

**DRAFT FACT SHEET  
NPDES PERMIT REISSUANCE  
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
WASTEWATER TREATMENT PLANT AT BLUE PLAINS  
WASHINGTON, DC  
September 1, 2017**

**NPDES Permit Number: DC0021199**

THE PURPOSE OF THIS ACTION IS THE ISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TREATED WASTEWATER TO WATERS OF THE UNITED STATES PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT.

**1. NOTICE OF PERMIT REISSUANCE**

The United States Environmental Protection Agency, Region III (EPA) has made a determination to revise and reissue a permit for the discharge of treated municipal wastewater from the wastewater treatment facility at Blue Plains and treated and untreated combined wastewater and storm water through the District of Columbia's combined sewer system as described in the permit application.

All permit requirements are based on the Clean Water Act (33 U.S.C. § 1251 *et seq.*), hereinafter referred to as the Act or CWA, and NPDES regulations (40 C.F.R. Parts 122, 124 and 133).

**2. PERMITTING AUTHORITY**

The NPDES Permitting authority is the EPA Region III, Office of NPDES Permits and Enforcement (3WP41), 1650 Arch Street, Philadelphia, PA 19103. The permit writer is Mark Smith (215-814-3105), NPDES Permits Branch.

**3. PERMITTEE**

The Permittee is the District of Columbia Water and Sewer Authority (DC Water or the permittee), 5000 Overlook Avenue, SW, Washington, DC 20032. The contact person is Leonard Benson (202-787-2358)

**4. EFFECTIVE DATES**

The permit will become effective 30 days after the final determination is made, unless a petition for review by the Environmental Appeals Board is filed within 30 days after receipt of

the final determination. See 40 C.F.R. § 124.19. The final permit shall expire five years from the effective date.

## **5. PUBLIC NOTICE**

This draft permit was offered for a 30-day public comment on September 1, 2017 for which EPA published a notice in the *Washington Times*. In addition to the notice in the *Times*, in accordance with the requirements found at 40 C.F.R. § 124.10(c)(1), EPA sent an email to persons living in the District of Columbia and the surrounding area who are known to EPA to be interested in such matters, with the location of electronic copies of the public notice, draft permit, and draft fact sheet.

## **6. DESCRIPTION OF THIS ACTION**

This action is to revise and reissue the NPDES permit for the Blue Plains Advanced Wastewater Treatment Plant (BPAWWTP) POTW located at 5000 Overlook Avenue, SW Washington DC 20032. The site of the treatment facility is commonly known as Blue Plains. The most recent permit was issued September 30, 2010 and expired on September 30, 2015 (2010 Permit). The 2010 Permit is currently administratively continued. DC Water submitted an application dated March 27, 2015 for the renewal of the Blue Plains permit. In a letter dated July, 30, 2015, EPA requested additional information regarding the permit reapplication. In a submission dated August 31, 2015, DC Water submitted the requested information. The permit authorizes the discharge from two outfalls located at the treatment plant and 56 combined sewer overflow (CSO) outfalls located throughout the collection system, including a discharge from the Northeast Boundary Swirl Concentrator facility.

## **7. FACILITY DESCRIPTION**

The BPAWWTP is the largest advanced wastewater treatment plant in the world. It covers 150 acres, has a re-rated design capacity of 384 million gallons per day (MGD), and a peak capacity of 555 MGD for the first four hours of wet weather treatment and 511 MGD after four hours. The collection system includes 1,800 miles of sanitary and combined sewers, 22 flow-metering stations, nine off-site wastewater pumping stations and 16 storm water pumping stations within the District of Columbia (District). Separate sanitary and storm sewers serve approximately two-thirds of the District. In older portions of the system, such as the downtown area, combined sanitary and storm sewer systems are prevalent.

The BPAWWTP serves the District of Columbia, and portions of Montgomery and Prince Georges Counties in Maryland and Fairfax and Loudoun counties in Virginia.

The plant has two discharge points, Outfalls 001 and 002. Outfall 002, which discharges to the Potomac River, is the principle discharge point. Treatment for this outfall includes primary

treatment, secondary treatment, nitrification, biological nitrogen removal, filtration, disinfection and dechlorination. Outfall 001 functions as an excess flow conduit and is used to avoid hydraulic overloads to the plant during wet weather. Effluent from Outfall 001, which also discharges to the Potomac River, receives primary treatment, disinfection and dechlorination. Outfall 001 has been characterized as a CSO-related bypass, pursuant to the 1994 CSO Policy. The current excess flow treatment facility which discharges peak flow of 336 MGD is being reconfigured to include a new wet weather treatment facility (WWTF) using enhanced clarification which will discharge a peak flow of 225 MGD.

The primary features of the combined sewer capture, storage, conveyance, and treatment system will be the operation of the storage tunnels in the collection system, the WWTF at Blue Plains and green infrastructure.

