UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE – SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NUMBER:

MA0003654

PUBLIC COMMENT PERIOD: July 29, 2011 – August 27, 2011

NAME AND ADDRESS OF APPLICANT:

Dominion Energy Brayton Point, LLC
One Brayton Point Road
Somerset, MA 02725

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Brayton Point Station
One Brayton Point Road
Somerset, MA 02725

RECEIVING WATER:

Mount Hope Bay

CLASSIFICATION:

SB/SA

Contents

1 Proposed Action, Type of Facility, and Discharge Location

On August 15, 2008, Dominion Energy Brayton Point, LLC (Dominion Brayton Point), applied to the U.S. Environmental Protection Agency (EPA) for renewal of its NPDES permit for the Brayton Point Station (BPS) power plant in Somerset, MA. This permit authorizes the facility to discharge wastewater into, and to withdraw water for cooling from, the Mount Hope Bay estuary, which is part of the larger Narragansett Bay estuary.

The facility's "existing" or "current" permit expired on May 26, 2009, but in accordance with 40 C.F.R. § 122.6, this permit has been administratively continued as a result of Dominion Energy Brayton Point's timely application for permit renewal. A brief history and background discussion of the existing permit's development and Brayton Point's compliance with its conditions is found in section 2 below.

EPA currently intends to reissue the facility's NPDES permit. As an important step in the process of permit reissuance, EPA is now issuing for public review and comment a new draft NPDES permit to Dominion Brayton Point. The draft permit's conditions remain largely unchanged from the conditions in the existing permit's, except for some revisions which are necessary to correct technical errors and/or to reflect the final technological and operational changes needed to convert the station from open-cycle to closed-cycle cooling.

2 Permitting History

The existing permit became effective May 26, 2004, although certain of its provisions (e.g., thermal discharge and cooling water withdrawal requirements) were stayed because of a permit appeal filed by the then owners of the facility (PG&E). Dominion took ownership of Brayton Point Station in 2005. Following significant legal proceedings, the legal challenges to the permit were resolved and all of the previously stayed conditions of the permit became effective on December 18, 2007.

The existing permit contains far stricter thermal discharge and cooling water withdrawal limits than the previous NPDES permit(s) for the Brayton Point Station. The existing permit's intake flow restrictions are technology-based and were developed under section 316(b) of the CWA, whereas the existing permit's thermal discharge limits were based on a biological assessment under section 316(a) of the Clean Water Act (CWA).

Section 316(b) of the CWA mandates that the design, location, construction and capacity of cooling water intake structures reflect the ***best technology available*** (BTA) for minimizing adverse environmental impact(s). Although technology-based, the permit's cooling water intake requirements do not dictate that they be met through the use or installation of a particular technology. While EPA determined that converting from open-cycle cooling to closed-cycle cooling using wet mechanical draft cooling towers would satisfy the BTA requirements of CWA § 316(b) at Brayton Point Station, and then based the permit's intake limits on the use of that technology, the permit nevertheless allows the facility to meet the permit's limits using any otherwise lawful means at its disposal. Thus, the existing permit's numerical cooling water intake limits are based on wet-mechanical draft cooling tower technology (three separate cooling tower units), but the permit does not require the use of this technology.

The permit's thermal discharge limits were based on a variance under section 316(a) of the CWA from the technology-based and water quality-based limits that would otherwise apply. As stated above, the analysis under section 316(a) is biologically-focused and the permit limits based on this analysis do not dictate a technology that must be used to comply with them. While it so happens that the permit's thermal discharge limits can also be met by converting to closed-cycle cooling, the permit again leaves the permittee free to pursue any lawful method of compliance.

The information used by EPA to develop the existing permit's cooling water withdrawal and thermal discharge limits was based, in part, on information submitted to EPA by the facility's previous owners (and their various consultants). This information included preliminary engineering design for converting the facility from open-cycle cooling to closed-cycle cooling using 3 wet mechanical draft cooling tower arrays – one 30-cell tower array to service units 1 and 2, a 22-cell tower array for unit 3, and a 20-cell tower array for unit 4.

On December 17, 2007, EPA issued an Administrative Order (AO) that provides a schedule for the facility to come into compliance with the existing permit. Dominion Energy Brayton Point, the new owners of the plant, worked cooperatively with EPA in the development of the AO. The AO set forth a schedule for converting the station to closed-cycle cooling so that the permittee could comply with the permit's conditions as soon as possible. The AO also sets interim limits to be satisfied until full compliance is achieved.

The implementation schedule contained in the AO is based on the technological design selected by Dominion for meeting the permit limits. Specifically, the permittee selected *natural draft* cooling tower technology –instead of *mechanical draft* cooling tower technology, as had been preferred by the prior owners of the facility, PG&E – as its means for complying with the permit's limits. Therefore, the above referenced AO schedule for converting the facility to

closed-cycle cooling, including obtaining the necessary environmental, construction and other permits and approvals, is based on using the natural draft cooling tower design. Dominion is on schedule to complete the cooling system conversion in the spring of 2012.

On August 15, 2008, Dominion Brayton Point submitted its NPDES renewal application. Appendix B of that submittal contains requests for changes to several conditions in the existing permit. On July 7, 2010, Dominion amended the application and replaced Appendix B of the August 15, 2008 application. The requested permit changes reflect Dominion's final design (and operational scheme) for the closed-cycle cooling system. For example, the new design has two internal blowdown streams, whereas the existing permit (based on mechanical-draft towers) identifies three internal blowdown streams. Also, the existing permit was based on using the Unit 4 intake on the Lee River for make-up water, but the new design calls for using unit 3's intake on the Taunton River.

Another change is a result of the permittee discovering during the design phase for the new closed-cycle cooling system, that the cooling tower make-up and blowdown flow for Unit 2 was inadvertently omitted from Brayton's past submittals. Weather simulations of the natural draft cooling tower performance also indicate lower than expected evaporation rates at certain times, while make-up water for the tower remains the same. Based on these considerations, the permittee has requested that the permit's flow and intake limits be increased somewhat to account for the previously omitted flow value of unit 2, and to manage cooling tower efficiency during certain weather conditions. The permittee has also requested a change in the permit's delta T limit, based on a more detailed review of weather conditions, ambient water temperatures, and cooling tower performance than was previously available.

EPA's analysis and subsequent determination regarding the permittee's request for permit modifications are discussed in further in this Fact Sheet.

3 Draft Permit Changes Related to Intake, Flow, and Temperature

Most of the permit requirements from the existing permit are carried forward in the draft permit. However, as discussed above, based on detailed engineering review conducted during the design and construction of the new cooling system, three changes to the permit's flow and temperature requirements are necessary. These include: 1) increase cooling water withdrawal (intake) from 56.2 MGD to 70 MGD; 2) eliminate the 22 degree "delta T" requirement; and, 3) increase flow rate at outfall 001 from 42 MGD to 74 MGD (maximum daily), and average monthly from 40 to 72. These changes are discussed below.

4 Facility Discharge and Receiving Water Information

4.1 Maps and Other Facility Information

Attachment A contains:

Figure 1 - station site and location
Figure 2 - station water balance
Figure 3 - cooling water flows for closed-cycle cooling using natural draft cooling towers

Attachment B contains:

Summary of effluent data (outfall 001, internal outfall 004)

4.2 Mount Hope Bay

Mount Hope Bay is a shallow estuary that is part of the larger Narragansett Bay estuary. A portion of Mount Hope Bay is located in the state of Rhode Island, while the rest is in the state of Massachusetts. Several rivers drain into the bay, including the Taunton, the Kickamuit, the Cole, the Lee (also known as Lees or Lee's) and the Quequechen. Mount Hope Bay is connected to Narragansett Bay by the Narragansett Bay East Passage and the Sakonnet River.

Mount Hope Bay is approximately 7 miles in length along its north-south axis and has a surface area of 13.6 square miles and a volume of 53 billion gallons at mean low water. In general, the bay is relatively shallow with an average depth of 18.7 ft. Most of the northern portion of the bay is shallower than this, as the deeper portions of the bay tend to be in the south, the shipping channel along the east side and the connections to Narragansett Bay. Furthermore, 70 percent of the bay is less than 6 meters deep at mean low water.

The two segments (MA61-06 and MA61-07) that Brayton Point withdraws water from and discharges effluent into are on the Massachusetts Year 2008 Integrated List of Water – Category 5, "Waters Requiring a TMDL," due to nutrients, unknown toxicity, organic enrichment/low DO, thermal modifications, and pathogens." According to the MassDEP's "NARRAGANSETT AND MOUNT HOPE BAY WATERSHEDS 2004-2008 WATER QUALITY ASSESSMENT REPORT" (see http://www.mass.gov/dep/water/resources/wqassess.htm), the designated uses for these segments are as follows:

MOUNT HOPE BAY (MA61-06) Use Summary Table

Designated Uses		Status
Aquatic Life		IMPAIRED Cause: Combined biota/habitat assessment – i.e., thermal modification contributing to collapse of fishery, elevated total nitrogen, elevated chlorophyll *a* Source: Industrial point source discharge, cooling water intake structures (impingement/entrainment), municipal point source discharge, wet weather discharges --point source and combination of stormwater, SSO or CSO
Fish Consumption		NOT ASSESSED
Shellfish Harvesting		IMPAIRED Cause: Elevated total fecal coliform bacteria Source: Unknown
Primary Contact		NOT ASSESSED*
Secondary Contact		NOT ASSESSED*
Aesthetics		NOT ASSESSED*

* Alert Status issues identified, see details in use assessment section

MOUNT HOPE BAY (MA61-07) Use Summary Table

Designated Uses		Status
Aquatic Life		IMPAIRED Cause: Combined biota/habitat assessment – i.e., thermal modification contributing to collapse of fishery, low dissolved oxygen, elevated total nitrogen, elevated chlorophyll *a* Source: Industrial point source discharge, cooling water intake structures (impingement/entrainment), unknown (Suspected sources: discharges from municipal separate storm sewer systems)
Fish Consumption		NOT ASSESSED
Shellfish Harvesting		IMPAIRED Cause: Elevated total fecal coliform bacteria Source: Unknown
Primary Contact		SUPPORT
Secondary Contact		SUPPORT
Aesthetics		NOT ASSESSED

As with the existing permit, this draft permit contains strict limits on the thermal discharge to, and cooling water withdrawals from, Mount Hope Bay. Compliance with these limits is expected to be achieved by the spring of 2012 and will significantly reduce the adverse effects on Mount Hope Bay resulting from the current operation of Brayton Point Station's cooling system. Indeed, these limits call for reductions in both thermal pollution and water withdrawals of more than 90 percent, which should help to address the current impairment of the designated use for Aquatic Life.

5 Limitations and Conditions

The effluent limitations and monitoring requirements of the draft permit may be found in Part I (Effluent Limitations and Monitoring Requirements) of the draft NPDES permit.

6 Permit Basis and Regulatory Explanation

6.1 General Statutory and Regulatory Background

The CWA prohibits the discharge of pollutants from point sources to waters of the United States without authorization from a National Pollutant Discharge Elimination System (NPDES) permit, unless the CWA specifically exempts a particular type of point source discharge from requiring a permit. The NPDES permit is the mechanism used to apply the CWA's pollution control standards and monitoring and reporting requirements directly to particular facilities. The draft NPDES permit for Brayton Point Station was developed in accordance with the CWA, EPA regulations promulgated thereunder, and other applicable federal and state legal requirements. The regulations governing the EPA NPDES permit program are generally found at 40 C.F.R. Parts 122, 124, 125, and 136.

When developing permit limits, EPA must apply both technology-based and water quality-based requirements. To the extent that both may apply, whichever is more stringent governs the permit limits. Put differently, dischargers must satisfy federal technology-based standards at a minimum and must also satisfy any more stringent state water quality-based requirements that may apply. Criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA-promulgated effluent limitations and case-by-case, Best Professional Judgment (BPJ) determinations of effluent limitations under Section 402(a)(1) of the CWA, are set out in 40 C.F.R. Part 125, Subpart A (especially 40 C.F.R. § 125.3). Development of water quality-based permit limits is addressed in, among other provisions, CWA §§ 301(b)(1)(C) and 401, as well as 40 C.F.R. §§ 122.4, 122.44, 124.53 and 124.55.

6.2 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see also 40 C.F.R. Part 125, Subpart A). Technology-based limits are set to reflect the pollutant removal capability of particular treatment technologies that satisfy various narrative treatment technology standards set forth in the CWA. These standards, in essence, define different levels of treatment capability. Specifically, pollutant discharges must be limited to a degree that corresponds with the best practicable control technology currently available (BPT) for certain conventional pollutants, the best conventional control technology (BCT) for other conventional pollutants, and the best available technology economically achievable (BAT) for toxic and non-conventional pollutants.

In general, the statute requires that facilities like Brayton Point Station comply with technology-based effluent limitations as expeditiously as practicable, but in no case later than March 31, 1989 (see 40 C.F.R. §125.3(a)(2)). Since the statutory deadline for meeting any applicable technology-based effluent limits has already passed, NPDES permits must require immediate compliance with any such limits included in the permit. When appropriate, however, schedules

by which a permittee will attain compliance with new permit limits may be developed and issued in an administrative compliance order under CWA § 309(a) or some other mechanism.

When EPA has promulgated national effluent limitation guidelines (ELGs) applying the statute's narrative technology standards (such as the BAT standard) to a particular industrial category's pollutant discharges, then those ELGs provide the basis for the discharge limits included in the NPDES permits issued to individual facilities within that industrial category. 33 U.S.C. §§ 1342(a)(1)(A) and (b). *See also* 40 C.F.R. §§ 122.43(a) and (b), 122.44(a)(1) and 125.3. In the absence of a categorical ELG, however, EPA develops NPDES permit limits by applying the narrative technology standards on a case-by-case, BPJ basis. *See* 33 U.S.C. § 1342(a)(1)(B) and (b)(1)(A); 40 C.F.R. §§ 122.43(a), 122.44(a)(1), 125.3 and 122.1(b)(1).

EPA has promulgated ELGs for the Steam Electric Power Generating Point Source Category, of which Brayton Point Station is a member, but these ELGs only set limits for some of the pollutants discharged by facilities in this industry. *See* 40 C.F.R. Part 423. In such a case, permit limits for some pollutants would be based on ELGs, while limits for certain other pollutants would be based on a BPJ application of the relevant technology standard. *See* 40 C.F.R. § 125.3(c)(3). EPA continues the BPJ BAT determination(s) from the current permit, and includes a new BPJ BAT determination for "nonchemical metal cleaning waste" in the draft permit. See below.

