a	A
2,4-Dimethylphenol	105-67-9	10.0	<0.5	a	A
2,4-Dinitrophenol	51-28-5	---	<10	a	A
2-Methyl-4,6-Dinitrophenol	534-52-1	---	<50	a	A
Nonylphenol	104-40-51	---	<5	a	A
Pentachlorophenol ^C	87-86-5	50.0	<20	a	A
Phenol	108-95-2	10.0	<10	a	A
2,4,6-Trichlorophenol ^C	88-06-2	10.0	<10	a	A
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	0.02	a	A
Chloride (mg/L)	16887-00-6	---	16.27	a	C.1
TRC (mg/L)	7782-50-5	0.1 mg/L	Believed absent; waived at application	---	---
Cyanide, Free	57-12-5	10.0	<10	a	A
Sulfide, dissolved	18496-25-8	100	No data. Testing will be required for Outfall 002 (West Treatment Pond) Final configuration	---	---
Hydrogen Sulfide	7783064	---	<1.0 mg/L	a	A
Tributyltin	60-10-5	---	<0.03	b	A
Hardness (mg/L as CaCO ₃)	471-34-1	---	70.1	a	---

The superscript "C" following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10⁻⁵.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:

a = Permit application 01.14.15

b = Permit application 01.05.10

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

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STAT.EXE Results Output

<p><u>Arsenic, dissolved</u> Chronic averaging period = 4 WLAa = 1300 WLAc = 3400 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 4 Variance = 5.76 C.V. = 0.6 97th percentile daily values = 9.73367 97th percentile 4 day average = 6.65516 97th percentile 30 day average= 4.82421 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 4</p>	<p><u>Chloride</u> Chronic averaging period = 4 WLAa = 3200 WLAc = 5300 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 16.27 Variance = 95.2966 C.V. = 0.6 97th percentile daily values = 39.5917 97th percentile 4 day average = 27.0698 97th percentile 30 day average= 19.6224 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 16.27</p>
<p><u>Chromium III, dissolved</u> Chronic averaging period = 4 WLAa = 1500 WLAc = 1100 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 1 Variance = .36 C.V. = 0.6 97th percentile daily values = 2.43341 97th percentile 4 day average = 1.66379 97th percentile 30 day average= 1.20605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 1</p>	<p><u>Chromium VI, dissolved</u> Chronic averaging period = 4 WLAa = 59 WLAc = 240 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 5</p>

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STAT.EXE Results Output

<p><u>Copper, dissolved</u> Chronic averaging period = 4 WLAa = 32 WLAc = 130 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 4 Variance = 5.76 C.V. = 0.6 97th percentile daily values = 9.73367 97th percentile 4 day average = 6.65516 97th percentile 30 day average= 4.82421 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 4</p>	<p><u>Lead, dissolved</u> Chronic averaging period = 4 WLAa = 260 WLAc = 170 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 1 Variance = .36 C.V. = 0.6 97th percentile daily values = 2.43341 97th percentile 4 day average = 1.66379 97th percentile 30 day average= 1.20605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 1</p>
<p><u>Nickel, dissolved</u> Chronic averaging period = 4 WLAa = 470 WLAc = 300 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 5</p>	<p><u>Zinc, dissolved</u> Chronic averaging period = 4 WLAa = 300 WLAc = 1800 Q.L. = 2 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 10 Variance = 36 C.V. = 0.6 97th percentile daily values = 24.3341 97th percentile 4 day average = 16.6379 97th percentile 30 day average= 12.0605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 10</p>

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STAT.EXE Results Output

Total Residual Chlorine

Chronic averaging period = 4

WLAa = 0.072

WLAc = 0.25

Q.L. = 0.1

samples/mo. = 30

samples/wk. = 7

Summary of Statistics:

observations = 1

Expected Value = 20

Variance = 144

C.V. = 0.6

97th percentile daily values = 48.6683

97th percentile 4 day average = 33.2758

97th percentile 30 day average = 24.1210

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 0.072

Average Weekly limit = 0.043970918886146

Average Monthly Limit = 3.56847237984729E-02

The data are: 20

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EVALUATION OF DISCHARGES FROM OUTFALLS 003 AND 006

Outfall 003

During the period prior to Part I.A.9 of the permit becoming effective, Outfall 003 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 003 prior to Part I.A.9 of the permit becoming effective.

During the dewatering activities when Part I.A.9 of the permit is effective, process wastewater from internal Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 003.

Outfall 003 will be retired following the completion of the dewatering activities at the facility.

Outfall 006

During the period prior to Part I.A.9 of the permit becoming effective, Outfall 006 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 006 prior to Part I.A.9 of the permit becoming effective.

During the dewatering activities when Part I.A.9 of the permit is effective, process wastewater from Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 006.

Following the dewatering activities, Outfall 006 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 006 during this period.

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APPENDIX E

PROCESS WASTEWATER FROM DEWATERING ACTIVITIES

Outfalls 501, 502, 503, 504, and 505

Final Limits

Combined Flow: 10.2912 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow (MGD)	1	NL	NL	1/Day	Estimate
TSS (mg/L)	3	30.0	100.0	3/Week	4 HC
Oil & Grease (mg/L)	3	15.0	20.0	3/Week	4 HC
Total Recoverable Antimony (ug/L)	2,4	2,100	2,100	3/Week	4 HC
Total Recoverable Arsenic (ug/L)	2,4	290	530	3/Week	4 HC
Total Recoverable Cadmium (ug/L)	2,4	1.8	3.2	3/Week	4 HC
Total Recoverable Chromium III	2,4	120	220	3/Week	4 HC
Total Recoverable Chromium VI	2,4	18	34	3/Week	4 HC
Total Recoverable Copper (ug/L)	2,4	12	23	3/Week	4 HC
Total Recoverable Lead (ug/L)	2,4	19	35	3/Week	4 HC
Total Recoverable Mercury (ug/L)	2,4	1.5	2.8	3/Week	4 HC
Total Recoverable Nickel (ug/L)	2,4	31	57	3/Week	4 HC
Total Recoverable Selenium (ug/L)	2,4	9.6	18	3/Week	4 HC
Total Recoverable Silver (ug/L)	2,4	2.7	5.0	3/Week	4 HC
Total Recoverable Thallium (ug/L)	2,4	1.4	1.4	3/Week	4 HC
Total Recoverable Zinc (ug/L)	2,4	110	210	3/Week	4 HC
Total Recoverable Aluminum (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Barium (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Beryllium (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Boron (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Cobalt (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Iron (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Molybdenum (ug/L)	4	NL	NL	1/Month	4 HC
Total Recoverable Vanadium (ug/L)	4	NL	NL	1/Month	4 HC
Cyanide, Free (ug/L)	2,4	NL	NL	1/Month	4 HC
Chloride (mg/L)	2,4	450	820	3/Week	4 HC
Ammonia-N (mg/L)	2,4	9.6	14	1/Week	4 HC
Hardness (mg/L as CaCO ₃)	2,4	NL	NL	3/Week	4 HC
-----	-----	Minimum	Maximum	-----	-----
pH	2,3	6.0 SU	9.0 SU	3/Week	Grab
Acute WET, <i>Ceriodaphnia dubia</i> (%)	2,4	100	NA	1/Month	24 HC
Chronic WET, <i>Ceriodaphnia dubia</i> (TU _c)	2,4	NA	6.25	1/Month	24 HC
Acute WET, <i>Pimephales promelas</i> (%)	2,4	100	NA	1/Month	24 HC
Chronic WET, <i>Pimephales promelas</i> (TU _c)	2,4	NA	6.25	1/Month	24 HC

NL = No Limitation, monitoring required NA = Not Applicable 4HC = 4-Hour Composite 24HC = 24-Hour Composite
Refer to permit for footnotes regarding parameters with 3/Week and 1/Month monitoring frequencies

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9VAC25-31)
2. Water Quality Standards (9VAC25-260)
3. Federal Effluent Limitation Guidelines (Steam Electric Power Generating Point Source Category – 40 CFR Part 423)
4. See rationale in Appendix E

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Ash dewatering water (pore water within the coal combustion residuals mass) and contact stormwater (stormwater that has contacted the coal combustion residuals) are process wastewater from dewatering activities.

Compliance with the limits above may be demonstrated with or without additional treatment.

Discharges associated with Coal Combustion Residual Impoundment Closure: Effluent Screening and Limitation Development

Effective October 2015, the U.S. Environmental Protection Agency (EPA) adopted a final Rule that will regulate the disposal of coal combustion residuals (CCR) as solid waste under subtitle D of the Resource Conservation and Recovery Act. Coal combustion residuals (otherwise known as coal ash) may include fly ash, bottom ash, boiler slag, and other low volume waste materials and are generated from burning coal for the purposes of generating electrical power. Disposal of the CCRs at this facility has historically been accomplished in impoundments located on site. These impoundments include surface waters originating from precipitation, storm water runoff into the impoundments, comingled process wastewaters, and waters used to hydraulically dredge ash from one pond to another. Interstitial, or pore, waters, also exist within the bottom residual mass of the impoundment. Due to its direct contact and exposure to the coal ash materials, the pollutant concentrations of the coal ash interstitial waters may pose a reasonable potential to exceed established water quality criteria. In response to EPA's 2015 CCR Rule, the owner plans to remove and discharge the accumulated waters to dry the ash and residuals that have settled to the bottom of the impoundment. This process is expected to involve the disturbance, movement, or re-suspension of the bottom residuals. Drying the ash and bottom residuals will facilitate their subsequent removal or construction of a closure cap of the impoundment system.

To identify and evaluate constituents of potential concern (COPC) associated with the removal of waters from the coal ash ponds, DEQ relied upon work previously performed by the EPA and documented in the following: 1) 40CFR Part 423 federal effluent limitation guidelines (ELGs) for the "Steam Electric Power Generating Point Source Category;" 2) a June 7, 2010 EPA memorandum titled, "National Pollutant Discharge Elimination System (NPDES) Permitting of Wastewater Discharges from Flue Gas Desulfurization (FGD) and Coal Combustion Residual (CCR) Impoundments at Steam Electric Power Plants;" and 3) a 2015 final Rule (commonly referred to as the "CCR Rule") that amended 40 CFR §§257.50 – 257.107, "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments."

In its June 2010 memo,¹ EPA identified 37 chemical parameters that had the potential to exist in relatively high concentrations in CCR effluent. Several years later, in the preamble to the 2015 CCR Rule, EPA identified 35 "Table 1"² chemical parameters that represented a hazard potential because they were characteristic of releases from coal combustion impoundments and may pose a toxicity risk potential. EPA performed further probabilistic analyses of the potential risks to human health and ecological receptors from the 35 Table 1 constituents and narrowed the list down to 23 "Table 2"³ parameters (List of Chemical Constituents Retained for Probabilistic Analysis). These parameters include Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chloride, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Lithium, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium and Zinc.

Although the parameters listed in the CCR Rule Table 2 represent potential risks from CCR leachate releases, a conservative assumption was made that the probabilistic risks associated with leachate releases would be comparable to concerns associated with the release of CCR pore water. These 23 Table 2 constituents and all other constituents were classified in one of 4 categories for consideration.

¹ United States Environmental Protection Agency, June 7, 2010 Memorandum from James A. Hanlon, Director, Office of Wastewater Management to Water Division Directors Regions 1 – 10; "National Pollutant Discharge Elimination System (NPDES) Permitting of Wastewater Discharges from Flue Gas Desulfurization (FGD) and Coal Combustion Residual (CCR) Impoundments at Steam Electric Power Plants," Attachment B, Water Quality-Based Effluent Limits, Coal Combustion Waste Impoundments; Appendix A, Steam Electric 2007/2008 Detailed Study Report, Ash Pond Effluent Concentrations.

² Federal Register, Vol. 80, No. 74, Friday, April 17, 2015, "Table 1 – List of Chemical Constituents Evaluated in the CCR Risk Assessment," page 21449.

³ Federal Register, Vol. 80, No. 74, Friday, April 17, 2015, "Table 2 – List of Chemical Constituents Retained for Probabilistic Analysis," page 21450.

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- **Category 1 - Table 2 constituents for which water quality criteria have been adopted in the Virginia Water Quality Standards regulation (9VAC25-260):** Water quality based effluent limitations were developed for these parameters regardless of whether or not the existing data for the facility demonstrated a reasonable potential to exceed the water quality criteria. Effluent limitations were developed in this fashion for Antimony, Arsenic, Cadmium, Chloride, Chromium (III and VI), Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc. There are no water quality criteria that are applicable to the aquatic life designation for Antimony or Thallium. For these parameters, the effluent limitation is equal to the most limiting allocation for human health.
- **Category 2 – Table 2 constituents for which water quality criteria have not be adopted in the the Virginia Water Quality Standards regulation (9VAC25-260):** A Whole Effluent Toxicity limitation was established in the absence of an applicable Virginia numeric water quality criterion. This approach is consistent with EPA’s Technical Support Document for Water Quality-based Toxics Control and the June 7, 2010 EPA memorandum. Parameters included in this category include Aluminum, Barium, Beryllium, Boron, Cobalt, Iron, Molybdenum and Vanadium. Appendix J details the derivation of the calculated WET limitations that will be included with this permit action. In addition, 1/Month monitoring of these parameters, to be done concurrently with WET test monitoring, is required. In that way, data are available for analysis in the event that WET tests indicate toxicity.
- **Category 3 – Constituents not listed in Table 2 for which water quality criteria have been adopted in the Virginia Water Quality Standards regulation (9VAC25-260):** A reasonable potential analysis was performed to determine the need for water-quality based effluent limitations on a case-by-case basis. This was done for Ammonia-N and Free Cyanide.

The previous draft included limitations for Ammonia-N. The revised evaluation indicated that no limits are required for Ammonia-N. It was determined that the previous evaluation was in error; however, because the Ammonia-N limits were included in the draft permit that was public noticed, the monthly average limit of 9.6 mg/L and daily maximum limit of 14 mg/L have not been removed from the draft permit.

The VA WQS establish criteria for Free Cyanide, consistent with the federal criteria. Free Cyanide represents a fraction of Total Cyanide. While it is appropriate to use Total Cyanide data to establish that reasonable potential does not exist, it is not appropriate to use Total Cyanide data to establish that reasonable potential does exist to exceed the Free Cyanide standard. In a 1994 DEQ Memorandum (11/2/94), DEQ notes that EPA acknowledged that the use of Total Cyanide measurement to implement the criteria might be overly conservative. A method for measuring free cyanide has since been approved by EPA and is published in 40 CFR Part 136. Consequently, 1/Month monitoring for Free Cyanide has been required in the draft permit to be performed concurrently with the Whole Effluent Toxicity monitoring. The draft permit contains a reopener condition that allows DEQ to modify the permit if the monitoring indicates the need for water quality-based effluent limits.

- **Category 4 – Federal Effluent Guidelines:** Technology-based effluent limits were assigned to applicable constituents addressed by the Federal Effluent Guidelines and not otherwise controlled by a more restrictive water quality-based effluent limitation. Constituents limited under this category include TSS, Oil & Grease, and pH.

For purposes of evaluating the parameters above, the combined discharge flow of 10.2912 MGD was utilized.

The dewatering wastewaters are to be managed to address the monitoring and effluent limitations established. The management of the dewatering wastewaters may include the use of interim treatment systems. The internal outfalls are designated as follows:

- Outfall 501 - process wastewater from dewatering activities in the West Ash Pond
- Outfall 502 - process wastewater from dewatering activities in the North Ash Pond
- Outfall 503 - process wastewater from dewatering activities in the East Ash Ponds

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Outfall 504 - combination of process wastewaters from dewatering activities in the North Ash Pond, West Ash Pond, East Ash Ponds, and Metals Cleaning Waste Treatment Basin

Outfall 505 - process wastewater from dewatering activities in the Metal Cleaning Waste Treatment Basin

It is staff's best professional judgment that the effluent limits be applied to the discharges of dewatering wastewaters (Internal Outfalls 501, 502, 503, 504, and 505) rather than being applied at Outfalls 002, 003, 004, and 006. Meeting effluent limits at the internal outfalls will protect and maintain water quality at any of the outfalls identified as discharge options, while providing Dominion with the flexibility needed to achieve closure by the required deadline.

The permit contains an Outfall 999 that will be used for reporting of total flows for Internal Outfalls 501, 502, 503, 504, and 505.

EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Input parameters for instream WQC and WLAs

Stream: A Flow Frequency Determination for the receiving stream is included in Appendix B. Water quality data for mean hardness, temperature, and pH for the receiving stream were obtained from Ambient Water Quality Monitoring Station No. 2-JMS176.63 on the James River. The ambient station is located 0.52 river miles upstream of BPS.

Stream Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	62.5	mg/L
90 th Percentile Temperature =	26.86	°C
90 th Percentile Maximum pH =	8.03	SU
10 th Percentile Maximum pH =	7.06	SU

Background in-stream water quality conditions were established for antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc using DEQ's probabilistic monitoring data collected at nearly 100 sites in the same James River Hydrologic Unit Code (HUC) where the subject facility is located.

Discharge: Temperature data were obtained from the 2015 application submitted by the permittee for Outfall 002. pH values were determined from DMR data. The mean hardness value was established based on best professional judgment and is considered to be a conservative characterization of the process wastewater generated during dewatering activities.

Discharge Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	70.1	mg/L
90 th Percentile Temperature =	28.3	°C
90 th Percentile Maximum pH =	8.3	SU
10 th Percentile Maximum pH =	7.0	SU

WQC and WLAs were calculated for all WQS parameters. Those WQC and WLAs are presented in the MSTRANTI spreadsheet that can be found in Appendix G. The Category 1 parameters were analyzed per the protocol above. The Category 3 parameters were evaluated per the protocol below.

Mix Evaluation for Process Wastewater from Dewatering Activities: The mix.exe evaluation shown in Appendix B predicts the distance for at which a complete mix assumption is appropriate and also shows the percent of the stream flow that can be used for that complete mix situation. This mixing approach is typically used for the evaluation of toxic pollutants in accordance with Guidance Memo No. 00-2011.

Based on public comments, a regulatory mixing zone of 2000 feet has been established which is five times the width of the receiving stream at the point of discharge. The percent of stream flow available for mixing at 2000 feet has been calculated by dividing 2000 feet by the predicted distance for complete mix as shown in Appendix B.

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7Q10:	2000 ft	/	52,772.32 ft	=	3.79 %
30Q10:	2000 ft	/	47,539.66 ft	=	4.21 %
1Q10:	2000 ft	/	56,317.3 ft	=	3.55 %
30Q5:	2000 ft	/	44,742.53 ft	=	4.47 %
Harmonic Mean:	2000 ft	/	26,228.76 ft	=	7.62 %

The results of the mixing evaluation shown in Appendix B were compared to those shown above and the most conservative values were used.

PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS

Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or < the required Quantification Level (QL), and at least one detection level is ≤ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	0.46	b	C.1
Cyanide, Free	57-12-5	10.0	12 (Total Cyanide)	a	B.2

The superscript "C" following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10⁻⁵.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:

a = Table 3 Summary of dewatering wastewater, Application Addendum dated October 6, 2015

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

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STAT.EXE Results Output

<p><u>Arsenic, dissolved:</u> Chronic averaging period = 4 WLAa = 740 WLAc = 360 Q.L. = 1.0 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 360 Variance = 46656 C.V. = 0.6 97th percentile daily values = 876.030 97th percentile 4 day average = 598.964 97th percentile 30 day average= 434.179 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 526.526922259163 Average Weekly Limit = 385.124800125611 Average Monthly Limit = 286.867638500289</p> <p>The data are: 360</p>	<p><u>Cadmium, dissolved:</u> Chronic averaging period = 4 WLAa = 6.5 WLAc = 2.2 Q.L. = 0.3 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 2.2 Variance = 1.7424 C.V. = 0.6 97th percentile daily values = 5.35351 97th percentile 4 day average = 3.66033 97th percentile 30 day average= 2.65331 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 3.21766452491711 Average Weekly Limit = 2.35354044521207 Average Monthly Limit = 1.75308001305732</p> <p>The data are: 2.2</p>
<p><u>Chromium III, dissolved:</u> Chronic averaging period = 4 WLAa = 1000 WLAc = 150 Q.L. = 0.5 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 150 Variance = 8100 C.V. = 0.6 97th percentile daily values = 365.012 97th percentile 4 day average = 249.568 97th percentile 30 day average= 180.907 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 219.386217607985 Average Weekly Limit = 160.468666719005 Average Monthly Limit = 119.528182708454</p> <p>The data are: 150</p>	<p><u>Chromium VI, dissolved:</u> Chronic averaging period = 4 WLAa = 34 WLAc = 26 Q.L. = 0.5 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 26 Variance = 243.36 C.V. = 0.6 97th percentile daily values = 63.2688 97th percentile 4 day average = 43.2585 97th percentile 30 day average= 31.3573 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 34 Average Weekly Limit = 24.8690857973368 Average Monthly Limit = 18.5242184144366</p> <p>The data are: 26</p>

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STAT.EXE Results Output

<p><u>Copper, dissolved:</u> Chronic averaging period = 4 WLAa = 23 WLAc = 17 Q.L. = 0.5 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 17 Variance = 104.04 C.V. = 0.6 97th percentile daily values = 41.3680 97th percentile 4 day average = 28.2844 97th percentile 30 day average= 20.5029 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 23 Average Weekly Limit = 16.8232050981984 Average Monthly Limit = 12.531088927413</p> <p>The data are: 17</p>	<p><u>Lead, dissolved:</u> Chronic averaging period = 4 WLAa = 190 WLAc = 24 Q.L. = 0.5 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 24 Variance = 207.36 C.V. = 0.6 97th percentile daily values = 58.4020 97th percentile 4 day average = 39.9309 97th percentile 30 day average= 28.9452 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 35.1017948172776 Average Weekly Limit = 25.6749866750408 Average Monthly Limit = 19.1245092333526</p> <p>The data are: 24</p>
<p><u>Mercury, dissolved:</u> Chronic averaging period = 4 WLAa = 3 WLAc = 1.9 Q.L. = 1.0 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 1.9 Variance = 1.2996 C.V. = 0.6 97th percentile daily values = 4.62349 97th percentile 4 day average = 3.16120 97th percentile 30 day average= 2.29150 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 2.77889208970114 Average Weekly Limit = 2.03260311177406 Average Monthly Limit = 1.51402364764042</p> <p>The data are: 1.9</p>	<p><u>Nickel, dissolved:</u> Chronic averaging period = 4 WLAa = 330 WLAc = 39 Q.L. = 0.5 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 39 Variance = 547.56 C.V. = 0.6 97th percentile daily values = 94.9032 97th percentile 4 day average = 64.8878 97th percentile 30 day average= 47.0360 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 57.040416578076 Average Weekly Limit = 41.7218533469412 Average Monthly Limit = 31.077327504198</p> <p>The data are: 39</p>

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STAT.EXE Results Output

<p><u>Selenium, total recoverable:</u> Chronic averaging period = 4 WLAa = 43 WLAc = 12 Q.L. = 2 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 12 Variance = 51.84 C.V. = 0.6 97th percentile daily values = 29.2010 97th percentile 4 day average = 19.9654 97th percentile 30 day average= 14.4726 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 17.5508974086388 Average Weekly Limit = 12.8374933375204 Average Monthly Limit = 9.56225461667631</p> <p>The data are: 12</p>	<p><u>Silver, dissolved:</u> Chronic averaging period = 4 WLAa = 5 WLAc = Q.L. = 0.2 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 5 Average Weekly Limit = 3.65721849960834 Average Monthly Limit = 2.72414976682892</p> <p>The data are: 5</p>
<p><u>Zinc, dissolved:</u> Chronic averaging period = 4 WLAa = 210 WLAc = 230 Q.L. = 2 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 210 Variance = 15876 C.V. = 0.6 97th percentile daily values = 511.017 97th percentile 4 day average = 349.395 97th percentile 30 day average= 253.271 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 210 Average Weekly Limit = 153.603176983551 Average Monthly Limit = 114.414290206815</p> <p>The data are: 210</p>	<p><u>Chloride:</u> Chronic averaging period = 4 WLAa = 1900 WLAc = 560 Q.L. = 1.0 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 560 Variance = 112896 C.V. = 0.6 97th percentile daily values = 1362.71 97th percentile 4 day average = 931.722 97th percentile 30 day average= 675.389 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 819.041879069809 Average Weekly Limit = 599.083022417617 Average Monthly Limit = 446.238548778228</p> <p>The data are: 560</p>

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STAT.EXE Results Output

<p><u>Ammonia-N:</u> Chronic averaging period = 30 WLAa = 14.1 WLAc = 2.7 Q.L. = 0.2 # samples/mo. = 12 # samples/wk. = 3</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = .46 Variance = .076176 C.V. = 0.6 97th percentile daily values = 1.11937 97th percentile 4 day average = .765343 97th percentile 30 day average = .554784 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 0.46</p>	<p><u>Cyanide, Free</u> Chronic averaging period = 4 WLAa = 48 WLAc = 13 Q.L. = 10 # samples/mo. = 1 # samples/wk. = 1</p> <p>Summary of Statistics:</p> <p># observations = 1 Expected Value = 12 Variance = 51.84 C.V. = 0.6 97th percentile daily values = 29.2010 97th percentile 4 day average = 19.9654 97th percentile 30 day average = 14.4726 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Chronic Toxicity Maximum Daily Limit = 19.013472192692 Average Weekly limit = 19.013472192692 Average Monthly Limit = 19.013472192692</p> <p>The data are: 12 (Total Cyanide)</p>
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Outfall 999

Final Limits

Combined Flow: 10.2912 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow (MGD)	1	NL	NL	1/Month	Calculated

NL = No Limitation, monitoring required

NA = Not Applicable

Outfall 999 is not an existing discharge point. It is a means of reporting total flow discharged through Internal Outfalls 501, 502, 503, 504, and 505 during the dewatering activities.

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APPENDIX F

**FINAL CONFIGURATION
OUTFALL 002 (WEST TREATMENT POND)**

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

PARAMETER	BASIS FOR LIMITS	Final Limits		Flow: 4.2912 MGD	
		EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow (MGD)	1	NL	NL	1/Month	Estimate
-----	-----	Monthly Average	Daily Maximum	-----	-----
TSS	3	30.0 mg/L	100.0 mg/L	1/Month	Grab
Oil & Grease (mg/L)	3	15.0	20.0	1/Month	Grab
Total Residual Chlorine (TRC) (mg/L)	2	0.036	0.072	1/Month	Grab
TKN (mg/L)	4	NA	NL	1/Year	Grab
Nitrite-N + Nitrate-N (mg/L)	4	NA	NL	1/Year	Grab
Total Nitrogen (mg/L)	4	NA	NL	1/Year	Calculated
Total Phosphorus (mg/L)	4	NA	NL	1/Year	Grab
-----	-----	Minimum	Maximum	-----	-----
pH	2,3	6.0 SU	9.0 SU	1/Month	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

1/Year = Annual sampling with the results submitted with the DMR due January 10th of each year

Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N shall be derived from the results of those tests.

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9VAC25-31)
2. Water Quality Standards (9VA 25-260)
3. Federal Effluent Limitation Guidelines (Steam Electric Power Generating Point Source Category – 40 CFR Part 423)
4. Guidance Memo No. 14-2011

APPENDIX A contains a One Line Diagram which lists all of the sources of wastewater which will be directed to the West Treatment Pond under the final configuration.