Upon completion of the Blue Plains Tunnel (BPT) and the tunnel dewatering treatment train, the flow configuration at Blue Plains will be modified to maximize treatment and pollutant reduction. Flows from the conveyance and storage tunnel will be serviced by the tunnel dewatering treatment train. The tunnel dewatering treatment train includes grit removal and pumps and enhanced clarification. The effluent from the tunnel dewatering treatment train is then directed to BPAWWTP's secondary treatment. Flows in excess of the optimized capacity of BPAWWTP's secondary treatment train are disinfected and discharged from Outfall 001.

The permittee operates a combined sewer system which had a total of 58 CSO outfalls at the time the 2010 Permit was issued. Since then, several have been separated or abandoned, reducing the number to 47. The sewer system is designed to convey waste to the treatment plant and to prevent wet weather flow from exceeding the hydraulic capacity of the sewers and/or the treatment plant. Included among the outfalls identified in the permit are Outfalls 004, 008, 061 and 062, which are emergency relief points at pump stations. They are not authorized to discharge. Outfall 059, identified as Luzon Valley is no longer covered by this permit, as it discharges only storm water; it is now authorized to discharge under the District's Municipal Separate Storm Sewer System (MS4) permit.

The BPAWWTP POTW consists of the following treatment technologies:

*Primary Treatment* - a wastewater treatment process that allows particles which float or settle to be separated from the water being treated. At the BPAWWTP, this process includes the following processes: raw wastewater pumping; grit removal; grease separation, and primary sedimentation. Solids removed from the process are treated by digestion, elutriation, and dewatering.

*Secondary Treatment* - is a wastewater treatment process used to convert dissolved or suspended materials into a form which can be separated from the water being treated. This process usually follows primary treatment by sedimentation. At the BPAWWTP, secondary treatment is accomplished by means of a modified-aeration step-feed activated sludge process. The secondary treatment facilities are comprised of aeration basins, secondary sedimentation basins, sludge return and wasting systems, the secondary blower facilities with associated blowers and diffusers,

and pumping stations. At Blue Plains carbon is reduced by use of coarse bubble diffused aeration and the plant uses chemical precipitation for phosphorus removal.

*Biological Nitrogen Removal (BNR)* - a process whereby ammonia nitrogen is converted to nitrate nitrogen. The process also includes denitrification facilities for nitrogen removal, filtration for effluent polishing, and chlorination for effluent disinfection.

*Nitrification* - an aerobic process in which bacteria change the ammonia and organic nitrogen in wastewater into oxidized nitrogen (usually nitrate). The second stage biological oxygen demand (BOD) is sometimes referred to as the "nitrification stage," and the first stage BOD is called the "carbonaceous stage." Blue Plains employs sparged air turbines for oxygenation.

*Denitrification* - an anaerobic process that occurs when nitrite or nitrate ions are reduced to nitrogen gas and bubbles are formed as a result of this process. The bubbles attach to the biological flocs and float the flocs to the surface of the secondary clarifiers. This condition is often the cause of rising sludge observed in secondary clarifiers or gravity thickeners. At Blue Plains, the denitrification facilities are able to treat the entire plant flow, due to a major upgrade of the plant's nitrification/denitrification facilities.

*Filtration and Disinfection and Dechlorination* - includes multimedia filtration of nitrified effluent and disinfection of the filtered effluent by chlorination and dechlorination prior to discharge.

*Solids Process* - includes gravity thickening and anaerobic digestion of primary sludges, air flotation thickening of waste activated and chemical sludges, vacuum filtration of the thickened and digested sludges, and direct off-site disposal of the vacuum filter cake.

*Chemical Addition* - chemicals may be employed in the liquid stream treatment operations for a variety of functions. The chemicals employed and the treatment applications are described briefly below.

*Odor Control* - chlorine may be applied at raw wastewater pumping station numbers 1 and 2 and to the effluent from the grit removal facilities.

*Settleability Enhancement* - polyelectrolytes (polymers) may be added as follows: influent to primary sedimentation; influent to secondary sedimentation; and influent to nitrification sedimentation

*Phosphorus Removal* - iron salts including ferric chloride, ferrous sulfate and liquid alum may be added to the unit process as follows: primary sedimentation; secondary treatment; nitrification and effluent filtration.

*Metal Salts* - are used for the precipitation of phosphorus and as an aid in enhancing settleability of sludges and mixed liquors.

*pH* - lime is applied to the effluent during nitrification in order to maintain an adequate pH level for the nitrification process.

*Foam Control* - commercial defoamant compounds can be added to secondary treatment and nitrification as needed.

*Disinfection* - the process used to kill most microorganisms in wastewater including essentially all disease causing bacteria. At Blue Plains, chlorine is used to disinfect effluent discharged from both plant outfalls.

*Dechlorination* - as noted above, chlorine is used to disinfect effluent discharged at both plant outfalls; however, excess chlorine is removed from the effluent by the addition of sulfur dioxide.

*Solids Processing* - polymers are used in the dissolved air floatation thickening process as stabilization along with ferric chloride for aiding dewatering during vacuum filtration and at the centrifuges as a dewatering aid.