Brayton Point Station discharges many different types of pollutants contained in several wastewater streams, including "nonchemical metal cleaning wastes." Nonchemical metal cleaning wastes may include wastewater from a variety of sources such as the following process equipment washing operations: air pre-heater wash, SCR catalyst wash, boiler wash, furnace wash, stack and breeching wash, fan wash, precipitator wash, and combustion air heater wash.

EPA has promulgated ELGs for the "Steam Electric Power Generating Point Source Category," of which Brayton Point Station is a member. *See* 40 C.F.R. Part 423. These ELGs define "metal cleaning wastes" as:

> any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

40 C.F.R. § 423.11(d). Thus, this regulation defines *metal cleaning waste* to include *any* wastewater generated from *either the chemical or nonchemical cleaning of metal process equipment*. In addition, the regulations define "chemical metal cleaning waste" as "any wastewater resulting from cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning." EPA also uses, but does not expressly define, the term "nonchemical metal cleaning waste" in the regulations when it states that it has "reserved" the development of BAT ELGs for such wastes. 40 C.F.R. § 423.13(f). While the regulations provide no definition of "nonchemical metal cleaning waste," the definitions of *metal cleaning waste* and *chemical metal cleaning waste* make clear that *nonchemical metal cleaning waste* is any wastewater resulting from the cleaning of metal process equipment without

chemical cleaning compounds.

Finally, the regulations define "low volume waste" as follows:

> . . . wastewater from all sources except those for which specific limitations are otherwise established in this part. Low volume wastes sources include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.

40 C.F.R. § 423.11(b). The waste sources listed as examples of low volume wastes include various process and treatment system wastewaters and do not include wastewater generated from washing metal process equipment. Therefore, low volume wastes are distinct from metal cleaning wastes.

The ELGs establish BPT daily maximum and 30-day average limits of 1.0 mg/l for both total copper and total iron in discharges of "metal cleaning waste." On the face of the regulations, these limits apply to both chemical and nonchemical metal cleaning wastes because, as stated above, both are included within the definition of "metal cleaning waste." 40 C.F.R. § 423.12(b)(5), 423.11(d). Thus, the facility's nonchemical metal cleaning wastes are, at a minimum, subject to ELGs' BPT limits of 1.0 mg/l (maximum and 30-day average limits) for both total copper and total iron.

The ELGs also set BAT daily maximum and 30-day average limits of 1.0 mg/L for both total copper and total iron in discharges of *chemical metal cleaning waste*, 40 C.F.R. § 423.13(e), while indicating that EPA has "reserved" specification of BAT ELGs for nonchemical metal cleaning waste. 40 C.F.R. § 423.13(f). While the regulations do not set categorical BAT limitations for nonchemical metal cleaning waste, by expressly reserving the development of BAT limitations, EPA's regulations confirm that the BAT standard applies to nonchemical metal cleaning wastes. EPA explained in the preamble to the Steam Electric Power Plant ELGs, promulgated in 1982, that it was "reserving" the specification of BAT standards for nonchemical metal cleaning wastes because it felt that it had insufficient information regarding (a) the potential for differences between the inorganic pollutant concentrations found in the nonchemical metal cleaning wastes of oil-burning and coal-burning power plants, and (b) the cost and economic impact that would result from requiring the entire industrial category to ensure that nonchemical metal cleaning wastes satisfy the same limits that had been set for chemical metal cleaning wastes. 47 Fed. Reg. 52297 (Nov. 19, 1982).

As explained above, in the absence of a relevant ELG, EPA develops NPDES permit limits by applying the statute's narrative technology standards (such as the BAT standard) on a case-by-case, BPJ basis. *See* 33 U.S.C. § 1342(a)(1)(B) and (b)(1)(A); 40 C.F.R. §§ 122.43(a), 122.44(a)(1), 125.3 and 122.1(b)(1). According to 40 C.F.R. § 125.3(c)(2), in determining technology-based requirements on a BPJ basis, EPA should consider the "appropriate technology

for the category of point sources of which the applicant is a member, based on all available information," and "any unique factors relating to the applicant."

CWA § 301(b) sets forth in narrative form the technology standards that pollutant discharges must satisfy and the deadlines by which compliance with them must be achieved. Effluent limitations based on application of the BAT were to be achieved no later than March 31, 1989. 33 U.S.C. § 301(b)(2). *See also* 40 C.F.R. §§ 125.3(a). According to the CWA's legislative history, "best available" technology refers to the "single best performing plant in an industrial field." *See* 45 Fed. Reg. 68333. EPA also considers the following factors in determining the BAT: (i) age of the equipment and facilities involved; (ii) process employed; (iii) engineering aspects of the application of various types of control techniques; (iv) process changes; (v) the cost of achieving such effluent reductions; and (vi) non-water quality environmental impact (including energy requirements). *See* CWA § 304(b)(2) and 40 C.F.R. § 125.3(d)(3).

EPA has determined that the BAT-based effluent limits for nonchemical metal cleaning waste discharges at Brayton Point Station should be at least as stringent as the applicable BPT limitations for such nonchemical metal cleaning wastes. Therefore, for this draft permit, EPA has determined, based on its BPJ, that any nonchemical metal cleaning wastes at Brayton Point Station should be subject to concentration-based effluent limits of 1.0 mg/L for total copper and total iron. EPA's consideration of the above-listed factors is discussed below.

(i) Age of the equipment and facilities involved

In determining BAT for Brayton Point Station, EPA accounted for the age of equipment and the facilities involved. Brayton Point Units 1, 2, and 3 came online in the 1960's, and Unit 4 in the early 1970s. Brayton Point Station already treats its chemical and non-chemical metal cleaning wastes. There is nothing about the age of the equipment and facilities involved that would preclude the continued use of the same or similar technology to treat nonchemical metal cleaning wastes at the facility.

(ii) Process employed

In determining the BAT for Brayton Point Station, EPA considered the process employed at the facility. Brayton Point Station is a fossil fuel-burning, steam-electric power plant with the primary purpose of generating electrical energy. Treating nonchemical metal cleaning wastes to the same level as chemical metal cleaning wastes does not prevent the permittee from maintaining its primary production processes. The facility already treats chemical and non-chemical metal cleaning waste generated as a result of operations at the facility using pH adjustment and settling basins for solids removal. This treatment process can be, and already is, applied to nonchemical metal cleaning wastes.

(iii) Engineering aspects of the application of various types of control techniques

Technologies to treat metal cleaning wastes for copper and iron are in wide use at large steam-electric power plants around the country. Typically, this treatment process entails pH

adjustment, metal coagulation and solids removal. This is fairly straightforward, standard technology applied to treat many types of wastewaters containing metals. EPA requires nonchemical metal cleaning wastes to receive the same level of treatment as chemical metal cleaning wastes and both must meet mass-based limits equivalent to concentration-based limits of 1.0 mg/L for total copper and total iron.

As mentioned above, technology to treat chemical metal cleaning wastewater already exists at Brayton Point Station. Specifically, this wastewater is treated prior to discharge using pH adjustment and solids removal within neutralization and waste tanks/basins. The Station can utilize the same treatment technologies at the facility to meet the proposed BAT standards for copper and iron for nonchemical metal cleaning wastewater.

(iv) Process changes

EPA has also evaluated the process changes associated with treatment of nonchemical metal cleaning wastes. As discussed, nonchemical metal cleaning wastes are already, and can continue to be, treated using existing technology at the plant. Since metal waste treatment is a separate process from power generation, the treatment of nonchemical metal cleaning wastewater does not impact power generating operations at the Station.

(v) Cost of achieving effluent reductions

EPA does not expect any additional costs since Brayton Point Station already treats chemical and non-chemical wastewater to the same level at its wastewater treatment plant.

(vi) Non-water quality environmental impacts (including energy requirements)

Finally, EPA considers the non-water quality environmental impacts associated with the treatment of nonchemical metal cleaning wastes, including energy consumption, air emissions, noise, and visual impacts at Brayton Point Station. In particular, EPA believes that the permittee will continue to treat the nonchemical metal cleaning wastes with a similar amount of energy usage, air emissions and noise as presently occurs at the facility. As previously stated, chemical and non-chemical wastes are, and can continue to be, treated using the facility's existing treatment technology. EPA has determined the non-water environmental impacts from the steps needed to comply with the BAT effluent limits would be negligible.

Therefore, EPA has established the following BAT limits for non-chemical metal cleaning wastes at BPS:

	Maximum daily (mg/l)	Max 30-day average (mg/l)
Copper, Total	1.0	1.0
Iron, Total	1.0	1.0

The draft permit's effluent monitoring requirements have been established to yield data representative of the discharges under the authority of CWA §§ 308(a) and 402(a)(2), and according to regulations set forth at 40 CFR § 122.41(j), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide consistent information on the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures are to be found in 40 CFR 136, unless other procedures are explicitly required in the permit.

6.3 Water Quality-Based Requirements

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water-quality standards. See CWA §§ 301(b)(1)(C) and 401.

State water quality standards (WQS) provide a classification for all the water bodies in the state and specify the "designated uses" and numeric and narrative water quality criteria that water bodies in each classification should be able to achieve. For example, a water body might be given the "B" classification and the designated uses and numeric and narrative criteria for B waters might include things like maintaining water quality acceptable for fishing, swimming and other recreational purposes (a designated use), prohibiting discharges that alter the water body's natural temperature variations (a narrative criterion), and maintaining a dissolved oxygen content of at least 75 percent of saturation (a numeric criterion). State WQS also contain antidegradation requirements to ensure, among other things, that once a use is attained, it will not be degraded. Permit limits must then be devised so that discharges and cooling water withdrawals do not cause violations of these WQS.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is, or may be, discharged at a level that causes or contributes to, or has the "reasonable potential" to cause or contribute to, a violation of WQS. See C.F.R. § 122.44(d)(1). A violation would occur, for example, if the projected or actual in-stream concentration exceeds the applicable criterion. In determining "reasonable potential," EPA considers: (1) existing controls on point and nonpoint sources of pollution; (2) the pollutant concentration and variability in the effluent and receiving water as determined from the permit application, monthly DMRs and State and Federal water quality reports; (3) sensitivity of relevant species to toxicity testing; (4) the statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, March 1991, EPA/505/2-90-001 in Section

3; and, where appropriate, (5) dilution of the effluent in the receiving water.

When using chemical-specific numeric criteria to develop permit limits, both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentrations, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 C.F.R. § 122.44(d)(1) and are implemented under 40 C.F.R. § 122.45(d).

Under CWA § 401, EPA may not issue a NPDES permit unless it first obtains a certification from the state confirming that its WQS will be satisfied or the state waives its certification rights. If the state issues a certification with conditions, then the permit must conform to the conditions. If the state denies certification, the permit may not be issued. See 33 U.S.C. §§ 1341(a)(1) and (d); 40 C.F.R. §§ 124.53 and 124.55.

As stated above, state WQS include: (1) designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria to protect the designated use(s); and (3) antidegradation requirements. The Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00, include these elements. The State will limit or prohibit discharges of pollutants and associated cooling water withdrawals to assure that the applicable WQS for the receiving waters are satisfied. These standards also include requirements for the control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless site-specific criteria are established. EPA has determined that the conditions of the proposed draft permit will satisfy Massachusetts WQS. EPA has determined that the conditions of the draft permit will also satisfy the State of Rhode Island WQS (the Rhode Island border runs through Mount Hope Bay and therefore its waters could potentially be affected by Brayton Point Station’s operation).

7 Facility Information and Outfall Descriptions

The facility is located on Brayton Point in Somerset, MA. Brayton Point is a peninsula formed by the confluence of the Lee and Taunton Rivers, both of which flow into Mount Hope Bay. The Station was built in the early 1960's.

Brayton Point Station consists of four units that generate electricity using steam turbines. Steam is produced in the facility's boilers by heating water using fossil fuels (coal, oil, and/or natural gas). The table below describes these units.

UNIT	CAPACITY (MEGAWATT)	START DATE	FUEL
1	250	1963	Coal
2	250	1964	Coal
3	650	1969	Coal
4	450	1974	Oil/Natural Gas

The plant site, including the locations of the Intake Structure and the Discharge Canal, is shown on Figure 1 in Attachment A.

This draft permit addresses the discharges listed below (see also the Station Water Use diagram, Figure 2 in Attachment A). The majority of the station's effluent is discharged at the end of the "discharge canal" (Outfall 001) into Mount Hope Bay. Outfalls 017A and 017B are point sources that discharge on the Taunton River side of the facility.

Discharge Number	Max/Ave Flow Rate	Discharge Description
001	74/72 MGD	Circulating Water System Discharge (Cooling Tower Blowdown), Wastewater Treatment System
003 (Internal outfall discharges to discharge canal, then 001)	70/Report MGD	Cooling Tower Blowdown
004 (Internal outfall discharges to discharge canal, then 001)	4/2 MGD[1]	Wastewater Treatment System (WWTS) (Low Volume Waste Streams, Ash Water, Coal Pile Runoff)
005 (Internal outfall discharges to 004)	2.03/Report MGD	Metal Cleaning Rinse Water
017A	0.073/Report MG/Hr	Intake screen wash
017B	0.146/Report MG/Hr	Fine debris auto-strainer backwash

[1]The station may recycle as much as 2 MGD from the Wastewater Treatment Facility to the cooling tower lower supply basin.

7.1 Outfall 001 (Point Source Discharge to Mount Hope Bay)

Outfall 001 is the facility's point source discharge to Mount Hope Bay. The effluent discharged through outfall 001 is the combined discharge from internal outfalls 003, 004 and 005 (see table above: outfall 005 discharges to outfall 004, the WWTS). The Station's temperature, total residual oxidant concentration, total recoverable copper concentration, flow, whole effluent toxicity level, pH, and Spectrus CT1300 concentration are all limited and/or monitored at outfall 001 prior to discharge to Mount Hope Bay.

7.2 Internal Waste Streams

7.2.1 Internal Outfall 003 (Cooling Tower Blowdown)

The existing permit, based on the preliminary engineering that had been completed at the time, identifies three sets of mechanical draft cooling towers, each with its own blowdown discharge (designated as internal outfalls 003A, 003B, and 003C). As a result of design revisions and final engineering work, the final cooling tower system at BPS has ended up with two natural draft cooling towers with only one internal blowdown waste stream (split into two discharge pipes). Cool water will exit each cooling tower, mix in the "upper discharge basin", and then will be recycled back through the condensers to absorb waste heat. In order to maintain proper water chemistry in the system, a relatively small amount of water from the circulating system is discharged from the upper discharge basin (referred to as "blowdown"). There are two pipes that discharge blowdown from the upper discharge basin. However, since they both discharge water with the same characteristics, it is only necessary to sample blowdown from one pipe for permitting purposes (except for flow, which will be the combined flow from both pipes). Therefore, the draft permit designates one internal outfall, 003, for cooling tower blowdown. Flow from outfall 003 will empty into the Discharge Canal and be discharged to Mount Hope Bay through Outfall 001 (see Figure 3 in Attachment A).