As presented below, the effluent limits and monitoring determined to be necessary for Outfall 002 (West Treatment Pond Final Configuration) are identical to the limits and monitoring determined to be necessary for the combined Outfall 002/004 discharge; therefore, the Outfall 002 limits and monitoring applicable to both scenarios are contained in only one effluent limit page (Part I.A.5) in the permit.

EFFLUENT LIMITATIONS GUIDELINES:

The final effluent limitations guidelines and standards for the steam electric power generating industry were signed by the EPA Administrator on September 30, 2015. The final rule will become effective on November 29, 2015.

The West Ash Pond will be clean closed and all ash will be removed. A portion of the former West Ash Pond footprint will be lined and repurposed as a lined West Treatment Pond; however, the West Treatment Pond may be used to receive treated contact stormwater and dewatering water from the closure activities.

The final ELGs zero discharge requirement eliminates the generation of fly ash transport water but does not eliminate fly ash transport water that has already been transferred to a surface impoundment. In order to address this issue, the ELGs specify that the discharge of legacy fly ash transport water is subject to the existing Best Practicable Control Technology currently available (BPT).

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Fly Ash and Bottom Ash are defined in the Steam Electric Power Generating ELGs at 40 CFR Part 423.11 (e) and (f).

ELGs for Best Practicable Control Technology Currently Available (BPT) for Fly Ash and Bottom Ash transport water in 40 CFR Part 423.12(b)(4) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
TSS	100.0 mg/L	30.0 mg/L
Oil & Grease	20.0 mg/L	15.0 mg/L

Low volume waste sources are defined in the Steam Electric Power Generating ELGs at 40 CFR Part 423.11 (b).

ELGs for Best Practicable Control Technology Currently Available (BPT) for low volume waste sources in 40 CFR Part 423.12(b)(3) are as follows:

Parameter	Daily Maximum	Maximum Monthly Average
TSS	100.0 mg/L	30.0 mg/L
Oil & Grease	20.0 mg/L	15.0 mg/L

pH – BPT limits are 6.0 to 9.0 SU for all discharges except once-through cooling water in accordance with 40 CFR Part 423.12(b)(1).

At the permitting authority’s discretion (Federal Effluent Guidelines (40 CFR 423.12(b)(11)), the quantity of pollutants allowed to be discharged may be expressed as a concentration limit instead of the mass based limit specified in paragraph 423.12(b). It is staff’s best professional judgment that applying the maximum concentrations and the average concentrations for TSS and Oil & Grease to the discharge will maintain and protect the water quality of the receiving stream.

Limits for low volume wastes are not applied to the Stormwater Management Pond because additional treatment for these parameters is provided in the West Treatment Pond.

EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Input parameters for WQC and WLAs

Stream: A Flow Frequency Determination for the receiving stream is included in Appendix B. Water quality data for mean hardness, temperature, and pH for the receiving stream were obtained from Ambient Water Quality Monitoring Station No. 2-JMS176.63 on the James River. The ambient station is located 0.52 river miles upstream of BPS.

Stream Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	62.5	mg/L
90 th Percentile Temperature =	26.86	° C
90 th Percentile Maximum pH =	8.03	SU
10 th Percentile Maximum pH =	7.06	SU

Background in-stream water quality conditions were established for antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc using DEQ’s probabilistic monitoring data collected at nearly 100 sites in the same James River Hydrologic Unit Code (HUC) where the subject facility is located.

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Discharge: Temperature and hardness data were obtained from the 2015 application submitted by the permittee for Outfall 002. pH data were determined from DMR data.

Discharge Parameter	Value	Units
Mean Hardness (as CaCO ₃) =	70.1	mg/L
90 th Percentile Temperature =	28.3	°C
90 th Percentile Maximum pH =	8.3	SU
10 th Percentile Maximum pH =	7.0	SU

WQC and WLAs were calculated for all WQS parameters. Those WQC and WLAs are presented in the MSTRANTI spreadsheet that can be found in Appendix G. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- TRC – Limits are required for TRC to address the discharge of chlorinated sanitary wastewater to the Stormwater Management Pond which ultimately discharges to the West Treatment Pond. For permitting purposes, the slightly more stringent TRC limits determined to be protective for the combined 002/004 discharge were imposed for Outfall 002 (final configuration).
- A complete WQS toxics scan has been required for the new lined West Treatment Pond. This monitoring must be initiated within one year of the West Treatment Pond beginning operation in its final configuration and must be reported using Attachment B of the permit.

PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or < the required Quantification Level (QL), and at least one detection level is ≤ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	No data. Testing required.	---	---
Arsenic, dissolved	7440-38-2	1.0	No data. Testing required.	---	---
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	No data. Testing required.	---	---
Chromium III, dissolved	16065-83-1	0.5	No data. Testing required.	---	---
Chromium VI, dissolved	18540-29-9	0.5	No data. Testing required.	---	---
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	No data. Testing required.	---	---
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	No data. Testing required.	---	---
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	No data. Testing required.	---	---
Nickel, dissolved	7440-02-0	0.5	No data. Testing required.	---	---
Selenium, total recoverable	7782-49-2	2.0	No data. Testing required.	---	---
Silver, dissolved	7440-22-4	0.2	No data. Testing required.	---	---
Thallium, dissolved	7440-28-0	---	No data. Testing required.	---	---
Zinc, dissolved	7440-66-6	2.0	No data. Testing required.	---	---
PESTICIDES/PCBS					
Aldrin ^c	309-00-2	0.05	No data. Testing required.	---	---
Chlordane ^c	57-74-9	0.2	No data. Testing required.	---	---
Chlorpyrifos	2921-88-2	---	No data. Testing required.	---	---
DDD ^c	72-54-8	0.1	No data. Testing required.	---	---
DDE ^c	72-55-9	0.1	No data. Testing required.	---	---
DDT ^c	50-29-3	0.1	No data. Testing required.	---	---
Demeton	8065-48-3	---	No data. Testing required.	---	---
Diazinon	333-41-5	---	No data. Testing required.	---	---
Dieldrin ^c	60-57-1	0.1	No data. Testing required.	---	---
Alpha-Endosulfan	959-98-8	0.1	No data. Testing required.	---	---
Beta-Endosulfan	33213-65-9	0.1	No data. Testing required.	---	---
Alpha-Endosulfan + Beta-Endosulfan		---	No data. Testing required.	---	---
Endosulfan Sulfate	1031-07-8	0.1	No data. Testing required.	---	---
Endrin	72-20-8	0.1	No data. Testing required.	---	---
Endrin Aldehyde	7421-93-4	---	No data. Testing required.	---	---
Guthion	86-50-0	---	No data. Testing required.	---	---
Heptachlor ^c	76-44-8	0.05	No data. Testing required.	---	---
Heptachlor Epoxide ^c	1024-57-3	---	No data. Testing required.	---	---
Hexachlorocyclohexane Alpha-BHC ^c	319-84-6	---	No data. Testing required.	---	---
Hexachlorocyclohexane Beta-BHC ^c	319-85-7	---	No data. Testing required.	---	---
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	No data. Testing required.	---	---
Kepone	143-50-0	---	No data. Testing required.	---	---
Malathion	121-75-5	---	No data. Testing required.	---	---
Methoxychlor	72-43-5	---	No data. Testing required.	---	---
Mirex	2385-85-5	---	No data. Testing required.	---	---

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Parathion	56-38-2	---	No data. Testing required.	---	---
PCB Total ^C	1336-36-3	7.0	No data. Testing required.	---	---
Toxaphene ^C	8001-35-2	5.0	No data. Testing required.	---	---
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	No data. Testing required.	---	---
Anthracene	120-12-7	10.0	No data. Testing required.	---	---
Benzidine ^C	92-87-5	---	No data. Testing required.	---	---
Benzo (a) anthracene ^C	56-55-3	10.0	No data. Testing required.	---	---
Benzo (b) fluoranthene ^C	205-99-2	10.0	No data. Testing required.	---	---
Benzo (k) fluoranthene ^C	207-08-9	10.0	No data. Testing required.	---	---
Benzo (a) pyrene ^C	50-32-8	10.0	No data. Testing required.	---	---
Bis 2-Chloroethyl Ether ^C	111-44-4	---	No data. Testing required.	---	---
Bis 2-Chloroisopropyl Ether	108-60-1	---	No data. Testing required.	---	---
Bis-2-Ethylhexyl Phthalate ^C	117-81-7	10.0	No data. Testing required.	---	---
Butyl benzyl phthalate	85-68-7	10.0	No data. Testing required.	---	---
2-Chloronaphthalene	91-58-7	---	No data. Testing required.	---	---
Chrysene ^C	218-01-9	10.0	No data. Testing required.	---	---
Dibenz(a,h)anthracene ^C	53-70-3	20.0	No data. Testing required.	---	---
1,2-Dichlorobenzene	95-50-1	10.0	No data. Testing required.	---	---
1,3-Dichlorobenzene	541-73-1	10.0	No data. Testing required.	---	---
1,4-Dichlorobenzene	106-46-7	10.0	No data. Testing required.	---	---
3,3-Dichlorobenzidine ^C	91-94-1	---	No data. Testing required.	---	---
Diethyl phthalate	84-66-2	10.0	No data. Testing required.	---	---
Dimethyl phthalate	131-11-3	---	No data. Testing required.	---	---
Di-n-Butyl Phthalate	84-74-2	10.0	No data. Testing required.	---	---
2,4-Dinitrotoluene	121-14-2	10.0	No data. Testing required.	---	---
1,2-Diphenylhydrazine ^C	122-66-7	---	No data. Testing required.	---	---
Fluoranthene	206-44-0	10.0	No data. Testing required.	---	---
Fluorene	86-73-7	10.0	No data. Testing required.	---	---
Hexachlorobenzene ^C	118-74-1	---	No data. Testing required.	---	---
Hexachlorobutadiene ^C	87-68-3	---	No data. Testing required.	---	---
Hexachlorocyclopentadiene	77-47-4	---	No data. Testing required.	---	---
Hexachloroethane ^C	67-72-1	---	No data. Testing required.	---	---
Indeno(1,2,3-cd)pyrene ^C	193-39-5	20.0	No data. Testing required.	---	---
Isophorone ^C	78-59-1	10.0	No data. Testing required.	---	---
Nitrobenzene	98-95-3	10.0	No data. Testing required.	---	---
N-Nitrosodimethylamine ^C	62-75-9	---	No data. Testing required.	---	---
N-Nitrosodi-n-propylamine ^C	621-64-7	---	No data. Testing required.	---	---
N-Nitrosodiphenylamine ^C	86-30-6	---	No data. Testing required.	---	---
Pyrene	129-00-0	10.0	No data. Testing required.	---	---
1,2,4-Trichlorobenzene	120-82-1	10.0	No data. Testing required.	---	---
VOLATILES					
Acrolein	107-02-8	---	No data. Testing required.	---	---
Acrylonitrile ^C	107-13-1	---	No data. Testing required.	---	---
Benzene ^C	71-43-2	10.0	No data. Testing required.	---	---

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Bromoform ^C	75-25-2	10.0	No data. Testing required.	---	---
Carbon Tetrachloride ^C	56-23-5	10.0	No data. Testing required.	---	---
Chlorobenzene	108-90-7	50.0	No data. Testing required.	---	---
Chlorodibromomethane ^C	124-48-1	10.0	No data. Testing required.	---	---
Chloroform	67-66-3	10.0	No data. Testing required.	---	---
Dichlorobromomethane ^C	75-27-4	10.0	No data. Testing required.	---	---
1,2-Dichloroethane ^C	107-06-2	10.0	No data. Testing required.	---	---
1,1-Dichloroethylene	75-35-4	10.0	No data. Testing required.	---	---
1,2-trans-dichloroethylene	156-60-5	---	No data. Testing required.	---	---
1,2-Dichloropropane ^C	78-87-5	---	No data. Testing required.	---	---
1,3-Dichloropropene ^C	542-75-6	---	No data. Testing required.	---	---
Ethylbenzene	100-41-4	10.0	No data. Testing required.	---	---
Methyl Bromide	74-83-9	---	No data. Testing required.	---	---
Methylene Chloride ^C	75-09-2	20.0	No data. Testing required.	---	---
1,1,2,2-Tetrachloroethane ^C	79-34-5	---	No data. Testing required.	---	---
Tetrachloroethylene	127-18-4	10.0	No data. Testing required.	---	---
Toluene	10-88-3	10.0	No data. Testing required.	---	---
1,1,2-Trichloroethane ^C	79-00-5	---	No data. Testing required.	---	---
Trichloroethylene ^C	79-01-6	10.0	No data. Testing required.	---	---
Vinyl Chloride ^C	75-01-4	10.0	No data. Testing required.	---	---
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	No data. Testing required.	---	---
2,4-Dichlorophenol	120-83-2	10.0	No data. Testing required.	---	---
2,4-Dimethylphenol	105-67-9	10.0	No data. Testing required.	---	---
2,4-Dinitrophenol	51-28-5	---	No data. Testing required.	---	---
2-Methyl-4,6-Dinitrophenol	534-52-1	---	No data. Testing required.	---	---
Nonylphenol	104-40-51	---	No data. Testing required.	---	---
Pentachlorophenol ^C	87-86-5	50.0	No data. Testing required.	---	---
Phenol	108-95-2	10.0	No data. Testing required.	---	---
2,4,6-Trichlorophenol ^C	88-06-2	10.0	No data. Testing required.	---	---
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	No data. Testing required.	---	---
Chloride (mg/L)	16887-00-6	---	No data. Testing required.	---	---
TRC (mg/L)	7782-50-5	0.1 mg/L	20 mg/L (Default)	---	C.2
Cyanide, Free	57-12-5	10.0	No data. Testing required.	---	---
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)(ppq)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Sulfide, dissolved	18496-25-8	100	No data. Testing required.	---	---
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	No data. Testing required.	---	---
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Hardness (mg/L as CaCO ₃)	471-34-1	---	No data. Testing required.	---	---

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10⁻⁵.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

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STAT.EXE Results Output

Total Residual Chlorine:

Chronic averaging period = 4

WLAa = 0.077

WLAc = 0.26

Q.L. = 0.1

samples/mo. = 30

samples/wk. = 7

Summary of Statistics:

observations = 1

Expected Value = 20

Variance = 144

C.V. = 0.6

97th percentile daily values = 48.6683

97th percentile 4 day average = 33.2758

97th percentile 30 day average = 24.1210

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 0.077

Average Weekly Limit = 4.70244549199062E-02

Average Monthly Limit = 3.81628296178113E-02

The data are: 20

APPENDIX G

MISTRANTI RESULTS

- **OUTFALL 001 (ONCE-THROUGH CONDENSER COOLING WATER)**
- **OUTFALLS 002 and 004**
- **INTERNAL OUTFALLS 501, 502, 503, 504, AND 505 DURING DEWATERING ACTIVITIES**
- **OUTFALL 002 (WEST TREATMENT POND) FINAL CONFIGURATION**

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **BPS Outfall 001**

Permit No.: **VA0004138**

Receiving Stream: **James River**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	62.5 mg/L
90% Temperature (Annual) =	26.86 deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	8.03 SU
10% Maximum pH =	7.06 SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	N
Trout Present Y/N? =	N
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	179 MGD
7Q10 (Annual) =	227 MGD
30Q10 (Annual) =	318 MGD
1Q10 (Wet season) =	MGD
30Q10 (Wet season) =	MGD
30Q5 =	380 MGD
Harmonic Mean =	1391 MGD

Mixing Information

Annual - 1Q10 Mix =	3.4 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	%
- 30Q10 Mix =	%

Effluent Information

Mean Hardness (as CaCO3) =	62.5 mg/L
90% Temp (Annual) =	deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	SU
10% Maximum pH =	SU
Discharge Flow =	157.6 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	3.4E+03	--	--	--	--	--	--	--	--	--	--	na	3.4E+03	
Acrolein	0	--	--	na	9.3E+00	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	na	3.2E+01	
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01	
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	3.1E+00	--	na	4.9E-03	--	--	--	--	--	--	--	--	--	3.1E+00	--	na	4.9E-03
Ammonia-N (mg/l) (Yearly)	0	5.84E+01	5.68E+00	na	--	6.07E+01	1.71E+01	na	--	--	--	--	--	--	--	--	--	--	6.07E+01	1.71E+01	na	--
Ammonia-N (mg/l) (High Flow)	0	5.84E+01	7.09E+00	na	--	5.84E+01	7.09E+00	na	--	--	--	--	--	--	--	--	--	--	5.84E+01	7.09E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05	
Antimony	0.236	--	--	na	6.4E+02	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	2.2E+03	
Arsenic	0.218	3.4E+02	1.5E+02	na	--	3.5E+02	3.7E+02	na	--	--	--	--	--	--	--	--	--	--	3.5E+02	3.7E+02	na	--
Barium	20.763	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--	
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	5.0E+03	--	--	--	--	--	--	--	--	--	--	na	5.0E+03	
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	2.0E-02	--	--	--	--	--	--	--	--	--	--	na	2.0E-02	
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00	
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00	
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00	
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00	
Bis2-Chloroethyl Ether ^C	0	--	--	na	5.3E+00	--	--	na	5.2E+01	--	--	--	--	--	--	--	--	--	--	na	5.2E+01	
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	2.2E+05	--	--	--	--	--	--	--	--	--	--	na	2.2E+05	
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	2.2E+02	--	--	--	--	--	--	--	--	--	--	na	2.2E+02	
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04	
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	6.5E+03	--	--	--	--	--	--	--	--	--	--	na	6.5E+03	
Cadmium	0.077	2.3E+00	7.8E-01	na	--	2.4E+00	1.8E+00	na	--	--	--	--	--	--	--	--	--	--	2.4E+00	1.8E+00	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02	
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	2.5E+00	1.0E-02	na	8.0E-02	--	--	--	--	--	--	--	--	--	2.5E+00	1.0E-02	na	8.0E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.9E+05	5.6E+05	na	--	--	--	--	--	--	--	--	--	--	8.9E+05	5.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	2.0E+01	2.7E+01	na	--	--	--	--	--	--	--	--	--	--	2.0E+01	2.7E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	5.5E+03	--	--	--	--	--	--	--	--	--	--	na	5.5E+03	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	3.8E+04	--	--	--	--	--	--	--	--	--	--	na	3.8E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	5.5E+03	--	--	--	--	--	--	--	--	--	--	na	5.5E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.6E-02	1.0E-01	na	--	--	--	--	--	--	--	--	--	8.6E-02	1.0E-01	na	--
Chromium III	0.398	3.9E+02	5.0E+01	na	--	4.0E+02	1.2E+02	na	--	--	--	--	--	--	--	--	--	4.0E+02	1.2E+02	na	--
Chromium VI	0.398	1.6E+01	1.1E+01	na	--	1.7E+01	2.6E+01	na	--	--	--	--	--	--	--	--	--	1.7E+01	2.6E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Copper	0.542	8.6E+00	6.0E+00	na	--	8.9E+00	1.4E+01	na	--	--	--	--	--	--	--	--	--	8.9E+00	1.4E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.3E+01	1.3E+01	na	5.5E+04	--	--	--	--	--	--	--	--	2.3E+01	1.3E+01	na	5.5E+04
DDD ^C	0	--	--	na	3.1E-03	--	--	na	3.0E-02	--	--	--	--	--	--	--	--	--	--	na	3.0E-02
DDE ^C	0	--	--	na	2.2E-03	--	--	na	2.2E-02	--	--	--	--	--	--	--	--	--	--	na	2.2E-02
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	2.4E-03	na	2.2E-02	--	--	--	--	--	--	--	--	1.1E+00	2.4E-03	na	2.2E-02
Demeton	0	--	1.0E-01	na	--	--	2.4E-01	na	--	--	--	--	--	--	--	--	--	--	2.4E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.8E-01	4.1E-01	na	--	--	--	--	--	--	--	--	--	1.8E-01	4.1E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	4.4E+03	--	--	--	--	--	--	--	--	--	--	na	4.4E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	3.3E+03	--	--	--	--	--	--	--	--	--	--	na	3.3E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	6.5E+02	--	--	--	--	--	--	--	--	--	--	na	6.5E+02
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	2.8E+00	--	--	--	--	--	--	--	--	--	--	na	2.8E+00
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	2.4E+04	--	--	--	--	--	--	--	--	--	--	na	2.4E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	3.4E+04	--	--	--	--	--	--	--	--	--	--	na	3.4E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	2.5E-01	1.4E-01	na	5.3E-03	--	--	--	--	--	--	--	--	2.5E-01	1.4E-01	na	5.3E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	1.5E+05	--	--	--	--	--	--	--	--	--	--	na	1.5E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	2.9E+03	--	--	--	--	--	--	--	--	--	--	na	2.9E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	3.8E+06	--	--	--	--	--	--	--	--	--	--	na	3.8E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	1.5E+04	--	--	--	--	--	--	--	--	--	--	na	1.5E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.8E+04	--	--	--	--	--	--	--	--	--	--	na	1.8E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	3.3E+02	--	--	--	--	--	--	--	--	--	--	na	3.3E+02
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.7E-07	--	--	--	--	--	--	--	--	--	--	na	1.7E-07
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	2.0E+01	--	--	--	--	--	--	--	--	--	--	na	2.0E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.3E-01	1.4E-01	na	3.0E+02	--	--	--	--	--	--	--	--	2.3E-01	1.4E-01	na	3.0E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.3E-01	1.4E-01	na	3.0E+02	--	--	--	--	--	--	--	--	2.3E-01	1.4E-01	na	3.0E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.3E-01	1.4E-01	--	--	--	--	--	--	--	--	--	--	2.3E-01	1.4E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.9E-02	8.8E-02	na	2.0E-01	--	--	--	--	--	--	--	--	8.9E-02	8.8E-02	na	2.0E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	1.0E+00	--	--	--	--	--	--	--	--	--	--	na	1.0E+00

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	7.2E+03	--	--	--	--	--	--	--	--	--	--	na	7.2E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	4.8E+02	--	--	--	--	--	--	--	--	--	--	na	4.8E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.8E+04	--	--	--	--	--	--	--	--	--	--	na	1.8E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.4E-02	na	--	--	--	--	--	--	--	--	--	--	2.4E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	5.4E-01	9.3E-03	na	7.8E-03	--	--	--	--	--	--	--	--	5.4E-01	9.3E-03	na	7.8E-03
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	5.4E-01	9.3E-03	na	3.8E-03	--	--	--	--	--	--	--	--	5.4E-01	9.3E-03	na	3.8E-03
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	2.8E-02	--	--	--	--	--	--	--	--	--	--	na	2.8E-02
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	1.8E+03	--	--	--	--	--	--	--	--	--	--	na	1.8E+03
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	4.8E-01	--	--	--	--	--	--	--	--	--	--	na	4.8E-01
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	1.7E+00	--	--	--	--	--	--	--	--	--	--	na	1.7E+00
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	9.9E-01	--	na	1.8E+01	--	--	--	--	--	--	--	--	9.9E-01	--	na	1.8E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	3.8E+03
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	--	--	na	3.2E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.9E+00	na	--	--	--	--	--	--	--	--	--	--	4.9E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Iron	133.264	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	9.4E+04	--	--	--	--	--	--	--	--	--	--	na	9.4E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0.086	6.5E+01	7.4E+00	na	--	6.8E+01	1.8E+01	na	--	--	--	--	--	--	--	--	--	6.8E+01	1.8E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	2.4E-01	na	--	--	--	--	--	--	--	--	--	--	2.4E-01	na	--
Manganese	45.732	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0.00212	1.4E+00	7.7E-01	--	--	1.5E+00	1.9E+00	--	--	--	--	--	--	--	--	--	--	1.5E+00	1.9E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	5.1E+03	--	--	--	--	--	--	--	--	--	--	na	5.1E+03
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	5.8E+04	--	--	--	--	--	--	--	--	--	--	na	5.8E+04
Methoxychlor	0	--	3.0E-02	na	--	--	7.3E-02	na	--	--	--	--	--	--	--	--	--	--	7.3E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0.483	1.2E+02	1.4E+01	na	4.6E+03	1.3E+02	3.3E+01	na	1.6E+04	--	--	--	--	--	--	--	--	1.3E+02	3.3E+01	na	1.6E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	2.4E+03	--	--	--	--	--	--	--	--	--	--	na	2.4E+03
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	5.9E+02	--	--	--	--	--	--	--	--	--	--	na	5.9E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	5.0E+01	--	--	--	--	--	--	--	--	--	--	na	5.0E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.9E+01	1.6E+01	na	--	--	--	--	--	--	--	--	--	2.9E+01	1.6E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.8E-02	3.2E-02	na	--	--	--	--	--	--	--	--	--	6.8E-02	3.2E-02	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	3.4E-02	na	6.3E-03	--	--	--	--	--	--	--	--	--	3.4E-02	na	6.3E-03
Pentachlorophenol ^C	0	7.8E-03	8.7E-03	na	3.0E+01	8.1E-03	2.1E-02	na	2.9E+02	--	--	--	--	--	--	--	--	8.1E-03	2.1E-02	na	2.9E+02
Phenol	0	--	--	na	8.6E+05	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0.396	2.0E+01	5.0E+00	na	4.2E+03	2.1E+01	1.2E+01	na	1.4E+04	--	--	--	--	--	--	--	--	2.1E+01	1.2E+01	na	1.4E+04
Silver	0.064	1.5E+00	--	na	--	1.6E+00	--	na	--	--	--	--	--	--	--	--	--	1.6E+00	--	na	--
Sulfate	33.6	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	--	--	na	3.2E+02
Thallium	0.081	--	--	na	4.7E-01	--	--	na	1.4E+00	--	--	--	--	--	--	--	--	--	--	na	1.4E+00
Toluene	0	--	--	na	6.0E+03	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	7.6E-01	4.9E-04	na	2.8E-02	--	--	--	--	--	--	--	--	7.6E-01	4.9E-04	na	2.8E-02
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.8E-01	1.8E-01	na	--	--	--	--	--	--	--	--	--	4.8E-01	1.8E-01	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	2.9E+03	--	--	--	--	--	--	--	--	--	--	na	2.9E+03
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Zinc	1.518	7.9E+01	7.9E+01	na	2.6E+04	8.2E+01	1.9E+02	na	8.9E+04	--	--	--	--	--	--	--	--	8.2E+01	1.9E+02	na	8.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = $(0.25(WQC - \text{background conc.}) + \text{background conc.})$ for acute and chronic
= $(0.1(WQC - \text{background conc.}) + \text{background conc.})$ for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.2E+03
Arsenic	1.4E+02
Barium	na
Cadmium	9.6E-01
Chromium III	7.4E+01
Chromium VI	6.6E+00
Copper	3.6E+00
Iron	na
Lead	1.1E+01
Manganese	na
Mercury	5.8E-01
Nickel	2.0E+01
Selenium	7.0E+00
Silver	6.4E-01
Zinc	3.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **BPS Outfalls 002 and 004**

Permit No.: **VA0004138**

Receiving Stream: **James River**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	62.5 mg/L
90% Temperature (Annual) =	26.86 deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	8.03 SU
10% Maximum pH =	7.06 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	N
Trout Present Y/N? =	N
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	341 MGD
7Q10 (Annual) =	389 MGD
30Q10 (Annual) =	480 MGD
1Q10 (Wet season) =	MGD
30Q10 (Wet season) =	MGD
30Q5 =	542 MGD
Harmonic Mean =	1553 MGD

Mixing Information

Annual - 1Q10 Mix =	3.48 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	%
- 30Q10 Mix =	%