*Wet Weather Treatment Facility (WWTF)* - The wet weather treatment facility is located on the Blue Plains site at the end of the BPT. The WWTF is designed to empty the BPT and transfer treated effluent to the BPAWWTP and/or discharge treated effluent from Outfall 001 during Combined Sewer System Flow (CSSF) conditions. The WWTF comprises initial screening and grit removal for pumps protection, pumping to empty the BPT, fine screening and grit removal, enhanced or high rate clarification, transfer of enhanced clarification effluent to the BPAWWTP, and disinfection of enhanced clarification effluent prior to discharge from Outfall 001.

*Green Infrastructure (GI)* - Techniques that store, infiltrate, evaporate, or detain runoff, including but not limited to, practices that mimic predevelopment site hydrology as identified in the District's stormwater management regulations and guidebook and in "Greening CSO Plans: Planning and Modeling Green Infrastructure for Combined Sewer Overflow (CSO) Control", U.S. Environmental Protection Agency, March 2014, Publication#832-R-14-001.

## **8. RECEIVING WATERS**

The treatment plant and sewer system discharge to the Potomac and Anacostia Rivers, Rock Creek and tributary waters. In its water quality standards (WQS), the District of Columbia has designated these waterbodies for primary contact recreation, aesthetic enjoyment, aquatic life, water oriented wildlife, raw water source for industrial water supply, and navigational use.

## 9. RELEVANT BACKGROUND AND PERMIT HISTORY

The following presents some of the background on the proposed permit reissuance and its terms. Additional information and detail can be found in the Fact Sheet for the 2010 Permit and the 2010 Permit itself, both of which are included in the Administrative Record for this permit action.

Much of the permit's history and terms relate to the provisions for the control of CSOs via development of the nine minimum controls (NMCs) and a CSO Long Term Control Plan (LTCP) to achieve applicable WQS as mandated by the 1994 CSO Control Policy (CSO Policy), and the CWA<sup>1</sup>, as well as the limits for total nitrogen (TN) discharges.

DC Water developed an LTCP which proposed a comprehensive plan designed to meet the District's WQS. The original proposed plan included, in part, select sewer separation, pump station enhancements and construction of three storage and conveyance tunnels serving the Anacostia, Potomac, and Rock Creek watersheds. After extensive public outreach and comment, EPA accepted this plan. On March 23, 2005 a Consent Decree between EPA and DC Water was entered (LTCP Consent Decree), which requires implementation of the LTCP, and which includes a schedule for DC Water to implement the CSO control measures in the LTCP.

Subsequently, DC Water proposed a number of significant changes to the LTCP to: address nutrient reduction requirements established by the Chesapeake Bay TMDL, incorporate additional sewer separation projects, and to incorporate extensive Green Infrastructure elements. These modifications would allow significant reductions in nutrients and other pollutants of concern above that in the original LTCP through: the optimization of flow to secondary treatment to maximize pollutant reductions during wet weather events, the construction of enhanced clarification units to treat wet weather flows, large scale implementation of Green Infrastructure in the Potomac and Rock Creek watersheds, elimination of the Piney Branch Tunnel, and changes to the design of the Potomac and Anacostia storage and conveyance tunnels to enhance operability and take advantage of flow reductions from Green Infrastructure and additional sewer separation. This also included a tunnel system dewatering pumping station and improvements to excess flow treatment. After extensive public outreach, EPA accepted these modifications. A modification to this Consent Decree was entered on January 14, 2016 (CD Amendment).

Prior to the issuance of the 2010 Permit, for which no petitions for review were filed with the Environmental Appeals Board (EAB), several of the provisions of prior permits, as discussed below, were challenged and the challenges were litigated before the EAB. The results of those challenges are reflected in the 2010 Permit provisions, as well as those currently proposed. Specifically, the previously challenged provisions include the LTCP WQS, both narrative and

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<sup>1</sup> 59 FR 18688 (April 19, 1994). The CWA requires NPDES permits to conform to the CSO Policy. See CWA Section 402 (q), 33 U.S.C. §1342(q)(1).

numeric provisions, lack of a compliance schedule to implement the LTCP, TN limits and lack of a compliance schedule to implement the TN limits.

On January 24, 2003 EPA reissued the Blue Plains permit.<sup>2</sup> Petitions to review certain provisions of the permit were filed with the EAB in accordance with 40 C.F.R. § 124.19 jointly by Friends of the Earth and the Sierra Club (FOE/SC) and also by DC Water. On December 16, 2004, after public notice and comment, EPA issued a modified permit which both included revisions to the contested provisions and added provisions to the permit in order to conform to the CSO Policy.<sup>3</sup> The modifications related to the implementation of the LTCP, designed to achieve compliance with the CWA, particularly requirements for compliance with state WQS. These are referred to as “Phase II” conditions under the CSO Policy. Both DC Water and FOE/SC filed timely petitions for review of certain of the CSO Phase II provisions of the modified permit, specifically to the water quality-based effluent limits (WQBELs) for CSOs. In addition, DC Water asserted that EPA should have included a compliance schedule for implementation of the LTCP into the permit, despite the fact that there was a schedule of compliance for the LTCP included in a Consent Decree between EPA and the permittee. See footnote 2.