The technology-based effluent limits for cooling tower blowdown do not depend on whether natural draft or mechanical draft towers are used. Therefore, apart from the number of internal blowdown waste streams, no adjustment of permit limits is required to account for the station's decision to use natural draft towers instead of mechanical draft towers.

The station's heat load will be limited and monitored at internal outfall 003.

7.2.2 Internal Outfall 004 (Wastewater Treatment System)

The existing permit identifies two outfalls, 004A and 004B, for the Wastewater Treatment System (WWTS). The existing permit allowed for two distinct outfalls because the facility needed to install, and operate, new air pollution control equipment during the permit term. The new equipment requires a wastewater discharge to the WWTS. Outfall 004A does not account for this new waste stream, but outfall 004B does. The facility has completed the equipment installation, adding the new discharge to the WWTS and rendering outfall 004A unnecessary.

Therefore, the draft permit contains only one outfall for the wastewater treatment system, designated as outfall 004.

The WWTS treats a variety of wastewater streams at the facility including: ash sluice water; floor and equipment drains; cooling tower cleaning water; demineralizer regeneration waste; boiler blowdown; chemical cleaning rinse water; reboiler water; boiler seal water; coal pile runoff, wash water; and stormwater.

7.2.3 Internal Outfall 005 (Treated Metal Cleaning Wastewater)

The draft permit contains a new internal outfall, designated as internal outfall 005, specifically for Brayton Point Station's metal cleaning waste (chemical and nonchemical cleaning). Dilution is not an acceptable means of achieving compliance with technology standards.

In most cases, the permittee collects the waste from its initial chemical metal cleaning operations for off-site disposal. The facility then "rinses" the equipment that has previously been chemically cleaned. This rinse water is routed to the WWTS for treatment. Although much less concentrated than the original chemical cleaning waste, EPA considers this rinse water metal cleaning waste under 40 CFR Part 423.

Generally, before the metal cleaning wastewater mixes with any other waste streams it must meet the technology based limits for copper and iron (1.0 mg/l), since dilution is not an acceptable method of treatment. However, the permittee has submitted sampling data indicating that iron is present, often at high levels, in many waste streams entering the WWTS. This is true for times when metal cleaning waste water is entering the WWTS, and during times when metal cleaning waste is not entering the WWTS. This is not the case for copper. Therefore, internal outfall 005 is an internal outfall for copper monitoring, but not for iron. This ensures that metal cleaning waste concentrations do not exceed the BAT copper limits, prior to mixing with any other wastewater. Iron will be monitored after treatment in the WWTS.

See section 9.3.4 of this document for derivation of iron limit, and 9.4.2 for copper limit derivation.

7.3 Outfall 017A (Intake Screen Wash Discharge to Mount Hope Bay)

The Taunton River intake will provide all of the make-up water for the closed-cycle cooling system. This is a modification from the design upon which the existing permit limits were based (namely, a mechanical draft cooling tower system using Unit 4's Lee River intake structure to obtain make-up water).

The existing permit allows the use of the screen wash discharge to the Taunton River on a limited basis (122 hours per year). However, since the Taunton River will now provide make-up for the entire closed-cycle system, this operational restriction has been removed from the permit.

The draft permit allows for the continuous operation of screen wash, which is discharged to the Taunton River through outfall 017A.

7.4 Outfall 017B (Auto-wash Strainer Backwash to Mount Hope Bay)

The facility needs to install and operate an "auto-wash strainer" after the travelling screens as part of the closed cycle system. The purpose of the auto-wash strainer is to ensure that material that passes through the traveling screens (for example, a small piece of sea grass) does not enter the cooling tower. Such material could clog and/or foul the cooling tower "fill", thereby interfering with its proper operation. As the auto-wash strainer traps debris, it will be periodically backwashed, either at a preset pressure differential or at a preset timeframe. The auto-wash strainer backwash will discharge to the Taunton River through a new outfall, designated as outfall 017B in the draft permit.

8 Pollutants of Concern

EPA has reviewed analytical data from the permittee's renewal application, relevant water quality classification information (CWA § 303(d) lists), Effluent Limitation Guidelines, water quality criteria and other technical information, and has identified the following pollutants of concern and adverse cooling water intake effects.

8.1 Heat

Brayton Point Station is converting its "open-cycle" cooling system (which discharges a large amount of waste heat directly to Mount Hope Bay) to a "closed-cycle" system (which will discharge most of the waste heat to the atmosphere). Some waste heat, although in a much smaller quantity, will still be discharged as a heated effluent directly to Mount Hope Bay (1.7 trillion Btus versus 42 trillion Btus, (annually), this is a 96 % reduction in thermal pollution to Mount Hope Bay).

8.2 Total Residual Oxidants and Chlorine

Power plants generally use an oxidant such as chlorine to prohibit the growth of organisms on the condenser tubes and other related cooling equipment. Power plants that use cooling towers also maintain a level of chlorine appropriate to control biofouling of the cooling tower "fill" material. BPS will use chlorine to keep its condensers clean (in addition to mechanical cleaning of the condenser tubes using the SIDTEC system), and it will also dose the cooling towers with chlorine to ensure that the fill material does not become fouled with organic matter.

8.3 Biocides (Spectrus CT1300)

The permittee requests the continued use of the molluskicide Spectrus CT1300, which prevents mussels from growing in the intake system. The Material Data Safety Sheet for this product lists the hazardous ingredients as Alkyl Dimethly Benzyl Ammonium Chloride and Ethyl Alcohol (Ethanol).

8.4 Oil and Grease

Oil and Grease has the potential to be discharged to the Mount Hope Bay from a variety of sources at the plant.

8.5 Total Suspended Solids (TSS)

As with oil and grease, TSS has the potential to be discharged from a variety of sources at the plant.

8.6 Metals and Metalloids

Cooling tower maintenance chemicals have the potential to contain trace amounts of metals. Additionally, metals and/or metalloids may enter the WWTS from a variety of sources around the facility including wastewater resulting from metal cleaning operations at the plant, or from the air pollution control equipment wastewater stream.

EPA has reviewed metal and metalloids quarterly analytical test results (2007 – 2011) from the wastewater treatment plant effluent (internal outfall 004) and has determined that the only metal (or metalloid) that has a reasonable potential to cause or contribute to an exceedence of water quality standards is copper.

8.7 Toxics

Brayton Point Station uses a variety of chemicals and generates a variety of wastewater streams. These chemicals and/or wastestreams, either individually or combined, could result in the discharge reaching concentrations that are toxic to some marine organisms.

8.8 pH

The discharge from Brayton Point Station has the potential to affect the pH of the receiving water.

8.9 Priority Pollutants

Brayton Point Station is adding cooling towers to reduce its cooling water withdrawals as well as reduce its thermal discharge to Mount Hope Bay. Cooling tower maintenance chemicals have the potential to contain priority pollutants.

Priority pollutants could also be discharged in the wastewater effluent. EPA has reviewed priority pollutant quarterly analytical test results (2007 – 2011) from wastewater treatment plant effluent (internal outfall 004). Based on this review, EPA has determined that, apart from copper, there is no reasonable potential to violate any priority pollutant water quality standard.

8.10 PCBs

Although PCBs are no longer used in transformer fluid, the ELGs at 40 CFR Part 423 prohibit the discharge of PCBs at power plants. Therefore, PCBs are prohibited from discharge.

8.11 Water Treatment Chemicals

The facility uses a variety of water treatment chemicals during its everyday operation. These chemicals may be used to: 1) control biofouling in the cooling water system; 2) generate steam; 3) regenerate the demineralizers; 4) control pH; or, 5) perform routine maintenance such as metal cleaning.

A list of chemicals, the yearly amounts, and the purpose for use at BPS is found below.

CHEMICAL NAME	AMOUNT, LBS/YEAR	PURPOSE
Ammonia Biflouride	9,800	Chemical Clean
Hydroxyacetic Acid	68,000	Chemical Clean
Formic Acid	29,000	Chemical Clean
Hydrochloric Acid	47,000	Chemical Clean
Hydrofloric Acid	500	Chemical Clean
Ammonium Bicarbonate	3,200	Chemical Clean
Ammonium Carbonate	1,000	Chemical Clean
Ammonium Hydroxide, 28%	20,000	Chemical Clean
EDTA	150,000	Chemical Clean
Sodium Hydroxide, 50%	400,000	Demineralizer Regeneration
Sodium Hydroxide, 50%	53,000	Chemical Clean
Sodium Hydroxide, 25%	50,000	Bottom Ash pH control
Sodium Hydroxide, 100%	200	Steam Cycle
Sodium Hypochlorite	100,000	Condenser Biofouling Control
Sodium Hypochlorite (12-15%)	3,000,000	Cooling Tower Biofouling Control
Sodium Hypochlorite	10,000	Closed Cycle Biofouling Control (spot)

CHEMICAL NAME	AMOUNT, LBS/YEAR	PURPOSE
Sodium Bisulfite	744,000	Dechlorination
Sodium Bisulfite	50,000	Cooling Tower Biofouling Control Treatment
Disodium Phosphate	1,000	Steam Cycle
Trisodium Phosphate	1,000	Steam Cycle
Sulfuric Acid, 98%	300,000	Demineralizer Regeneration
Hydrazine, 28%	2,000	Steam Cycle
Hydrazine, 28%	4,900	Chemical Clean
Spectrus CT1300	50,000	Biocide
Spectrus DT1400 and 1401		Detoxify Spectrus CT1300
Sodium Nitrite	1,000	Bearing Water Treatment
Sulfuric Acid	170,000	WWTS Treatment
Sulfuric Acid	300,000	Closed Cycle Anti-Scalant
Foamtrol AF3551	0.08 mg/l per minute	Foam Control
Depositrol 6501	80,000	Dispersant//Corrosion Inhibitor

As previously discussed, Spectrus CT1300 is used as a biocide. The permittee's application states that, in order to meet the current permit's Spectrus CT1300 limit after conversion to closed-cycle cooling, is will be necessary to use Spectrus DT1400 and/or DT1401 to "de-toxify" the Spectrus CT1300. Therefore, EPA is allowing the use of Spectrus DT1400 and DT1401.

9 Derivation of Effluent Limits: Application of Technology, Water Quality and Other CWA Requirements to Brayton Point Station

The derivation of the draft permit limits is based on a combination of: 1) current permit conditions (anti-backsliding prohibits a new permit from making conditions less stringent than the corresponding conditions in an existing permit, unless certain exceptions apply); 2) requirements pursuant to the Steam Electric Power Generating Facility ELGs (40 CFR Part 423); 3) CWA Sections 316(a) and (b); and, 4) Commonwealth of Massachusetts' WQS (314 CMR 4.00).

9.1 Outfall 001 (Point Source Discharge to Mount Hope Bay)

9.1.1 Heat, Temperature, and delta T

The current NPDES permit limits the amount of heat discharged by the facility to Mount Hope Bay to 1.7 Trillion British Thermal Units (BTUs) per year. This is approximately a 96 percent reduction in heat load from the level that was allowed in the prior permit, which was, in effect, 42 Trillion BTUs per year (discharged when the facility operates in open-cycle cooling mode). The amount of heat discharged from BPS will be determined by, among other things, monitoring the blowdown stream, at internal outfall 003.

The current permit also sets a maximum temperature limit of 95 degrees Fahrenheit (F).

The existing permit's thermal discharge limits, set under section 316(a) of the Clean Water Act as a variance to BPJ BAT technology standards and Massachusetts water quality based limits, also allowed Brayton Point Station to operate on an open-cycle basis for 122 hours per year and set a limit on the difference between the temperature of the intake water and the effluent of no greater than 22 degrees F (delta T).

The delta T limit was carried forward in the existing permit from the 1993 permit (which authorized unlimited open-cycle cooling) because the current permit allows a limited amount of once-through cooling. The allowance to switch from closed-cycle cooling to open-cycle for 122 hours per year was intended to give the permittee some additional operational flexibility, while still meeting the maximum thermal discharge limit of 1.7 Trillion BTUs per year that was derived from the analysis under CWA § 316(a) .

As a result of design changes and further detailed engineering work on the closed-cycle cooling system, Dominion requests changes to certain parameters related to the thermal discharge limits. First, and importantly, Dominion is not seeking any change to either the permit's discharge heat load of 1.7 Trillion BTUs per year; or the maximum temperature limit of 95 degrees F. Second, Dominion indicates that it will not seek to operate on an open-cycle basis at any time and, therefore, the new draft permit eliminates the allowance for 122 hours of once-through cooling operation. Third, Dominion asks that the permit's delta T limit of 22 degrees F be eliminated and replaced with a reporting-only requirement for delta T. This issue is discussed below.

Dominion explains that because the November 2001 316 Demonstration Study (submitted in response to an EPA CWA Section 308 request) included only conceptual engineering for closed-cycle cooling, the actual delta T, when operating in closed-cycle mode, was not fully evaluated. Since that time Dominion moved past conceptual engineering into final engineering and it now is apparent that the delta T of the much smaller thermal discharge resulting from the cooling tower operation will, at times, exceed 22 degrees F. The delta T will vary *according to meteorological conditions* (since the exit temperature of the water from the cooling towers is now a function of the ambient wet bulb temperature). Given that it has no control over meteorological conditions, Dominion requests elimination of the permit limit for delta T to reflect actual closed-cycle operation.

EPA agrees that a plant's delta T, when operating using cooling towers, depends on the ambient

weather condition and the river water temperature, and that these conditions will result in variation in the delta T of the discharge. Previously, when operating in open-cycle mode, the delta T (temperature increase) was directly related to how much waste heat was transferred to the condenser cooling water.

The existing permit's yearly heat load limit was based on an assessment of environmental impacts from several plant operating scenarios. EPA (and MassDEP) asked Dominion to evaluate the impact of unrestricting the delta T, together with increasing the allowable maximum flow rate from the cooling towers (including the blowdown to account for Unit 2 operation, which was mistakenly omitted from the total blowdown value in the submissions supporting the existing permit) using the same model that was used to develop the current thermal load. The results indicate that the new operating scenarios - a thermal discharge limit of 1.7 Trillion BTUs per year, together with eliminating the provision allowing limited once-through cooling, retaining the 95 degree F maximum temperature limit, and unrestricting the delta T – continue to be protective of the balanced, indigenous population of fish, shellfish and wildlife in Mount Hope Bay. Moreover, since EPA is removing the permit condition that allows periods of once-through cooling, the need to include a delta T limit no longer applies. The draft permit, therefore, requires Brayton Point to report the delta T.