Effluent Information

Mean Hardness (as CaCO3) =	70.1 mg/L
90% Temp (Annual) =	28.3 deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	8.3 SU
10% Maximum pH =	7 SU
Discharge Flow =	4.2912 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	1.3E+05	--	--	na	9.9E+01	--	--	na	1.3E+04	--	--	na	1.3E+04
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.2E+03	--	--	na	9.3E-01	--	--	na	1.2E+02	--	--	na	1.2E+02
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	9.1E+02	--	--	na	2.5E-01	--	--	na	9.1E+01	--	--	na	9.1E+01
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	1.1E+01	--	na	1.8E-01	7.5E-01	--	na	5.0E-05	6.0E+01	--	na	1.8E-02	1.1E+01	--	na	1.8E-02
Ammonia-N (mg/l) (Yearly)	0	7.12E+00	1.05E+00	na	--	2.68E+01	1.18E+02	na	--	1.98E+00	2.62E-01	na	--	1.59E+02	2.96E+01	na	--	2.68E+01	2.96E+01	na	--
Ammonia-N (mg/l) (High Flow)	0	4.71E+00	1.52E+00	na	--	4.71E+00	1.52E+00	na	--	1.18E+00	3.81E-01	na	--	1.18E+00	3.81E-01	na	--	1.18E+00	3.81E-01	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	5.1E+06	--	--	na	4.0E+03	--	--	na	5.1E+05	--	--	na	5.1E+05
Antimony	0.236	--	--	na	6.4E+02	--	--	na	8.1E+04	--	--	na	6.4E+01	--	--	na	8.1E+03	--	--	na	8.1E+03
Arsenic	0.218	3.4E+02	1.5E+02	na	--	1.3E+03	1.4E+04	na	--	8.5E+01	3.8E+01	na	--	6.8E+03	3.4E+03	na	--	1.3E+03	3.4E+03	na	--
Barium	20.763	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	1.9E+05	--	--	na	5.1E+01	--	--	na	1.9E+04	--	--	na	1.9E+04
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	7.3E-01	--	--	na	2.0E-04	--	--	na	7.3E-02	--	--	na	7.3E-02
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	6.5E+01	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	6.5E+00
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	6.5E+01	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	6.5E+00
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	6.5E+01	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	6.5E+00
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	6.5E+01	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	6.5E+00
Bis2-Chloroethyl Ether ^C	0	--	--	na	5.3E+00	--	--	na	1.9E+03	--	--	na	5.3E-01	--	--	na	1.9E+02	--	--	na	1.9E+02
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	8.3E+06	--	--	na	6.5E+03	--	--	na	8.3E+05	--	--	na	8.3E+05
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	8.0E+03	--	--	na	2.2E+00	--	--	na	8.0E+02	--	--	na	8.0E+02
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	5.1E+05	--	--	na	1.4E+02	--	--	na	5.1E+04	--	--	na	5.1E+04
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	2.4E+05	--	--	na	1.9E+02	--	--	na	2.4E+04	--	--	na	2.4E+04
Cadmium	0.077	2.4E+00	7.9E-01	na	--	8.8E+00	6.5E+01	na	--	6.4E-01	2.5E-01	na	--	4.5E+01	1.6E+01	na	--	8.8E+00	1.6E+01	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	5.8E+03	--	--	na	1.6E+00	--	--	na	5.8E+02	--	--	na	5.8E+02
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	9.0E+00	3.9E-01	na	2.9E+00	6.0E-01	1.1E-03	na	8.1E-04	4.8E+01	9.9E-02	na	2.9E-01	9.0E+00	9.9E-02	na	2.9E-01
Chloride	0	8.6E+05	2.3E+05	na	--	3.2E+06	2.1E+07	na	--	2.2E+05	5.8E+04	na	--	1.7E+07	5.3E+06	na	--	3.2E+06	5.3E+06	na	--
TRC	0	1.9E+01	1.1E+01	na	--	7.2E+01	1.0E+03	na	--	4.8E+00	2.8E+00	na	--	3.8E+02	2.5E+02	na	--	7.2E+01	2.5E+02	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	2.0E+05	--	--	na	1.6E+02	--	--	na	2.0E+04	--	--	na	2.0E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	4.7E+04	--	--	na	1.3E+01	--	--	na	4.7E+03	--	--	na	4.7E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.4E+06	--	--	na	1.1E+03	--	--	na	1.4E+05	--	--	na	1.4E+05
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	2.0E+05	--	--	na	1.6E+02	--	--	na	2.0E+04	--	--	na	2.0E+04
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.9E+04	--	--	na	1.5E+01	--	--	na	1.9E+03	--	--	na	1.9E+03
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	3.1E-01	3.8E+00	na	--	2.1E-02	1.0E-02	na	--	1.7E+00	9.4E-01	na	--	3.1E-01	9.4E-01	na	--
Chromium III	0.398	4.0E+02	5.0E+01	na	--	1.5E+03	4.6E+03	na	--	9.7E+01	1.3E+01	na	--	7.8E+03	1.1E+03	na	--	1.5E+03	1.1E+03	na	--
Chromium VI	0.398	1.6E+01	1.1E+01	na	--	5.9E+01	9.7E+02	na	--	4.3E+00	3.0E+00	na	--	3.1E+02	2.4E+02	na	--	5.9E+01	2.4E+02	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	1.3E+03	--	--	--	na	--
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	1.8E-03	--	--	na	6.5E-01	--	--	na	6.5E-01
Copper	0.542	8.9E+00	6.0E+00	na	--	3.2E+01	5.0E+02	na	--	2.6E+00	1.9E+00	na	--	1.6E+02	1.3E+02	na	--	3.2E+01	1.3E+02	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	8.3E+01	4.8E+02	na	2.0E+06	5.5E+00	1.3E+00	na	1.6E+03	4.4E+02	1.2E+02	na	2.0E+05	8.3E+01	1.2E+02	na	2.0E+05
DDD ^C	0	--	--	na	3.1E-03	--	--	na	1.1E+00	--	--	na	3.1E-04	--	--	na	1.1E-01	--	--	na	1.1E-01
DDE ^C	0	--	--	na	2.2E-03	--	--	na	8.0E-01	--	--	na	2.2E-04	--	--	na	8.0E-02	--	--	na	8.0E-02
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	4.1E+00	9.2E-02	na	8.0E-01	2.8E-01	2.5E-04	na	2.2E-04	2.2E+01	2.3E-02	na	8.0E-02	4.1E+00	2.3E-02	na	8.0E-02
Demeton	0	--	1.0E-01	na	--	--	9.2E+00	na	--	--	2.5E-02	na	--	--	2.3E+00	na	--	--	2.3E+00	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	6.4E-01	1.6E+01	na	--	4.3E-02	4.3E-02	na	--	3.4E+00	3.9E+00	na	--	6.4E-01	3.9E+00	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	6.5E+01	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	6.5E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.7E+05	--	--	na	1.3E+02	--	--	na	1.7E+04	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.2E+05	--	--	na	9.6E+01	--	--	na	1.2E+04	--	--	na	1.2E+04
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	2.4E+04	--	--	na	1.9E+01	--	--	na	2.4E+03	--	--	na	2.4E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	1.0E+02	--	--	na	2.8E-02	--	--	na	1.0E+01	--	--	na	1.0E+01
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	6.2E+04	--	--	na	1.7E+01	--	--	na	6.2E+03	--	--	na	6.2E+03
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	1.3E+05	--	--	na	3.7E+01	--	--	na	1.3E+04	--	--	na	1.3E+04
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	9.0E+05	--	--	na	7.1E+02	--	--	na	9.0E+04	--	--	na	9.0E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.3E+06	--	--	na	1.0E+03	--	--	na	1.3E+05	--	--	na	1.3E+05
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	3.7E+04	--	--	na	2.9E+01	--	--	na	3.7E+03	--	--	na	3.7E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	5.4E+04	--	--	na	1.5E+01	--	--	na	5.4E+03	--	--	na	5.4E+03
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	7.6E+04	--	--	na	2.1E+01	--	--	na	7.6E+03	--	--	na	7.6E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	9.0E-01	5.1E+00	na	2.0E-01	6.0E-02	1.4E-02	na	5.4E-05	4.8E+00	1.3E+00	na	2.0E-02	9.0E-01	1.3E+00	na	2.0E-02
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	5.6E+06	--	--	na	4.4E+03	--	--	na	5.6E+05	--	--	na	5.6E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.1E+05	--	--	na	8.5E+01	--	--	na	1.1E+04	--	--	na	1.1E+04
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.4E+08	--	--	na	1.1E+05	--	--	na	1.4E+07	--	--	na	1.4E+07
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	5.7E+05	--	--	na	4.5E+02	--	--	na	5.7E+04	--	--	na	5.7E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	6.7E+05	--	--	na	5.3E+02	--	--	na	6.7E+04	--	--	na	6.7E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	3.6E+04	--	--	na	2.8E+01	--	--	na	3.6E+03	--	--	na	3.6E+03
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	1.2E+04	--	--	na	3.4E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	6.5E-06	--	--	na	5.1E-09	--	--	na	6.5E-07	--	--	na	6.5E-07
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	7.3E+02	--	--	na	2.0E-01	--	--	na	7.3E+01	--	--	na	7.3E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	8.3E-01	5.1E+00	na	1.1E+04	5.5E-02	1.4E-02	na	8.9E+00	4.4E+00	1.3E+00	na	1.1E+03	8.3E-01	1.3E+00	na	1.1E+03
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	8.3E-01	5.1E+00	na	1.1E+04	5.5E-02	1.4E-02	na	8.9E+00	4.4E+00	1.3E+00	na	1.1E+03	8.3E-01	1.3E+00	na	1.1E+03
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	8.3E-01	5.1E+00	--	--	5.5E-02	1.4E-02	--	--	4.4E+00	1.3E+00	--	--	8.3E-01	1.3E+00	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.1E+04	--	--	na	8.9E+00	--	--	na	1.1E+03	--	--	na	1.1E+03
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	3.2E-01	3.3E+00	na	7.6E+00	2.2E-02	9.0E-03	na	6.0E-03	1.7E+00	8.2E-01	na	7.6E-01	3.2E-01	8.2E-01	na	7.6E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.8E+01	--	--	na	3.0E-02	--	--	na	3.8E+00	--	--	na	3.8E+00

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.7E+05	--	--	na	2.1E+02	--	--	na	2.7E+04	--	--	na	2.7E+04
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.8E+04	--	--	na	1.4E+01	--	--	na	1.8E+03	--	--	na	1.8E+03
Fluorene	0	--	--	na	5.3E+03	--	--	na	6.7E+05	--	--	na	5.3E+02	--	--	na	6.7E+04	--	--	na	6.7E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	9.2E-01	na	--	--	2.5E-03	na	--	--	2.3E-01	na	--	--	2.3E-01	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	2.0E+00	3.5E-01	na	2.9E-01	1.3E-01	9.5E-04	na	7.9E-05	1.0E+01	8.7E-02	na	2.9E-02	2.0E+00	8.7E-02	na	2.9E-02
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	2.0E+00	3.5E-01	na	1.4E-01	1.3E-01	9.5E-04	na	3.9E-05	1.0E+01	8.7E-02	na	1.4E-02	2.0E+00	8.7E-02	na	1.4E-02
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	1.1E+00	--	--	na	2.9E-04	--	--	na	1.1E-01	--	--	na	1.1E-01
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	6.5E+04	--	--	na	1.8E+01	--	--	na	6.5E+03	--	--	na	6.5E+03
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	1.8E+01	--	--	na	4.9E-03	--	--	na	1.8E+00	--	--	na	1.8E+00
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	6.2E+01	--	--	na	1.7E-02	--	--	na	6.2E+00	--	--	na	6.2E+00
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	3.6E+00	--	na	6.5E+02	2.4E-01	--	na	1.8E-01	1.9E+01	--	na	6.5E+01	3.6E+00	--	na	6.5E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.4E+05	--	--	na	1.1E+02	--	--	na	1.4E+04	--	--	na	1.4E+04
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	1.2E+04	--	--	na	3.3E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.8E+02	na	--	--	5.0E-01	na	--	--	4.6E+01	na	--	--	4.6E+01	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	6.5E+01	--	--	na	1.8E-02	--	--	na	6.5E+00	--	--	na	6.5E+00
Iron	133.264	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	3.5E+06	--	--	na	9.6E+02	--	--	na	3.5E+05	--	--	na	3.5E+05
Kepon	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Lead	0.086	6.8E+01	7.4E+00	na	--	2.6E+02	6.7E+02	na	--	1.6E+01	1.9E+00	na	--	1.3E+03	1.7E+02	na	--	2.6E+02	1.7E+02	na	--
Malathion	0	--	1.0E-01	na	--	--	9.2E+00	na	--	--	2.5E-02	na	--	--	2.3E+00	na	--	--	2.3E+00	na	--
Manganese	45.732	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0.00212	1.4E+00	7.7E-01	--	--	5.3E+00	7.0E+01	--	--	3.5E-01	1.9E-01	--	--	2.8E+01	1.8E+01	--	--	5.3E+00	1.8E+01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.9E+05	--	--	na	1.5E+02	--	--	na	1.9E+04	--	--	na	1.9E+04
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	2.1E+06	--	--	na	5.9E+02	--	--	na	2.1E+05	--	--	na	2.1E+05
Methoxychlor	0	--	3.0E-02	na	--	--	2.7E+00	na	--	--	7.5E-03	na	--	--	6.9E-01	na	--	--	6.9E-01	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Nickel	0.483	1.3E+02	1.4E+01	na	4.6E+03	4.7E+02	1.2E+03	na	5.9E+05	3.1E+01	3.8E+00	na	4.6E+02	2.5E+03	3.0E+02	na	5.9E+04	4.7E+02	3.0E+02	na	5.9E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	8.8E+04	--	--	na	6.9E+01	--	--	na	8.8E+03	--	--	na	8.8E+03
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	1.1E+04	--	--	na	3.0E+00	--	--	na	1.1E+03	--	--	na	1.1E+03
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	2.2E+04	--	--	na	6.0E+00	--	--	na	2.2E+03	--	--	na	2.2E+03
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	1.9E+03	--	--	na	5.1E-01	--	--	na	1.9E+02	--	--	na	1.9E+02
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.1E+02	6.0E+02	na	--	7.0E+00	1.7E+00	--	--	5.6E+02	1.5E+02	--	--	1.1E+02	1.5E+02	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	2.4E-01	1.2E+00	na	--	1.6E-02	3.3E-03	na	--	1.3E+00	3.0E-01	na	--	2.4E-01	3.0E-01	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.3E+00	na	2.3E-01	--	3.5E-03	na	6.4E-05	--	3.2E-01	na	2.3E-02	--	3.2E-01	na	2.3E-02
Pentachlorophenol ^C	0	9.1E+00	7.1E+00	na	3.0E+01	3.4E+01	6.5E+02	na	1.1E+04	2.3E+00	1.8E+00	na	3.0E+00	1.9E+02	1.6E+02	na	1.1E+03	3.4E+01	1.6E+02	na	1.1E+03
Phenol	0	--	--	na	8.6E+05	--	--	na	1.1E+08	--	--	na	8.6E+04	--	--	na	1.1E+07	--	--	na	1.1E+07
Pyrene	0	--	--	na	4.0E+03	--	--	na	5.1E+05	--	--	na	4.0E+02	--	--	na	5.1E+04	--	--	na	5.1E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0.396	2.0E+01	5.0E+00	na	4.2E+03	7.4E+01	4.2E+02	na	5.3E+05	5.3E+00	1.5E+00	na	4.2E+02	3.9E+02	1.1E+02	na	5.3E+04	7.4E+01	1.1E+02	na	5.3E+04
Silver	0.064	1.6E+00	--	na	--	5.9E+00	--	na	--	4.3E-01	--	na	--	3.0E+01	--	na	--	5.9E+00	--	na	--
Sulfate	33.6	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	1.5E+04	--	--	na	4.0E+00	--	--	na	1.5E+03	--	--	na	1.5E+03
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	1.2E+04	--	--	na	3.3E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Thallium	0.081	--	--	na	4.7E-01	--	--	na	5.0E+01	--	--	na	1.2E-01	--	--	na	5.0E+00	--	--	na	5.0E+00
Toluene	0	--	--	na	6.0E+03	--	--	na	7.6E+05	--	--	na	6.0E+02	--	--	na	7.6E+04	--	--	na	7.6E+04
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	2.7E+00	1.8E-02	na	1.0E+00	1.8E-01	5.0E-05	na	2.8E-04	1.5E+01	4.6E-03	na	1.0E-01	2.7E+00	4.6E-03	na	1.0E-01
Tributyltin	0	4.6E-01	7.2E-02	na	--	1.7E+00	6.6E+00	na	--	1.2E-01	1.8E-02	na	--	9.3E+00	1.6E+00	na	--	1.7E+00	1.6E+00	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	8.9E+03	--	--	na	7.0E+00	--	--	na	8.9E+02	--	--	na	8.9E+02
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	5.8E+04	--	--	na	1.6E+01	--	--	na	5.8E+03	--	--	na	5.8E+03
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	1.1E+05	--	--	na	3.0E+01	--	--	na	1.1E+04	--	--	na	1.1E+04
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	8.7E+03	--	--	na	2.4E+00	--	--	na	8.7E+02	--	--	na	8.7E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	8.7E+03	--	--	na	2.4E+00	--	--	na	8.7E+02	--	--	na	8.7E+02
Zinc	1.518	8.1E+01	7.9E+01	na	2.6E+04	3.0E+02	7.1E+03	na	3.3E+06	2.1E+01	2.1E+01	na	2.6E+03	1.6E+03	1.8E+03	na	3.3E+05	3.0E+02	1.8E+03	na	3.3E+05

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	8.1E+03
Arsenic	5.1E+02
Barium	na
Cadmium	3.5E+00
Chromium III	6.0E+02
Chromium VI	2.4E+01
Copper	1.3E+01
Iron	na
Lead	1.0E+02
Manganese	na
Mercury	2.1E+00
Nickel	1.8E+02
Selenium	3.0E+01
Silver	2.4E+00
Zinc	1.2E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **BPS Internal Outfalls 501, 502, 503, 504, and 505**

Permit No.: **VA0004138**

Receiving Stream: **James River**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	62.5 mg/L
90% Temperature (Annual) =	26.86 deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	8.03 SU
10% Maximum pH =	7.06 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	N
Trout Present Y/N? =	N
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	341 MGD
7Q10 (Annual) =	389 MGD
30Q10 (Annual) =	480 MGD
1Q10 (Wet season) =	MGD
30Q10 (Wet season) =	MGD
30Q5 =	542 MGD
Harmonic Mean =	1553 MGD

Mixing Information

Annual - 1Q10 Mix =	3.54 %
- 7Q10 Mix =	3.79 %
- 30Q10 Mix =	4.21 %
Wet Season - 1Q10 Mix =	%
30Q10 Mix =	%
30Q5 Mix =	4.47 %
Harmonic Mean Mix =	7.62 %

Effluent Information

Mean Hardness (as CaCO3) =	100 mg/L
90% Temp (Annual) =	28.3 deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	8.3 SU
10% Maximum pH =	7 SU
Discharge Flow =	10.2912 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	3.3E+03	--	--	na	9.9E+01	--	--	na	5.3E+03	--	--	na	3.3E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	3.1E+01	--	--	na	9.3E-01	--	--	na	5.0E+01	--	--	na	3.1E+01
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	3.1E+01	--	--	na	2.5E-01	--	--	na	3.8E+01	--	--	na	3.1E+01
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	6.5E+00	--	na	6.2E-03	7.5E-01	--	na	5.0E-05	2.6E+01	--	na	7.6E-03	6.5E+00	--	na	6.2E-03
Ammonia-N (mg/l) (Yearly)	0	6.51E+00	9.12E-01	na	--	1.41E+01	2.70E+00	na	--	1.96E+00	2.61E-01	na	--	6.70E+01	1.24E+01	na	--	1.41E+01	2.70E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	4.71E+00	1.52E+00	na	--	4.71E+00	1.52E+00	na	--	1.18E+00	3.81E-01	na	--	1.18E+00	3.81E-01	na	--	1.18E+00	3.81E-01	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.3E+05	--	--	na	4.0E+03	--	--	na	2.1E+05	--	--	na	1.3E+05
Antimony	0.236	--	--	na	6.4E+02	--	--	na	2.1E+03	--	--	na	6.4E+01	--	--	na	3.4E+03	--	--	na	2.1E+03
Arsenic	0.218	3.4E+02	1.5E+02	na	--	7.4E+02	3.6E+02	na	--	8.5E+01	3.8E+01	na	--	2.9E+03	1.5E+03	na	--	7.4E+02	3.6E+02	na	--
Barium	20.763	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	6.4E+03	--	--	na	5.1E+01	--	--	na	7.7E+03	--	--	na	6.4E+03
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	2.5E-02	--	--	na	2.0E-04	--	--	na	3.0E-02	--	--	na	2.5E-02
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	2.2E+00	--	--	na	1.8E-02	--	--	na	2.7E+00	--	--	na	2.2E+00
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	2.2E+00	--	--	na	1.8E-02	--	--	na	2.7E+00	--	--	na	2.2E+00
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	2.2E+00	--	--	na	1.8E-02	--	--	na	2.7E+00	--	--	na	2.2E+00
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	2.2E+00	--	--	na	1.8E-02	--	--	na	2.7E+00	--	--	na	2.2E+00
Bis2-Chloroethyl Ether ^C	0	--	--	na	5.3E+00	--	--	na	6.6E+01	--	--	na	5.3E-01	--	--	na	8.1E+01	--	--	na	6.6E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	2.2E+05	--	--	na	6.5E+03	--	--	na	3.5E+05	--	--	na	2.2E+05
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	2.7E+02	--	--	na	2.2E+00	--	--	na	3.3E+02	--	--	na	2.7E+02
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	1.7E+04	--	--	na	1.4E+02	--	--	na	2.1E+04	--	--	na	1.7E+04
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	6.4E+03	--	--	na	1.9E+02	--	--	na	1.0E+04	--	--	na	6.4E+03
Cadmium	0.077	3.0E+00	9.3E-01	na	--	6.5E+00	2.2E+00	na	--	6.5E-01	2.6E-01	na	--	2.0E+01	7.0E+00	na	--	6.5E+00	2.2E+00	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	2.0E+02	--	--	na	1.6E+00	--	--	na	2.4E+02	--	--	na	2.0E+02
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	5.2E+00	1.0E-02	na	1.0E-01	6.0E-01	1.1E-03	na	8.1E-04	2.0E+01	4.2E-02	na	1.2E-01	5.2E+00	1.0E-02	na	1.0E-01
Chloride	0	8.6E+05	2.3E+05	na	--	1.9E+06	5.6E+05	na	--	2.2E+05	5.8E+04	na	--	7.3E+06	2.2E+06	na	--	1.9E+06	5.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	4.1E+01	2.7E+01	na	--	4.8E+00	2.8E+00	na	--	1.6E+02	1.1E+02	na	--	4.1E+01	2.7E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	5.4E+03	--	--	na	1.6E+02	--	--	na	8.6E+03	--	--	na	5.4E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	1.6E+03	--	--	na	1.3E+01	--	--	na	2.0E+03	--	--	na	1.6E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	3.7E+04	--	--	na	1.1E+03	--	--	na	5.9E+04	--	--	na	3.7E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	5.4E+03	--	--	na	1.6E+02	--	--	na	8.6E+03	--	--	na	5.4E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	5.0E+02	--	--	na	1.5E+01	--	--	na	8.0E+02	--	--	na	5.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.8E-01	1.0E-01	na	--	2.1E-02	1.0E-02	na	--	7.1E-01	4.0E-01	na	--	1.8E-01	1.0E-01	na	--
Chromium III	0.398	4.7E+02	6.0E+01	na	--	1.0E+03	1.5E+02	na	--	9.9E+01	1.3E+01	na	--	3.4E+03	4.9E+02	na	--	1.0E+03	1.5E+02	na	--
Chromium VI	0.398	1.6E+01	1.1E+01	na	--	3.4E+01	2.6E+01	na	--	4.3E+00	3.0E+00	na	--	1.3E+02	1.0E+02	na	--	3.4E+01	2.6E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	5.4E+02	--	--	--	na	--
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	2.2E-01	--	--	na	1.8E-03	--	--	na	2.7E-01	--	--	na	2.2E-01
Copper	0.542	1.1E+01	7.2E+00	na	--	2.3E+01	1.7E+01	na	--	2.6E+00	1.9E+00	na	--	7.1E+01	5.4E+01	na	--	2.3E+01	1.7E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.8E+01	1.3E+01	na	5.4E+04	5.5E+00	1.3E+00	na	1.6E+03	1.9E+02	5.0E+01	na	8.6E+04	4.8E+01	1.3E+01	na	5.4E+04
DDD ^C	0	--	--	na	3.1E-03	--	--	na	3.9E-02	--	--	na	3.1E-04	--	--	na	4.7E-02	--	--	na	3.9E-02
DDE ^C	0	--	--	na	2.2E-03	--	--	na	2.7E-02	--	--	na	2.2E-04	--	--	na	3.3E-02	--	--	na	2.7E-02
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	2.4E+00	2.4E-03	na	2.7E-02	2.8E-01	2.5E-04	na	2.2E-04	9.4E+00	9.7E-03	na	3.3E-02	2.4E+00	2.4E-03	na	2.7E-02
Demeton	0	--	1.0E-01	na	--	--	2.4E-01	na	--	--	2.5E-02	na	--	--	9.7E-01	na	--	--	2.4E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	3.7E-01	4.1E-01	na	--	4.3E-02	4.3E-02	na	--	1.5E+00	1.6E+00	na	--	3.7E-01	4.1E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	2.2E+00	--	--	na	1.8E-02	--	--	na	2.7E+00	--	--	na	2.2E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	4.4E+03	--	--	na	1.3E+02	--	--	na	7.0E+03	--	--	na	4.4E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	3.2E+03	--	--	na	9.6E+01	--	--	na	5.2E+03	--	--	na	3.2E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	6.4E+02	--	--	na	1.9E+01	--	--	na	1.0E+03	--	--	na	6.4E+02
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	3.5E+00	--	--	na	2.8E-02	--	--	na	4.3E+00	--	--	na	3.5E+00
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	2.1E+03	--	--	na	1.7E+01	--	--	na	2.6E+03	--	--	na	2.1E+03
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	4.6E+03	--	--	na	3.7E+01	--	--	na	5.6E+03	--	--	na	4.6E+03
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	2.4E+04	--	--	na	7.1E+02	--	--	na	3.8E+04	--	--	na	2.4E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	3.4E+04	--	--	na	1.0E+03	--	--	na	5.4E+04	--	--	na	3.4E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	9.7E+02	--	--	na	2.9E+01	--	--	na	1.6E+03	--	--	na	9.7E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	1.9E+03	--	--	na	1.5E+01	--	--	na	2.3E+03	--	--	na	1.9E+03
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	2.6E+03	--	--	na	2.1E+01	--	--	na	3.2E+03	--	--	na	2.6E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	5.2E-01	1.4E-01	na	6.7E-03	6.0E-02	1.4E-02	na	5.4E-05	2.0E+00	5.4E-01	na	8.2E-03	5.2E-01	1.4E-01	na	6.7E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	1.5E+05	--	--	na	4.4E+03	--	--	na	2.4E+05	--	--	na	1.5E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	2.9E+03	--	--	na	8.5E+01	--	--	na	4.6E+03	--	--	na	2.9E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	3.7E+06	--	--	na	1.1E+05	--	--	na	5.9E+06	--	--	na	3.7E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	1.5E+04	--	--	na	4.5E+02	--	--	na	2.4E+04	--	--	na	1.5E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.8E+04	--	--	na	5.3E+02	--	--	na	2.8E+04	--	--	na	1.8E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	9.4E+02	--	--	na	2.8E+01	--	--	na	1.5E+03	--	--	na	9.4E+02
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	4.2E+02	--	--	na	3.4E+00	--	--	na	5.2E+02	--	--	na	4.2E+02
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.7E-07	--	--	na	5.1E-09	--	--	na	2.7E-07	--	--	na	1.7E-07
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	2.5E+01	--	--	na	2.0E-01	--	--	na	3.0E+01	--	--	na	2.5E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.8E-01	1.4E-01	na	3.0E+02	5.5E-02	1.4E-02	na	8.9E+00	1.9E+00	5.4E-01	na	4.8E+02	4.8E-01	1.4E-01	na	3.0E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.8E-01	1.4E-01	na	3.0E+02	5.5E-02	1.4E-02	na	8.9E+00	1.9E+00	5.4E-01	na	4.8E+02	4.8E-01	1.4E-01	na	3.0E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.8E-01	1.4E-01	--	--	5.5E-02	1.4E-02	--	--	1.9E+00	5.4E-01	--	--	4.8E-01	1.4E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	3.0E+02	--	--	na	8.9E+00	--	--	na	4.8E+02	--	--	na	3.0E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.9E-01	8.8E-02	na	2.0E-01	2.2E-02	9.0E-03	na	6.0E-03	7.3E-01	3.5E-01	na	3.2E-01	1.9E-01	8.8E-02	na	2.0E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	1.0E+00	--	--	na	3.0E-02	--	--	na	1.6E+00	--	--	na	1.0E+00