Ultimately, EPA decided to propose modifications to the challenged provisions, so EPA withdrew those permit provisions, in accordance with 40 C.F.R. § 124.19(d). The only issue remaining before the EAB at that point was DC Water’s request that the Board require EPA to include a compliance schedule for implementation of the LTCP in the permit. After public notice and comment, on April 5, 2007, EPA issued a second modification of the permit. That modification removed the general WQS compliance requirement for CSOs included in the previous modification, relying instead on the specific performance standards for the LTCP as the

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<sup>2</sup> Prior to issuance of the 2003 Permit, several citizen’s groups had filed challenges to DC Water’s compliance with the CSO Policy, alleging that DC Water failed to adequately implement the NMCs and to develop and implement an LTCP as required by the CSO Policy. Anacostia Watershed Society, et al. v. District of Columbia Water and Sewer Authority, et al., U. S. District Court of D.C. Civ. Action No: 1:00CV00183TFH. The United States had also filed a Complaint against DC Water and the District of Columbia, alleging, *inter alia*, that DC Water failed to fully implement the Nine Minimum Controls required by the CSO Policy and violated applicable WQS. U. S. v. District of Columbia Water and Sewer Authority, et al., Civil Action No: 1:002CV02511. These two lawsuits were consolidated as Consolidated Civil Action No. 1: CV00813TFH. DC Water is currently subject to two Consent Decrees as a result of these lawsuits. On October 10, 2003, a Consent Decree among the United States, the Permittee and the citizen’s groups was entered, resolving a number of issues in the litigation, particularly those issues related to implementation of the nine minimum controls. In addition, on March 23, 2005 a Consent Decree between EPA and WASA was entered (LTCP Consent Decree), which requires implementation of the LTCP, and which includes a schedule for WASA (DC Water) to implement the CSO control measures in the LTCP. EPA accepted these modifications, and on January 14, 2016, the CD Amendment was entered.

<sup>3</sup> The CSO Policy includes requirements for “Phase I” permits relating to demonstration of implementation of the NMCs and development of an LTCP, and “Phase II” permits relating to implementation of an LTCP, once it has been developed, in particular, including water quality-based effluent limits.

applicable WQBELs for CSO discharges. The permit modification also replaced the previous total nitrogen (TN) discharge goal with a TN discharge limit effective upon the permit's effective date.<sup>4</sup>

Petitions for review of portions of the April 5, 2007 permit modification were filed with the EAB by three parties: 1) DC Water - EPA's decision to place the TN limit in the permit and not to include a compliance schedule for achievement of that limit.; 2) DC Water and the Chesapeake Bay Foundation (CBF) - EPA's decision not to include a compliance schedule for the TN limit in the permit; and 3) Friends of the Earth and the Sierra Club (FOE/SC) - EPA's decision not to include the general requirement for WQS compliance in the CSO-related provisions of the permit.

On March 19, 2008, the EAB issued a decision on the issues raised in the petitions with respect to the April 5, 2007 permit modification, as well as on the sole issue remaining from the DC Water petition for review of the December 16, 2004 permit modification, DC Water's assertion that EPA should be required to include a compliance schedule for the LTCP in the permit. See, *In re District of Columbia Water and Sewer Authority*, 13 EAD 714 (March 19, 2008). The EAB denied the challenges in part and remanded certain of the challenged permit provisions to EPA for further action.

First, the EAB denied DC Water's challenge of the total nitrogen limit of 4,689,000 pounds per year, both as to EPA's decision to include the limit in the permit at that time and DC Water's challenge to the limit itself.<sup>5</sup> However, the EAB agreed with both DC Water and CBF that under the CWA and the applicable District of Columbia WQS, it would be appropriate for the permit to include a compliance schedule for DC Water to achieve the TN limit. See 21

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<sup>4</sup> Prior to the April 4, 2007 permit modification, the Blue Plains permit contained a total annual nitrogen discharge goal of no greater than 8,467,200 pounds per year. Based upon the EPA Chesapeake Bay Criteria Guidance and prospective state water quality standards, EPA and the Bay states (Virginia, Maryland, Delaware, New York, Pennsylvania and the District of Columbia) established cap loadings for the major basins for each of the states for nitrogen, phosphorous and sediment. The states then developed tributary strategies to achieve the agreed to allocations. The District of Columbia's Bay allocation is divided among non-point sources, DC Water and CSOs. The final mass load limit for Blue Plains was established at a total mass load of 4,689,000 pounds per year for total nitrogen, which was the permit limit in the 2007 modification. In the Fact Sheet to the April 2007 modification EPA stated its intention to establish a schedule for compliance with the nitrogen limit in a separate enforceable document, such as through a modification of the Consent Decree between EPA and the permittee in *U. S. v District of Columbia Water and Sewer Authority, et al.*, Civil Action No: 1:002CV02511 (Dist. Ct. D.C.).