In summary, the thermal heat load limit remains the same as in the existing permit - a yearly total not to exceed 1.7 Trillion BTUs. This limit is based on the same CWA section 316(a) variance from the BPJ BAT technology and water quality limits as the existing permit. The biological basis of the maximum temperature of the discharge also remains unchanged in the draft permit – it may not exceed 95 °F. The draft permit eliminates the allowance to operate in the open cycle mode for 122 hours per year, and replaces the delta T 22 °F limit with a "report- only" requirement.

9.1.2 Total Residual Oxidants

Total Residual Oxidant (TRO) levels are limited in the existing permit. The maximum daily TRO discharge concentration limit is 0.065 mg/l, and the average monthly TRO limit is 0.0375 mg/l. These limits are water quality based and are carried forward in the draft permit in accordance with antibacksliding regulations. They are also more stringent than the technology-based limits for chlorine (see below). The TRO limits shall be measured at outfall 001, prior to the discharge of effluent into Mount Hope Bay.

9.1.3 pH

The pH range for Class SB marine waters is from 6.5 to 8.5 standard units (s.u.), as defined in the Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00. The pH of the effluent shall be measured at outfall 001, prior to its discharge to Mount Hope Bay.

9.1.4 Toxicity

EPA's **Technical Support Document for Water Quality-Based Toxics Control**, **March 1991**, **EPA/505/2-90-001**, recommends using an "integrated strategy" containing both pollutant specific (chemical) approaches and whole effluent toxicity (biological) approaches to better detect toxics in effluent discharges. Such information may then be used to control the entrance of those toxic pollutants into the nation's waterways. Pollutant-specific approaches, such as those in the Gold Book and State regulations, address individual chemicals whereas whole effluent toxicity approaches evaluate interactions between pollutants, i.e., the "Additive," "Antagonistic" and/or "Synergistic" effects of pollutants. In addition, the presence of unknown toxic pollutants can be discovered and addressed through whole effluent analysis.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts, as do Massachusetts WQS, which state, in part, that "all surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." The NPDES regulations under 40 CFR Section 122.44(d)(1)(v) require whole effluent toxicity (WET) limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

EPA Region I adopted the recommended "integrated strategy" on July 1, 1991, for use in permit development and issuance. The Region modified this strategy to protect aquatic life and human health in a manner that is both cost-effective as well as environmentally protective.

The toxicity of Brayton Point Station's effluent after conversion to closed-cycle cooling is unknown at this time. Therefore, including a WET test monitoring requirement in the draft permit is necessary to gather information to support a determination of whether or not there is a "reasonable potential" that this effluent will cause or contribute to an exceedence of the state's narrative water quality criterion prohibiting toxic discharges. This approach is consistent with that recommended in Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001.

Requiring WET testing is a proactive method of carrying out EPA's Congressional mandate to prevent the discharge of toxic substances into the Nation's waterways. Also, EPA cannot make a "reasonable potential" determination on an individual discharge without first evaluating WET test results evaluating a given facility's discharge.

Therefore, the draft permit requires the permittee to report the results of chronic (and modified acute) WET tests using Inland Silverside (Menidia beryllina), acute WET tests using Mysid Shrimp (Mysidopsis bahia) and chronic WET tests using Sea Urchin (Arbacia punctulata) on a quarterly basis. A 24-hour composite sample is the required "sample type" for WET testing. If after eight consecutive sampling periods (two years), no toxicity is found, the permittee may request a reduction in toxicity testing to twice per year.

The existing permit requires that BPS collect Day 1 (acute) toxicity samples during metal cleaning, discharge of Spectrus CT1300, cooling tower blowdown, and application of foam controlling agent. The permit allows a variance from the sampling scheme if the station can provide justifiable operating reason(s) why the scheme cannot be met. In the past years tests, BPS has provided such a justification, and EPA has granted such a variance. The operational reason (apart from including discharge of cooling tower blowdown, which has not been discharged in the past) is that metal cleaning is conducted during plant shutdown, and, therefore, the station is not discharging Spectrus CT1300 or foam control.

Therefore, EPA is retaining the quarterly WET testing requirements, but is removing the day 1, day 2 and day 3 sampling collection schemes.

The draft permit specifies that toxicity tests be conducted during “normal” station operation (three tests per year) and during station “shutdown”, when metal cleaning is happening (one test per year). For this permit, ‘normal operation” means the day–to-day process of generating and selling electricity. “Shutdown” means that the station is undergoing maintenance and is not making electricity for sale. The permittee will be required to document and submit to EPA the various scenarios under which toxicity testing has been performed (i.e., identify internal outfall discharges, chemical use and concentration, etc).

If these WET tests detect toxicity, the Regional Administrator of EPA or his or her designee (“The Regional Administrator”) and the Commissioner of MassDEP or his or her designee (“The Commissioner”) may decide to modify the permit. Such modifications may include toxicity and/or other limits or conditions that adequately protect the waters receiving Brayton Point Station’s pollutant discharges during the remaining life of the permit. EPA expects that the results of these toxicity tests will be considered "new information not available at permit development"; therefore, the permitting authority would be allowed to use this information as the basis for modifying an issued permit under authority in 40 C.F.R. § 122.62(a)(2).

9.1.5 Biocides (Spectrus 1300)

The existing permit allows the use of the biocide Spectrus 1300 to control the growth of mussels at the facility. The permitted discharge concentration shall not exceed 0.20 parts per million. This limit is based on aquatic toxicity information for Mysid Shrimp (LC_{50}) and the detection limit found in the compound’s Material Safety Data Sheet.

The facility will use Spectrus DT1400 or its equivalent to de-toxify the discharge, as needed. The permit limit is carried forward in the draft permit.

Spectrus CT1300 and chlorine are the only biocides approved for use.

9.1.6 Copper

The existing permit contains a water quality based limit based on the discharge of copper from the WWTS (internal outfall 004). EPA has reviewed the outfall 004 sampling data for copper and re-affirms the reasonable potential for the discharge of copper from Brayton Point Station to cause or contribute to ambient exceedences of the acute and/or chronic Massachusetts water quality copper standards. Therefore the draft permit contains water quality based copper limits, although EPA is revising the copper limits in the draft permit (to slightly more stringent values than existing permit) based on new information, as follows.

Copper Acute criteria (dissolved, revised since existing permit) = 4.8 µg/l
Copper Chronic criteria (dissolved, revised since existing permit) = 3.1 µg/l
Dilution Factor (retained from current permit) = 5
Conversion Factor to translate from total dissolved (criteria) to total recoverable (permit limit) = 0.96

Convert acute total dissolved to total recoverable:

4.8 µg/l/0.96 = 5.0 µg/l

Permit Limit (acute) = standard x dilution factor = 5.0 µg/l x 5 = 25 µg/l = 0.025 mg/l

Convert chronic dissolved to total recoverable

3.1 µg/l/0.96 = 3.23 µg/l

Permit Limit (chronic) = standard x dilution factor = 3.23 µg/l x 5 = 16.2 µg/l
= 0.0162 mg/l

This review indicates the need to slightly revise the permit limits for copper (25 µg/l versus 28.9 µg/l for acute, and 16.2 µg/l versus 18.4 µg/l for chronic).

The draft permit includes these revised, lower copper limits. The draft permit requires weekly monitoring for copper.

9.1.7 PCBs

Pursuant to 40 CFR Part 423, discharge of polychlorinated biphenyl compounds (PCBs) is prohibited. BPS has requested that the test method that is currently used to monitor compliance with this zero discharge standard be used throughout the term of the permit, regardless of whether more stringent PCB test methods are developed.

BPS' concern is based on the fact that PCBs are considered ubiquitous in the environment, and that the derivation of the zero discharge standard in 40 CFR Part 423 is based on controlling the discharge from leaking transformers, which in the past contained PCBs. As more sensitive tests methods are developed, they are likely to detect levels above the zero discharge standard due to

the presence of PCBs generally in the environment, and not from BPS' operations.

EPA agrees maintaining the test method from the existing permit is protective and meets the intent of 40 CFR Part 423. Therefore the draft permit states that PCBs shall be measured using Method 608, as listed in 40 CFR Part 136.

9.1.8 Flow

The existing permit allows a maximum daily flow of 42 MGD, and a monthly average flow of 40 MGD. This is the combined flow from the cooling tower blowdown and the WWTS. This value was derived using information submitted by Brayton Point Station's former owners.

During the more advanced stages of cooling tower design, Dominion discovered that Brayton Point's previous submission regarding the amount of make-up and blowdown that would be required to properly operate the planned cooling towers at the station mistakenly omitted the volume for generating unit 2. Correcting this error by adding in the make-up water for unit 2 (about 13 MGD) increases the total amount of intake water needed from 56.2 to about 70 MGD. Dominion has requested, therefore, that the draft permit intake allowance be increased to the latter amount.

Dominion also requests that the cooling tower blowdown discharge flow rate be increased to a maximum of 70 MGD. Dominion requests this change because more detailed weather simulations used during the detailed design of the natural draft cooling towers indicate that there will be limited periods of time in which very little or no evaporation of water will take place in the cooling tower (during winter operation). During these periods, it will be necessary for the water flows to balance so that the volume of the discharge must equal that of the intake.

EPA agrees that these changes requested by Dominion make sense and has included them in the new draft permit. These changes are needed to correct the omission of unit 2 flow and in order to enable the station to properly manage the cooling towers in all anticipated weather conditions. Thus, EPA is setting the maximum cooling tower blowdown discharge flow rate to equal the maximum allowable intake withdrawal. When the discharge from the wastewater treatment plant is taken into account, the required flow is 74 MGD and the monthly average value is increased to 72 MGD. The draft permit applies these flow rate limits at outfall 001.

9.2 Internal Outfall 003 (Cooling Tower Blowdown)

The existing permit limits for cooling tower blowdown were derived in accordance with the technology-based effluent limit guidelines (ELGs) found at 40 CFR § 423.13(d)(1).

EPA has established BAT limits for free available chlorine, chromium, zinc, and the 126 priority pollutants for cooling tower blowdown. These requirements are found at 40 CFR § 423.13(d)(1).

The technology-based cooling tower blowdown limits apply prior to mixing with any other waste stream(s). As previously discussed, each of the two cooling towers discharges into the "upper discharge basin." From there, the majority of the now cool water is re-circulated back through the condensers to absorb waste heat. A small portion of water is discharged from the upper discharge basin, which is referred to as "blowdown." Two separate pipes transport the blowdown from the upper basin to the discharge canal, where the blowdown mixes with WWTS effluent in is discharged through outfall 001 to Mount Hope Bay. Since the two pipes transport water with the same characteristics, it is only necessary to sample from one pipe.

9.2.1 Flow

As explained in section 9.1.8 above, EPA is allowing an increase, to a maximum of 70 MGD, for cooling tower blowdown. This corrects a mistake with regard to the necessary volume of cooling tower blowdown that was submitted to EPA during the preliminary design phase for converting BPS to closed-cycle cooling.

Flow will be measured using in-line flow meters for both pipes transporting blowdown. The values will be summed and reported as the total daily blowdown flow.

9.2.2 Heat

The existing permit contains reporting only requirements on the discharge of heat from the then anticipated three internal cooling tower blowdown streams. The permit requires the values to be added for the three internal outfalls and reported as one value under outfall 001.

Since final design has resulted in there being only one blowdown stream (albeit in two pipes), the heat discharged from the station will be calculated and limited at a single location (internal outfall 003).

Similar to the existing permit, the draft permit specifies that the monthly heat load be calculated by taking the difference between the intake and discharge temperature (delta T) and multiplying it times the effluent flow rate, on an average daily basis. The average daily heat load is summed to calculate the monthly value. The monthly heat loads are summed and the year's heat load is to be reported (January through December, and reported with the next January Discharge Monitoring Report). This value may not exceed 1.7 Trillion BTUs.

9.2.3 Free Available Chlorine (FAC)

The existing permit limits the amount (concentration) and the length of time that FAC that may be discharged from cooling towers at BPS. This is a technology derived limit (40 CFR Part 423).

The ELGs specify that the instantaneous maximum FAC concentration in cooling tower blowdown may not exceed 0.5 mg/l, and that the average daily concentration may not exceed 0.2 mg/l. The daily average is specified as a single period of chlorination, not to exceed two hours, unless the utility can demonstrate that the units in a particular location cannot operate at or below

this level of chlorination.

Since the facility is installing two new natural draft cooling towers, it may be necessary to chlorinate for longer periods than two hours to ensure the cooling tower "fill" material does not become fouled with organic matter. The facility expects that it may also need to de-chlorinate the effluent in order to ensure that chlorine levels are below detection. The permit authorizes chlorination for longer than two hour and allows the use of Sodium Bisulfite for de-chlorination.

EPA is retaining the concentration based limits in the draft permit but, as explained above, is allowing the facility to chlorinate for longer than two hours, as necessary.

9.2.4 Priority Pollutants

The discharge of any of the 126 priority pollutants, except chromium and zinc, in cooling tower blowdown is prohibited by 40 CFR Section 423.13(d)(1). This prohibition is contained in the existing permit and continued in this draft permit. The ELGs allow, at the permitting authority's discretion, the use of engineering calculations to demonstrate compliance with this prohibition (i.e., a mass balance which shows that any of the priority pollutants contained in cooling tower chemicals would not be detectable in the final discharge). This option for demonstrating compliance is included in the draft permit.

9.2.5 Chromium and Zinc

The existing permit allows maximum daily discharges of chromium (0.2 mg/l) and zinc (1.0 mg/l) from cooling towers due to the addition of cooling tower maintenance chemicals. BPS has asked that this limit be removed since it will not use cooling tower chemicals that contain either metal.

EPA is replacing this limit in the draft permit with a prohibition on the discharge of any priority pollutant (including chromium and zinc), due to cooling tower chemical addition.

9.3 Internal Outfall 004 (Wastewater Treatment System)

Internal outfall 004 discharges effluent from the plant's wastewater treatment system into the discharge canal, where it mixes with cooling tower blowdown. The combined waste streams are then discharged to Mount Hope Bay through outfall 001.

The effluent limitations applied in the draft permit for outfall 004 are taken from the ELGs found at 40 CFR Part 423, and the BPJ BAT derivation found in section 6.2 of this Fact Sheet (the ELGs "reserved" non-chemical metal cleaning waste BAT requirements for future development). Specifically, EPA has established technology-based limits for low volume wastes, ash transport water, metal cleaning wastes (chemical and non-chemical), and coal pile runnoff.