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	7.0E+03	--	--	na	2.1E+02	--	--	na	1.1E+04	--	--	na	7.0E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	4.7E+02	--	--	na	1.4E+01	--	--	na	7.5E+02	--	--	na	4.7E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.8E+04	--	--	na	5.3E+02	--	--	na	2.8E+04	--	--	na	1.8E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.4E-02	na	--	--	2.5E-03	na	--	--	9.7E-02	na	--	--	2.4E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	1.1E+00	9.2E-03	na	9.9E-03	1.3E-01	9.5E-04	na	7.9E-05	4.4E+00	3.7E-02	na	1.2E-02	1.1E+00	9.2E-03	na	9.9E-03
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	1.1E+00	9.2E-03	na	4.9E-03	1.3E-01	9.5E-04	na	3.9E-05	4.4E+00	3.7E-02	na	5.9E-03	1.1E+00	9.2E-03	na	4.9E-03
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	3.6E-02	--	--	na	2.9E-04	--	--	na	4.4E-02	--	--	na	3.6E-02
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	2.2E+03	--	--	na	1.8E+01	--	--	na	2.7E+03	--	--	na	2.2E+03
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	6.1E-01	--	--	na	4.9E-03	--	--	na	7.4E-01	--	--	na	6.1E-01
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	2.1E+00	--	--	na	1.7E-02	--	--	na	2.6E+00	--	--	na	2.1E+00
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	2.1E+00	--	na	2.2E+01	2.4E-01	--	na	1.8E-01	8.1E+00	--	na	2.7E+01	2.1E+00	--	na	2.2E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	3.7E+03	--	--	na	1.1E+02	--	--	na	5.9E+03	--	--	na	3.7E+03
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	4.1E+02	--	--	na	3.3E+00	--	--	na	5.0E+02	--	--	na	4.1E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.9E+00	na	--	--	5.0E-01	na	--	--	1.9E+01	na	--	--	4.9E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	2.2E+00	--	--	na	1.8E-02	--	--	na	2.7E+00	--	--	na	2.2E+00
Iron	133.264	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	1.2E+05	--	--	na	9.6E+02	--	--	na	1.5E+05	--	--	na	1.2E+05
Kepon	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Lead	0.086	8.9E+01	9.8E+00	na	--	1.9E+02	2.4E+01	na	--	1.7E+01	2.0E+00	na	--	5.7E+02	7.3E+01	na	--	1.9E+02	2.4E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	2.4E-01	na	--	--	2.5E-02	na	--	--	9.7E-01	na	--	--	2.4E-01	na	--
Manganese	45.732	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0.00212	1.4E+00	7.7E-01	--	--	3.0E+00	1.9E+00	--	--	3.5E-01	1.9E-01	--	--	1.2E+01	7.5E+00	--	--	3.0E+00	1.9E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	5.0E+03	--	--	na	1.5E+02	--	--	na	8.0E+03	--	--	na	5.0E+03
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	7.4E+04	--	--	na	5.9E+02	--	--	na	9.0E+04	--	--	na	7.4E+04
Methoxychlor	0	--	3.0E-02	na	--	--	7.3E-02	na	--	--	7.5E-03	na	--	--	2.9E-01	na	--	--	7.3E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Nickel	0.483	1.5E+02	1.6E+01	na	4.6E+03	3.3E+02	3.9E+01	na	1.5E+04	3.1E+01	3.8E+00	na	4.6E+02	1.1E+03	1.3E+02	na	2.5E+04	3.3E+02	3.9E+01	na	1.5E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	2.3E+03	--	--	na	6.9E+01	--	--	na	3.7E+03	--	--	na	2.3E+03
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	3.7E+02	--	--	na	3.0E+00	--	--	na	4.6E+02	--	--	na	3.7E+02
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	7.5E+02	--	--	na	6.0E+00	--	--	na	9.1E+02	--	--	na	7.5E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	6.4E+01	--	--	na	5.1E-01	--	--	na	7.7E+01	--	--	na	6.4E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	6.1E+01	1.6E+01	na	--	7.0E+00	1.7E+00	--	--	2.4E+02	6.4E+01	--	--	6.1E+01	1.6E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.4E-01	3.2E-02	na	--	1.6E-02	3.3E-03	na	--	5.5E-01	1.3E-01	na	--	1.4E-01	3.2E-02	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	3.4E-02	na	8.0E-03	--	3.5E-03	na	6.4E-05	--	1.4E-01	na	9.7E-03	--	3.4E-02	na	8.0E-03
Pentachlorophenol ^C	0	9.0E+00	6.9E+00	na	3.0E+01	2.0E+01	1.7E+01	na	3.7E+02	2.3E+00	1.8E+00	na	3.0E+00	7.9E+01	6.9E+01	na	4.6E+02	2.0E+01	1.7E+01	na	3.7E+02
Phenol	0	--	--	na	8.6E+05	--	--	na	2.9E+06	--	--	na	8.6E+04	--	--	na	4.6E+06	--	--	na	2.9E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.3E+04	--	--	na	4.0E+02	--	--	na	2.1E+04	--	--	na	1.3E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0.396	2.0E+01	5.0E+00	na	4.2E+03	4.3E+01	1.2E+01	na	1.4E+04	5.3E+00	1.5E+00	na	4.2E+02	1.7E+02	4.5E+01	na	2.3E+04	4.3E+01	1.2E+01	na	1.4E+04
Silver	0.064	2.3E+00	--	na	--	5.0E+00	--	na	--	4.4E-01	--	na	--	1.3E+01	--	na	--	5.0E+00	--	na	--
Sulfate	33.6	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	5.0E+02	--	--	na	4.0E+00	--	--	na	6.1E+02	--	--	na	5.0E+02
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	4.1E+02	--	--	na	3.3E+00	--	--	na	5.0E+02	--	--	na	4.1E+02
Thallium	0.081	--	--	na	4.7E-01	--	--	na	1.4E+00	--	--	na	1.2E-01	--	--	na	2.2E+00	--	--	na	1.4E+00
Toluene	0	--	--	na	6.0E+03	--	--	na	2.0E+04	--	--	na	6.0E+02	--	--	na	3.2E+04	--	--	na	2.0E+04
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	1.6E+00	4.9E-04	na	3.5E-02	1.8E-01	5.0E-05	na	2.8E-04	6.2E+00	1.9E-03	na	4.3E-02	1.6E+00	4.9E-04	na	3.5E-02
Tributyltin	0	4.6E-01	7.2E-02	na	--	1.0E+00	1.8E-01	na	--	1.2E-01	1.8E-02	na	--	3.9E+00	7.0E-01	na	--	1.0E+00	1.8E-01	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	2.3E+02	--	--	na	7.0E+00	--	--	na	3.8E+02	--	--	na	2.3E+02
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	2.0E+03	--	--	na	1.6E+01	--	--	na	2.4E+03	--	--	na	2.0E+03
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	3.7E+03	--	--	na	3.0E+01	--	--	na	4.6E+03	--	--	na	3.7E+03
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	3.0E+02	--	--	na	2.4E+00	--	--	na	3.6E+02	--	--	na	3.0E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	3.0E+02	--	--	na	2.4E+00	--	--	na	3.6E+02	--	--	na	3.0E+02
Zinc	1.518	9.7E+01	9.6E+01	na	2.6E+04	2.1E+02	2.3E+02	na	8.7E+04	2.1E+01	2.1E+01	na	2.6E+03	6.7E+02	7.7E+02	na	1.4E+05	2.1E+02	2.3E+02	na	8.7E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.1E+03
Arsenic	2.2E+02
Barium	na
Cadmium	1.3E+00
Chromium III	8.8E+01
Chromium VI	1.4E+01
Copper	9.2E+00
Iron	na
Lead	1.4E+01
Manganese	na
Mercury	1.1E+00
Nickel	2.4E+01
Selenium	7.0E+00
Silver	2.0E+00
Zinc	8.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **BPS Outfall 002 Final Configuration**

Permit No.: **VA0004138**

Receiving Stream: **James River**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	62.5 mg/L
90% Temperature (Annual) =	26.86 deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	8.03 SU
10% Maximum pH =	7.06 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	N
Trout Present Y/N? =	N
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	358 MGD
7Q10 (Annual) =	406 MGD
30Q10 (Annual) =	497 MGD
1Q10 (Wet season) =	MGD
30Q10 (Wet season) =	MGD
30Q5 =	559 MGD
Harmonic Mean =	1570 MGD

Mixing Information

Annual - 1Q10 Mix =	3.64 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	%
- 30Q10 Mix =	%

Effluent Information

Mean Hardness (as CaCO3) =	70.1 mg/L
90% Temp (Annual) =	28.3 deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	8.3 SU
10% Maximum pH =	7 SU
Discharge Flow =	4.2912 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	1.3E+05	--	--	na	9.9E+01	--	--	na	1.3E+04	--	--	na	1.3E+04
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.2E+03	--	--	na	9.3E-01	--	--	na	1.2E+02	--	--	na	1.2E+02
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	9.2E+02	--	--	na	2.5E-01	--	--	na	9.2E+01	--	--	na	9.2E+01
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	1.2E+01	--	na	1.8E-01	7.5E-01	--	na	5.0E-05	6.3E+01	--	na	1.8E-02	1.2E+01	--	na	1.8E-02
Ammonia-N (mg/l) (Yearly)	0	7.18E+00	1.05E+00	na	--	2.90E+01	1.22E+02	na	--	1.98E+00	2.62E-01	na	--	1.67E+02	3.06E+01	na	--	2.90E+01	3.06E+01	na	--
Ammonia-N (mg/l) (High Flow)	0	4.71E+00	1.52E+00	na	--	4.71E+00	1.52E+00	na	--	1.18E+00	3.81E-01	na	--	1.18E+00	3.81E-01	na	--	1.18E+00	3.81E-01	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	5.3E+06	--	--	na	4.0E+03	--	--	na	5.3E+05	--	--	na	5.3E+05
Antimony	0.236	--	--	na	6.4E+02	--	--	na	8.4E+04	--	--	na	6.4E+01	--	--	na	8.4E+03	--	--	na	8.4E+03
Arsenic	0.218	3.4E+02	1.5E+02	na	--	1.4E+03	1.4E+04	na	--	8.5E+01	3.8E+01	na	--	7.2E+03	3.6E+03	na	--	1.4E+03	3.6E+03	na	--
Barium	20.763	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	1.9E+05	--	--	na	5.1E+01	--	--	na	1.9E+04	--	--	na	1.9E+04
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	7.3E-01	--	--	na	2.0E-04	--	--	na	7.3E-02	--	--	na	7.3E-02
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	6.6E+01	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	6.6E+00
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	6.6E+01	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	6.6E+00
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	6.6E+01	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	6.6E+00
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	6.6E+01	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	6.6E+00
Bis2-Chloroethyl Ether ^C	0	--	--	na	5.3E+00	--	--	na	1.9E+03	--	--	na	5.3E-01	--	--	na	1.9E+02	--	--	na	1.9E+02
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	8.5E+06	--	--	na	6.5E+03	--	--	na	8.5E+05	--	--	na	8.5E+05
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	8.1E+03	--	--	na	2.2E+00	--	--	na	8.1E+02	--	--	na	8.1E+02
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	5.1E+05	--	--	na	1.4E+02	--	--	na	5.1E+04	--	--	na	5.1E+04
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	2.5E+05	--	--	na	1.9E+02	--	--	na	2.5E+04	--	--	na	2.5E+04
Cadmium	0.077	2.4E+00	7.9E-01	na	--	9.4E+00	6.8E+01	na	--	6.4E-01	2.5E-01	na	--	4.7E+01	1.7E+01	na	--	9.4E+00	1.7E+01	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	5.9E+03	--	--	na	1.6E+00	--	--	na	5.9E+02	--	--	na	5.9E+02
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	9.7E+00	4.1E-01	na	3.0E+00	6.0E-01	1.1E-03	na	8.1E-04	5.1E+01	1.0E-01	na	3.0E-01	9.7E+00	1.0E-01	na	3.0E-01
Chloride	0	8.6E+05	2.3E+05	na	--	3.5E+06	2.2E+07	na	--	2.2E+05	5.8E+04	na	--	1.8E+07	5.5E+06	na	--	3.5E+06	5.5E+06	na	--
TRC	0	1.9E+01	1.1E+01	na	--	7.7E+01	1.1E+03	na	--	4.8E+00	2.8E+00	na	--	4.0E+02	2.6E+02	na	--	7.7E+01	2.6E+02	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	2.1E+05	--	--	na	1.6E+02	--	--	na	2.1E+04	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	4.8E+04	--	--	na	1.3E+01	--	--	na	4.8E+03	--	--	na	4.8E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.4E+06	--	--	na	1.1E+03	--	--	na	1.4E+05	--	--	na	1.4E+05
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	2.1E+05	--	--	na	1.6E+02	--	--	na	2.1E+04	--	--	na	2.1E+04
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	2.0E+04	--	--	na	1.5E+01	--	--	na	2.0E+03	--	--	na	2.0E+03
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	3.4E-01	3.9E+00	na	--	2.1E-02	1.0E-02	na	--	1.8E+00	9.8E-01	na	--	3.4E-01	9.8E-01	na	--
Chromium III	0.398	4.0E+02	5.0E+01	na	--	1.6E+03	4.8E+03	na	--	9.7E+01	1.3E+01	na	--	8.2E+03	1.2E+03	na	--	1.6E+03	1.2E+03	na	--
Chromium VI	0.398	1.6E+01	1.1E+01	na	--	6.3E+01	1.0E+03	na	--	4.3E+00	3.0E+00	na	--	3.3E+02	2.5E+02	na	--	6.3E+01	2.5E+02	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	1.3E+03	--	--	--	na	--
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	1.8E-03	--	--	na	6.6E-01	--	--	na	6.6E-01
Copper	0.542	8.9E+00	6.0E+00	na	--	3.4E+01	5.2E+02	na	--	2.6E+00	1.9E+00	na	--	1.7E+02	1.3E+02	na	--	3.4E+01	1.3E+02	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	8.9E+01	5.0E+02	na	2.1E+06	5.5E+00	1.3E+00	na	1.6E+03	4.6E+02	1.2E+02	na	2.1E+05	8.9E+01	1.2E+02	na	2.1E+05
DDD ^C	0	--	--	na	3.1E-03	--	--	na	1.1E+00	--	--	na	3.1E-04	--	--	na	1.1E-01	--	--	na	1.1E-01
DDE ^C	0	--	--	na	2.2E-03	--	--	na	8.1E-01	--	--	na	2.2E-04	--	--	na	8.1E-02	--	--	na	8.1E-02
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	4.4E+00	9.6E-02	na	8.1E-01	2.8E-01	2.5E-04	na	2.2E-04	2.3E+01	2.4E-02	na	8.1E-02	4.4E+00	2.4E-02	na	8.1E-02
Demeton	0	--	1.0E-01	na	--	--	9.6E+00	na	--	--	2.5E-02	na	--	--	2.4E+00	na	--	--	2.4E+00	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	6.9E-01	1.6E+01	na	--	4.3E-02	4.3E-02	na	--	3.6E+00	4.1E+00	na	--	6.9E-01	4.1E+00	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	6.6E+01	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	6.6E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.7E+05	--	--	na	1.3E+02	--	--	na	1.7E+04	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.3E+05	--	--	na	9.6E+01	--	--	na	1.3E+04	--	--	na	1.3E+04
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	2.5E+04	--	--	na	1.9E+01	--	--	na	2.5E+03	--	--	na	2.5E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	1.0E+02	--	--	na	2.8E-02	--	--	na	1.0E+01	--	--	na	1.0E+01
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	6.2E+04	--	--	na	1.7E+01	--	--	na	6.2E+03	--	--	na	6.2E+03
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	1.4E+05	--	--	na	3.7E+01	--	--	na	1.4E+04	--	--	na	1.4E+04
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	9.3E+05	--	--	na	7.1E+02	--	--	na	9.3E+04	--	--	na	9.3E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.3E+06	--	--	na	1.0E+03	--	--	na	1.3E+05	--	--	na	1.3E+05
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	3.8E+04	--	--	na	2.9E+01	--	--	na	3.8E+03	--	--	na	3.8E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	5.5E+04	--	--	na	1.5E+01	--	--	na	5.5E+03	--	--	na	5.5E+03
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	7.7E+04	--	--	na	2.1E+01	--	--	na	7.7E+03	--	--	na	7.7E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	9.7E-01	5.4E+00	na	2.0E-01	6.0E-02	1.4E-02	na	5.4E-05	5.1E+00	1.3E+00	na	2.0E-02	9.7E-01	1.3E+00	na	2.0E-02
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	5.8E+06	--	--	na	4.4E+03	--	--	na	5.8E+05	--	--	na	5.8E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.1E+05	--	--	na	8.5E+01	--	--	na	1.1E+04	--	--	na	1.1E+04
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.4E+08	--	--	na	1.1E+05	--	--	na	1.4E+07	--	--	na	1.4E+07
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	5.9E+05	--	--	na	4.5E+02	--	--	na	5.9E+04	--	--	na	5.9E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	7.0E+05	--	--	na	5.3E+02	--	--	na	7.0E+04	--	--	na	7.0E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	3.7E+04	--	--	na	2.8E+01	--	--	na	3.7E+03	--	--	na	3.7E+03
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	1.2E+04	--	--	na	3.4E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	6.7E-06	--	--	na	5.1E-09	--	--	na	6.7E-07	--	--	na	6.7E-07
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	7.3E+02	--	--	na	2.0E-01	--	--	na	7.3E+01	--	--	na	7.3E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	8.9E-01	5.4E+00	na	1.2E+04	5.5E-02	1.4E-02	na	8.9E+00	4.6E+00	1.3E+00	na	1.2E+03	8.9E-01	1.3E+00	na	1.2E+03
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	8.9E-01	5.4E+00	na	1.2E+04	5.5E-02	1.4E-02	na	8.9E+00	4.6E+00	1.3E+00	na	1.2E+03	8.9E-01	1.3E+00	na	1.2E+03
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	8.9E-01	5.4E+00	--	--	5.5E-02	1.4E-02	--	--	4.6E+00	1.3E+00	--	--	8.9E-01	1.3E+00	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.2E+04	--	--	na	8.9E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	3.5E-01	3.4E+00	na	7.9E+00	2.2E-02	9.0E-03	na	6.0E-03	1.8E+00	8.6E-01	na	7.9E-01	3.5E-01	8.6E-01	na	7.9E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.9E+01	--	--	na	3.0E-02	--	--	na	3.9E+00	--	--	na	3.9E+00

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.8E+05	--	--	na	2.1E+02	--	--	na	2.8E+04	--	--	na	2.8E+04
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.8E+04	--	--	na	1.4E+01	--	--	na	1.8E+03	--	--	na	1.8E+03
Fluorene	0	--	--	na	5.3E+03	--	--	na	7.0E+05	--	--	na	5.3E+02	--	--	na	7.0E+04	--	--	na	7.0E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	9.6E-01	na	--	--	2.5E-03	na	--	--	2.4E-01	na	--	--	2.4E-01	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	2.1E+00	3.6E-01	na	2.9E-01	1.3E-01	9.5E-04	na	7.9E-05	1.1E+01	9.1E-02	na	2.9E-02	2.1E+00	9.1E-02	na	2.9E-02
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	2.1E+00	3.6E-01	na	1.4E-01	1.3E-01	9.5E-04	na	3.9E-05	1.1E+01	9.1E-02	na	1.4E-02	2.1E+00	9.1E-02	na	1.4E-02
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	1.1E+00	--	--	na	2.9E-04	--	--	na	1.1E-01	--	--	na	1.1E-01
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	6.6E+04	--	--	na	1.8E+01	--	--	na	6.6E+03	--	--	na	6.6E+03
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	1.8E+01	--	--	na	4.9E-03	--	--	na	1.8E+00	--	--	na	1.8E+00
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	6.2E+01	--	--	na	1.7E-02	--	--	na	6.2E+00	--	--	na	6.2E+00
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	3.8E+00	--	na	6.6E+02	2.4E-01	--	na	1.8E-01	2.0E+01	--	na	6.6E+01	3.8E+00	--	na	6.6E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.4E+05	--	--	na	1.1E+02	--	--	na	1.4E+04	--	--	na	1.4E+04
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	1.2E+04	--	--	na	3.3E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.9E+02	na	--	--	5.0E-01	na	--	--	4.8E+01	na	--	--	4.8E+01	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	6.6E+01	--	--	na	1.8E-02	--	--	na	6.6E+00	--	--	na	6.6E+00
Iron	133.264	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	3.5E+06	--	--	na	9.6E+02	--	--	na	3.5E+05	--	--	na	3.5E+05
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Lead	0.086	6.8E+01	7.4E+00	na	--	2.7E+02	7.0E+02	na	--	1.6E+01	1.9E+00	na	--	1.4E+03	1.8E+02	na	--	2.7E+02	1.8E+02	na	--
Malathion	0	--	1.0E-01	na	--	--	9.6E+00	na	--	--	2.5E-02	na	--	--	2.4E+00	na	--	--	2.4E+00	na	--
Manganese	45.732	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0.00212	1.4E+00	7.7E-01	--	--	5.6E+00	7.3E+01	--	--	3.5E-01	1.9E-01	--	--	3.0E+01	1.8E+01	--	--	5.6E+00	1.8E+01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	2.0E+05	--	--	na	1.5E+02	--	--	na	2.0E+04	--	--	na	2.0E+04
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	2.2E+06	--	--	na	5.9E+02	--	--	na	2.2E+05	--	--	na	2.2E+05
Methoxychlor	0	--	3.0E-02	na	--	--	2.9E+00	na	--	--	7.5E-03	na	--	--	7.2E-01	na	--	--	7.2E-01	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Nickel	0.483	1.3E+02	1.4E+01	na	4.6E+03	5.1E+02	1.3E+03	na	6.0E+05	3.1E+01	3.8E+00	na	4.6E+02	2.6E+03	3.1E+02	na	6.0E+04	5.1E+02	3.1E+02	na	6.0E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	9.1E+04	--	--	na	6.9E+01	--	--	na	9.1E+03	--	--	na	9.1E+03
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	1.1E+04	--	--	na	3.0E+00	--	--	na	1.1E+03	--	--	na	1.1E+03
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	2.2E+04	--	--	na	6.0E+00	--	--	na	2.2E+03	--	--	na	2.2E+03
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	1.9E+03	--	--	na	5.1E-01	--	--	na	1.9E+02	--	--	na	1.9E+02
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.1E+02	6.3E+02	na	--	7.0E+00	1.7E+00	--	--	5.9E+02	1.6E+02	--	--	1.1E+02	1.6E+02	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	2.6E-01	1.2E+00	na	--	1.6E-02	3.3E-03	na	--	1.4E+00	3.1E-01	na	--	2.6E-01	3.1E-01	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.3E+00	na	2.3E-01	--	3.5E-03	na	6.4E-05	--	3.3E-01	na	2.3E-02	--	3.3E-01	na	2.3E-02
Pentachlorophenol ^C	0	9.1E+00	7.1E+00	na	3.0E+01	3.7E+01	6.8E+02	na	1.1E+04	2.3E+00	1.8E+00	na	3.0E+00	2.0E+02	1.7E+02	na	1.1E+03	3.7E+01	1.7E+02	na	1.1E+03
Phenol	0	--	--	na	8.6E+05	--	--	na	1.1E+08	--	--	na	8.6E+04	--	--	na	1.1E+07	--	--	na	1.1E+07
Pyrene	0	--	--	na	4.0E+03	--	--	na	5.3E+05	--	--	na	4.0E+02	--	--	na	5.3E+04	--	--	na	5.3E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0.396	2.0E+01	5.0E+00	na	4.2E+03	8.0E+01	4.4E+02	na	5.5E+05	5.3E+00	1.5E+00	na	4.2E+02	4.1E+02	1.1E+02	na	5.5E+04	8.0E+01	1.1E+02	na	5.5E+04
Silver	0.064	1.6E+00	--	na	--	6.3E+00	--	na	--	4.3E-01	--	na	--	3.1E+01	--	na	--	6.3E+00	--	na	--
Sulfate	33.6	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	1.5E+04	--	--	na	4.0E+00	--	--	na	1.5E+03	--	--	na	1.5E+03
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	1.2E+04	--	--	na	3.3E+00	--	--	na	1.2E+03	--	--	na	1.2E+03
Thallium	0.081	--	--	na	4.7E-01	--	--	na	5.1E+01	--	--	na	1.2E-01	--	--	na	5.2E+00	--	--	na	5.2E+00
Toluene	0	--	--	na	6.0E+03	--	--	na	7.9E+05	--	--	na	6.0E+02	--	--	na	7.9E+04	--	--	na	7.9E+04
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	2.9E+00	1.9E-02	na	1.0E+00	1.8E-01	5.0E-05	na	2.8E-04	1.5E+01	4.8E-03	na	1.0E-01	2.9E+00	4.8E-03	na	1.0E-01
Tributyltin	0	4.6E-01	7.2E-02	na	--	1.9E+00	6.9E+00	na	--	1.2E-01	1.8E-02	na	--	9.7E+00	1.7E+00	na	--	1.9E+00	1.7E+00	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	9.2E+03	--	--	na	7.0E+00	--	--	na	9.2E+02	--	--	na	9.2E+02
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	5.9E+04	--	--	na	1.6E+01	--	--	na	5.9E+03	--	--	na	5.9E+03
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	1.1E+05	--	--	na	3.0E+01	--	--	na	1.1E+04	--	--	na	1.1E+04
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	8.8E+03	--	--	na	2.4E+00	--	--	na	8.8E+02	--	--	na	8.8E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	8.8E+03	--	--	na	2.4E+00	--	--	na	8.8E+02	--	--	na	8.8E+02
Zinc	1.518	8.1E+01	7.9E+01	na	2.6E+04	3.2E+02	7.4E+03	na	3.4E+06	2.1E+01	2.1E+01	na	2.6E+03	1.6E+03	1.9E+03	na	3.4E+05	3.2E+02	1.9E+03	na	3.4E+05

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	8.4E+03
Arsenic	5.5E+02
Barium	na
Cadmium	3.8E+00
Chromium III	6.4E+02
Chromium VI	2.5E+01
Copper	1.4E+01
Iron	na
Lead	1.1E+02
Manganese	na
Mercury	2.3E+00
Nickel	1.9E+02
Selenium	3.2E+01
Silver	2.5E+00
Zinc	1.3E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

APPENDIX H

THERMAL MIXING ZONE EVALUATION AND EFFLUENT LIMITATIONS FOR HEAT REJECTED

There are two thermal mixing zones in the vicinity of BPS:

- Thermal Mixing Zone – Dominion-Bear Garden Power Station: The Dominion Bear Garden Power Station is located directly across the James River from BPS. The Bear Garden Power Station has cooling towers so its thermal mixing zone is much smaller than the thermal mixing zone for BPS. The location of Outfall 001 for the Bear Garden Power Station is shown on page 4 of Appendix B. The Bear Garden Power Station has a Thermal Mixing Zone which is 100 feet long and 20 feet wide. The Bear Garden Thermal Mixing Zone does not affect the BPS Thermal Mixing Zone.
- Thermal Mixing Zone – BPS: BPS does not have cooling towers. The Thermal Mixing Zone was first designated in 1977. The approved Thermal Mixing Zone is defined as “40% of the width of the James River, as measured from the north bank extending from the John H. Cocke Memorial Bridge downstream to Spicer’s Island, approximately 5 ½ miles downstream of the cooling water discharge (Outfall 001).”