<sup>5</sup> DC Water filed a Motion for Reconsideration of the EAB decision on the TN limit, and the motion was denied. *In re District of Columbia Water and Sewer Authority*, April 23, 2008. DC Water appealed the EAB decision on that issue to the D.C. Circuit Court of Appeals. *DC Water and Sewer Authority v. EPA*, Civil Action No. 08, 1251 (D.C. Cir.). EPA moved to dismiss the appeal for lack of jurisdiction and the motion was granted. (December 12, 2008, unpublished.)



DCMR 1105.9. The EAB found that the District's WQS require EPA to include a compliance schedule in the permit when a new WQBEL is included in a permit, consistent with the Clean Water Act and the applicable District regulations and remanded the permit to EPA to take action in accordance with the decision. Accordingly, EPA included in the 2010 Permit a compliance schedule for DC Water to make the necessary process changes in order to meet the TN limit.<sup>6</sup> DC Water complied with the compliance schedule and it is no longer needed, so it is not included in the current permit.

DC Water had also challenged EPA's decision not to include a compliance schedule for implementation of DC Water's CSO LTCP in the December 16, 2004 permit modification as contrary to the requirements of DC's WQS regulation. A schedule for implementation of the LTCP obligations is already contained in a judicial Consent Decree between DC Water and EPA. See Footnote 2. The EAB found that, while EPA's decision to place the implementation schedule in a consent decree was consistent with the CSO Policy and the CWA, the District WQS regulation also requires EPA to place a compliance schedule in the permit, to the extent the WQS at issue were established after July 1, 1977. See *In re District of Columbia Water and Sewer Authority*, 13 EAD 714, page 33, and footnote 42.

The WQS that the LTCP was designed to achieve include: 1) the designated uses for the Potomac River, the Anacostia River and Rock Creek and its tributaries<sup>7</sup>; 2) the narrative WQS<sup>8</sup>; and, 3) the numeric WQSs for bacteria and dissolved oxygen<sup>9</sup>. EPA determined that each of the controls in the LTCP is designed to achieve the designated uses, narrative WQS and the numeric standards for dissolved oxygen and bacteriological pollutants, measured by E. coli. EPA further determined that the WQS at issue were enacted before July 1, 1977, or were essentially the same as those enacted prior to that time, and therefore it is not appropriate to

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<sup>6</sup> The allocation for Blue Plains in the 2010 Permit was 4,689,000 pounds per year total nitrogen, based on the nitrogen cap loadings established pursuant to the EPA Bay Criteria Guidance, state water quality standards and the tributary strategies developed for the Chesapeake Bay. Previously, EPA had applied the Bay allocation for Blue Plains by setting a limit of 4,689,000 pounds per year applied to the combined discharges from Outfalls 001 and 002. However, DC Water provided information demonstrating that unlike the discharges from Outfall 002, the nutrient discharges from Outfall 001, as a CSO-related bypass, rather than a continuous discharge, will fluctuate, based on weather conditions and temperature. Therefore, EPA has applied a specific nitrogen limit only to Outfall 002, of not more than 4,377,580 pounds per year. The modeling used to establish the load allocations for the Bay considered rainfall in the years 1985 to 1994. The wettest year in that period was 1989, with a rainfall of 50.32 inches reported at Ronald Reagan National Airport. Had the controls in the TN/Wet Weather Plan been implemented in 1989, DC Water projected that Outfall 001 would have discharged 311,420 pounds of total nitrogen. It is expected that will be the maximum discharge from Outfall 001. Therefore, in order to assure compliance with the nitrogen allocation for Blue Plains, a limit of 4,377,580 pounds per year has been assigned to Outfall 002: 4,689,000. lbs./yr. (total allocation) – 311,420 lbs./yr. (Outfall 001) = 4,377,580 lbs./yr. (Outfall 002).

<sup>7</sup> See, 21 DCMR 1101.1 and 1101.2;

<sup>8</sup> See, 21 DCMR 1104.1

<sup>9</sup> See, 21 DCMR 1104.8

include a compliance schedule for LTCP implementation in the permit. The bases for these determinations are discussed at length in the Fact Sheet for the 2010 Permit, and documented in the administrative record for that permit action.

In addition to its dispositive legal analysis of the appropriateness of including a compliance schedule for the LTCP in the 2010 Permit, the Region noted practical considerations that would make inclusion of an LTCP schedule in the permit problematic. These included that, the compliance schedule in the Consent Decree addressing DC Water's discharges is a bargained for settlement position in the context of a judicial action handled by the Department of Justice (DOJ), the Consent Decree terms, including the compliance schedule, are subject to modification by motion of one or both parties and the agreement of the District of Columbia District Court. Indeed, the Consent Decree has been modified (see footnote 2). Further, any compliance schedule in a permit is potentially subject to appeal to the EAB by citizens or the permittee and thereafter to judicial appeal. Accordingly, the issue of coordination between judicial resolution of a schedule in a Consent Decree, as well as resolution of issues which may be raised on appeal to the EAB, might present significant delays in establishing consistent requirements in the NPDES permit. In addition, both Consent Decree modification and NPDES permit modifications carry public notice requirements. Coordination of these processes would be burdensome, duplicative and could render unclear the legal obligations applicable to DC Water's discharges at different points in time. EPA did not include an LTCP compliance schedule in the 2010 Permit.