The parameters addressed include: total suspended solids (TSS), oil and grease, pH, copper and iron.

The Steam Electric Power Plant ELGs, *see* 40 C.F.R. Part 423, require that when separately regulated waste streams (i.e., "waste streams from different sources") are combined for treatment or discharge, each waste stream must independently satisfy the effluent limitations applicable to it. 40 C.F.R. §§ 423.12(b)(12), 423.13(h). *See also* 40 C.F.R. § 125.3(f) (technology-based treatment requirements may not be satisfied with "'non-treatment'" techniques such as flow augmentation). Thus, it is not acceptable to determine compliance for different wastewater streams after they have been diluted with each other, unless the effluent limits applicable to them are the same (although a facility could combine waste streams with different limits if they were willing to meet the most stringent limit). *See* 40 C.F.R. § 122.45(h) (internal waste streams).

The low volume and ash wastes may be combined prior to sampling for compliance because the effluent limitations for these two waste streams are the same. Similarly, the chemical and nonchemical metal cleaning wastes may be combined prior to compliance monitoring because they are subject to the same limitations. BPS may combine the coal pile runoff with the other waste streams if it's willing to treat the low volume waste streams to a more stringent level (the regulations allow 50 mg/l TSS for coal pile runoff whereas 100 mg/l is allowed for other low volume waste streams that enter the WWTS). Monitoring data from outfall 004 shows that BPS' WWTS routinely treats TSS to low levels (see Attachment B). Therefore, BPS is it willing to accept the more stringent 50 mg/l TSS limit for outfall 004, thereby avoiding the need to separately monitor low volume and coal pile runoff.

Generally, metal cleaning wastes may not be combined with other types of wastes prior to compliance monitoring, because the metal cleaning wastes are subject to additional effluent limitations for copper and iron. Applying the copper and iron limit of 1.0 mg/l to the combined waste streams potentially allows permittees to meet the limit by diluting the metal cleaning waste stream rather than treating it, which, as stated above, is not an acceptable means of compliance.

In addition, if metal cleaning wastes are greatly diluted, removal of the metals in the metal cleaning wastes during treatment becomes more difficult and less efficient. Therefore, the metal cleaning wastewater must be separately monitored for compliance with copper and iron limitations, a combined waste stream formula must be developed for the comingled waste stream, or the facility can combined wastewater for treatment if it demonstrates that the pollutant of concern (iron or copper) is present in each waste steam entering the WWTS (in other words, if copper and/or iron is present above the permitted concentration of 1.0 mg/l, the metal cleaning waste is not being diluted). As previously discussed, iron is present in the other wastewater streams at the facility (often at high levels) and the WWTS routinely precipitates iron out.

Therefore, EPA is allowing compliance monitoring for iron after the combined wastewater streams are treated by the WWTS. Copper, on the other hand, is not routinely present at levels above 1.0 mg/l in other waste streams and compliance monitoring after mixing for copper potentially allows the ELG to be met through dilution rather than treatment. Therefore, EPA has included an internal outfall (designated as internal outfall 005 in the draft permit), where the station will monitoring for compliance with the copper metal cleaning waste technology limit of 1.0 mg/l, prior to mixing with any other waste stream. See section 9.4 below.

9.3.1 Flow

The permitted flow from the WWTS remains the same in the draft permit as in the existing

permit – 4 MGD maximum daily and 2 MGD average monthly. The permittee has the ability to recycle up to 2 MGD from the WWTS effluent to the lower supply basin, thereby conserving water. However, compliance monitoring for the parameters discussed below shall be after treatment and before any WWTS effluent is re-circulated in the lower supply basin.

9.3.2 Total Suspended Solids (TSS)

The quantity of TSS that can be discharged from metal cleaning operations, low volume waste streams, ash transport water, and coal pile run off is limited under the ELGs found at 40 CFR Part 423. For low volume waste streams, ash transport, and metal cleaning waste streams, the limit is 100 mg/l daily maximum and 30 mg/l monthly average. Coal pile runoff is limited to a maximum concentration of 50 mg/l at any time, although the ELGs allow for coal pile runoff to be directly discharged (untreated) during a 10 year, 24 hours storm event.

For this permit, EPA is allowing one sampling point for TSS. This sampling point is after the WWTS, and prior to discharge into the discharge canal (internal outfall 004). Monitoring for TSS at this location allows for mixing of waste streams. The facility has demonstrated that it can meet the lower of the two ELG TSS limits (50 mg/l). Meeting the lower limit ensures that the facility is treating all of its waste streams to a very high level, thereby complying with the federal ELGs TSS requirements for the steam electric category.

9.3.3 Oil and Grease

Oil and Grease is limited in the existing permit to a value of 15 mg/l, for both maximum daily and average monthly. These limits are based on a combination of state water quality requirements (15 mg/l max. daily) and technology-based requirements (15 mg/l average monthly). These values also are retained in the draft permit based on anti-backsliding.

Monitoring after waste streams mix is also acceptable for Oil and Grease, since the waste stream must satisfy a water quality derived maximum daily limit of 15 mg/l, and the technology limit of 15 mg/l will be satisfied so long as the permittee complies with the maximum daily limit.

9.3.4 Iron

As discussed above, the permittee has submitted information indicating that iron is routinely treated at the WWTS both during “normal” operation and during metal cleaning operations. Therefore, combining the metal cleaning waste with other wastes streams does not dilute the metal cleaning waste stream, nor does it make the removal of iron less efficient. Therefore, EPA has established an iron limit at outfall 004 of 1.0 mg/l. This limit applies during all facility operations.

9.3.5 Other Metals and Metalloids

EPA has reviewed previous sampling results for Antimony, Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Silver, Thallium, Zinc, Aluminum, Cobalt, Iron, Vanadium and

Molybdenium for outfall 004. EPA has compared these results to appropriate water quality standards. In no case did EPA find that the facility had a "reasonable potential" to exceed any applicable water quality standard. Therefore, no additional permit limits are necessary. EPA will continue to require monitoring and reporting for these parameters.

9.3.6 Other Parameters

The existing permit requires that BPS report results for priority pollutants including selenium and manganese (quarterly); nitrate (quarterly); and ammonia (quarterly).

EPA has reviewed the sampling results and has determined that no new limits are necessary for these pollutants at this time. However, EPA intends to continue to require regular sampling and reporting for these pollutants.

9.3.7 Best Management Practices for Flue Gas Desulfurization Truck Wash Water

The station installed a dry flue gas desulfurization system to control air pollution that does not have a chloride purge stream or any other waste liquid stream, when in service. Dry scrubbers produce a dry solid waste called dry scrubber material (DSM). The DSM material is loaded on trucks for off-sight disposal and the potential exists for some of this material to enter the receiving water (through the WWTS) unless best management practices (BMPs) are followed.

Therefore, EPA is including the following BMPs for truck loading and truck wash water in the draft permit.

1. The draft permit requires that all trucks are loaded within a closed area.

2. The draft permit requires that material is loaded into either pneumatic dry enclosed trucks or moist (40-50%) 18 wheel dump trucks. If loaded into a dump truck, the material must be discharged through a long nozzle hose which extends into the truck or truck bed.

3. The draft permit specifies that trucks enter a truck wash before leaving the property, and that the scrubber wash water be collected and recycled back into the process in a closed system.

9.4 Internal Outfall 005 (Metal Cleaning Waste)

EPA is establishing an internal outfall for metal cleaning waste. The location and sampling of this internal outfall will be prior to metal cleaning waste mixing with any other waste stream. This is necessary to ensure copper is not diluted as a means of meeting the ELG, since, unlike iron, copper is not routinely present in waste streams above a concentration of 1.0 mg/l.

Each piece of equipment on the coal units (Units 1 - 3) is usually cleaned annually, during shutdown. Unit 4 (oil or gas fired) equipment is usually cleaned about every 3 years. However, it's possible that a particular maintenance activity may require equipment to be washed during an unplanned outage. Chemical cleans (water side of the boiler) are conducted much less frequently than equipment washes, ranging anywhere from 3 - 5 years per unit.

9.4.1 Flow

EPA has established a maximum daily value of 2.03 MGD in the draft permit. This is based on the highest potential daily metal cleaning flow. This maximum flow scenario occurs when equipment for Units 3 and 4 is washed together with the ash reduction process equipment. EPA is also including a requirement to report the total monthly metal cleaning waste flow. EPA expects that the maximum total metal cleaning monthly flow will not exceed 5.05 MGD. Metal cleaning lasts anywhere from a minimum of 6 hours (unit 1 boiler clean, for example) to a maximum of 60 hours (air preheater wash on Unit 3). Most equipment washes last less than 24 hours.

Also, as previously discussed, BPS generally sends the concentrated chemical cleaning wastes off site for disposal. The approximate amounts transferred off site are:

Unit 1 – 30,000 gallons per waterside chemical cleaning
Unit 2 - 30,000 gallons per waterside chemical cleaning
Unit 3 – 90,000 gallons per waterside chemical cleaning
Unit 4 – 100,000 gallons per waterside chemical cleaning

Therefore, the maximum daily flow includes the volume of equipment wash water, and any "rinse" water used after chemical cleaning of the waterside boiler (after the concentrated waste is shipped off site).

9.4.2 Copper

The ELGs allow a maximum concentration of copper of 1 mg/l for metal cleaning waste operations. Combining this waste stream for dilution is not an acceptable means of treatment. The ELGs also include a monthly average copper limit of 1.0 mg/l.

As stated above, the facility typically transfers its concentrated chemical metal cleaning waste off site for treatment and disposal. The facility then rinses the metal equipment, and that rinse water is sent to the treatment plant. EPA considers the rinse water metal cleaning waste. In addition to chemical cleaning, the facility washes equipment, which is considered a non-chemical metal cleaning operation. Therefore the plant must meet a copper limit of 1.0 mg/l (max. daily and average monthly) before either the chemical or non-chemical metal cleaning wastewater mixes with any other wastewater stream. This ensures that copper will not be diluted prior to meeting the 1.0 mg/l limit. These limits are contained in the draft permit.

As discussed in the flow section above, metal cleaning is a short duration operation at BPS. The longest any one operation lasts in 60 hours (unit 3 air preheater wash). The draft permit specifies that the average monthly value shall be determined by summing the results of the daily measurements, and dividing that sum by the number of discharge days.

9.5 Outfall 017A (Intake Screen Wash to Mount Hope Bay)

As previously discussed in this fact sheet, the current unit 3 intake on the Taunton River will be used to provide make-up water for the new cooling towers (the existing permit allowed the unit 4 intake for makeup water). The current permit restricted the use of the Taunton River intake for a period not to exceed 122 hours per year, which would coincide with the 122 hours per year allowance for open-cycle cooling operations. Dominion will not operate in an open-cycle mode at any time, and the intake will be used solely to provide makeup water for the cooling tower system. Therefore, Dominion is permitted to use this intake (and wash it of debris) continuously.

9.5.1 Flow

EPA is adjusting the flow value downward, since a much smaller amount of water is needed for the screen wash operation in closed-cycle mode, as opposed to open-cycle. The draft permit specifies that the intake screen wash water flow rate shall not exceed 0.073 Million Gallons per Hour (about 1/3 of the currently permitted flow). The remaining flow will be directed to the auto strainer backwash system (discussed below).

9.5.2 Floating Solids, Oil Sheen, and Visible Foam

The existing permit contains narrative requirements that specify there shall be no floating solids, oil sheen, or visible foam. These limits are carried forward in the draft permit.

9.6 Outfall 017B (Auto Strainer Backwash to Mount Hope Bay)

As part of the new closed cycle cooling system, BPS is installing two “auto-wash” strainers downstream of the intake. These strainers are designed to minimize cooling tower fill clogging from debris in the make-up water that was small enough to pass through the main intake screens. The strainer system will be self cleaning based either on a change in pressure across the strainer, or at a pre-set time interval. Therefore, the discharge is intermittent.

The draft permit includes a new permitted discharge to Mount Hope Bay for this system. The discharge is similar in nature to the discharge of outfall 017A and therefore includes similar permit conditions. See below.

9.6.1 Flow

When operating, the flow from each strainer will be approximately 0.073 million gallons per hour, for a total of 0.146 million gallons per hour.

9.6.2 Floating Solids, Oil Sheen, and Visible Foam

Similar to outfall 017A, the draft permit includes a narrative requirement specifying that there shall be no floating solids, oil sheen, or visible foam from this discharge.

9.7 Cooling Water Intake (CWA Section 316(b))

CWA Section 316(b) authorizes EPA to impose an intake capacity (or flow) limit based on the permittee's ability to meet that limit using the best technologies available, such as, for example, cooling towers. Such a technology-based limit imposes a performance standard for CWIS capacity (or flow) which the permittee should be capable of meeting using a particular technology, but the permittee may meet the limit in any manner it chooses.

EPA imposed a capacity (flow) requirement consistent with closed-cycle cooling technology in the existing permit, using best professional judgment. The existing permit limits the withdrawal of water from Mount Hope Bay to 56.2 Million Gallons per Day (for cooling tower makeup water).

EPA re-affirms its best professional judgment determination that closed-cycle cooling is the best technology available for use at Brayton Point Station to minimize adverse impact from its cooling water intake structure. EPA considered some new information necessary to maintain proper operation of the new cooling towers in making this determination. As discussed above, the new draft permit proposes to allow an increase in cooling tower make-up from 56.2 to 70 MGD to correct a technical error underlying the flow limit in the existing permit.

In the existing permit, EPA determined that the intake make-up water requirements for operating BPS using closed-cycle cooling could be no greater than 56.2 Million Gallons per Day. This value represents a reduction of 96 percent from the previously permitted open cycle flow. EPA based this value on information submitted by the previous owners of Brayton Point Station, the New England Power Company and PG&E (see 2001 Determination Document).

Dominion Energy bought Brayton Point Station and subsequently agreed to comply with the existing permit's strict heat and flow requirements. During the more detailed design phase for the new closed-cycle cooling system at BPS, Dominion discovered that a technical error had been made during the preliminary engineering phase. Specifically, the volume of "make-up" and "blowdown" water necessary to operate Unit 2 using cooling towers was inadvertently omitted from the summary of total station cooling water needs. The erroneous values were then submitted to EPA as representing the total cooling water needs for the facility. To properly account for Unit 2's cooling water needs, however, an additional amount of about 13 MGD of make-up water needs to be added to the station's total water withdrawal allowance.