Annual Thermal Mixing Zone Study:

The applicant has conducted a stream monitoring program in July of each year since the 1970s. These studies are conducted during the time of year when the river is warmest and critical flow conditions are more likely to be occurring. That program has been adequate to describe the maximum stream temperature below the plant; the increase in stream temperature from the natural condition; the zone of clear passage (where there is no temperature change) and the length of the mixing zone required to bring the river back to its normal temperature. Compliance is demonstrated using instream temperature monitoring performed during the month of July and at a time when the plant is as near full operating capacity as reasonably possible, the river is warmest, and critical flow conditions are more likely to be occurring. The purpose of the annual thermal mixing zone study is to demonstrate that the effluent limitations for heat rejection are adequate for maintaining numeric WQC for temperature outside of the approved Thermal Mixing Zone. Thermal mixing zone studies performed annually by the applicant and conducted in accordance with the approved monitoring plan were reviewed. River water temperatures outside of the mixing zone were not greater than 3° C above ambient conditions in studies performed during the term of the previous permit. The review of all the thermal discharge and surface water monitoring data indicates that, on occasion, the maximum discharge temperatures do result in use of the full extent of the allowable Thermal Mixing Zone. For that reason the evaluation concluded that the existing mixing zone should not be changed.

The permit requires that a thermal mixing zone survey be conducted twice per year rather than once per year. The second survey is to be conducted during January or February each year to capture any seasonal variation. The permit requires that within 60 days of the effective date of the permit, a revised Thermal Mixing Zone Monitoring Plan be submitted for DEQ approval.

Heat Rejection Limit:

Heat Rejection is defined as the rate of heat transfer from a unit’s condenser to its circulating water system. It is calculated directly by conservation of mass and energy either across the circulating water system (condenser tube side) or from the turbine exhaust to the hotwell (condenser shell side). Heat Rejection is measured in BTU/Hour.

On December 21, 1978, VPDES Permit No. VA0004138 was modified to include the Board approved thermal mixing zone. The modified permit also required continuous monitoring for Outfall 001 (once-through condenser cooling water) temperature and specified that the maximum heat rejection to the waterway shall not exceed a maximum of 1.62×10^9 BTU/Hour. The heat rejection limit was considered to be protective of the instream standards for temperature outside the approved thermal mixing zone and has been carried forward since that time. No change to the heat rejection limit is proposed with this reissuance. The permit requires monitoring for intake temperature and effluent temperature at Outfall 001 for future evaluation purposes.

Fact Sheet – VPDES Permit No. VA0004138 – Dominion-Bremo Power Station

Dominion used available information from recent tests to develop heat rejection estimates for Units 3 and 4. Below is a discussion of the estimates provided by Dominion on October 20, 2015.

Dominion periodically performs capacity tests of Unit 3 and Unit 4 that are used to substantiate market dispatch of both units. These capacity tests are performed during environmental and operational conditions approaching maximum. Using the data from a capacity test of the units performed this past summer our engineering team determined that the heat rejected by Unit 3 was 471.66×10^6 BTU/HR on June 24, 2015 and the heat rejected by Unit 4 was 840.95×10^6 Btu/Hr on June 23, 2015. The total heat rejection for both units, based on these specific tests, equates to 1.313×10^9 BTU/HR, which is within 20% of our current heat rejection limit.

The above calculated condenser heat rejection values are based on modeling the units in “heat balance” software, called F-Cycle. F-Cycle is a heat balance modeling tool that takes test data and balances the mass flows, energy and temperatures across the unit. F-Cycle and similar software programs are used by the energy industry to evaluate and analyze the performance of various units in their systems.

The results of these capacity tests provide an indication of the heat rejection for the particular operational period during which the tests were performed. However, heat rejection by the units can vary considerably due to many factors, including at least the following:

1. Condenser Air In-Leakage
2. Low River Levels – Reducing Circulating Water Pump Flows to the Condensers
3. High River Water Temperatures
4. Equipment out of service, e.g., 1st Pt FWH, etc.
5. Condenser Tube Side Cleanliness

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APPENDIX I

COOLING WATER INTAKE STRUCTURE 316(b) EVALUATION

Section 316(b) of the Clean Water Act requires the location, design, construction, and capacity of cooling water intake structures (CWIS) reflect the best technology available (BTA) for minimizing adverse environmental impacts. The cooling water intake requirements are included in the federal NPDES Permit Regulations, 40 CFR §§122 & 125 (Subparts I, J, & N). EPA’s final “Phase II” rule addressing existing facilities was promulgated on August 15, 2014, and became effective on October 14, 2014.

40 CFR §125.92 includes the following definitions:

Cooling Water – ‘...water used for contact or non-contact cooling, including water used for equipment cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used...’

Cooling Water Intake Structure – “...the total physical structure and any associated constructed waterways used to withdraw cooling water from surface waters. The cooling water intake structure extends from the point at which water is first withdrawn...up to, and including the intake pumps.”

Existing Facility – “...any facility that commenced construction... on or before January 17, 2002...”

BPS is subject to the requirements of 40CFR §125. 94 through 40CFR §125.99 of the 316(b) rule because:

- BPS is an existing facility;
- The facility is a point source discharger subject to a VPDES permit;
- The facility uses cooling water obtained from one or more cooling water intake structures;
- The facility’s cumulative design intake flow (DIF) is greater than 2 MGD;
- Water is withdrawn from waters of the U.S.; and
- At least 25% of the actual intake flow (AIF) is used exclusively for cooling purposes.

Existing facilities with DIF > 2 MGD are subject to applicable provisions of the following permit application information submittal requirements.

40 CFR 122.21 Section	Study Name	Study Contents (to include, but not limited to)
(r)(2)	Source water physical data	Water body description (dimensions, depths, salinity, temperatures, hydrological & geomorphological features); methods used to determine the intake’s area of influence within the waterbody.
(r)(3)	Cooling water intake structure data	Engineering drawings, location (lat/long), configuration within the waterbody and water column, flow distribution and water balance diagram, description of operations (withdrawal flows, daily hours, number of days)
(r)(4)	Source water baseline biological characterization data	Species/life stages present & their abundance, susceptibility to impingement mortality and entrainment (IM&E), spawning periods, seasonal and daily patterns, T&E species documentation
(r)(5)	Cooling water system data	Configuration/operation of the cooling system (number of days, seasonal changes, etc.), flows allocated for cooling vs. process waters; existing reuse, flow reduction, & IM&E measures
(r)(6)	Chosen method(s) of compliance with the Impingement Mortality standard	The selected impingement mortality compliance path, option-specific info (e.g. monitoring plan for BTA, documentation of velocities); Performance Optimization Study
(r)(7)	Existing entrainment performance studies	Previous studies on technology efficacy and costs, studies conducted at other facilities/locations
(r)(8)	Operational status	Age, capacity utilization, past & planned upgrades

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There are additional permit application requirements for all existing facilities whose AIFs are greater than 125 MGD; however, the additional permit application requirements do not apply in this situation because the AIF at BPS is less than 125 MGD.

ALTERNATE SCHEDULE FOR SUBMITTAL OF 40 CFR §122.21(r) INFORMATION:

VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet the requirements under §316(b) of the Clean Water Act (CWA) determined by the department on a case-by-case, best professional judgment (BPJ) basis. Federal regulations at 40 CFR §125.95(a)(2) allow for owners or operators of a facility whose permit expires prior to July 14, 2018 to request the Director establish an alternate schedule for the submission of the information required in 40 CFR §122.21(r) when making application for this permit. If the owner or operator of the facility demonstrates that it could not develop the required information by the applicable date of submission, DEQ must establish an alternate schedule for the submission of the required information.

Dominion has requested an alternate schedule be established for BPS. Language from Dominion's January 2015 permit application regarding the alternate schedule is included below:

On October 14, 2014, the Environmental Protection Agency finalized regulations (the Rule) for cooling water intake structures at existing facilities pursuant to Section 316(b) of the Clean Water Act. Bremo Power Station is subject to the Rule as an existing facility with a Design Intake Flow greater than 2 MGD. Section 40 CFR 122.21(r) of the Rule establishes the application information required to support entrainment and impingement technology decisions. Section 40 CFR 125.95(a)(2) of the rule allows permittees to request an alternative schedule for submittal of the 316(b) permit application requirements for permits that expire before July 14, 2018. Additionally, for a permit issued before July 14, 2018, Section 40 CFR 125.98(b)(5) of the Rule allows the permitting authority to include permit conditions to ensure that the permittee provide all application information required for the Rule for the subsequent permit.

We have conducted a review of the Rule requirements as they apply to the Bremo Power Station. Based on that review, we will be required to provide the information specified in Section 40 CFR 122.21(r)(2) through (8.). The Actual Intake Flow (AIF) at the Station is approximately 82 MGD based on the three years 2011 through 2013. Because the AIF is less than 125 MGD, the information specified in Section 40 CFR 122.21(r)(9) through (13) is not required. The information items required include:

- r(2): Source Water Physical Data
- r(3): Cooling Water Intake Structure Data
- r(4): Source water baseline biological characterization data
- r(5): Cooling Water System Data
- r(6): Chosen Method(s) of Compliance with Impingement Mortality Standard
- r(7): Entrainment Performance Studies
- r(8): Operational Status

Given that the rule became effective in October 2014, the required information could not be developed in time for application submittal. The information identified above includes numerous time-consuming efforts including:

- Collecting and summarizing information on the intake structure and cooling water system;
- Determination of the area of influence of the intake structure;
- Collecting and summarizing information for the baseline biological characterization;
- Conducting additional field studies for evaluation of impingement technologies, we are planning to conduct one year of impingement monitoring to inform that decision;
- Conducting extensive engineering evaluations of candidate technologies to identify the proposed impingement compliance method and the specific compliance technology compatible with existing operations.

Accordingly, we request an alternative schedule in our reissued permit to specify that all applicable information in Section 40 CFR 122.21(r) be submitted with the subsequent permit reissuance application.

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Upon review of the request, DEQ staff determined the permittee successfully demonstrated the inability to reasonably develop the required information by their reissuance application due date, thereby qualifying for an alternate schedule to be established.

Federal regulations at 40 CFR §125.98(a) requires the review, for completeness, of the materials submitted by the applicant under 40 CFR §122.21(r) at the time of any application for a subsequent permit. To facilitate a determination of a timely and complete reissuance application in compliance with Part II.M of this permit, the Alternate Schedule for this facility has been established to require submission of the 40 CFR §122.21(r) information to the DEQ-Regional Office by no later than 270 days prior to the expiration date of this permit.

40CFR §125.98(b)(5) establishes that permits issued after October 14, 2014 and before July 14, 2018 and where alternate schedules for information submittal have been established:

- May include permit conditions to ensure that, for any subsequent permit, all the information required by 40 CFR 122.21(r) necessary to establish impingement mortality and entrainment BTA will be available to the Director; and
- Must establish interim Best Technology Available (BTA) requirements in the permit based on best professional judgment and a site-specific basis.

BPS has two CWISs. Dominion reports their water withdrawals each year to the DEQ-Office of Water Supply in accordance with the Water Withdrawal Reporting Regulation (9VAC25-200). The following table is a summary of the cumulative calendar year water withdrawals through the two CWIS, based on data reported to DEQ from 2009 to 2014:

Year	Total Calendar Year Withdrawals (Million Gallons, MG)	Calendar Year Average Withdrawal (Million Gallons per Day, MGD)	Calendar Year Maximum Single Day Withdrawal (MGD)
2009	39671	108.7	173
2010	41788.7	114.5	173
2011	37320.4	102.2	173
2012	27794.8	76.2	173
2013	24676.3	67.6	173
2014	23717.1	65	173

Actual Intake Flow (AIF)

The actual intake flow is defined as “... the average volume of water withdrawn on an annual basis by the cooling water intake structures over the past three years.” After October 14, 2019, AIF is to be based on flows averaged over the previous five years.

The AIF at BPS from 2012 to 2014 was 69 MGD.

Design Intake Flow (DIF)

The design intake flow is defined as “... the maximum instantaneous rate of flow of water the cooling water intake system is capable of withdrawing from a source waterbody.” DIF does not include back-up/redundant pump capacities, or emergency and fire suppression capacity.

Based on a file review, the DIF at BPS is 179 MGD.

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MEASURES TO PROTECT FEDERALLY-LISTED THREATENED OR ENDANGERED (T&E) SPECIES, DESIGNATED CRITICAL HABITAT, AND FRAGILE SPECIES OR SHELLFISH

VPDES Permit Regulation 9VAC25-31-330 authorizes the board to include conditions in the permit in response to advice submitted in writing to the DEQ from the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, or any other state or federal agency with jurisdiction over fish, wildlife, or public health that the imposition of specified conditions are necessary to avoid substantial impairment of fish, shellfish, or wildlife resources and to the extent the board determines the conditions are necessary to carry out the provisions of the regulation, the law and of the CWA.

In addition, VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet requirements under section 316(b) of the Clean Water Act determined by the department on a case-by-case, best professional judgment (BPJ) basis. 40 CFR §§125.94(a)(1), 125.94(g), 125.96(g), and 125.97(g) authorize DEQ to establish additional control measures, monitoring, and reporting requirements in the permit designed to minimize incidental take, reduce or remove more than minor detrimental effects to Federally-listed threatened or endangered species or designated critical habitat, or avoid jeopardizing Federally-listed species or destroying or adversely modifying designated critical habitat (e.g. prey base).

40 CFR §125.96(g) mandates that DEQ require monitoring associated with any additional measures designed to minimize incidental take, reduce or remove more than minor detrimental effects to Federally-listed threatened or endangered species or designated critical habitat, or avoid jeopardizing Federally-listed species or destroying or adversely modifying designated critical habitat (e.g. prey base) pursuant to 40 CFR §125.94(g).

State Water Control Law §62.1-44.5.A.3 and VPDES Permit Regulation 9VAC25-31-50.A.2 prohibits the alteration of the physical, chemical or biological properties of State waters and making them detrimental to animal or aquatic life, except in compliance with a permit issued by the Board. In addition, VPDES Permit Regulation 9VAC25-31-190.E requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.

State Water Control Law §62.1-44.21 and VPDES Permit Regulation 9VAC25-31-190.H authorizes the Board to require owners to furnish plans, specifications, and other pertinent information as may be necessary to accomplish the purposes of the State Water Control Law. In addition, federal regulations at 40 CFR §125.94(g) and §125.97(e) authorize DEQ to establish additional permit monitoring and reporting requirements. Information provided by the permittee under this special condition may be used as a foundation to address other reporting requirements of 40 CFR §125.98(k).

In accordance with EPA's final Phase II Rule, all permit applications of facilities subject to 40CFR §125.98 must be sent to the appropriate Field Office of the U.S Fish & Wildlife Service (USFWS) and/or the National Marine Fisheries Services (NMFS) upon receipt.

- The Services are to be provided a 60-day period of review prior to public notice of the draft or proposed permit.
- The Services are also to be provided a copy of the draft permit, fact sheet, and public notice and an opportunity to comment during the public comment period.

The permit application was sent to EPA, Department of Conservation and Recreation (DCR), Department of Game and Inland Fisheries (DGIF), USFWS and NMFS on January 27, 2015. Coordination with the NMFS was undertaken because of the NMFS's jurisdiction over habitat management of the Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) and because USFWS indicated in an email dated January 27, 2015, that the Atlantic Sturgeon is known to occur in the James River downstream of Bremo Bluff. The 60-day review period for review of the application ended on March 27, 2015.

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- Comments related to the CWIS were received from USFWS on April 3, 2015 and were forwarded to the permittee. The letter from USFWS is included below. USFWS recommended that the Benefits Valuation Study (which was included in the July 2011 Best Technology Available Determination for Reducing Impingement Mortality) not be considered in determining if the cost of reducing IM&E outweighs the benefits. USFWS also requested that non-use benefits be considered in determining the IM&E standards for BPS.
- In accordance with the alternative schedule established in the 2016 permit, all the information required by 40 CFR 122.21(r) necessary to establish impingement mortality and entrainment BTA is required to be submitted 270 days prior to the expiration date of the permit; therefore, the comments from USFWS are not relevant to this permit reissuance since the final BTA determination will be made as part of the next permit reissuance.
- No comments were received from EPA or the NMFS.

A permit application addendum dated August 6, 2015, was received on August 12, 2015. A revised permit application addendum dated October 6, 2015, was received on October 7, 2015. These documents were sent to EPA, NMFS and USFWS.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

April 3, 2015



Ms. Beverly Carver
Virginia Department of Environmental Quality
Valley Regional Office
P.O. Box 3000
Harrisonburg, VA 22801

Re: Dominion – Bremo Power Station,
VPDES VA0004138 Reissuance,
Fluvanna County, VA, Project #
2015-I-0895

Dear Ms. Carver:

The U.S. Fish and Wildlife Service (Service) has reviewed the information provided by the Virginia Department of Environmental Quality (VDEQ) on January 27, 2015 regarding the referenced project. The draft permit proposes re-issuance of the Dominion – Bremo Power Station (BPS) discharge of condenser cooling water and additional wastewater from other sources to the James River. The following comments are provided under provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended.

The federally listed endangered James spiny mussel (*Pleurobema collina*) was historically known to occur in the James River in the vicinity of the BPS. This species would be expected to recolonize the area if habitat conditions improve. Four other mussel species, the yellow lance (*Elliptio lanceolata*), Atlantic pigtoe (*Fusconaia masoni*), brook floater (*Alasmidonta varicosa*), and green floater (*Lasmigona subviridis*), occur near the BPS. The brook floater is listed endangered by the Commonwealth of Virginia and the Atlantic pigtoe and green floater are listed threatened by the Commonwealth. The yellow lance does not have Federal or State status. All five mussel species could be impacted by the BPS cooling water intake and discharge.

Related to these mussel species, the Service is concerned about continued thermal discharge and compliance with the revised Clean Water Act 316(b) rule (79 FR 48300-48439) at the BPS.

Continued thermal discharge

The BPS is in compliance with its permitted mixing zone. However, the Service has concerns

about the impacts of the thermal discharge to mussels. These concerns stem from a 2007 survey conducted by the Catena Group during which no common aquatic mollusks were found downstream of the discharge even though such mollusks were abundant in adjacent areas. It was hypothesized that the thermal discharge was the cause.

To mitigate for historic and ongoing adverse impacts to freshwater mussels, Dominion agreed to offer financial support to the Virginia Department of Game and Inland Fisheries (VDGIF) Atlantic Slope mussel propagation efforts at the Service's Harrison Lake National Fish Hatchery (HLNFH). Dominion provided \$70,000 to upgrade the facilities at HLNFH plus an additional \$50,000 per year over the 5 year life of the Virginia Pollutant Discharge Elimination System (VPDES) permit. Since 2010, these funds have been used to propagate and release over 90,000 freshwater mussels of 7 species into streams within the Chowan, James, Rappahannock, and York River basins.

According to data supplied by Dominion on its application for reissuance of its VPDES permit, the thermal discharge has not changed since the last VPDES permit was issued and it is not expected to change in the near future. Dominion has requested the continuation of the thermal mixing zone into the next permit cycle. If the temperature of the discharge and the size of the permitted mixing zone remain unchanged, it is likely that adverse impacts to mussels will continue.

The Service, VDEQ, VDGIF, and Dominion have agreed to meet on April 27 to discuss how to best ameliorate and/or compensate for these continued adverse impacts. During and after the meeting, we will provide more detailed comments to VDEQ regarding this issue.

Compliance with the revised 316(b) rule

In 2014, the U.S. Environmental Protection Agency issued a rule under Section 316(b) of the Clean Water Act that requires certain National Pollutant Discharge Elimination System permittees, including the BPS, to reduce impingement mortality and entrainment (IM&E) of aquatic organisms at cooling water intake structures (CWIS). To address an earlier version of the 316(b) rule, Veritas Economic Consulting was hired by Dominion to conduct a benefits valuation study at the BPS in 2006. According to this study, the costs associated with bringing the CWIS into compliance with the revised 316(b) rules outweigh the benefits realized from a decrease in IM&E of aquatic organisms (Bingham et al. 2006). The study concluded that since the costs of reducing IM&E outweigh the benefits to recreational fishing, less stringent standards were appropriate for this facility (Bingham et al. 2006).

VDEQ can make IM&E reduction decisions based on a valuation of costs and benefits. However, because the Bingham et al. (2006) study only considered the recreational fishery, we do not believe the benefits associated with reduced IM&E have been fully evaluated. The study claims that non-use benefits are not accounted for in the analysis unless there is potential harm to threatened, endangered, or otherwise important species. Although there is no documentation of IM&E of Federal or State-listed species at this facility, fish that serve as hosts for the larvae of the James spiny mussel, Atlantic pigtoe, and brook floater have been impinged, as documented in the report. Impingement of fish hosts represents potential harm to threatened and endangered

Ms. Carver

Page 3

species, and therefore the benefits realized by reducing IM&E need to be accounted for in a valuation study.

In addition, the revised 316(b) rule offers the following in regards to threatened and endangered species:

Populations of T&E (threatened and endangered) species may suffer increased mortality as direct or indirect consequences of IM&E. T&E species are vulnerable to future extinction or at risk of extinction in the near future and IM&E losses could either lengthen population recovery time, hasten the demise of these species, or counteract the effects of other conservation efforts. For this reason, the population-level and societal values of T&E losses are likely to be considered more important than the absolute number of losses that occur. Due to low population sizes, I&ME from CWISs may represent a substantial portion of the annual reproduction of T&E species (79 FR 48319).

It is clear that the U.S. Environmental Protection Agency is aware of and appreciates the benefits gained by a reduction in IM&E of threatened and endangered species. According to the revised rule, facilities like BPS that draw at least 125 million gallons of water per day through a CWIS must list social and non-water quality environmental benefits, such as benefits to threatened and endangered species, realized from a reduction in IM&E on their permit application [40 CFR §122.21(r)]. In addition, the rule allows for VDEQ to consider these benefits when making its determination.

Given that the 2006 valuation study did not account for benefits to threatened and endangered species resulting from a reduction of IM&E, we recommend the study not be considered in determining if the cost of reducing IM&E outweighs the benefits. The revised rule allows VDEQ to account for non-use benefits and we request that non-use benefits be considered in determining the IM&E standards for the BPS. We request that you notify the Service as to whether these recommendations will be followed.

If you have any questions, please contact Brett Hillman of this office at (804) 824-2420 or via email at brett_hillman@fws.gov.

Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

cc: VDCR, Richmond, VA (Attn: Rene Hypes)
VDGIF, Forest, VA (Attn: Brian Watson)
VDGIF, Richmond, VA (Attn: Ernie Aschenbach)
VDGIF, Richmond, VA (Attn: Amy Ewing)

Literature Cited

Bingham, M.F., K. Mathews, C.M. Spagnardi, D.M. Woodard, J.S. Whaley, and J.C. Kinnell.
2006. Benefits valuation study & significantly greater evaluation: Bremo Power Station.
Veritas Economic Consulting, LLC, Cary, NC. Project No. 104.004.

INTERIM BTA – 40 CFR 125.98(b)(5)

VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet the requirements under §316(b) of the Clean Water Act (CWA) determined by the department on a case-by-case, best professional judgment basis. DEQ staff have determined the permitted facility to be subject to the §316(b) requirements because it is a point source that uses or proposes to use one or more cooling water intake structures that withdraws waters of the U.S. for cooling purposes.

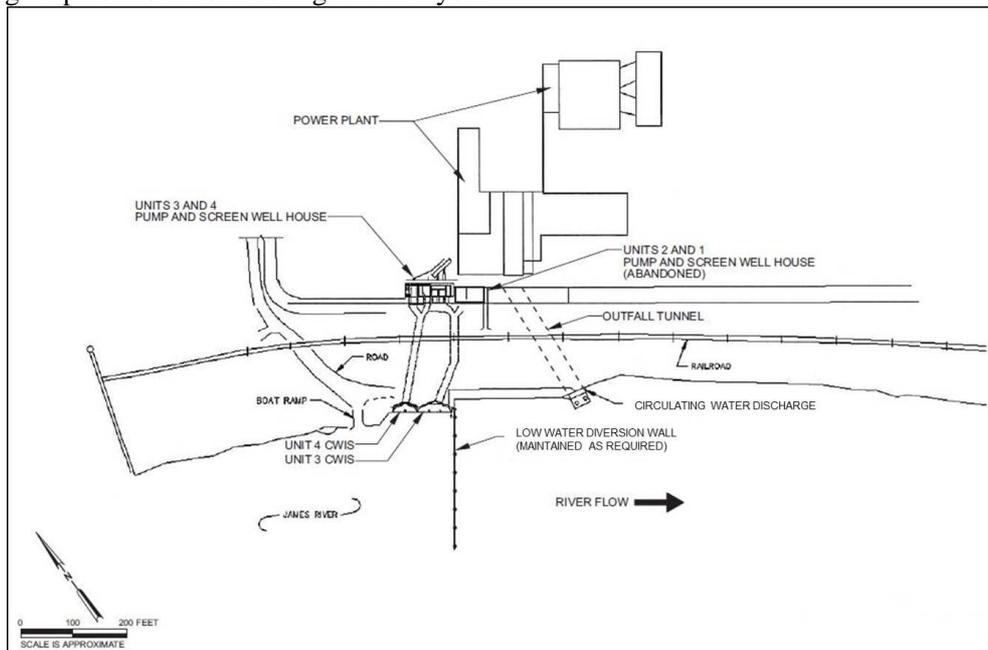
Federal regulations at 40 CFR §§125.98(b)(5) and (b)(6) mandate that for permits issued before July 14, 2018, for which an alternate schedule has been established for the submission of information required by 40 CFR §122.21(r), must include interim BTA requirements in the permit based on best professional judgment on a site-specific basis. This special condition outlines interim BTA practices to minimize impingement and entrainment (I&E) mortality and adverse impacts to aquatic organisms.