Finally, the FOE/SC had challenged EPA's decision to include in the permit only the LTCP performance standards as the WQBELs applicable to CSO discharges. The EAB found that EPA's decision to remove the general prohibition against discharging in excess of WQS had not been subject to public notice and comment as required by 40 C.F.R. § 124.10. Therefore, the EAB remanded that provision to EPA, requiring the Agency to either reinstate the prior language to the permit, or reopen the public comment period to allow comment on this issue, provide a response to comments and reissue the permit addressing that provision. EPA reinstated the general prohibition in the 2010 Permit, and it remains in the proposed permit.

The 2010 Permit also added a condition to address the Total Maximum Daily Load (TMDL) of Polychlorinated Biphenyls (PCBs) for Tidal Portions of the Potomac and Anacostia Rivers in the District of Columbia, Maryland and Virginia (Potomac/Anacostia PCB TMDL), approved by EPA on October 31, 2007.<sup>10</sup>

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<sup>10</sup> With the approval of the Potomac/Anacostia PCB TMDL, the WQBELs in NPDES permits that are issued, reissued or modified after the TMDL approval date must be consistent with the assumptions and requirements of the WLAs. 40 C.F.R. 122.44 (d)(1)(vii)(B).

## 10. PERMIT CONDITIONS

This proposed Permit carries forward the same conditions and limitations as the 2010 Permit, which include: 1) effluent limitations and monitoring requirements for Outfalls 002, 001 and 019; 2) standard conditions applicable to all NPDES permits; 3) operation and maintenance requirements; 4) monitoring and reporting requirements; 5) reporting and public accountability requirements; 6) combined sewer system technology-based and water quality-based requirements; and, 7) special conditions for: pretreatment, sludge handling, chlorination/dechlorination, total nitrogen, storm water management, PCB monitoring and reduction and whole effluent toxicity testing in subsequent permit applications.

The 370 MGD design capacity stated in Part I.B. of the current 2010 permit is the dry weather annual average design capacity for the Complete Treatment facilities in the BPAWWTP, which discharges treated effluent from Outfall 002. In addition to dry weather flow, the plant provides advanced treatment to flows from the combined sewer system during wet weather. The proposed permit requires advanced treatment of 555 MGD for the first four hours and 511 MGD thereafter during combined sewer system flow conditions. As part of this permit renewal, the quantity of captured stormwater flow that is a component of the sources that make up the design capacity of the Complete Treatment facilities has been quantified. DC Water has used the LTCP Combined Sewer System (CSS) wet weather model to estimate captured stormwater flow resulting from changes in the CSO system. Based on predictions from the LTCP CSS wet weather model it is anticipated that an additional 21 MGD of wet weather stormwater will be captured by the system in an average year of rainfall. Modeling results anticipated that on an annual average 14 MGD will be discharged from Outfall 002 receiving full treatment and 7 MGD will receive wet weather treatment. Therefore, 14 MGD has been added to the dry weather design capacity of 370 MGD for a total 384 MGD and the proposed permit applies recalculated permit limitations for Outfall 002 based on the new design capacity of 384 MGD.

The design capacity of 384 MGD has been incorporated into the Blue Plains Intermunicipal Agreement of 2012 (IMA), among the District of Columbia, DCW, Fairfax County, Virginia, Montgomery County Maryland, Prince George's County, Maryland and the Washington Suburban Sanitary Commission.

Highlights of the draft permit are set forth below:

### A. Effluent Limits (Outfall 002)

1. **E. Coli**, (*Escherichia coli*) - Based on a 2005 revision to the District WQS, the bacteriological criterion has been changed from fecal coliform to *E. coli*, effective January 1, 2008. 21 DCMR 1104.8. The *E. coli* bacteria limitation for Outfall 002 is being carried through from the previous permit: 126 cfu/100 ml geometric mean.

2. **Dissolved Oxygen** - The dissolved oxygen limitation of 5.0 mg/l minimum daily average and of not less than 4.0 mg/l at any time and the total residual chlorine (TRC) limitation of non-detectable is being carried through unchanged at Outfall 002.
3. **Total Residual Chlorine** - The TRC limitation of non-detectable is being carried through.
4. **CBOD<sub>5</sub>** - The 5-day Carbonaceous Biological Oxygen Demand (CBOD<sub>5</sub>) loads for the 2010 permit with a 370 MGD dry weather design flow capacity was 15,429 lbs/day monthly average and 23,143 lbs/day weekly average. 384 MGD divided by 370 MGD produces an increased flow coefficient of 1.03783 and multiplying the previous loads by that results in 16,013 lbs/day monthly average and 24,019 lbs/day weekly average load limits. The same concentrations limit of 5.0 mg/l monthly average and 7.5 mg/l weekly average CBOD<sub>5</sub> were carried through from the 2010 permit.