EPA's new draft permit proposes to allow this increase in make-up water to correct the earlier mistake. This correction does not impact EPA's determination that closed-cycle cooling is the best technology available for minimizing adverse impacts.

The performance-based standard that reflects the use of cooling towers as the best technology available is an intake volume of 70 MGD for make-up water.

EPA has also determined that the intake velocity, calculated as 0.31 ft/sec, is also a component of the BTA for Brayton Point Station. Further, the station will be using variable speed pumps to regulate the amount of intake water and to reduce intake flows when possible. This is also a component of BTA.

10 Essential Fish Habitat (EFH) and Endangered Species Act (ESA)

Under the 1996 Amendments (PL 104-297) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's actions, or proposed actions that EPA funds, permits, or undertakes, may adversely impact any essential fish habitat. 16 U.S.C. Section 1855(b). The Amendments broadly define essential fish habitat as, ... those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C. Section 1802(10). Adverse effect means any impact which reduces the quality and/or quantity of EFH. 50 C.F.R. Section 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

EFH is only designated for species that are the subject of federal Fishery Management Plans (16 U.S.C. Section 1855(b)(1)(A)). EFH designations were approved for New England by the U.S. Department of Commerce on March 3, 1999.

As the federal agency charged with authorizing the discharge from this facility, EPA is in the process of consulting with the National Marine Fisheries Service (NMFS) under section 305 (b)(2) of the Magnuson-Stevens Act for essential fish habitat (EFH). This consultation will be completed before the permit is finalized.

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) typically administers Section 7 consultations for bird, terrestrial, and freshwater aquatic species. The National Marine Fisheries Service (NMFS) typically administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish and wildlife to see if any listed species might potentially be impacted by the re-issuance of this NPDES permit. The review has focused primarily on marine mammals, sea turtles and anadromous fish since the discharge is into Mount Hope Bay. Based on the normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge. Furthermore, effluent limitations and other permit conditions which are in place in this draft permit should preclude any adverse effects should there be any incidental contact with listed species in Mount Hope Bay.

EPA re-affirms, with the issuance of this draft permit, its determination under the existing permit, that the permitted intake and discharge activities at Brayton Point Station do not jeopardize any endangered species. EPA is submitting this draft permit to NMFS for its concurrence with this determination.

11 Biological Monitoring Program

The biological monitoring program will remain the same as the current permit's program, except for a few small alterations that include removal of the requirement to reduce the discharge temperature to below 90 degree within two hours of an unusual impingement event; and to specify that notification is required within four hours during normal business hours, otherwise notification shall be no later than the next business day.

The program, as put forth in the draft permit, is outlined below:

The biological program sets forth a Contingency Plan that allows EPA and MassDEP the opportunity to respond in a timely manner to new information and to implement, when necessary, improvements in the Biological Plan (BP).

The Contingency Plan identifies action that Brayton Point Station may undertake when improvements to the BP are necessary. The Contingency Plan authorizes the annual evaluation of the BP using data collected, and, if necessary, requires recommendations for improvements to the BP and the development of a Management Plan. At a minimum, the BP and BP data are evaluated through the following:

1. An annual review of the environmental/biological sampling and analysis plan and data;

2. The identification of change in the aquatic or biological system;

3. The determination of statistically significant change;

4. The determination of biological importance;

5 The determination of the likelihood that Brayton Point Station contributed to the change;

6. A review and analysis of BP data variability and power analysis update; and,

7. The identification of improved sampling and/or analysis technologies, including, but not limited to: statistical methods, sampling equipment, and modeling technologies.

Indications of Contingency Plan implementation include, but are not limited to, exceedences of permit limits, observations divergent from baseline conditions, changes in population assemblages, changes in data variability, and non-attainment of state and/or federal water quality criteria. Best professional judgment and environmental risk as well as population impact assessments tools will be employed in the evaluation of BP data.

The draft permit requires that the BP undergo an annual review according to the following schedule:

1. Sept. 1: Permittee submits the results from the previous year's BP to the Permitting Authority;

2. Nov. 1: Permitting Authority submits comments and questions to the Permittee, if any;

3. Dec. 1: Permittee schedules meeting to present data and review proposed BP for the following year;

4. Feb. 1: Improvements reviewed and approved by the Permitting Authority;

5. Mar. 1: Permittee continues BP or implements improvements.

The BP requires the Permittee to determine whether any adverse environmental impacts are occurring due to its operation. If they are, then the Permittee must, in a timely manner, develop and implement a Management Plan, approved by the Permitting Authority, to prevent such impacts. A report on these efforts must be submitted to EPA and MassDEP every thirty days until the issue has been resolved.

This Plan authorizes implementation of improvements, approved by the Permitting Authority, to the BP when warranted. The need for changes may be indicated by results and analysis of BP data. Changes may also be considered based on acceptable data from other sources. Analysis of data for measured parameters such as temperature, delta T, and rates of impingement and entrainment may indicate the need for monitoring program enhancements or improvements.

The Permitting Authority will require annual review of sampling data and protocols and evaluate the need for more frequent sampling. Additional sampling locations and any other justified analytical or biological program improvements may be authorized. This review will be conducted by the EPA. Only improvements to the BP will be considered.

The draft permit allows for BP improvements, when justified. Examples of BP improvements include, but are not limited to:

1 Additional sampling stations;

2. Increased sampling frequency;

3. Changes demonstrated to reduce data variability or increased analysis sensitivity;

4. Changes demonstrated to increase the power to detect statistical significance;

5. Collection of additional data demonstrated to more definitively determine the facility's impacts, and;

6. Additional predictive models such as species-specific population, community, and/or trophic level risk assessments.

12 Monitoring and Reporting

The draft permit's monitoring requirements have been established to yield data representative of the facility's pollutant discharges under the authority of Sections 308(a) and 402(a)(2) of the CWA and consistent with 40 C.F.R. §§ 122.41 (j), 122.43(a), 122.44(i) and 122.48. The

monitoring program in the permit specifies routine sampling and analysis which will provide ongoing, representative information on the levels of regulated constituents in the wastewater discharge streams. The approved analytical procedures are found in 40 C.F.R. Part 136 unless other procedures are explicitly required in the permit.

The Permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time specified within the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

The draft permit includes new provisions related to DMR submittals to EPA and the State. The draft permit requires that, no later than one year after the effective date of the permit, the Permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request"). In the interim (until one year from the effective date of the permit), the Permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit DMRs electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 C.F.R. § 122.41 and § 403.12. NetDMR is accessed from the following url: http://www.epa.gov/netdmr. Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

EPA currently conducts free training on the use of NetDMR, and anticipates that the availability of this training will continue to assist permittees with the transition to use of NetDMR. To participate in upcoming trainings, visit http://www.epa.gov/netdmr for contact information for Massachusetts.

The draft permit requires the Permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The draft permit also includes an "opt-out" request process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing to EPA, at least sixty (60) days prior to the date the facility would have otherwise been required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the draft permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

13 State Certification Requirements

EPA may not issue a permit in the Commonwealth of Massachusetts unless the Massachusetts Department of Environmental Protection (MassDEP) certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State's Water Quality Standards. The staff of the MassDEP has reviewed the draft permit. EPA has requested permit certification by the state pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

14 Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection, Industrial Permit's Branch, 5 Post Office Square, Suite 100, Mail Code OEP06-04, Boston, Massachusetts 02109-3912. Any person, prior to the closed of the public comment period, may submit a request in writing to EPA and the State Agency for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

15 EPA Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 A.M. and 5:00 P.M. (8:00 A.M. and 4:00 P.M. for the state), Monday through Friday, excluding holidays from:

Mr. Damien Houlihan, Environmental Engineer

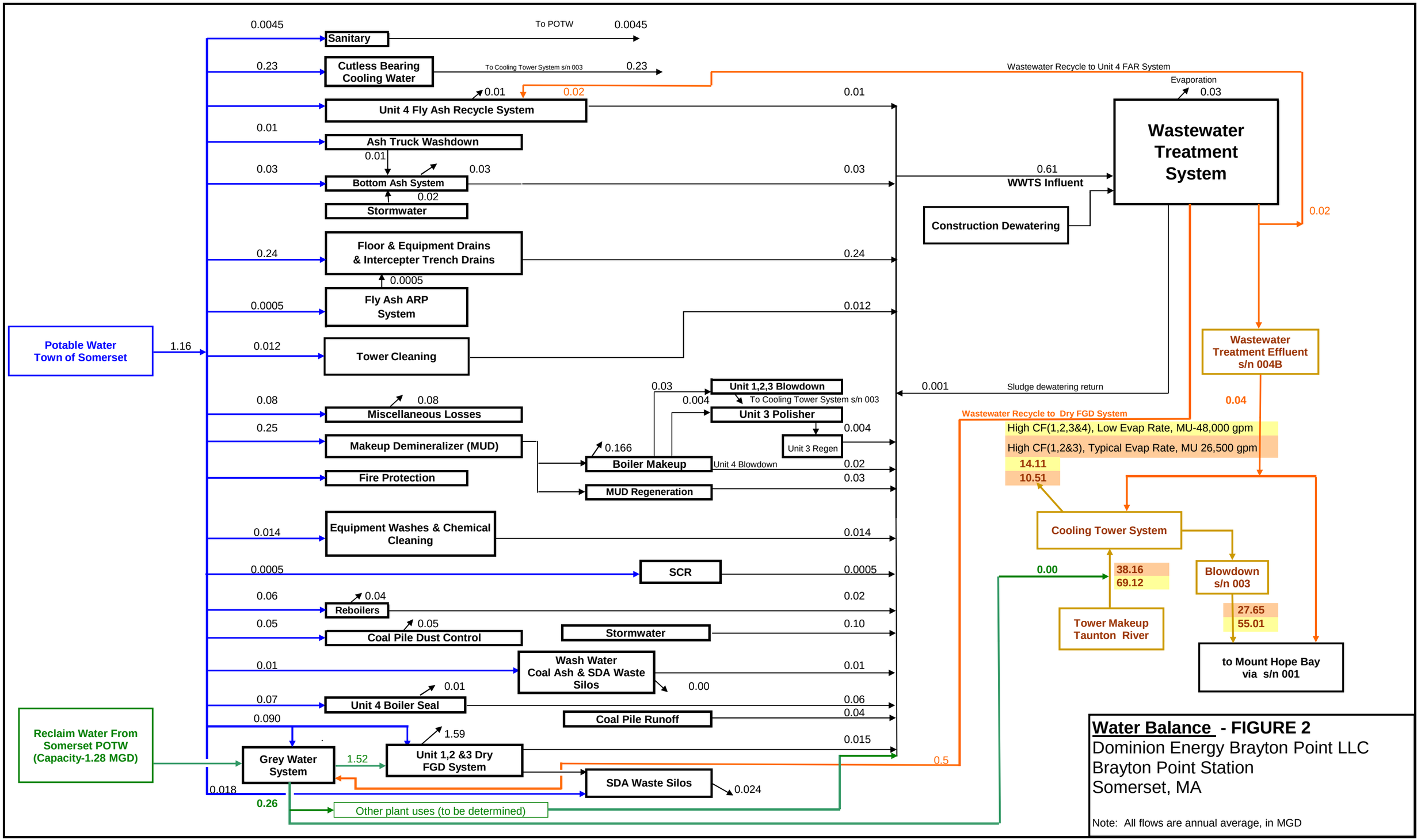
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912
Telephone: (617) 918-1586
Email: Houlihan.damien@epa.gov

_____ **Stephen S. Perkins**, **Director**
Date: **Office of Ecosystem Protection**
U.S. Environmental Protection Agency

Figure 1 – Intake/Outfall Locations
Brayton Point Station
Somerset, MA

Source: 7.5 Minute Topographic USGS Map

Dominion



Water Balance - FIGURE 2

Dominion Energy Brayton Point LLC

Brayton Point Station

Somerset, MA

Note: All flows are annual average, in MGD

Evaporation Losses (nominal 2.1%)

Evaporation Losses (nominal 2.1%)

Cooling Tower

Cooling Tower Basin

Cooling Tower

Cooling Tower Basin

Make-Up Water Pumps Intake from Taunton River
70 MGD

Intake Screen

Intake Screen

Spectrus CT1300

Seasonal Biocide Treatment
(Spectrus CT1300 @ 6x per year via portable tote)

Make-Up Water Pumps
(4) x 50% pumps
24,300-gpm each
(from Taunton River)

Debris Filters
(2) x 100%
(New)

Debris Filter Discharge

SCREENWELL INTAKE STRUCTURE

017A

Outfall 017A
0.073 MGH

017B

Outfall 017B
0.146 MGH

Cooling Tower Bypass

Cooling Tower Bypass

(720,000 - evap) gpm

720,000 -gpm to (2) Cooling Towers from Cooling Tower Supply Pumps

Cooling Tower Water Supply Pumps
(4) x 50% pumps
180,000-gpm each

Upper Discharge Basin

180,000-gpm (D)
144,000-gpm (A)

(2) x 60"

Unit 1 Condenser

180,000-gpm (D)
144,000-gpm (A)

(2) x 60"

Unit 2 Condenser

280,000-gpm (D)
216,000-gpm (A)

(2) x 72"

Unit 3 Condenser

260,000-gpm (D)
216,000-gpm (A)

(1) x 90"

(1) x 84"

Unit 4 Condenser

BP1 SW HX Discharge

BP2 SW HX Discharge

BP3 SW HX Discharge

BP4 SW HX Discharge

Seal Pit

Seal Pit

Seal Pit

Seal Pit

Make-Up Water Flow Bypasses to BP2 Seal Pit

Lower Supply Basin

Drop Structure

Drop Structure

Overflow Spillway
(design: 180,000-gpm)

USBR Type VI

004

Cooling Tower Gravity Blowdown
4.2% nominal

Bearing Water Coolers
#1, 2 and 3

Unit 1 Condensate Cooler

Unit 2 Condensate Cooler

Unit 3 Condensate Coolers

Bearing Water Coolers
#4, 5 and 6

Unit 4 Auxiliary Coolers
#4-1, 4-2 and 4-3

Sodium Hypochlorite

Cooling Tower Water Treatment
(Sodium Hypochlorite)

Spectrus DT1400
Sodium Bisulfite

Static Mixer

Flow Meter

(2) x 42"

Valve/Meter Vault

Blowdown Dechlorination
(Sodium Bisulfite/Spectrus DT1404)

Blowdown Biocide Detoxification
(Spectrus DT1400 via portable tote)

(D) = Design Flow
(A) = Apportioned Flow

Control Volume

WWTS Discharge
Internal Outfall 004
Overflow (intermittent)