The following information has been utilized in establishing interim BTA requirements.

COOLING WATER INTAKE STRUCTURE DESCRIPTION:

BPS uses a once-through cooling water system that withdraws cooling water through two CWISs located on the shoreline of the James River and discharges it through a tunnel back to the James River 250 feet downstream via Outfall 001. The total design cooling water intake flow is approximately 179.3 MGD.

The following figure presents the site configuration layout:



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A draft Impingement Characterization Study Plan prepared by HDR Engineering, Inc. dated April 10, 2015 was submitted on April 30, 2015. The impingement study is not required at BPS by the 316(b) rule; however, Dominion has initiated impingement sampling to better inform fish and shellfish protection technology decisions. The sampling period will be from July 2015 to June 2016. The following excerpt from the draft Impingement Characterization Study Plan provides a description of the operation of the CWIS at BPS.

2.2.1 Station Operational History

The BPS cooling water system is operated on demand and is not a base-load facility. BPS contains four, vertical-shaft, wet-pit, circulating water pumps: Units 3 and 4 each contain two circulating water pumps. The pumps are located approximately 12 to 15 feet downstream of the four traveling water screens (one traveling water screen per circulating water pump). The design pump rating for Unit 4 is 41,250 gallons per minute (gpm) for each pump. The design pump rating for Unit 3 is 21,000 gpm for each pump. The total design flow for all four pumps running at capacity is approximately 124,500 gpm, which equates to an intake flow of 277.4 cfs, which is approximately 179.3 MGD. The calculated design through-screen velocity for both bays of Unit 3 is approximately 0.90 feet per second (fps); for both bays of Unit 4 is approximately 1.89 fps.

BPS has seasonal variation in its operations and maintenance (O&M). Four Pumps are needed to ensure unit operating capabilities. Single pump operation may vary by season and system conditions. O&M activities on the generating units are scheduled for the spring months after the end of the winter peaking season. The duration of the maintenance outages depends on the scheduled work that needs to be done on the units. In addition to the four circulating water pumps, there are three screen wash pumps, each connected to a common header. Each pump has a design capacity of 560 gpm, and only two pumps are required to provide the flow requirement to the spray nozzles of all four screens. The Unit 3 screens each require 274 gpm at 70 pounds per square inch gauge (psig) of spray wash water, while the Unit 4 screens require 60 to 80 psig spray wash water.

2.2.2 Intake Structure

Cooling water for both power-generating units at BPS is withdrawn from the James River through two adjacent intake structures with trash racks positioned parallel to the river flow. Cooling water is conveyed from the intake concrete tunnels to two separate screen houses, one for each unit. The main river channel width at the intake structures is approximately 450 to 550 feet across and has normal water depths ranging from 7 to 26 feet, depending on river conditions.

There is a low rock deflector wall to divert surface river flow and to help divert ice and river debris away from the intakes. The intake structures are designed to operate at river levels greater than El. 73.5 feet. The mean water level is El. 78.3 feet. All elevations in this report refer to station Datum in which 100.0 feet corresponds to United States Coastal and Geodetic Survey (USC & GS) Datum 222.44 feet.

The river intake structure for Unit 3 is 64 feet wide with three 20-foot bays. Unit 4 has a 46-footwide river intake structure with two 21-foot bays. There are two tunnels between the trash rack structure and the screen house. The Unit 3 tunnel is approximately 210 feet long, while the Unit 4 tunnel is approximately 170 feet long. The tunnels are 10 feet wide by 7.75 feet high for Unit 3 and 7 feet square for Unit 4. A trash rack extends across the entire length of both intake structures and prevents debris and ice from entering the screen house. The trash rack extends from the intake structure at approximately El. 71.0 feet to the intake deck at approximately El. 90.5 feet. The trash rake and trash rake hoist housing are operated at this level. The trash rake structure extends above the extreme high water level, at approximately El. 108.0 feet, in order to keep the trash rake hoist dry during high water. The steel trash rack has 4-inch by 3/8-inch bars with a 4.5-inch bar spacing and a 4-inch by 1/8-inch clear opening. During periods of high water, the trash racks are totally submerged. During periods of extremely low flow, the flashboards create a pool at the trash rack structure to enable diversions.

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There are four traveling water screen bays, two for each unit. There are four circulating water pumps located approximately 12 to 15 feet downstream of the four traveling water screens (one circulating water pump per screen). The circulating water pumps supply cooling water, service water, and ash sluice water to the facility. Three raw water pumps and three screen wash water pumps draw water downstream of the Units 3 and 4 traveling screens. Except for the common discharge, each unit has separate circulating water systems. The circulating water discharge is located about 250 feet downstream of the intake structure. Plan and section drawings of the CWIS are provided on Figures 2-6, and 2-7, respectively.

BPS is equipped with four traveling water screens, two for each unit. The Unit 3 screens are through-flow screens and are 8 feet wide with 3/8-inch mesh. Through-flow screens are conventional screens which are oriented perpendicular to the water flow. Unit 4 has two dualflow (Brackett-Green) screens. Dual-flow traveling water screens are oriented parallel to the water flow. Water enters both screen faces and exits out the middle of the screens. Each screen contains 4-foot-wide screen baskets that yield approximately the same effective area as the 8-foot-wide conventional traveling screens. The Unit 4 screens have 3/16-inch mesh.

Both Unit 3 and Unit 4 vertical traveling water screens are designed to run in either “automatic” or “manual” mode. In “automatic” mode, the screen motors do not rotate until the differential pressure across the screen reaches a certain point. In “manual” mode, the screen motors rotate continuously. Additionally, the screen wash pumps go into a recirculation mode when the screen motors are in the “automatic” mode. The screens have a spray wash system with a spray header and a debris collection/fish return trough that discharges to the cooling water discharge tunnel on the station side of the railroad track.

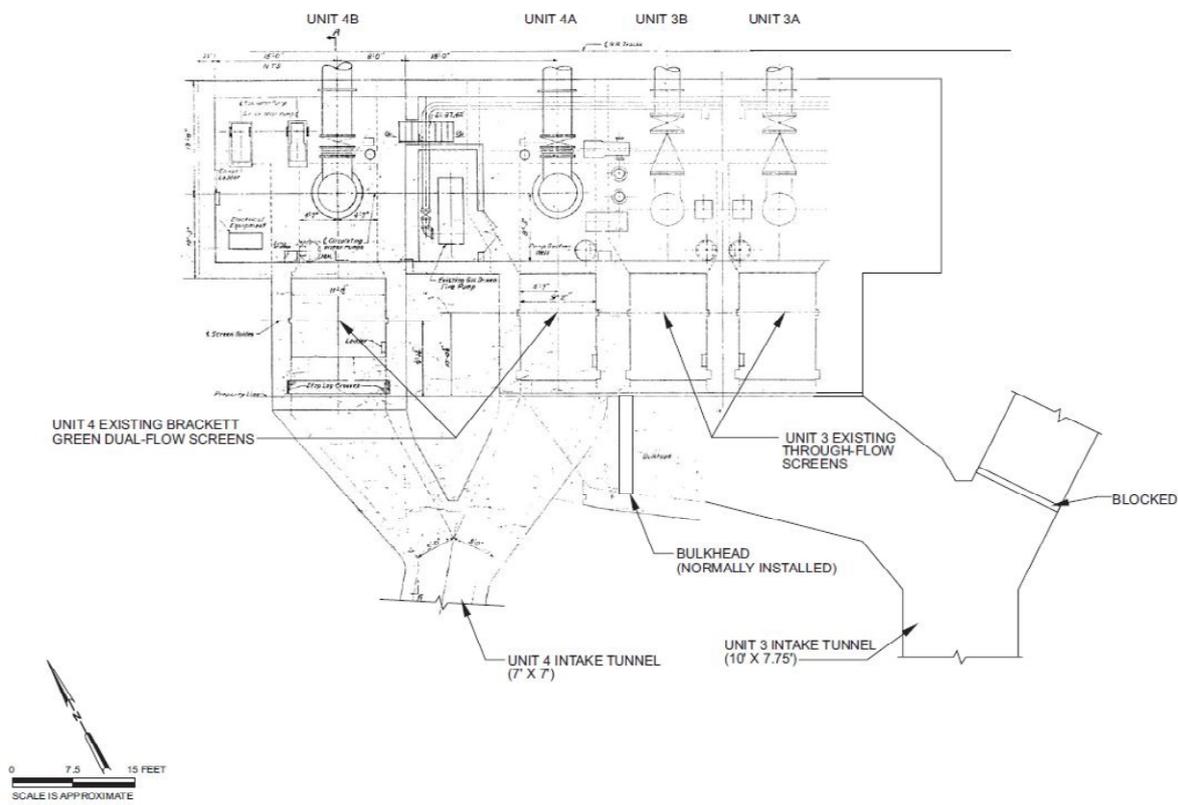


Figure 2-6. BPS Pump and Screen Well House – Plan View

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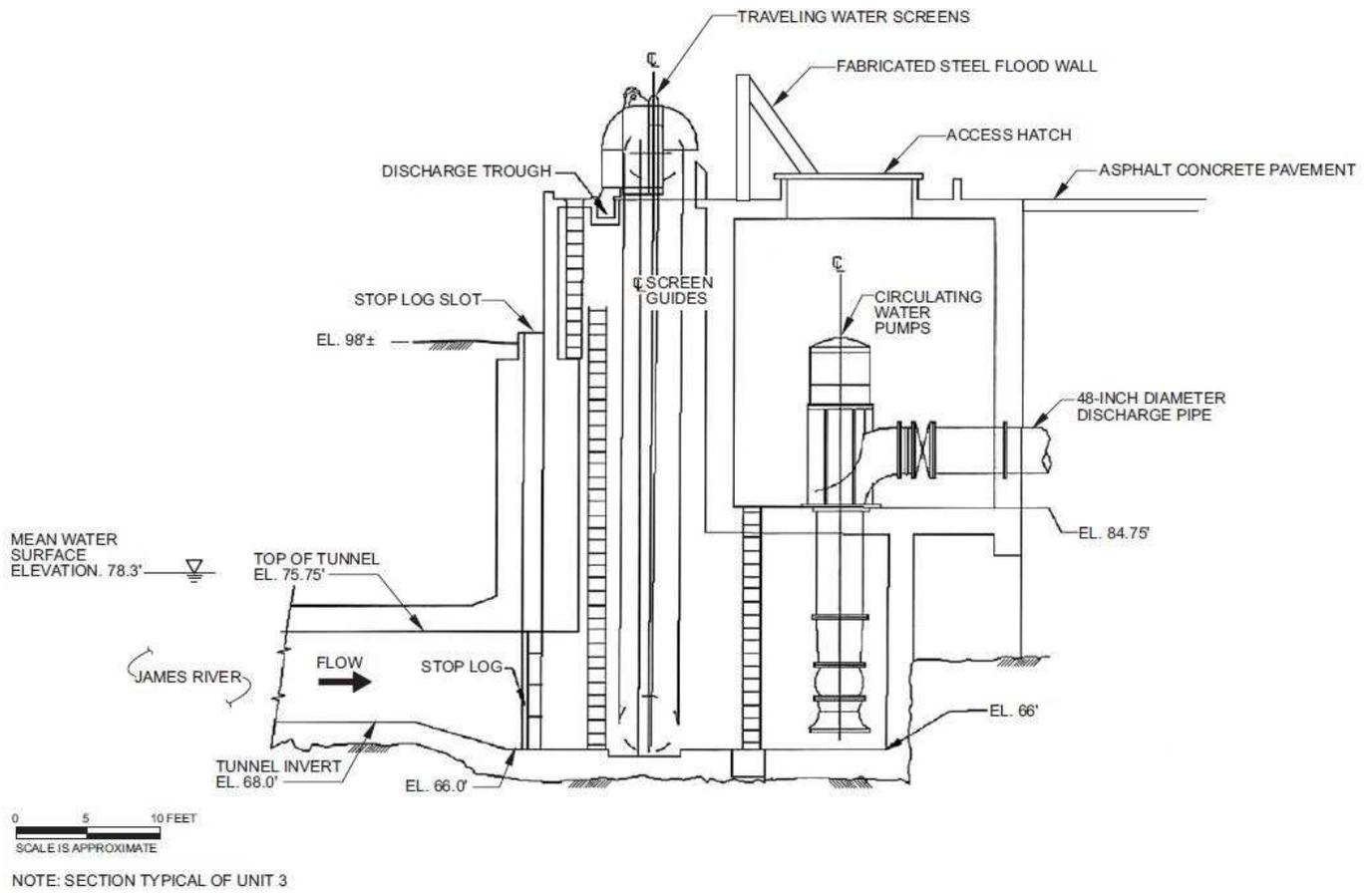


Figure 2-7. BPS Pump and Screen Well House – Section View

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Photos from Site Visit on May 5, 2015:



BPS has 2 adjacent CWISs located on the north bank of the James River. The intake trash rack is located in front of the CWIS. Debris is collected from the intake trash rack and hauled offsite. There is a low rock deflector wall in the James River to divert surface river flow and to help divert ice and river debris away from the intakes.



View from behind CWIS. Trash collecting on the intake trash rack is pulled up onto land and then hauled offsite.



Pumps located at Outfall 001 are used in the event that Outfall 001 flow is used for deicing the CWISs (located just upstream of Outfall 001). The water is sprayed on the CWIS to prevent ice buildup.



View from the CWIS towards the Screen House. There are railroad tracks located between the CWIS and the screen house. The screen houses are not located near the CWISs because of flooding issues.

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Cooling water is conveyed from the intake concrete tunnels to 2 separate screen houses. There are 4 traveling water screen bays.



River water is sprayed on the traveling screens to dislodge debris and fish. The traveling screen backwash enters a trough and then drops 20 feet. The traveling screen backwash is recognized as Internal Outfall 101.



The traveling screen backwash continues to flow through a trough.



The traveling screen backwash drops another 20 feet into the tunnel serving Outfall 001. Access is through the manhole located in the center of the picture.



The traveling screen backwash (Internal Outfall 101) is combined with the once through heated condenser cooling water and discharges to the James River through Outfall 001 shown in the above picture.

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In evaluating interim BTA, the river intake structures were considered. As described in the draft Impingement Characterization Study Plan, the river intake structure for Unit 3 is 64 feet wide with three 20-foot bays. Unit 4 has a 46-footwide river intake structure with two 21-foot bays. There are two tunnels between the trash rack structure and the screen house. The Unit 3 tunnel is approximately 210 feet long, while the Unit 4 tunnel is approximately 170 feet long. The tunnels are 10 feet wide by 7.75 feet high for Unit 3 and 7 feet square for Unit 4.

While the maximum design through-screen intake velocities at the four traveling water screens exceeds 0.5 ft/sec, the velocities at the river intake structures where the trash racks are located are less than 0.5 ft/sec as shown in the calculations below.

Unit 3

- 3 sections, each 19 ft wide
- 18.83 ft height with 2 ft of concrete roof
- 93.6 ft³/sec design flow rate

Screen area: 3 x 19 ft x (18.83 ft – 2 ft) = 959.31 ft²

Velocity: 93.6 ft³/s / 959.31 ft² = **0.0976 ft/sec**

Unit 4

- 2 sections, each 21 ft wide
- 18.83 ft height with 2ft of concrete roof
- 183.8 ft³/sec design flow rate

Screen area: 2 x 21 ft x (18.83 ft – 2 ft) = 706.86 ft²

Velocity: 183.8 ft³/sec / 706.86 ft² = **0.260 ft/sec**

EPA documents and studies have found that fish impingement mortality can be reduced where velocities are 0.5 fps or less because it allows fish to escape the intake current. According to the preamble to EPA's final Phase II Rule, swim speed studies have demonstrated that intake velocities of 0.5 fps or less may result in 96 percent or better reductions in impingement mortality for most species.

In addition to these low velocities at the river intake structures, any fish or other aquatic organisms that pass through the trash racks at the river intake structures must travel through the tunnels before reaching the traveling water screens. The dark conditions that exist in the approximately 210 ft long Unit 3 tunnel and 170 ft long Unit 4 tunnel may serve as a behavioral deterrent encouraging fish to swim back through the trash rack.

Accordingly, based on best professional judgment and on a site-specific basis, DEQ believes that, if employed throughout the term of this permit, the following interim BTA practices will minimize impingement and entrainment mortality and adverse impacts to aquatic organisms:

- Maintain intake velocities of less than or equal to 0.5 ft/sec at the river intake structures; and
- Maintain the current configuration of the two tunnels between the trash rack structure and the screen house.

IMPINGEMENT AND ENTRAINMENT CONTROL TECHNOLOGY PREVENTATIVE MAINTENANCE

VPDES Permit Regulation 9VAC25-31-190.E requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.

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VISUAL OR REMOTE INSPECTIONS

VPDES Permit Regulation 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. Federal regulations at 40 CFR §125.96(e) requires visual inspections or the employment of remote monitoring devices to be conducted at least weekly during the period any cooling water intake structure is in operation to ensure any technologies operated are maintained and operated to function as designed, including those installed to protect Federally-listed threatened or endangered species or designated critical habitat.

40 CFR §125.96 authorizes DEQ to establish monitoring requirements, and specific protocols, as appropriate. Provisions for inspection waivers, adverse weather conditions, and deficiency discoveries were developed, using as a foundation, comparable provisions found in the VPDES General Permit for Stormwater Discharges Associated with Industrial Activity, 9VAC25-151-70, Part I.A.2.e, A.3. and A.6.b.

ANNUAL CERTIFICATION STATEMENT REQUIREMENTS

VPDES Permit Regulation 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. Federal regulations at 40 CFR §125.97(c) requires the permittee to annually submit a certification statement signed by a responsible corporate officer reporting whether there have been substantial modifications to the operation at any unit at the facility that impacts cooling water withdrawals or operation of the cooling water intake structures, or if information contained in the previous year's annual certification remains pertinent.

FEDERAL ENDANGERED SPECIES ACT COMPLIANCE

State Water Control Law §62.1-44.5.A.3 and VPDES Permit Regulation 9VAC25-31-50.A.2 prohibits the alteration of the physical, chemical or biological properties of State waters and making them detrimental to animal or aquatic life, except in compliance with a permit issued by the Board.

In addition, VPDES Permit Regulation 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. 40 CFR §125.98(j) stipulates that nothing in Subpart J of Part 125 of the Code of Federal Regulations authorizes the take, as defined at 16 U.S.C. 1532(19), of threatened or endangered species of fish or wildlife. Such take is prohibited under the Endangered Species Act unless it is exempted pursuant to 16 U.S.C 1536(o) or permitted pursuant to 16 U.S.C 1539(a). Absent such exemption or permit, any facility must not take threatened or endangered species. 40 CFR §125.98(b)(1) requires all NPDES permits for facilities subject to §316(b) of the Clean Water Act to include as a permit condition the specific language of this special condition.

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APPENDIX J

WHOLE EFFLUENT TOXICITY (WET) EVALUATION

Applicability of Toxics Management Program:

The applicability criteria for a facility to perform toxicity testing is contained in the Departments Guidance Memo No. 00-2012, Toxics Management Program Implementation Guidance, 08/24/00, Part IV. The Standard Industrial Code (SIC) for BPS is 4911, Electrical Generation, which is included in Appendix A of the TMP Guidance. In addition, the Instream Waste Concentration (IWC) is greater than or equal to 33% (GM 00-2012, Sections IV.1.A. and IV.1.B, respectively).

Outfall 001 has not been screened for WET since at least the 1995 permit reissuance because the discharge consists of only once-through condenser cooling water withdrawn from the James River, which is not chemically altered in any way. Because the data are 20 years old and unavailable for review, Outfall 001 will be re-screened at this reissuance.

Summary of Toxicity Testing:

- Outfall 002: The previous permit required quarterly-to-annual acute and chronic testing using *Ceriodaphnia dubia* at Outfall 002. Tables 1 and 2 contain summaries of the toxicity testing results for this outfall during the term of the permit.
- Outfall 004: The previous permit also required annual acute testing using *Ceriodaphnia dubia* at Outfall 004. Table 3 contains a summary of the toxicity testing results for this outfall during the term of the permit.

The toxicity data for Outfalls 002 and 004 were evaluated using the procedures outlined in the TMP guidance.

- Outfall 001: No data is available for review at this outfall.
- Outfall 003 and 006: Outfall 003 and outfall 006 currently discharge only stormwater with no exposure to industrial activity and therefore require no WET monitoring. Therefore, no data is available for review at these outfalls. During closure activities, Outfalls 003 and 006 will be authorized to discharge wastewater from dewatering activities and toxicity testing will be required during this time.

Rationale for Acute versus Chronic Toxicity Testing:

- Outfall 001 (Once-Through Condenser Cooling Water): As shown in Table 4, the IWC_a is 96.28%. Since the $IWC_a > 33%$, the acute tests require the determination of a valid NOAEC. Additionally, Outfall 001 is a continuous discharge with a IWC_c of 40.98%. Since the $IWC_c > 1%$, Outfall 001 must also be assessed for chronic toxicity.
- Outfalls 002 and 004 at the combined flow of 4.2912 MGD: As shown in Table 5, the IWC_a is 26.55%. Since the $IWC_a < 33%$, the acute tests require the determination of a valid LC_{50} . The IWC_c is 1.09. Since the $IWC_c > 1%$, Outfalls 002 and 004 must also be assessed for chronic toxicity.
- Outfalls 501, 502, 503, 504, and 505 at combined flow of 10.2912 MGD: As shown in Table 6, the IWC_a is 46.02%. Since the $IWC_a > 33%$, the acute tests require the determination of a valid NOAEC. The IWC_c is 2.58 %. Since the $IWC_c > 1%$, Outfalls 002, 003, 004, and 006 must also be assessed for chronic toxicity.
- Outfall 002 (West Treatment Pond) Final Configuration: As shown in Table 7, the IWC_a is 24.78%. Since the $IWC_a < 33%$, the acute tests require the determination of a valid LC_{50} . The IWC_c is 1.04 %. Since the $IWC_c > 1%$, Outfall 002 must also be assessed for chronic toxicity.

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Rationale for Most Sensitive Species:

Ceriodaphnia dubia was previously designated as the most sensitive species for Outfalls 002 and 004. This designation has been carried forward for the combination of Outfalls 002 and 004. During the dewatering activities, toxicity testing will be required for both *Pimephales promelas* and *Ceriodaphnia dubia*. Language has been included to allow testing to be required for only the more sensitive species if, after a minimum of four tests, results establish the more sensitive species per GM 00-2012, Section VII.2.B.

Since a more sensitive species has not been determined for Outfall 001, both *Pimephales promelas* and *Ceriodaphnia dubia* testing is required at this outfall.

Sample Type:

- Outfall 001: A 24-hour composite sample is representative of the discharge at Outfall 001.
- Outfalls 002 and 004 at the combined flow of 4.2912 MGD: 24-hour composite samples are considered representative for Outfalls 002 and 004 for the combined flow of 4.2912 MGD.
- Outfalls 501, 502, 503, 504, and 505 at combined flow of 10.2912 MGD during dewatering activities: 24-hour composite samples are required since that is the sample type for the chemical parameters during this period.
- Outfall 002 (West Treatment Pond) Final Configuration: Grab samples are considered representative for Outfall 002 at its final configuration.

Monitoring Frequency:

- Outfall 001: Monitoring shall be performed quarterly until a total of four quarters is completed. The results from the quarterly testing will be evaluated to determine if there is a need for WET limits. If no limits are deemed necessary, and all tests are acceptable, the facility will move to annual monitoring.
- Outfalls 002 and 004 at combined flow of 4.2912 MGD: The monitoring frequency is annual based on an evaluation of the toxicity testing.
- Outfalls 002, 003, 004, and 006 at combined flow of 10.2912 MGD during dewatering activities: The monitoring frequency is monthly during the dewatering activities.
- Outfall 002 (West Treatment Pond) Final Configuration: Monitoring shall be performed quarterly until a total of four quarters is completed. The results from the quarterly testing will be evaluated to determine if there is a need for WET limits. If no limits are deemed necessary, and all tests are acceptable, the facility will move to annual monitoring.

Calculation of WLAs: Acute and chronic WLAs were generated from the WETLimit10.xls spreadsheet by entering the design flow, stream flows, and stream mix percentages for the respective stream flows.

Dilution Series:

The recommended dilution series for chronic tests are shown in italics in:

- Table 4 for Outfall 001
- Table 5 for Outfall 002 and 004 for the combined flow of 4.2912 MGD
- Table 6 for Outfalls 002, 003, 004, and 006 during the combined flow of 10.2912 MGD
- Table 7 for Outfall 002 West Treatment Pond Final Configuration

The recommended dilution series for acute tests for all outfalls and stages is the standard 0.5 series. The only exception to this is for dewatering activities where a limit of 100% minimum applies; then only the control and 100% dilution are required.

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Stat.exe Limit Evaluation:

The WLAs are used in the Department’s Stat.exe program in order to perform a statistical evaluation of the acute and chronic test results expressed as Toxicity Units (TUs). The toxicity data are analyzed separately by species and test type (acute or chronic).

Chronic Stat.exe Limit Evaluation:

Outfall 002: The summary of the chronic toxicity testing data are shown in Table 2. The results of the Stat.exe evaluation are shown in Table 8. Based on the evaluation of the chronic toxicity data, a WET Limit is not required at this time.

Outfall 004: No chronic toxicity testing data are available for analysis.

Outfall 001: No chronic toxicity testing data are available for analysis.

Acute Stat.exe Limit Evaluation:

Outfall 002: The summary of the acute toxicity testing data (Table 1) shows that the No Observed Adverse Effects Concentration (NOAEC) in every test was 100%. Based on the acute toxicity data all showing no toxicity, no acute limit was determined to be necessary.

Outfall 004: The summary of the acute toxicity testing data (Table 3) shows that the LC₅₀ in every test was > 100%. Also, there was 100 percent survival in 100% effluent in all tests. Based on the acute toxicity data all showing no toxicity, no acute limit was determined to be necessary.

Outfall 001: No acute toxicity testing data are available for analysis.

WET Limits for combined flow of 10.2912 MGD during dewatering activities:

Acute and chronic WET limits were established for the period when the dewatering activities are occurring. The acute WET limit of NOAEC = 100% and chronic WET limit of 6.25 TU_c are shown on Table 6. The rationale for the WET limits is presented in APPENDIX E.

Peer Reviewer: Dawn Jeffries

Date: October 20, 2015

**Table 1
Summary of Acute Toxicity Testing (NOAEC) – Outfall 002**

Monitoring Period	Test Date	48-Hr. Static Acute <i>Ceriodaphnia dubia</i> (%)
1 st Quarter 10/1/2010 – 12/31/2010	11/4/10	100
2 nd Quarter 1/1/2011 – 03/31/2011	1/13/11	100
3 rd Quarter 4/1/2011 – 6/30/2011	4/7/11	100
4 th Quarter 7/1/2011 – 9/30/2011	7/14/11	100
1 st Annual 1/1/2012 – 12/31/2012	4/23/12	100
2 nd Annual 1/1/2013 – 12/31/2013	5/2/13	100
3 rd Annual 1/1/2014 – 12/31/2014	4/1/14	100

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**Table 2
Summary of Chronic Toxicity Testing – Outfall 002**

Monitoring Period	Test Date	Chronic 3-Brood Static Renewal Survival and Reproduction <i>Ceriodaphnia dubia</i>		48-hr LC ₅₀
		Survival (TUc)	Reproduction (TUc)	
6 th Annual* 1/10/10 – 12/31/10	8/3/10	1.0	1.54	>100
1 st Quarter 10/1/2010 – 12/31/2010	11/04/10	1.0	1.0	>100
2 nd Quarter 1/1/2011 – 3/31/2011	1/11/11	1.0	1.67	>100
3 rd Quarter 4/1/2011 – 6/30/2011	4/5/11	1.0	1.0	>100
4 th Quarter 7/1/2011 – 9/30/2011	7/12/11	1.0	1.67	>100
1 st Annual 1/1/2012 – 12/31/2012	4/23/12	1.0	1.67	>100
2 nd Annual 1/1/2013 – 12/31/2013	5/1/13	1.0	1.67	>100
3 rd Annual 1/1/2014 – 12/31/2014	4/1/14	1.0	1.0	>100

* This toxicity test was conducted on August 3, 2010, just before the permit was reissued on August 13, 2010; therefore, this test will be evaluated with this permit reissuance.