Blowdown Discharge
Internal Outfall 003
70 MGD maximum

Outfall 001
(downstream of 003 and 004)
74 MGD maximum
1.7 TBTU annual maximum
95 deg F maximum hourly average

WWTS Discharge
Internal Outfall 004
4 MGD maximum

003

003

004

Blowdown Discharge Weir Structure

Water Control Structure

Canal to Mount Hope Bay

001

Figure 3:
Dominion Energy Brayton Point Station
Closed Loop Cooling Project
NPDES System Diagram

Permit Limits with DMR Violation Data

MA0003654 - DOMINION ENERGY BRAYTON POINT

Outfall 001A								
Monitoring Location 1								
		Flow	Flow	Copper	Copper	Oxidants	Oxidants	pH
		925 Mgal/d	Req. Mon. Mgal/d	.0184 mg/L	.0289 mg/L	.0375 mg/L	.065 mg/L	6.5 SU
MP Date	Rec'd Date	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MINIMUM
01/31/2004	2/17/2004	781.5	876.4				0.027	
02/29/2004	3/16/2004	776.5	879.8				0.025	
03/31/2004	4/14/2004	789.5	884.1				0.027	
04/30/2004	5/14/2004	780.7	885.				0.004	
05/31/2004	6/10/2004	478.2	535.5				0.02	
06/30/2004	7/15/2004	C	1076.6				0.02	
07/31/2004	8/16/2004	C	1221.1				0.023	
08/31/2004	9/16/2004	C	1102.1				0.025	
09/30/2004	10/15/2004	C	1120.4				0.025	
10/31/2004	11/15/2004	739.1	827.5				0.025	
11/30/2004	12/14/2004	702.1	896.8				0.04	
12/31/2004	1/19/2005	857.7	902.3				0.022	
01/31/2005	2/14/2005	841.1	893.1				0.03	
02/28/2005	3/22/2005	829.6	898.9				0.03	
03/31/2005	4/15/2005	788.2	899.6				0.03	
04/30/2005	5/17/2005	858.3	895.3				0.032	
05/31/2005	6/15/2005	589.5	888.1				0.03	
06/30/2005	7/20/2005	C	1220.2				0.027	
07/31/2005	8/17/2005	C	1164.9				0.033	
08/31/2005	9/14/2005	C	1201.5				0.04	
09/30/2005	10/19/2005	C	1154.9				0.038	
10/31/2005	11/18/2005	926.8	1220.8				0.034	
11/30/2005	12/14/2005	815.5	900.6				0.031	
12/31/2005	1/17/2006	882.9	899.7				0.03	
01/31/2006	3/16/2006	882.7	895.8				0.03	
02/28/2006	3/17/2006	731.	893.5				0.04	
03/31/2006	4/24/2006	735.3	892.4			C	C	
04/30/2006	5/17/2006	479.1	496.9				0.036	7.1
05/31/2006	6/19/2006	621.9	880.7			0.0148	0.035	6.
06/30/2006	7/18/2006	C	1083.1			0.0038	0.025	6.9
07/31/2006	8/17/2006	C	1247.2			0.0138	0.03	7.
08/31/2006	9/18/2006	C	1232.8			0.025	0.1	7.
09/30/2006	10/18/2006	C	1067.3			0.024	0.038	7.2
10/31/2006	11/16/2006	756.5	896.8			0.037	0.034	7.1
11/30/2006	12/18/2006	873.6	898.8			0.0233	0.03	7.6
12/31/2006	1/12/2007	886.3	888.9			0.0375	0.03	7.8
01/31/2007	2/17/2007	781.9	887.3			0.0173	0.032	7.8
02/28/2007	3/19/2007	837.2	890.			0.0239	0.03	7.9
03/31/2007	4/12/2007	874.	893.1			0.0198	0.03	8.
04/30/2007	5/16/2007	867.8	888.8			C	0.025	7.8
05/31/2007	6/13/2007	881.7	888.6			0.0171	0.026	7.7
06/30/2007	7/12/2007	C	888.8			0.013	0.02	7.8
07/31/2007	8/6/2007	C	1155.1			0.0274	0.04	7.6
08/31/2007	9/6/2007	C	1168.9			0.021	0.043	7.6
09/30/2007	10/11/2007	C	1095.			0.0247	0.039	7.6
10/31/2007	11/9/2007	846.9	888.7			0.0267	0.038	7.7
11/30/2007	12/12/2007	807.4	894.7	0.0039	0.021	0.0162	0.026	7.7

12/31/2007	1/5/2008	873.8	889.3	0.0015	0.027	0.0149	0.028	7.8
01/31/2008	2/5/2008	841.	867.	0.	0.	0.0104	0.028	8.1
02/29/2008	3/11/2008	864.	870.	0.001	0.02	0.0193	0.044	8.
03/31/2008	4/10/2008	686.6	863.	0.	0.	0.0437	0.06	7.9
04/30/2008	5/13/2008	61.9	872.6	0.	0.	0.019	0.046	7.7
05/31/2008	6/9/2008	580.	868.	0.002	0.019	0.0028	0.0025	7.7
06/30/2008	7/14/2008	C	1174.	0.	0.	0.0036	0.023	7.5
07/31/2008	8/14/2008	C	1250.	0.	0.	0.0099	0.0099	7.5
08/31/2008	9/12/2008	C	1157.	0.002	0.016	0.0113	0.025	7.6
09/30/2008	10/8/2008	C	920.	0.	0.	0.017	0.044	7.6
10/31/2008	11/7/2008	868.	873.	0.	0.	0.0175	0.037	7.7
11/30/2008	12/11/2008	870.	875.	0.	0.	0.0111	0.033	7.7
12/31/2008	1/14/2009	814.	875.	0.003	0.024	0.0081	0.033	7.7
01/31/2009	2/12/2009	846.	866.	0.003	0.023	0.0077	0.025	7.7
02/28/2009	3/13/2009	759.	864.	0.	0.	0.003	0.023	7.9
03/31/2009	4/14/2009	764.	859.	0.	0.	0.0054	0.031	8.1
04/30/2009	5/21/2009	740.	865.	0.	0.	0.	0.	7.5
05/31/2009	6/9/2009	676.	874.	0.	0.	0.0024	0.02	7.5
06/30/2009	7/14/2009	C	1183.	0.	0.	0.0068	0.021	7.7
07/31/2009	8/14/2009	C	947.	0.	0.	0.0072	0.03	7.6
08/31/2009	9/11/2009	C	1228.	0.	0.	0.0036	0.025	7.4
09/30/2009	10/9/2009	C	872.	0.001	0.017	0.0061	0.023	7.6
10/31/2009	11/10/2009	696.	879.	0.001	0.016	0.0014	0.021	7.7
11/30/2009	12/9/2009	792.	878.	0.	0.	0.0118	0.024	7.7
12/31/2009	1/12/2009	723.	889.	0.	0.	0.0056	0.02	7.8
01/31/2010	2/12/2010	805.3	863.6	0.	0.	0.0106	0.028	7.9
02/28/2010	3/10/2010	795.	856.	0.	0.	0.	0.	8.
03/31/2010	4/14/2010	800.	845.	0.	0.	0.0018	0.02	7.7
04/30/2010	5/12/2010	822.	826.	0.	0.	0.0026	0.023	7.4
05/31/2010	6/11/2010	591.	817.	0.	0.	0.0201	0.025	7.7
06/30/2010	7/14/2010	C		0.	0.	0.0149	0.03	7.6
07/31/2010	8/12/2010	C		0.0006	0.018	0.014	0.033	7.9
08/31/2010	9/14/2010	C		0.	0.	0.0098	0.025	7.6
09/30/2010	10/8/2010	C		0.	0.	0.006	0.021	7.7
10/31/2010	11/10/2010	858.	863.	0.	0.	0.0109	0.026	7.7
11/30/2010	12/9/2010	502.	858.	0.	0.	0.0069	0.028	7.8
12/31/2010	1/13/2011	580.	845.	0.	0.	0.0125	0.029	7.8
01/31/2011	2/11/2011	783.	855.	0.	0.	0.0078	0.022	8.
02/28/2011	3/11/2011	819.	856.	0.	0.	0.0127	0.027	8.1
03/31/2011	4/11/2011	581.	854.	0.	0.	0.0182	0.019	7.9
04/30/2011								
Average		**757.49322**	**942.83012**	**0.00046**	**0.0049**	**0.0135**	**0.02881**	**7.64**
Minimum		**61.9**	**496.9**	**0.**	**0.**	**0.**	**0.**	**6.**
Maximum		**926.8**	**1250.**	**0.0039**	**0.027**	**0.0437**	**0.1**	**8.1**

Date	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	30- DAY AVERAGE TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
1/1/2007						0.3699						
1/2/2007						1.2388						
1/3/2007		5.1				0.2756						
1/4/2007	5		0	0.22	0.9	0.4249						
1/5/2007						0.1565						
1/6/2007						0.9805						
1/7/2007						0.4832						
1/8/2007		0				0.7032						
1/9/2007	7.2		0.117	0.434	1.09	0.8640						
1/10/2007						0.2995						
1/11/2007						0.7336						
1/12/2007						0.3466						
1/13/2007	0	0	0.049	0.167		0.4212						
1/14/2007	0	0	0.065	0.145		0.3945						
1/15/2007	0	0	0.046	0.157		0.3851						
1/16/2007	0	0	0.055	0.307		0.3865						
1/17/2007	0	0	0.034	0.155		0.3348						
1/18/2007	0	0	0.041	0.16	0.85	0.0088						
1/19/2007						1.2818						
1/20/2007						0.5842						
1/21/2007						0.1689						
1/22/2007						0.4318						
1/23/2007						0.5479						
1/24/2007	0	0	0	0.169	3.05	0.4617						
1/25/2007						0.6965						
1/26/2007						1.2973						
1/27/2007						0.9528						
1/28/2007						1.0594						
1/29/2007						0.6759						
1/30/2007	0	0	0.055	0.148		0.8683						
1/31/2007						1.3726	1.2200	0.5100	0.0462	0.2062	1.4725	0.6196
2/1/2007						0.8238						
2/2/2007						0.7943						
2/3/2007						0.6764						
2/4/2007						0.4127						
2/5/2007						0.7531						
2/6/2007						0.5954						
2/7/2007	0	0	0.027	0.072	2.978	0.8635						
2/8/2007						0.8496						
2/9/2007						0.7773						
2/10/2007						1.0989						
2/11/2007						0.8065						
2/12/2007	0					0.6443						
2/13/2007		0	0.041	0.173	4.017	0.4956						
2/14/2007						0.8634						
2/15/2007						1.1446						
2/16/2007						1.3699						
2/17/2007						1.3699						
2/18/2007						0.9225						
2/19/2007	0					1.0681						
2/20/2007		0	0.045	0.185	5.031	0.6617						
2/21/2007			0.02			0.6372						
2/22/2007						0.7580						
2/23/2007						0.7378						
2/24/2007						0.2744						
2/25/2007						0.7708						
2/26/2007						0.3980						
2/27/2007						0.7130						
2/28/2007						0.6972	0.0000	0.0000	0.0333	0.1433	4.0087	0.7849
3/1/2007	4.6	0	0.045	0.542	5.376	0.4506						
3/2/2007						1.2132						
3/3/2007						1.2401						
3/4/2007						1.2166						
3/5/2007		0			3.219	0.5677						
3/6/2007	6.6		0.046	0.206		0.9684						
3/7/2007						0.9046						
3/8/2007						0.8144						

							30- DAY AVERAGE					
Date	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
3/9/2007						0.4303						
3/10/2007						0.8263						
3/11/2007						0.8192						
3/12/2007						0.2596						
3/13/2007	0	0	0.028	0.163	3.821	0.8537						
3/14/2007						0.7842						
3/15/2007						1.3053						
3/16/2007						1.0522						
3/17/2007						0.7937						
3/18/2007						1.5069						
3/19/2007	0	0	0.028	0.252	3.121	1.4568						
3/20/2007						1.1499						
3/21/2007						1.1001						
3/22/2007						0.9221						
3/23/2007						0.8761						
3/24/2007						0.8309						
3/25/2007						0.7272						
3/26/2007		7.6			1.621	0.5727						
3/27/2007	0		0	0.202		0.9198						
3/28/2007						0.7009						
3/29/2007						0.7383						
3/30/2007						0.6022						
3/31/2007						0.5951	2.2400	1.5200	0.0294	0.2730	3.4316	0.8774
4/1/2007						0.2760						
4/2/2007						0.4299						
4/3/2007	6.8	0	0.053	0.339	1.159	0.3322						
4/4/2007						0.2955						
4/5/2007						1.0126						
4/6/2007						0.9917						
4/7/2007						0.8693						
4/8/2007						0.1974						
4/9/2007						0.5664						
4/10/2007	5.6	0	0.078	0.278	1.105	0.8583						
4/11/2007						0.6682						
4/12/2007						0.2674						
4/13/2007						1.5400						
4/14/2007						0.9278						
4/15/2007						0.4384						
4/16/2007						1.7461						
4/17/2007	19.8	0	0.054	0.69	0.636	1.7270						
4/18/2007						1.7184						
4/19/2007						0.9344						
4/20/2007						1.2044						
4/21/2007						0.9399						
4/22/2007						0.6420						
4/23/2007						0.6075						
4/24/2007	7.6	0	0.044	0.305	0.75	0.7971						
4/25/2007						0.5495						
4/26/2007						1.0924						
4/27/2007						0.3105						
4/28/2007						1.5572						
4/29/2007						0.7307						
4/30/2007						0.6283	9.9500	0.0000	0.0573	0.4030	0.9125	0.8285
5/1/2007	9.8	0	0.062	0.236	1.267	0.6754						
5/2/2007						0.8194						
5/3/2007						0.5752						
5/4/2007						0.6546						
5/5/2007						0.7097						
5/6/2007						0.6925						
5/7/2007						0.1662						
5/8/2007	4.6	0	0.035	0.211	1.311	1.0280						
5/9/2007	0	0	0.042	0.146		1.0280						
5/10/2007	4.2	0	0.02	0.158		0.6879						
5/11/2007	4.4	0	0.033	0.116		0.7012						
5/12/2007	0	0	0.042	0.196		0.6024						
5/13/2007	0	0	0.04	0.158		0.4098						
5/14/2007	0	0	0.039	0.124		0.7039						
5/15/2007	0	0	0.022	0.244		0.6724						