**Table 3
Summary of Acute Toxicity Testing (LC₅₀) – Outfall 004**

Monitoring Period	Test Date	48-Hr. Static Acute <i>Ceriodaphnia dubia</i> (TUa)	48-Hr. Static Acute <i>Ceriodaphnia dubia</i> (% Survival in 100% Effluent)
6 th Annual* 1/1/2010 – 12/31/2010	8/3/10	<1.0	100
1 st Annual 10/1/2011 – 12/31/2011	4/5/11	<1.0	100
2 nd Annual 1/1/2012 – 12/31/2012	4/23/12	<1.0	100
3 rd Annual 1/1/2013 – 12/31/2013	5/2/13	<1.0	100
4 th Annual 1/1/2014 – 12/31/2014	4/1/14	<1.0	100

* This toxicity test was conducted on August 3, 2010, just before the permit was reissued on August 13, 2010. Therefore, this test will be evaluated with this permit reissuance.

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**Table 4
WETLim10.xls Spreadsheet – Outfall 001**

Spreadsheet for determination of WET test endpoints or WET limits					
Excel 97	Acute Endpoint/Permit Limit		Use as LC₅₀ in Special Condition, as TU_a on DMR		
Revision Date: 12/13/13	ACUTE	100% = NOAEC	LC₅₀ = NA	% Use as NA	TU_a
File: WETLIM10.xls (MIX.EXE required also)	ACUTE WLA_a	0.31158503	Note: Inform the permittee that if the mean of the data exceeds this TU _a : 1.0 , a limit may result using STATS.EXE		
	Chronic Endpoint/Permit Limit		Use as NOEC in Special Condition, as TU_c on DMR		
	CHRONIC	3.11585033 TU_c	NOEC =	33 % Use as	3.03 TU_c
	BOTH*	3.11585033 TU_c	NOEC =	33 % Use as	3.03 TU_c
Enter data in the cells with blue type:	AML	3.11585033 TU_c	NOEC =	33 % Use as	3.03 TU_c
Entry Date: 10/16/15	ACUTE WLA_{a,c}	3.11585025	Note: Inform the permittee that if the mean of the data exceeds this TU _c : 1.28044209 , a limit may result using STATS.EXE		
Facility Name: Dominion Bremo	CHRONIC WLAc	2.44035533			
VPDES Number: VA0004138	* Both means acute expressed as chronic				
Outfall Number: 001	% Flow to be used from MIX.EXE		Diffuser /modeling study?		
Plant Flow: 157.6 MGD			Enter Y/N	n	
Acute 1Q10: 179 MGD		3.4 %	Acute	1 :1	
Chronic 7Q10: 227 MGD		100 %	Chronic	1 :1	
Are data available to calculate CV? (Y/N)	N	(Minimum of 10 data points, same species, needed)		Go to Page 2	
Are data available to calculate ACR? (Y/N)	N	(NOEC<LC50, do not use greater/less than data)		Go to Page 3	
IWC _a	96.2819056 %	Plant flow/plant flow + 1Q10	NOTE: If the WCa is >33%, specify the NOAEC = 100% test/endpoint for use		
IWC _c	40.97763911 %	Plant flow/plant flow + 7Q10			
Dilution, acute	1.038616751	100/IWC _a			
Dilution, chronic	2.44035533	100/IWC _c			
WLA _a	0.311585025	Instream criterion (0.3 TU _a) X's Dilution, acute			
WLA _c	2.44035533	Instream criterion (1.0 TU _c) X's Dilution, chronic			
WLA _{a,c}	3.115850254	ACR X's WLA _a - converts acute WLA to chronic units			
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)			
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)			
Constants eA	0.4109447	Default = 0.41			
eB	0.6010373	Default = 0.60			
eC	2.4334175	Default = 2.43			
eD	2.4334175	Default = 2.43 (1 samp)	No. of samples	1	**The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTA _{a,c} and MDL using it are driven by the ACR.
LTA _{a,c}	1.280442148	WLA _{a,c} X's eA			
LTA _c	1.466744579	WLA _c X's eB			Rounded NOEC's %
MDL** with LTA _{a,c}	3.11585033	TU _c	NOEC =	32.093968	(Protects from acute/chronic toxicity) NOEC = 33 %
MDL** with LTA _c	3.569201925	TU _c	NOEC =	28.017468	(Protects from chronic toxicity) NOEC = 29 %
AML with lowest LTA	3.11585033	TU _c	NOEC =	32.093968	Lowest LTA X's eD NOEC = 33
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a					
MDL with LTA _{a,c}	0.311585033	TU _a	LC50 =	320.939677 %	Use NOAEC=100% Rounded LC50's %
MDL with LTA _c	0.356920193	TU _a	LC50 =	280.174678 %	Use NOAEC=100% LC50 = NA %

CHRONIC DILUTION SERIES TO RECOMMEND					
	Monitoring % Effluent	TU _c	Limit % Effluent	TU _c	
Dilution series based on data mean	79	1.280442			
Dilution series to use for limit			33	3.03	
Dilution factor to recommend:	0.888819442		0.574456265		
Dilution series to recommend:	100.0	1.00	100.0	1.00	
	88.9	1.13	57.4	1.74	
	79.0	1.27	33.0	3.03	
	70.2	1.42	19.0	5.28	
	62.4	1.60	10.9	9.18	
Extra dilutions if needed	55.47	1.80	6.26	15.99	
	49.30	2.03	3.59	27.83	

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**Table 5
WETLim10.xls Spreadsheet – Combined Flow = 4.2912 MGD**

Spreadsheet for determination of WET test endpoints or WET limits					
Excel 97	Acute Endpoint/Permit Limit		Use as LC₅₀ in Special Condition, as TU_a on DMR		
Revision Date: 12/13/13	ACUTE	1.12961412 TU _a	LC ₅₀ =	89 % Use as	1.12 TU _a
File: WETLIM10.xls (MIX.EXE required also)	ACUTE WLA_a	1.12961409	Note: Inform the permittee that if the mean of the data exceeds this TU _a : 1.0 a limit may result using STATS.EXE		
	Chronic Endpoint/Permit Limit		Use as NOEC in Special Condition, as TU_c on DMR		
	CHRONIC	11.2961412 TU _c	NOEC =	9 % Use as	11.11 TU _c
	BOTH*	11.2961412 TU _c	NOEC =	9 % Use as	11.11 TU _c
Enter data in the cells with blue type:	AML	11.2961412 TU _c	NOEC =	9 % Use as	11.11 TU _c
Entry Date: 10/16/15	ACUTE WLA_{a,c}	11.2961409	Note: Inform the permittee that if the mean of the data exceeds this TU _c : 4.64208903 a limit may result using STATS.EXE		
Facility Name: Dominion Bremo	CHRONIC WLAC	91.6506339			
VPDES Number: VA0004138	* Both means acute expressed as chronic				
Outfall Number: 002 and 004 combined	% Flow to be used from MIX.EXE		Diffuser /modeling study?		
Plant Flow: 4.2912 MGD	Acute 1Q10: 341 MGD	3.48 %	Enter Y/N	n	
Chronic 7Q10: 389 MGD		100 %	Acute	1 :1	
			Chronic	1 :1	
Are data available to calculate CV? (Y/N)	N	(Minimum of 10 data points, same species, needed)		Go to Page 2	
Are data available to calculate ACR? (Y/N)	N	(NOEC<LC50, do not use greater/less than data)		Go to Page 3	
IWC _a	26.55774229 %	Plant flow/plant flow + 1Q10	NOTE: If the WCa is >33%, specify the NOAEC = 100% test/endpoint for use		
IWC _c	1.091099928 %	Plant flow/plant flow + 7Q10			
Dilution, acute	3.765380313	100/IWC _a			
Dilution, chronic	91.65063386	100/IWC _c			
WLA _a	1.129614094	Instream criterion (0.3 TU _a) X's Dilution, acute			
WLA _c	91.65063386	Instream criterion (1.0 TU _c) X's Dilution, chronic			
WLA _{a,c}	11.29614094	ACR X's WLA _a - converts acute WLA to chronic units			
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)			
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)			
Constants eA	0.4109447	Default = 0.41			
eB	0.6010373	Default = 0.60			
eC	2.4334175	Default = 2.43			
eD	2.4334175	Default = 2.43 (1 samp)	No. of samples	1 **The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTA _{a,c} and MDL using it are driven by the ACR.	
LTA _{a,c}	4.64208925	WLA _{a,c} X's eA			
LTA _c	55.08544952	WLA _c X's eB	Rounded NOEC's %		
MDL** with LTA _{a,c}	11.29614122	TU _c	NOEC = 8.852581	(Protects from acute/chronic toxicity) NOEC = 9 %	
MDL** with LTA _c	134.0458968	TU _c	NOEC = 0.746013	(Protects from chronic toxicity) NOEC = 1 %	
AML with lowest LTA	11.29614122	TU _c	NOEC = 8.852581	Lowest LTA X's eD NOEC = 9 %	
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU _c to TU _a					
MDL with LTA _{a,c}	1.129614122	TU _a	LC50 = 88.525805 %	Rounded LC50's %	
MDL with LTA _c	13.40458968	TU _a	LC50 = 7.460131 %	LC50 = 89 %	
				LC50 = 8 %	

CHRONIC DILUTION SERIES TO RECOMMEND				
	Monitoring		Limit	
	% Effluent	TU _c	% Effluent	TU _c
Dilution series based on data mean	22	4.642089		
Dilution series to use for limit			9	11.11
Dilution factor to recommend:	0.469041576		0.3	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	46.9	2.13	30.0	3.33
	22.0	4.55	9.0	11.11
	10.3	9.69	2.7	37.04
	4.8	20.66	0.8	123.46
Extra dilutions if needed	2.27	44.05	0.24	411.52
	1.06	93.91	0.07	1371.74

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**Table 6
WETLim10.xls Spreadsheet – Combined Flow = 10.2912 MGD**

Spreadsheet for determination of WET test endpoints or WET limits										
Excel 97		Acute Endpoint/Permit Limit		Use as LC₅₀ in Special Condition, as TU_a on DMR						
Revision Date: 12/13/13		ACUTE	100% =	NOAEC	LC₅₀ =	NA	% Use as	NA	TU_a	
File: WETLIM10.xls (MIX.EXE required also)		ACUTE WLA_a	0.65189482	Note: Inform the permittee that if the mean of the data exceeds this TU _a : 1.0 , a limit may result using STATS.EXE						
		Chronic Endpoint/Permit Limit		Use as NOEC in Special Condition, as TU_c on DMR						
		CHRONIC	6.51894839	TU_c	NOEC =	16 %	Use as	6.25	TU_c	
		BOTH*	6.51894839	TU_c	NOEC =	16 %	Use as	6.25	TU_c	
		AML	6.51894839	TU_c	NOEC =	16 %	Use as	6.25	TU_c	
Enter data in the cells with blue type:										
Entry Date:	10/16/15	ACUTE WLA_{a,c}	6.51894823	Note: Inform the permittee that if the mean of the data exceeds this TU _c : 2.6789271						
Facility Name:	Dominion Bremo	CHRONIC WLA_c	38.7992848	* Both means acute expressed as chronic						
VPDES Number:	VA0004138									
Outfall Number:	002, 003, 004 and 006 combined									
		% Flow to be used from MIX.EXE				Diffuser /modeling study?				
Plant Flow:	10.2912 MGD					Enter Y/N n				
Acute 1Q10:	341 MGD	3.54 %					Acute 1 :1			
Chronic 7Q10:	389 MGD	100 %					Chronic 1 :1			
Are data available to calculate CV? (Y/N)	N	(Minimum of 10 data points, same species, needed)				Go to Page 2				
Are data available to calculate ACR? (Y/N)	N	(NOEC<LC50, do not use greater/less than data)				Go to Page 3				
IWC _a	46.0196936 %	Plant flow/plant flow + 1Q10		NOTE: If the IWC_a is >33%, specify the NOAEC = 100% test/endpoint for use						
IWC _c	2.577367094 %	Plant flow/plant flow + 7Q10								
Dilution, acute	2.172982743	100/IWC _a								
Dilution, chronic	38.79928483	100/IWC _c								
WLA _a	0.651894823	Instream criterion (0.3 TU _a) X's Dilution, acute								
WLA _c	38.79928483	Instream criterion (1.0 TU _c) X's Dilution, chronic								
WLA _{a,c}	6.518948228	ACR X's WLA _a - converts acute WLA to chronic units								
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)								
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)								
Constants	eA	0.4109447	Default = 0.41							
	eB	0.6010373	Default = 0.60							
	eC	2.4334175	Default = 2.43							
	eD	2.4334175	Default = 2.43 (1 samp) No. of samples 1 **The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTA_{a,c} and MDL using it are driven by the ACR.							
LTA _{a,c}	2.678927224	WLA _{a,c} X's eA								
LTA _c	23.31981739	WLA _c X's eB		Rounded NOEC's %						
MDL** with LTA _{a,c}	6.518948387	TU _c	NOEC =	15.339897	(Protects from acute/chronic toxicity)		NOEC =	16 %		
MDL** with LTA _c	56.74685174	TU _c	NOEC =	1.762212	(Protects from chronic toxicity)		NOEC =	2 %		
AML with lowest LTA	6.518948387	TU _c	NOEC =	15.339897	Lowest LTA X's eD		NOEC =	16 %		
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a										
MDL with LTA _{a,c}	0.651894839	TU _a	LC50 =	153.398975 %	Use NOAEC=100%		LC50 =	NA %		
MDL with LTA _c	5.674685174	TU _a	LC50 =	17.622123 %			LC50 =	18 %		

CHRONIC DILUTION SERIES TO RECOMMEND				
	Monitoring		Limit	
	% Effluent	TU _c	% Effluent	TU _c
Dilution series based on data mean	38	2.678927		
Dilution series to use for limit			16	6.25
Dilution factor to recommend:	0.6164414		0.4	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	61.6	1.62	40.0	2.50
	38.0	2.63	16.0	6.25
	23.4	4.27	6.4	15.63
	14.4	6.93	2.6	39.06
Extra dilutions if needed	8.90	11.23	1.02	97.66
	5.49	18.22	0.41	244.14

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**Table 7
WETLim10.xls Spreadsheet – Outfall 002 - Final Configuration**

Spreadsheet for determination of WET test endpoints or WET limits										
Excel 97		Acute Endpoint/Permit Limit		Use as LC₅₀ in Special Condition, as TU_a on DMR						
Revision Date: 12/13/13		ACUTE	1.21101793 TU _a	LC₅₀ =	83 % Use as	1.20	TU _a			
File: WETLIM10.xls (MIX.EXE required also)		ACUTE WLA_a	1.2110179	Note: Inform the permittee that if the mean of the data exceeds this TU _a : 1.0 a limit may result using STATS.EXE						
		Chronic Endpoint/Permit Limit		Use as NOEC in Special Condition, as TU_c on DMR						
		CHRONIC	12.1101793 TU _c	NOEC =	9 % Use as	11.11	TU _c			
		BOTH*	12.1101793 TU _c	NOEC =	9 % Use as	11.11	TU _c			
		AML	12.1101793 TU _c	NOEC =	9 % Use as	11.11	TU _c			
Enter data in the cells with blue type:										
Entry Date:	10/16/15	ACUTE WLA_{a,c}	12.110179	Note: Inform the permittee that if the mean of the data exceeds this TU _c : 4.97661363						
Facility Name:	Dominion Bremo	CHRONIC WLA_c	95.6122297	* Both means acute expressed as chronic a limit may result using STATS.EXE						
VPDES Number:	VA0004138									
Outfall Number:	002 Final configuration									
		% Flow to be used from MIX.EXE				Diffuser /modeling study?				
Plant Flow:	4.2912 MGD					Enter Y/N n				
Acute 1Q10:	358 MGD	3.64 %					Acute 1 :1			
Chronic 7Q10:	406 MGD	100 %					Chronic 1 :1			
Are data available to calculate CV? (Y/N)	N	(Minimum of 10 data points, same species, needed)				Go to Page 2				
Are data available to calculate ACR? (Y/N)	N	(NOEC<LC50, do not use greater/less than data)				Go to Page 3				
IWC _a	24.77254884 %	Plant flow/plant flow + 1Q10	NOTE: If the IWC_a is >33%, specify the NOAEC = 100% test/endpoint for use							
IWC _c	1.045891308 %	Plant flow/plant flow + 7Q10								
Dilution, acute	4.036726324	100/IWC _a								
Dilution, chronic	95.61222968	100/IWC _c								
WLA _a	1.211017897	Instream criterion (0.3 TU _a) X's Dilution, acute								
WLA _c	95.61222968	Instream criterion (1.0 TU _c) X's Dilution, chronic								
WLA _{a,c}	12.11017897	ACR X's WLA _a - converts acute WLA to chronic units								
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)								
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)								
Constants	eA 0.4109447	Default = 0.41								
	eB 0.6010373	Default = 0.60								
	eC 2.4334175	Default = 2.43								
	eD 2.4334175	Default = 2.43 (1 samp) No. of samples 1 **The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTA _{a,c} and MDL using it are driven by the ACR.								
LTA _{a,c}	4.976613864	WLA _{a,c} X's eA								
LTA _c	57.46651637	WLA _c X's eB								
MDL** with LTA _{a,c}	12.11017927	TU _c	NOEC =	8.257516	(Protects from acute/chronic toxicity)			Rounded NOEC's	9 %	
MDL** with LTA _c	139.8400266	TU _c	NOEC =	0.715103	(Protects from chronic toxicity)			NOEC =	1 %	
AML with lowest LTA	12.11017927	TU _c	NOEC =	8.257516	Lowest LTA X's eD			NOEC =	9 %	
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a										
MDL with LTA _{a,c}	1.211017927	TU _a	LC50 =	82.575161 %					Rounded LC50's	83 %
MDL with LTA _c	13.98400266	TU _a	LC50 =	7.151028 %					LC50 =	8 %

CHRONIC DILUTION SERIES TO RECOMMEND					
	Monitoring		Limit		
	% Effluent	TU _c	% Effluent	TU _c	
Dilution series based on data mean	21	4.976614			
Dilution series to use for limit			9	11.11	
Dilution factor to recommend:	0.458257569		0.3		
Dilution series to recommend:	100.0	1.00	100.0	1.00	
	45.8	2.18	30.0	3.33	
	21.0	4.76	9.0	11.11	
	9.6	10.39	2.7	37.04	
	4.4	22.68	0.8	123.46	
Extra dilutions if needed	2.02	49.48	0.24	411.52	
	0.93	107.98	0.07	1371.74	

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**Table 8
Stat.exe Results**

Chemical = Chronic WET, Outfall 002 C. dubia

Chronic averaging period = 4

WLAa,c = 11.2961409

WLAc = 91.6506339

Q.L. = 1.0

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 8

Expected Value = 1.40125

Variance = .706860

C.V. = 0.6

97th percentile daily values = 3.40982

97th percentile 4 day average = 2.33138

97th percentile 30 day average = 1.68998

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 1.54, 1, 1.67, 1, 1.67, 1.67
1.66, 1

APPENDIX K

GROUNDWATER MONITORING PLAN EVALUATION

EPA published a Final Rule for the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities on April 17, 2015. The rule established technical requirements for CCR landfills and surface impoundments under Subtitle D of the Resource Conservation and Recovery Act (RCRA). These regulations address the management and disposal of coal ash including stability, groundwater monitoring, and fugitive dust emissions. Adoption of the federal regulations into the Virginia Solid Waste Management Regulations is anticipated in late 2015.

CCR Surface Impoundments have been regulated under the VPDES program during their operational life. The Virginia Solid Waste Management Regulations (VSWMR) applies after their operational life and provides for closure requirements in 9VAC20-81-370. Their long-term management which includes closure, post-closure, and groundwater monitoring will be addressed by the solid waste program in accordance with the VSWMR and requirements under the EPA rule as applicable. Existing groundwater monitoring, corrective action and/or risk assessment plans currently in effect under the VPDES permit will remain in effect until such time that they are superseded by a groundwater monitoring program pursuant to a solid waste permit for closure and/or post-closure in accordance with the Virginia Solid Waste Management Regulations (9VAC20-81-10 *et. seq.*).

The chronology below is a summary of the Groundwater Monitoring Plan (GWMP) as it currently stands under the VPDES permit. All documents are contained in the DEQ files. This GWMP will remain in effect until it is superseded by a groundwater monitoring program pursuant to a solid waste permit. The permit contains a special condition regarding the transition from the VPDES Permit to a Solid Waste Permit.

1. The original GWMP was initiated in conjunction with the construction of the North Ash Pond in 1984. The GWMP included monitoring of upgradient and downgradient wells for Selenium, Iron, Barium, Magnesium, Manganese, Sulfate and Total Dissolved Solids once per permit term.
2. The VPDES Permit was reissued on August 13, 2010 and Part I.C of the permit required submittal of a revised GWMP by August 13, 2011. It was required that the GWMP address all active and closed impoundments and ponds at the site.
3. The GWMP was received on August 12, 2011. Rather than the technical review being completed in the Water Permitting Division, the technical review of the GWMP was provided by the DEQ Land Protection and Revitalization Division.
4. Comments on the GWMP were provided to Dominion in a DEQ 1st Technical Review memo dated February 10, 2012.
5. An updated GWMP was submitted on May 10, 2012.
6. Comments on the GWMP were provided to Dominion in a DEQ 2nd Technical Review memo dated August 21, 2012.
7. A Groundwater Monitoring Program, Well Installation Report dated March 6, 2013 was received as required by the GWMP.
8. DEQ approved the disposal of Well Development and Purge Water on March 18, 2013. The well development water and purge water was proposed to be directed to the Metal Cleaning Pond which discharges through internal Outfall 202 to the West Ash Pond.
9. Upon review of the well installation report in an email on March 27, 2013, DEQ requested the submittal of a revised GWMP.

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- 10. An updated GWMP was submitted on July 2, 2013.
- 11. Comments on the GWMP were provided to Dominion in a DEQ 3rd Technical Review memo dated September 6, 2013.
- 12. DEQ approved the GWMP on September 11, 2013.

The excerpt below from the GWMP shows the parameters that are monitored and describes the process for determining the monitoring frequency. Figure 1 shows the locations of the 14 groundwater monitoring wells.

4.1 Parameter Selection

The following analytical parameters shall be included for groundwater samples collected from monitoring wells during each sampling event at the site.

Table D – Groundwater Sampling Parameters

Dissolved Metals	Arsenic, barium, cadmium, chromium, hexavalent chromium, copper, iron, lead, manganese, mercury, molybdenum, selenium, silver, vanadium, zinc
Water Quality Parameters	Ammonia, chloride, nitrate, sulfate, TDS, total hardness
Field Measurements	Conductivity, turbidity, groundwater elevation, pH, temperature and sample time

4.2 Sampling Frequency

In accordance with the DEQ guidelines, the sampling frequency at the site will generally be on a quarterly basis for the first two years of acquired monitoring data for a total of eight sampling events. After approximately two years of monitoring, an assessment of the acquired monitoring data will be performed to evaluate future monitoring frequency. A monitoring frequency of no less than once per year shall be maintained for the site. Please note that if statistical analysis is triggered, sampling frequencies may be modified to collect sufficient data for the statistical analysis. Changes to sampling parameters or monitoring frequency will be approved by the VDEQ prior to implementation.

- 13. Under the approved GWMP, Dominion began collecting quarterly background groundwater samples for background data collection in 2013. Groundwater monitoring was performed quarterly over a 2-year period. The results were submitted with the VPDES permit application due January 27, 2015.
- 14. The results of the 2-year background monitoring study were received on January 15, 2015 with the permit application.

The conclusions of the report stated:

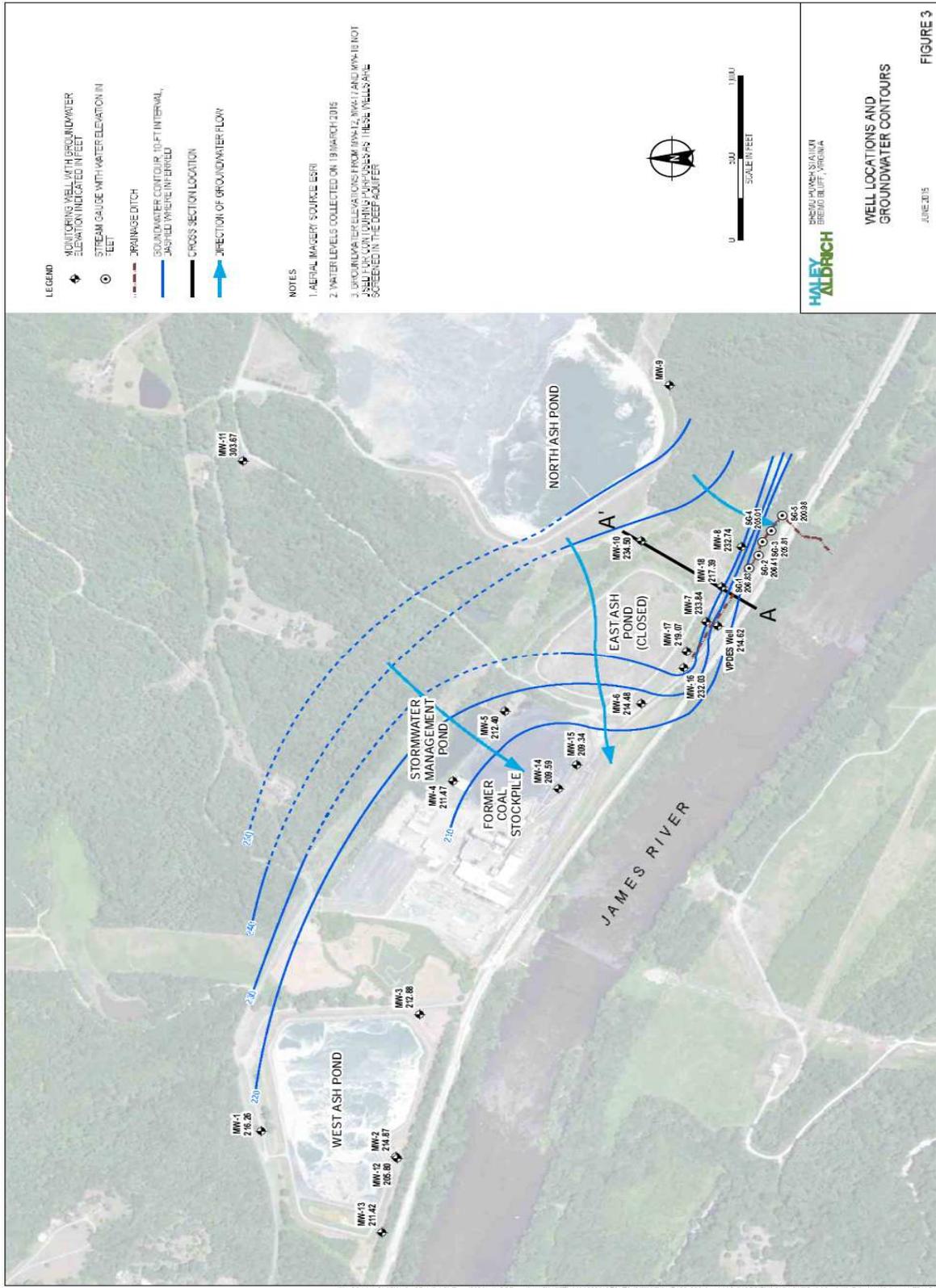
“In accordance with the VPDES permit, A Corrective Action Plan will be submitted to DEQ within 90 days of submittal of this report based on data that suggests groundwater quality at the site is influenced by the presence of the ash ponds.”

- 15. The VPDES permit requires the submittal of an annual groundwater report. Groundwater monitoring activities performed during the 2014 calendar year consisted of background data collection. Since the background data was submitted with the VPDES permit application, it was clarified by DEQ an email dated February 25, 2015 that the first annual groundwater report will be due by March 1, 2016.

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16. A Corrective Action Plan (CAP) was submitted by letter dated April 14, 2015. The results of a risk assessment, which will evaluate human health and ecological risks related to groundwater at the East Ash Pond was to be submitted to DEQ by June 30, 2015.
17. A letter dated June 22, 2015 was received from Cathy Taylor, Director, Electric Environmental Services, regarding a portion of the risk assessment related to the East Ash Pond drainage feature (Outfall 003). The evaluation determined that a portion of the water may be groundwater seepage that may come into contact with coal ash constituents within the inactive East Ash Pond. Chemical analyses of the water collected from various locations within the drainage showed compliance with applicable water quality standards, and the risk assessment confirmed that there are no risks to human health or the environment.
18. An email was received on June 30, 2015 requesting an extension until July 10, 2015 for submittal of the risk assessment report. The risk assessment report due date has not yet been established as the Corrective Action Plan has not yet been approved by DEQ; therefore, the 10 day extension for submittal of the risk assessment report was approved.
19. The risk assessment report was received on July 10, 2015. The report is currently under review by the DEQ Division of Land Protection and Revitalization. The risk assessment will be incorporated into a comprehensive Correction Action Plan which will be submitted to DEQ for approval.
20. 40 CFR Parts 257 and 261 regarding the Disposal of Coal Combustion Residuals from Electric Utilities became effective on October 14, 2015. The rule included new requirements for groundwater for coal ash impoundments.

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APPENDIX L

BASES FOR SPECIAL CONDITIONS AND PERMIT CHANGES

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page	<ul style="list-style-type: none"> Content and format as prescribed by the VPDES Permit Manual. The list of outfalls was added.
Part I.A.1	<p>Effluent Limitations and Monitoring Requirements – Outfall 001 (Once-Through Condenser Cooling Water): Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.1 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> The flow monitoring frequency was changed from 1/Month to 1/Day. Heat Rejected was changed to Heat Rejection. The footnote changed to show the permit limits were calculated based on a flow of 157.6 MGD rather than a flow of 172.8 MGD. Effluent temperature and intake temperature monitoring were added. Monthly average TRC limits were added. Maximum TRC limits were changed from 0.20 mg/L to 0.02 mg/L.
Part I.A.2	<p>Effluent Limitations and Monitoring Requirements – Outfall 101 (Traveling Screen Backwash): Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.4 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> Outfall 101 was separated from Outfalls 003 and 006 on the permit pages. The permit language was updated to reflect this. Changed the description of Outfall 101 from “intake screen backwash” to “traveling screen backwash” to distinguish between the two screens.
Part I.A.3	<p>Effluent Limitations and Monitoring Requirements – Outfall 203 (Sewage Treatment Plant): Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.6 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> Permit limits were added for BOD₅, TSS, E. coli and pH. TRC limits were removed and are now found in Part I.A.5 for Outfall 002 and Part I.A.7 for Outfall 004. A footnote was added referring to the Part I.B disinfection requirements.
Part I.A.4	<p>Effluent Limitations and Monitoring Requirements – Outfall 202 (Metal Cleaning Waste Treatment Basin): Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.5 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> The monitoring frequency for all parameters was changed from 1/6 Months to 1/Month. A footnote was added that Outfall 202 will be retired following the closure of the Metals Cleaning Waste Treatment Basin.

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<p>Part I.A.5</p>	<p>Effluent Limitations and Monitoring Requirements – Outfall 002: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.2 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> • TRC limits were added. • Oil & Grease monitoring frequency was changed from 1/3 Months to 2/Month. • 1/Year monitoring was added for TKN, Nitrite-N + Nitrate-N, Total Nitrogen and Total Phosphorus. • A footnote was added that the limits are based on a flow of 4.2912 MGD. • A footnote was added that effluent from the Stormwater Management Pond may be discharged through Outfall 002. TRC limits and monitoring apply if effluent from the Stormwater Management Pond is discharged through Outfall 002. • A footnote was added that sampling may take place prior to commingling with treated process wastewater from internal Outfalls 501, 502, 503, 504 and 505. • A footnote was added that Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be derived from the results of those tests.
<p>Part I.A.6</p>	<p>Effluent Limitations and Monitoring Requirements – Outfall 003: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.4 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> • Outfall 003 was separated from Outfalls 101 and 006 on the permit pages. The permit language was updated to reflect this. • A footnote was added that during the period prior to Part I.A.9 becoming effective, Outfall 003 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 003 prior to Part I.A.9 becoming effective. • A footnote was added that during the dewatering activities when Part I.A.9 is effective, process wastewater from internal Outfalls 501, 502, 503, 504 and 505 may be discharged through Outfall 003. • A footnote was added that outfall 003 will be retired following the dewatering activities at the facility.
<p>Part I.A.7</p>	<p>Effluent Limitations and Monitoring Requirements – Outfall 004: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.3 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> • TRC limits were added. • The monitoring frequency for flow, pH, TSS and Oil and Grease was changed from 1/3 Months to 2/Month. • A footnote was added that the limits are based on a flow of 4.2912 MGD. • A footnote was added that effluent from the Stormwater Management Pond may be discharged thorough Outfall 004. TRC limits and monitoring apply if effluent from the Stormwater Management Pond is discharged through Outfall 004. • A footnote was added that sampling may take place prior to commingling with treated process wastewater from internal Outfalls 501, 502, 503, 504, and 505. • A footnote was added that during the dewatering activities when Part I.A.9 is effective, process wastewater from internal Outfalls 501, 502, 503, 504 and 505 may be discharged through Outfall 004. • A footnote was added that Outfall 004 will be retired following the dewatering activities at the facility.

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Part I.A.8	<p>Effluent Limitations and Monitoring Requirements – Outfall 006: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet.</p> <p><i>Updates Part I.A.4 of the previous permit with the following:</i></p> <ul style="list-style-type: none"> • Outfall 006 was separated from Outfalls 101 and 003 on the permit pages. The permit language was updated to reflect this. • A footnote was added that during the period prior to Part I.A.9 becoming effective, Outfall 006 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 006 prior to Part I.A.9 becoming effective. • A footnote was added that during the dewatering activities when Part I.A.9 is effective, process wastewater from Outfalls 501, 502, 503, 504, and 505 may be discharged through Outfall 006. • A footnote was added that following dewatering activities, Outfall 006 shall contain only stormwater not associated with a regulated industrial activity where monitoring would be required. There shall be no discharge of process wastewater from Outfall 006 during this period.
Part I.A.9	<p>Effluent Limitations and Monitoring Requirements – Internal Outfalls 501, 502, 503, 504, and 505: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet. <i>New requirement.</i></p>
Part I.A.10	<p>Effluent Limitations and Monitoring Requirements – Outfall 999: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet. <i>New requirement.</i></p>
Part I.A.11	<p>Effluent Limitations and Monitoring Requirements – Outfall 007, 008, and 009 (Stormwater not exposed to industrial activity) Final Configuration: Bases for effluent limits and monitoring requirements provided in previous pages of this fact sheet. <i>New requirement.</i></p>
Part I.B	<p>Additional TRC and E. coli Limitations and Monitoring Requirements – Outfall 203: <i>New requirement.</i> Required by Sewage Collection and Treatment (SCAT) Regulations, 9VAC25-790 and Water Quality Standards, 9VAC25-260-170, Bacteria; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.</p>
Part I.C	<p>Effluent Limitations and Monitoring Requirements – Additional Instructions: <i>Updates Part I.B of the previous permit.</i> Authorized by VPDES Permit Regulation, 9VAC25-31-190 J 4 and 220 I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.</p>
Part I.D	<p>Groundwater Monitoring Plan: <i>Updates Part I.C of the previous permit.</i> 9VAC25-280-20. Except where otherwise specified, ground water quality standards shall apply statewide and shall apply to all ground water occurring at and below the uppermost seasonal limits of the water table. In order to prevent the entry of pollutants into ground water occurring in any aquifer, a soil zone or alternate protective measure or device sufficient to preserve and protect present and anticipated uses of ground water shall be maintained at all times. 9VAC25-280-60 Groundwater criteria, although not mandatory, also provide guidance in preventing groundwater pollution. Also, State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters. Groundwater monitoring for parameters of concern will indicate whether possible lagoon/pond seepage is resulting in violations to the State Water Control Board’s Groundwater Standards.</p>
Part I.E	<p>Whole Effluent Toxicity Requirements: <i>Updates Part I.D of the previous permit.</i> VPDES Permit Regulation, 9VAC25-31-210 and 220.I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.</p>

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Part I.F	Cooling Water Intake Structure Requirements
Part I.F.1	<p>Interim 316(b) Best Technology Available (BTA): <i>New requirement.</i> VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet the requirements under §316(b) of the Clean Water Act (CWA) determined by the department on a case-by-case, best professional judgment basis. DEQ staff have determined the permitted facility to be subject to the §316(b) requirements because it is a point source that uses or proposes to use one or more cooling water intake structures that withdraws waters of the U.S. for cooling purposes.</p> <p>Federal regulations at 40 CFR §§125.98(b)(5) and (b)(6) mandate that for permits issued before July 14, 2018, for which an alternate schedule has been established for the submission of information required by 40 CFR §122.21(r), must include interim BTA requirements in the permit based on best professional judgment on a site-specific basis. This special condition outlines interim BTA practices to minimize impingement and entrainment (I&E) mortality and adverse impacts to aquatic organisms.</p>
Part I.F.2	<p>Impingement and Entrainment Control Technology Preventative Maintenance: <i>New requirement.</i> VPDES Permit Regulation 9VAC25-31-190.E requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.</p>
Part I.F.3	<p>Alternate Schedule for Submittal of 40 CFR §122.21(r) Information: <i>New requirement.</i> VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet the requirements under §316(b) of the Clean Water Act (CWA) determined by the department on a case-by-case, best professional judgment (BPJ) basis. Federal regulations at 40 CFR §125.95(a)(2) allow for owners or operators of a facility whose permit expires prior to July 14, 2018 to request the Director establish an alternate schedule for the submission of the information required in 40 CFR §122.21(r) when making application for this permit. If the owner or operator of the facility demonstrates that it could not develop the required information by the applicable date of submission, DEQ must establish an alternate schedule for the submission of the required information.</p> <p>DEQ staff received a written request from the permittee, with the permit application received January 15, 2015, requesting an alternate schedule (see Appendix E). Upon review of the request, DEQ staff determined the permittee successfully demonstrated the inability to reasonably develop the required information by their reissuance application due date, thereby qualifying for an alternate schedule to be established.</p> <p>Federal regulations at 40 CFR §125.98(a) requires the review, for completeness, of the materials submitted by the applicant under 40 CFR §122.21(r) at the time of any application for a subsequent permit. To facilitate a determination of a timely and complete reissuance application in compliance with Part II.M of this permit, the Alternate Schedule for this facility has been established to require submission of the 40 CFR §122.21(r) information to the DEQ-Valley Regional Office by no later than 270 days prior to the expiration date of this permit.</p>

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<p>Part I.F.4</p>	<p>Visual or Remote Inspections: <i>New requirement.</i> VPDES Permit Regulation 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. Federal regulations at 40 CFR §125.96(e) requires visual inspections or the employment of remote monitoring devices to be conducted at least weekly during the period any cooling water intake structure is in operation to ensure any technologies operated are maintained and operated to function as designed, including those installed to protect Federally-listed threatened or endangered species or designated critical habitat.</p> <p>40 CFR §125.96 authorizes DEQ to establish monitoring requirements, and specific protocols, as appropriate. Provisions for inspection waivers, adverse weather conditions, and deficiency discoveries were developed, using as a foundation, comparable provisions found in the VPDES General Permit for Stormwater Discharges Associated with Industrial Activity, 9VAC25-151-70, Part I.A.2.e, A.3 and A.6.b.</p>
<p>Part I.F.5</p>	<p>Annual Certification Statements: <i>New requirement.</i> VPDES Permit Regulation 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. Federal regulations at 40 CFR §125.97(c) requires the permittee to annually submit a certification statement signed by a responsible corporate officer reporting whether there have been substantial modifications to the operation at any unit at the facility that impacts cooling water withdrawals or operation of the cooling water intake structures, or if information contained in the previous year’s annual certification remains pertinent.</p>
<p>Part I.F.6</p>	<p>Measures to protect Federally-listed Threatened or Endangered Species, designated critical habitat, and fragile species or shellfish: <i>New requirement.</i> VPDES Permit Regulation 9VAC25-31-330 authorizes the board to include conditions in the permit in response to advice submitted in writing to the DEQ from the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, or any other state or federal agency with jurisdiction over fish, wildlife, or public health that the imposition of specified conditions are necessary to avoid substantial impairment of fish, shellfish, or wildlife resources and to the extent the board determines the conditions are necessary to carry out the provisions of the regulation, the law and of the CWA.</p> <p>In addition, VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet requirements under section 316(b) of the Clean Water Act determined by the department on a case-by-case, best professional judgment (BPJ) basis. 40 CFR §§125.94(a)(1), 125.94(g), 125.96(g), and 125.97(g) authorize DEQ to establish additional control measures, monitoring, and reporting requirements in the permit designed to minimize incidental take, reduce or remove more than minor detrimental effects to Federally-listed threatened or endangered species or designated critical habitat, or avoid jeopardizing Federally-listed species or destroying or adversely modifying designated critical habitat (e.g. prey base).</p> <p>40 CFR CFR §125.96(g) mandates that DEQ require monitoring associated with any additional measures designed to minimize incidental take, reduce or remove more than minor detrimental effects to Federally-listed threatened or endangered species or designated critical habitat, or avoid jeopardizing Federally-listed species or destroying or adversely modifying designated critical habitat (e.g. prey base) pursuant to 40 CFR §125.94(g).</p> <p>State Water Control Law §62.1-44.5.A.3 and VPDES Permit Regulation 9VAC25-31-50.A.2 prohibits the alteration of the physical, chemical or biological properties of State waters and making them detrimental to animal or aquatic life, except in compliance with a permit issued by the Board. In addition, VPDES Permit Regulation 9VAC25-31-190.E requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.</p>

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	<p>State Water Control Law §62.1-44.21 and VPDES Permit Regulation 9VAC25-31-190.H authorizes the Board to require owners to furnish plans, specifications, and other pertinent information as may be necessary to accomplish the purposes of the State Water Control Law. In addition, federal regulations at 40 CFR §125.94(g) and §125.97(e) authorize DEQ to establish additional permit monitoring and reporting requirements. Information provided by the permittee under this special condition may be used as a foundation to address other reporting requirements of 40 CFR §125.98(k).</p> <p>Federal regulations at 40CFR §125.94(c)(9) and 40 CFR §125.98(b)(8) requires owners or operators to comply with any additional measures to protect fragile species and shellfish.</p> <p>Further discussion regarding T&E can be found in the Fact Sheet Introduction, Appendix H and Appendix I.</p>
Part I.F.7	<p>Federal Endangered Species Act Compliance: <i>New requirement.</i> State Water Control Law §62.1-44.5.A.3 and VPDES Permit Regulation 9VAC25-31-50.A.2 prohibits the alteration of the physical, chemical or biological properties of State waters and making them detrimental to animal or aquatic life, except in compliance with a permit issued by the Board.</p> <p>In addition, VPDES Permit Regulation 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. 40 CFR §125.98(j) stipulates that nothing in Subpart J of Part 125 of the Code of Federal Regulations authorizes the take, as defined at 16 U.S.C. 1532(19), of threatened or endangered species of fish or wildlife. Such take is prohibited under the Endangered Species Act unless it is exempted pursuant to 16 U.S.C 1536(o) or permitted pursuant to 16 U.S.C 1539(a). Absent such exemption or permit, any facility must not take threatened or endangered species. 40 CFR §125.98(b)(1) requires all NPDES permits for facilities subject to §316(b) of the Clean Water Act to include as a permit condition the specific language of this special condition.</p>
Part I.G	<p>Other Requirements and Special Conditions</p>
Part I.G.1	<p>95% Capacity Reopener (Outfall 203): <i>Updates Part I.E.1 of the previous permit.</i> Clarifies that the requirement applies to Internal Outfall 203 for the sewage treatment plant. Required by VPDES Permit Regulation, 9VAC25-31-200.B.4 for certain permits.</p>
Part I.G.2	<p>Materials Handling/Storage: <i>Updates Part I.E.2 of the previous permit.</i> 9VAC25-31-280.B.2. requires that the types and quantities of “wastes, fluids, or pollutants which are ... treated, stored, etc.” be addressed for all permitted facilities.</p>
Part I.G.3	<p>O&M Manual Requirement: <i>Updates Part I.E.3 of the previous permit.</i> Code of Virginia at 62.1-44.16, VPDES Permit Regulation 9VAC25-31-190.E, and 40 CFR 122.41(e) require proper operation and maintenance of the permitted facility.</p>
Part I.G.4	<p>CTC/CTO Requirement (Outfall 203): <i>Identical to Part I.E.14 of the previous permit.</i> Required by Code of Virginia 62.1-44.19, SCAT Regulations 9VAC25-790, and VPDES Permit Regulation 9VAC25-31-190.E for all STPs</p>
Part I.G.5	<p>Concept Engineering Report: <i>New requirement.</i> Section 62.1-44.16 of the Code of Virginia requires industrial facilities to obtain DEQ approval for proposed discharges of industrial wastewater. A CER means a document setting forth preliminary concepts or basic information for the design of industrial wastewater treatment facilities and the supporting calculations for sizing the treatment operations.</p>

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Part I.G.6	Sludge Management Plan (SMP) Requirement (Outfall 203): <i>Updates Part I.E.4 of the previous permit.</i> VPDES Permit Regulation 9VAC25-31-100.P, 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9VAC25-32-10 <i>et seq.</i>)
Part I.G.7	Reliability Class (Outfall 203): <i>New requirement.</i> Required by Sewage Collection and Treatment (SCAT) Regulations 9VAC25-790 for all municipal facilities. Class II status recommended by VDH for this facility on June 3, 2015.
Part I.G.8	Debris Collected on Intake Trash Racks: <i>Identical to Part I.E.5 of the previous permit.</i> Specifies that materials removed from the intake screen not be returned to the river.
Part I.G.9	Discharges of PCBs: <i>Updates Part I.E.6 of the previous permit.</i> The two previous permits specified no discharge of transformer fluids in amounts equal to or greater than detected by EPA Test Methods specified in the Federal register 40 CFR 136, Guidelines For Establishing Test Procedures for the Analysis for pollutants. Prohibition of discharge for facilities subject to the Federal ELGs for Steam Electric Power Generating Point Source Category (40 CFR Part 423).
Part I.G.10	Discharges of Chlorine: <i>Updates Part I.E.7 of the previous permit.</i> Special conditions and additional restrictions to the discharge of chlorine when chlorination practices are employed. Conditions and restrictions for facilities subject to the Federal ELGs for Steam Electric Power Generating Point Source Category (40 CFR Part 423) and Best Professional Judgment.
Part I.G.11	Oil Storage Groundwater Monitoring Reopener: <i>Identical to Part I.E.12 of the previous permit.</i> Most facilities with large oil storage tanks, above or under ground, are required to monitor ground water under the Oil Discharge Contingency Plans and Administrative Fees for Approval Regulation, 9VAC25-90-10 <i>et seq.</i> Where potential exists for groundwater pollution and that regulation does not require monitoring, the VPDES permit may under Code of Virginia at 62.1-44.21.
Part I.G.12	Thermal Mixing Zone: <i>Identical to Part I.E.8 of the previous permit.</i> Continues the designation of the previously approved thermal mixing zone for discharges from Outfall 001.
Part I.G.13	Instream Monitoring: <i>Updates Part I.E.9 of the previous permit.</i> Continues the requirement for the permittee to conduct a previously approved monitoring plan. State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters.
Part I.G.14	Water Quality Criteria Monitoring: <i>New requirement.</i> State Water Control Law Section 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, Subpart 131.11. To ensure that water quality standards are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachments A, B and C of this VPDES permit.
Part I.G.15	Treatment Works Closure Plan: <i>New requirement.</i> This condition establishes the requirement to submit a closure plan for the Metal Cleaning Waste Treatment Basin, Sewage Treatment Plant, and West Treatment Pond if the treatment unit is being replaced or is expected to close. This is necessary to ensure industrial sites and treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law.

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Part I.G.16	<p>Reopeners:</p> <p>a. <i>Identical to Part I.E.10.a of the previous permit.</i> Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.</p> <p>b. <i>Updates Part I.E.10.b of the previous permit:</i> 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.</p> <p>c. <i>Identical to Part I.E.10.c of the previous permit.</i> Required by the VPDES Permit Regulation, 9VAC25-31-220.C, for all permits issued to STPs.</p>
Part I.G.17	<p>Notification Levels: <i>Identical to Part I.E.11 of the previous permit.</i> Required by the VPDES Permit Regulation 9VAC25-31-200.A for all manufacturing, commercial, mining, and silvicultural dischargers.</p>
Part I.G.18	<p>Ash Pond Closure Stormwater Management: <i>New requirement.</i> The State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters.</p>
Part I.G.19	<p>Metal Cleaning Waste Treatment Basin Decanting/Dewatering: <i>New requirement.</i> The State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters.</p>
Part I.G.20	<p>Notification of Milestones: <i>New requirement.</i> The State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters.</p>
Part I.G.21	<p>Cooling Water and Boiler Additives: <i>New requirement.</i> Based on 9VAC25-196-70 for discharge of Noncontact Cooling Water when chemical additives are proposed for which the need for limits have not been evaluated.</p>
Part I.G.22	<p>Cease Discharge Requirements: <i>New requirement.</i> This condition is included to ensure that any discharge from during closure activities that exceeds established effluent limitations is ceased as soon as possible once the exceedance(s) is discovered. §62.1-44.15.8.a grants the Board authority to “issue special orders to owners who are permitting or causing pollution (as defined by §62.1-44.3) of state waters to cease and desist.” §62.1-44.5 prohibits discharges except in compliance with the permit. 9VAC25-31-210 allows on a case-by-case basis any conditions required to assure compliance with applicable requirements of the law, the CWA, and regulations. Because the characterization of the discharge during closure activities cannot be fully known in advance, it is appropriate to include this condition to protect water quality.</p>
Part I.G.23	<p>Coal Ash Pond Drawdown Rate: <i>New requirement.</i> This condition has been included to limit the drawdown rate of the ponds in an effort to reduce the risk of dam stability issues during drawdown. The drawdown limit was developed based on recommendations from DCR’s Dam Safety Program.</p>
Part I.G.24	<p>North Ash Pond Notification: <i>New requirement.</i> The State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters.</p>
Part I.G.25	<p>Polychlorinated Biphenyls (PCBs) Monitoring: <i>New requirement.</i> The State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters.</p>
Part I.H	<p>Stormwater Management Conditions</p>

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Part I.H.1	General Stormwater Special Conditions: <i>Updates Part I.F.1 of the previous permit.</i> VPDES Permit Regulation 9VAC25-31-10 defines discharges of stormwater from industrial activity in 9 industrial categories. 9VAC25-31-120 requires a permit for these discharges. The Stormwater Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of stormwater associated with industrial activity, 9VAC25-151-10 et seq. VPDES Permit Regulation, 9VAC25-31-220.K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law.
Part I.H.2	Stormwater Pollution Prevention Plan (SWPPP): <i>Updates Part I.F.2 of the previous permit.</i> See rationale listed above for the General Stormwater Special Conditions.
Part I.H.3	Sector-Specific Stormwater Pollution Prevention Plan Requirements: Steam Electric Power Generating Facilities: <i>Updates Part I.F.3 of the previous permit.</i> See rationale listed above for the General Stormwater Special Conditions.
Attachment A and B Monitoring	Water Quality Criteria Monitoring: <i>New requirement.</i> State Water Control Law Section 62.1-44.21 authorizes the Board to request information needed to determine the discharge’s impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, Subpart 131.11. To ensure that water quality standards are maintained, the permittee is required to analyze the facility’s effluent for the substances noted in Attachments A and B of this VPDES permit.
Part II	Conditions Applicable To All VPDES Permits: <i>Updates Part II of the previous permit.</i> VPDES Permit Regulation 9VAC25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

Deletions from the permit:

Part I.A.7	Internal Outfall 204 – Stormwater Treatment Pond – Permit limits at Outfall 204 were included in the previous permit for coal pile runoff. The coal pile has been eliminated so Outfall 204 limits are no longer needed in the permit.
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Dominion – Bremo Power Station, VPDES Permit No. VA0004138
Attachment F - Letter from the Honorable A. Donald McEachin
December 29, 2015

Attachment F
VPDES Permit No. VA0004138 – Dominion – Bremo Power Station
Letter from the Honorable A. Donald McEachin

SENATE OF VIRGINIA

A. DONALD MCEACHIN
6th SENATORIAL DISTRICT
ALL OF CHARLES CITY COUNTY;
PART OF HANOVER AND HENRICO COUNTIES;
AND PART OF THE CITY OF RICHMOND
4719 NINE MILE ROAD
RICHMOND, VIRGINIA 23223



COMMITTEE ASSIGNMENTS:
AGRICULTURE, CONSERVATION AND
NATURAL RESOURCES
COURTS OF JUSTICE
PRIVILEGES AND ELECTORS

November 18, 2015

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NOV 23 '15

DEQ - OD

Mr. David K. Paylor, Director
Virginia Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218

RE: Draft Permit No. VA0004138 for Dominion - Brems Power Station, 1038 Brems Road, Brems Bluff, Virginia 23022

Dear Director Paylor:

We are reviewing the DEQ's proposed draining permit for the coal ash ponds at the Brems Power Station. Dominion proposes to release hundreds of millions of gallons of wastewater from these ponds directly into the James River. This water is contaminated with a suite of toxic metals like arsenic, hexavalent chromium, and selenium. The public needs sufficient time to evaluate the complex technical issues presented in the draft permit and to understand how this discharge will impact the health of this important fishery and recreational resource. Accordingly, I am requesting a 60-day extension of the public comment period.

Sincerely,

A handwritten signature in cursive script that reads "Donald".

A. Donald McEachin