Date	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	30- DAY AVERAGE TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
5/16/2007	0	0	0	0.184		0.4928						
5/17/2007	0	0	0	0.147		0.3628						
5/18/2007	0	0	0.041	0.146	1.268	0.7081						
5/19/2007						0.8140						
5/20/2007						1.0622						
5/21/2007						0.3331						
5/22/2007	0	8	0.025	0.214	1.443	0.4706						
5/23/2007						0.6085						
5/24/2007						0.4067						
5/25/2007						0.4572						
5/26/2007	0	0	0	0.172		1.1539						
5/27/2007	5.2	0	0.025	0.165		0.1337						
5/28/2007	5.8	0	0.021	0.145		0.6701						
5/29/2007	6.6	0	0.033	0.179		0.4244						
5/30/2007	6	0	0.034	0.117		0.9694						
5/31/2007	4.21	0	0	0.084		0.6460	2.6742	0.4211	0.0271	0.1654	1.3223	0.6400
6/1/2007					1.216	0.5090						
6/2/2007						0.3376						
6/3/2007						0.0000						
6/4/2007						0.7418						
6/5/2007	4.6	0	0	0.081	1.267	1.5580						
6/6/2007						1.3091						
6/7/2007						0.8928						
6/8/2007						0.7060						
6/9/2007						0.2362						
6/10/2007						0.6962						
6/11/2007						0.7054						
6/12/2007	0	0	0	0.037	1.229	0.8909						
6/13/2007						0.5940						
6/14/2007						0.4574						
6/15/2007						0.6588						
6/16/2007						0.4627						
6/17/2007						0.4049						
6/18/2007						0.7877						
6/19/2007	0	0	0.068	0.174	1.141	0.2754						
6/20/2007						0.6962						
6/21/2007						0.3278						
6/22/2007						0.3221						
6/23/2007						0.3344						
6/24/2007						0.3370						
6/25/2007						0.8837						
6/26/2007	0	7	0.027	0.24	0.944	0.2016						
6/27/2007						0.3555						
6/28/2007						0.3523						
6/29/2007						0.7061						
6/30/2007						0.2898	1.1500	1.7500	0.0238	0.1330	1.1594	0.5677
7/1/2007						0.3397						
7/2/2007						0.3362						
7/3/2007	0	0	0.132	0.095	1.006	0.3445						
7/4/2007						0.7805						
7/5/2007						0.2584						
7/6/2007						0.8505						
7/7/2007						0.3647						
7/8/2007						0.3520						
7/9/2007		0				0.3507						
7/10/2007						0.3686						
7/11/2007						0.3715						
7/12/2007	4.4		0.158	0.468	0.826	0.3542						
7/13/2007						0.3234						
7/14/2007						0.3357						
7/15/2007						0.3227						
7/16/2007						0.2095						
7/17/2007	0	0	0.033	0.193	0.787	0.3423						
7/18/2007						0.3267						
7/19/2007						0.9719						
7/20/2007						0.2817						
7/21/2007						0.3494						
7/22/2007						0.3499						

							30- DAY AVERAGE					
Date	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
7/23/2007						0.2290						
7/24/2007	0	0	0.062	0.217	0.749	0.2581						
7/25/2007						0.2995						
7/26/2007						0.3151						
7/27/2007						0.3200						
7/28/2007						0.7056						
7/29/2007						0.2200						
7/30/2007					0.743	0.2679						
7/31/2007	5	0	0	0.071		0.4265	1.8800	0.0000	0.0770	0.2088	0.8222	0.3847
8/1/2007	5	0	0	0.071	0.743	0.3803						
8/2/2007						0.3706						
8/3/2007						0.2947						
8/4/2007						0.3050						
8/5/2007						0.3118						
8/6/2007						0.3213						
8/7/2007	8.2	0	0.025	0.131	0.733	0.3051						
8/8/2007						0.9770						
8/9/2007						0.2224						
8/10/2007						0.0801						
8/11/2007						0.7564						
8/12/2007						0.1933						
8/13/2007						0.2878						
8/14/2007	23.2	0	0	0.116	0.803	0.4642						
8/15/2007						0.5195						
8/16/2007						0.3201						
8/17/2007						0.3874						
8/18/2007						0.6274						
8/19/2007						0.3480						
8/20/2007						0.3657						
8/21/2007	18.6	0	0	0.098	0.824	0.3049						
8/22/2007						0.3974						
8/23/2007						0.1902						
8/24/2007						0.4102						
8/25/2007						0.3690						
8/26/2007						0.3216						
8/27/2007						0.3036						
8/28/2007	6.2	0	0.057	0.205	0.809	0.2388						
8/29/2007						0.3350						
8/30/2007			0.02			0.3025						
8/31/2007						0.3451	12.2400	0.0000	0.0170	0.1242	0.7824	0.3663
9/1/2007						0.2051						
9/2/2007						0.3281						
9/3/2007						0.1941						
9/4/2007		0				0.3874						
9/5/2007	0		0.038	0.187	0.31	0.2661						
9/6/2007						0.2527						
9/7/2007						0.3926						
9/8/2007						0.4054						
9/9/2007	0	0	0	0.118		0.2165						
9/10/2007	0	0	0.027	0.195		0.2160						
9/11/2007	0	0	0.029	0.121		0.5907						
9/12/2007	7.4	0	0.048	0.162		0.7380						
9/13/2007	0	0	0.048	0.368		0.9774						
9/14/2007	0	0	0.054	0.106		0.4912						
9/15/2007	0	0	0	0.056		0.4902						
9/16/2007	0	0	0	0.2		0.3741						
9/17/2007	0	0	0	0.119		0.7914						
9/18/2007	0	0	0	0.176		0.3230						
9/19/2007	0	0	0	0.192		0.3943						
9/20/2007	0	0	0	0.168	0.217	0.5288						
9/21/2007						0.6256						
9/22/2007						0.4230						
9/23/2007						0.2752						
9/24/2007						0.7745						
9/25/2007	0					0.2260						
9/26/2007		5.4	0	0.252	0.311	0.6325						
9/27/2007						0.3695						
9/28/2007						0.8547						

							30- DAY AVERAGE					
Date	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
9/29/2007						0.4873						
9/30/2007						0.4780	0.5286	0.3857	0.0174	0.1729	0.2793	0.4570
10/1/2007						0.4927						
10/2/2007	0	0	0.01	0.047	0.321	0.4368						
10/3/2007						0.6127						
10/4/2007						0.6056						
10/5/2007						0.0029						
10/6/2007						1.0115						
10/7/2007						0.4647						
10/8/2007						0.3035						
10/9/2007	0	0	0.011	0.047	0.3	0.5583						
10/10/2007						0.6072						
10/11/2007						0.5165						
10/12/2007						0.5125						
10/13/2007						0.5740						
10/14/2007						0.3151						
10/15/2007						0.2175						
10/16/2007	0	0	0.015	0.135	0.318	0.4308						
10/17/2007						0.5433						
10/18/2007						0.5662						
10/19/2007						0.4516						
10/20/2007						0.7356						
10/21/2007						0.3099						
10/22/2007						0.0840						
10/23/2007	0	0	0.027	0.072	0.323	0.8478						
10/24/2007						0.1740						
10/25/2007						0.6459						
10/26/2007						0.1141						
10/27/2007						0.5062						
10/28/2007						0.0001						
10/29/2007						0.4229						
10/30/2007	0	0	0.016	0.063	0.362	0.5548						
10/31/2007						0.3153	0.0000	0.0000	0.0158	0.0728	0.3248	0.4495
11/1/2007						0.4181						
11/2/2007						0.3922						
11/3/2007						0.3861						
11/4/2007						0.1595						
11/5/2007						0.4582						
11/6/2007	0	0	0.019	0.072	0.423	0.4267						
11/7/2007						0.4659						
11/8/2007						0.2977						
11/9/2007						0.2750						
11/10/2007						0.1949						
11/11/2007						0.3574						
11/12/2007						0.2531						
11/13/2007		0				0.4044						
11/14/2007	0		0.027	0.122		0.1315						
11/15/2007						0.5663						
11/16/2007				0.03		0.3864						
11/17/2007						0.2069						
11/18/2007						0.2265						
11/19/2007						0.1611						
11/20/2007	0	0	0.034	0.127	0.377	0.3433						
11/21/2007						0.4063						
11/22/2007						0.1846						
11/23/2007						0.0007						
11/24/2007						0.6378						
11/25/2007						0.2282						
11/26/2007						0.2811						
11/27/2007		0	0.14	0.109	0.625	0.6904						
11/28/2007						0.3114						
11/29/2007						0.2987						
11/30/2007						0.4004	0.0000	0.0000	0.0550	0.0920	0.4750	0.3317
12/1/2007						0.3270						
12/2/2007						0.3527						
12/3/2007						0.4014						
12/4/2007	0	0	0.025	0.107	0.915	0.4816						
12/5/2007						0.1168						

							30- DAY AVERAGE					
Date	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
12/6/2007						0.2069						
12/7/2007						0.4780						
12/8/2007						0.3400						
12/9/2007						0.4070						
12/10/2007		0				0.5295						
12/11/2007	0		0.018	0.094	0.903	0.5497						
12/12/2007						0.4992						
12/13/2007						0.4601						
12/14/2007						0.4287						
12/15/2007						0.4217						
12/16/2007						0.4412						
12/17/2007		0				0.4324						
12/18/2007	0		0.014	0.121	2.56	0.4275						
12/19/2007						0.6372						
12/20/2007						0.4296						
12/21/2007						0.4149						
12/22/2007						0.4141						
12/23/2007						0.3740						
12/24/2007						0.3341						
12/25/2007						0.3155						
12/26/2007		0				0.3146						
12/27/2007	4.2		0.132	0.118	2.16	0.3098						
12/28/2007						0.3161						
12/29/2007						0.3330						
12/30/2007						0.3238						
12/31/2007						0.4150	1.0500	0.0000	0.0473	0.1100	1.6345	0.3946
Avg	**2.5**	**0.4**	**0.033**	**0.175**	**1.4**	**0.557**	**2.744**	**0.382**	**0.037**	**0.175**	**1.385**	**0.558**
Max	**23.2**	**8.0**	**0.158**	**0.690**	**5.4**	**1.746**	**12.240**	**1.750**	**0.077**	**0.403**	**4.009**	**0.877**
Count	**81**	**82**	**84**	**83**	**50**	**365**						

	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)	TSS (ppm)	O&G (ppm)	Cu (ppm)	Fe (ppm)	V (ppm)	Flow (MGD)
							30- DAY AVERAGE					

Priority Pollutants	Units	2/21/2007	5/18/2007	8/30/2007	11/16/2007	3/17/2008	5/23/2008	8/15/2008	10/6/2008
PCB	ug/l	ND	ND	ND	ND		ND	ND	ND
Pesticides	ug/l	ND	ND	ND	ND		ND	ND	ND
Semi-volitile Organic	ug/l	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organics	ug/l	ND	ND	ND	ND	ND	ND	ND	ND
2,3,7,8 TCDD	pg/l	ND	ND	ND	ND		ND	ND	ND
Phenols	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Asbestos	Fibers	0	0	0	0		0	0	0
Antimony	mg/l	0.016	0.007	0.008	0.006	0	0.003	0.006	0.004
Arsenic	mg/l	0.006	0	0	0.005	0	ND	0.007	ND
Beryllium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/l	0	0	0	0.001	0	ND	ND	ND
Chromium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Copper	mg/l						ND	ND	ND
Cyanide, Total	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Lead	mg/l	0	0.001	0.001	0.002	0	ND	0.001	0.001
Mercury	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	mg/l	0	0.014	0.008	0.045	0.0082	0.005	0.005	ND
Selenium	mg/l	0.011	0.019	0.012	0.01	0	0.021	0.019	0.019
Silver	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	mg/l	0.031	0.106	0.052	0.331	0.16	0.059	0.047	0.032
Other parameters									
Nitrate as N	mg/l	0.35	0.15	0.03	0.43	0.413	0.34	0.284	0.295
Aluminum	mg/l	0.15	0.07	0.08	0.1	2.3	0.16	0.08	0.03
Cobalt	mg/l	0.002	0..1	0.002	0.001	0	ND	ND	ND
Mangenese	mg/l	0.005	0.009	0.008	0.018	0.022	ND	0.009	ND
Ammonia	mg/l	0	0	0	0.15	0.47	0.37	0.17	0.13

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Priority Pollutants	Units	3/2/2009	5/21/2009	8/17/2009	10/26/2009	2/22/2010	5/17/2010	7/26/2010	10/25/2010	3/21/2011	Avg
PCB	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-volitile Organic	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organics	ug/l	ND except chloroform 1.1	ND	ND	ND	ND	ND	ND	ND except, chloroform 2.6, Bromodichloromethane 0.8	ND	ND
2,3,7,8 TCDD	pg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenols	mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Asbestos	Fibers	0	0	0	0	0	0	0	0	0	
Antimony	mg/l	0.009	0.005	0.006	ND	0.004	0.005	0.004	0.006	ND	0.0059
Arsenic	mg/l	0.012	0.009	0.02	ND	0.001	0.008	0.018	0.009	0.007	0.0073
Beryllium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/l	ND	0.002	ND	ND	ND	ND	ND	ND	ND	0.0005
Chromium	mg/l	ND	ND	ND	ND	0.002	0.006	0.006	ND	ND	ND
Copper	mg/l	ND	0.03	ND	ND	0.002	0.022	0.03	ND	ND	
Cyanide, Total	mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	mg/l	0.001	0.005	0.001	0.001	0.003	0.001	0.017	0.001	0.004	0.0025
Mercury	mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	mg/l	0.024	0.008	ND	ND	0.004	0.006	0.010	ND	0.006	0.0110
Selenium	mg/l	0.029	0.023	0.032	0.019	ND	0.022	0.072	0.021	0.024	0.0221
Silver	mg/l	ND	ND	ND	ND	0.002	ND	ND	ND	ND	ND
Thallium	mg/l	ND	0.01	0.001	ND	ND	ND	ND	ND	ND	ND
Zinc	mg/l	0.128	0.005	0.107	0.041	0.125	0.073	0.015	0.04	0.044	0.0821
Other parameters											
Nitrate as N	mg/l	0.417	0.284	0.889	0.579	1.97	0.666	0.395	4.45	1.22	0.7742
Aluminum	mg/l	0.16	0.268	0.19	0.625	0.259	0.135	0.09	0.01	0.06	0.2804
Cobalt	mg/l	ND	0.001	ND	ND	0.002	ND	ND	0.001	ND	0.0013
Mangenese	mg/l	0.008	0.03	ND	0.013	0.016	0.005	0.01	0.005	0.006	0.0117
Ammonia	mg/l	0.55	ND	ND	0.19	0.19	0.22	ND	ND	2.59	0.3869