Carbonaceous Biological Oxygen Demand (5 day) (CBOD<sub>5</sub>) – concentration limits govern limitation for CBOD<sub>5</sub> and these concentrations limits have been maintained at the level in the current permit and mass loads have been adjusted for 384 MGD.

5. **Ammonia Limits** - A March 26, 2015 Limno-Tech memo included in the permit application describes the procedure used to recalculate the ammonia limits for the proposed permit. The same procedure was used to derive the limitations as was used in the 2010 permit: definition of the applicable WQSs and environmental conditions (temperature and pH. at critical environmental conditions), determine wasteload allocations with the use of mathematical models to predict the effluent and receiving stream concentrations, calculate the permit limits using statistical techniques that will adhere to standards. The concentration limits are similar to those developed in 2001, but differ slightly due to factors such as lower upstream ammonia concentrations and a decrease in the chronic dilution factor caused by the higher discharge design capacity used for modelling.

The 2010 permit's ammonia limits were: Summer (5/1-10/31) load limits of 12,960 lbs/day average monthly, 18,823 lbs/day weekly average, and concentration limits of 4.2 mg/l monthly average and 6.1 mg/l weekly average. Winter I (11/1-2/14) load limits of 34,253 lbs/day monthly average, 45,670 lbs/day weekly average and concentration limits of 11.1 mg/l monthly average and 14.8 mg/l weekly average. Winter II (2/15-4/30) load limits of 39,500 lbs/day monthly average and 52,460 lbs/day weekly average and concentration limits of 12.8 mg/l monthly average and 17.0 mg/l weekly average.

The draft permit's recalculated ammonia limits are: Summer (5/1-10/31) load limits of 13,130 lbs/day monthly average, 19,536 lbs/day weekly average and concentration limits of 4.1 mg/l monthly average and 6.1 mg/l weekly average. Winter I (11/1-2/14) load limits of 40,993 lbs/day monthly average and 61,809 lbs/day weekly average and concentration limits of 12.8 mg/l monthly average and 19.3 mg/l weekly average. Winter II (2/15-4/2) load limits of 32,986 lbs/day monthly average and 49,319 lbs/day weekly average and concentrations limits of 10.3 mg/l monthly average and 15.4 mg/l weekly average.

Ammonia limits based on toxicity for 384 MGD were calculated using EPA's 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA 822-R-99-014 and EPA's Technical Support Document for Water Quality-based Toxics Control (1991).

**6. Total Nitrogen, Total Phosphorus and Total Suspended Solids** - The annual TN limit in the 2010 Permit is based on the Chesapeake Bay Tributary Strategy (forerunner of the Chesapeake Bay TMDL) TN wasteload allocation (WLA) of 4,689,000 lbs/year to Blue Plains. The 2010 permit distributed the 4,689,000 lbs/year WLA between Outfalls 001 and 002 based on preliminary wet weather modeling by the Permittee. This modeling predicted a TN discharge of 311,420 lbs/year from Outfall 001 during the wettest year of the 3-year LTCP climate period (1989, 50.32" of rainfall). Using that scenario, the 2010 permit established the annual TN limit for Outfall 002 at 4,377,580 lbs/year ( $4,689,000 - 311,420 = 4,377,580$  lbs/year).

The average monthly TP limit in the 2010 Permit is based on the Potomac Strategy Management Commission Agreement and best technical information available at the time the 2010 permit was issued, which set a concentration at 0.18mg/L for a BPAWWTP design capacity of 370 MGD.

The average monthly limit for TSS in the 2010 Permit was derived from a 1969 USEPA Administrative Order establishing a TSS concentration of 7.0 mg/L.

The Chesapeake Bay TMDL, based on the latest scientific modeling using the 10-year hydrologic period for the years 1991 to 2000, is the current basis for the nutrient limits in the permit. The wettest year in the Chesapeake Bay TMDL was 1996 with a rainfall of 50.24". In this permit reissuance, the same approach is used to establish the distribution of loads between Outfalls 001 and 002 for TN as was used in the 2010 permit. The Permittee's combined sewer system model was used to predict pounds of TSS, TN, and TP discharged from Outfall 001 in the wettest year in the Chesapeake Bay TMDL climate period (1996, 50.24" of rain). This amount was then subtracted from the total Blue Plains allocation in the Chesapeake Bay TMDL to arrive at the distribution for Outfall 002 as follows:

Row	Parameter:	Total Nitrogen (lbs/yr)	Total Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
1	Chesapeake Bay TMDL Wasteload Allocation to Blue Plains	4,689,000	203,855	8,198,332
2	Distribution to 001	318,922	10,237	1,043,388
3	Distribution to 002 (Row 1 minus Row 2)	4,370,078	193,618	7,154,944

Effluent limitations for Outfall 002 for TN, TSS, and TP in the proposed permit has been based on the above wasteload allocations and a flow of 384 MGD as follows:

Parameter	2010 Permit	Draft Permit
<b>TN</b>		
Annual Limit	4,377,580 lb/yr	4,370,078 lb/yr
Average monthly load	No limit	No limit
Average weekly load	No limit	No limit
Average monthly concentration	No limit	No limit
Average weekly concentration	No limit	No limit
<b>TSS</b>		
Annual Limit	7,884,000 lb/yr	7,154,944 lb/yr
Average monthly load	21,600 lb/day	19,603 lb/day
Average weekly load	32,400 lb/day	29,404 lb/day
Average monthly concentration	6.7 mg/L	6.1 mg/L
Average weekly concentration	No limit	No limit
<b>TP</b>		
Annual Limit	202,575	193,618
Average monthly load	555 lb/day	530 lb/day
Average weekly load	1,080 lb/day	1,080 lb/day
Average monthly concentration	0.18 mg/L	0.17 mg/L
Average weekly concentration	0.35 mg/L	0.34 mg/L

The load allocations between the two outfalls may be re-evaluated based on the results of post construction monitoring required by this permit.

### Monitoring Only Requirements

Outfalls 002, 001, and 019 all have monitoring only requirements. In the 2010 permit Outfall 002 had monitoring only requirements for total ortho-phosphate, total alkalinity, total

hardness, nitrate, nitrate/ TKN, total nitrogen, cadmium (dissolved), copper (dissolved), iron (dissolved), mercury (total recoverable), lead (dissolved), nickel (dissolved) and PCBs. In the 2010 permit Outfall 001 had monitoring only requirements for flow, CBOD5, total suspended solids (TSS), pH, PCBs, E. coli, total nitrogen (TN) and total phosphorous (TP). Outfall 019 in the 2010 permit had monitoring only requirements for flow, TSS, E. coli, TRC, nitrate, total Kjeldahl nitrogen, nitrogen, phosphorous, CBOD.

In the draft permit at Outfall 002 all the monitoring only requirements are being carried forward.

All the monitoring only requirements for Outfall 001 are being carried through. All the monitoring only requirements for Outfall 019 are being carried through until the Northeast Boundary Swirl Facility is taken out of service with the completion of the tunnel system and WWTF.

**Outfall 001** – An E.coli Total Maximum Daily Load (TMDL) for the District of Columbia was established in 2004 and revised in 2014. The revised TMDL assigns an annual E. coli waste load allocation (WLA) of 5.99 E+ 15 MPN and a maximum daily WLA of 4.37 E+14 MPN for Outfall 001 during wet weather events. Both the annual and daily WLAs in the TMDL for Outfall 001 are based on the bacteria loading assumptions in the Long Term Control Plan (LTCP) for Blue Plains. EPA and the District have agreed that the controls in the LTCP will not preclude compliance with the District's WQS, provided that they have been properly designed, constructed, and operated. As the TMDL was based upon the assumptions in the LTCP, proper design, construction, and operation of the controls should result in compliance with the WLA, as well. This will be verified through post-construction monitoring. This permit establishes post-construction monitoring requirements (see Part III, Section D, paragraph 2) to ensure that the installed controls result in discharges that will not cause or contribute to an excursion from any applicable WQS and are consistent with the assumptions and requirements of any applicable WLA.

Under the updated LTCP, CSO flows that would have discharged into the Potomac and Anacostia Rivers are captured and stored in a system of inter-related tunnels. This wastewater is then conveyed to Blue Plains through the Blue Plains Tunnel. The contents of the Blue Plains Tunnel are emptied via a tunnel dewatering treatment train that includes grit removal and pumps, after which it is directed to enhanced or high rate clarification. After leaving enhanced clarification, the flow is preferentially directed to the BPAWWTP's secondary treatment provided that it does not surpass the capacity of secondary treatment. If a portion of the flow cannot be treated by secondary treatment due to flow restrictions, it is treated by the WWTF using enhanced clarification followed by disinfection and dechlorination and is then discharged at Outfall 001. As Outfall 001 is a CSO-related bypass, there is significant variability in the influent quality and quantity, and its discharge frequency. This, when coupled with sample analysis lag time does not allow real time analysis of the facility's compliance status. Consequently, EPA has concluded that numeric effluent limitations are infeasible for Outfall 001. Therefore, pursuant to

40 CFR 122.44(k), EPA intends to require best management practices in the form of parametric operation and monitoring requirements to control discharges from Outfall 001. However, since the WWTF will not be operational until 2018, EPA lacks the data needed to establish the parametric monitoring and operation requirements for Outfall 001 in this permit. Therefore, in order to collect the data needed to establish the parametric operation and monitoring requirements for Outfall 001, this permit establishes a requirement in Part III.D.2 requiring the permittee to conduct a monitoring and operation analysis to correlate pollutant loads of E. coli and other pollutants of concern, with key process operating parameters for the Enhanced Clarification Facility (ECF) and the disinfection process units of the WWTF after it is placed in operation. The results of this analysis will be used in the establishment of parametric limits to ensure consistency with the assumptions and requirements of available WLAs.

Specifically, for Outfall 001, the permittee submitted to EPA for review and approval a Monitoring Plan to 1) demonstrate that the treatment process is meeting the assumptions of the LTCP regarding appropriate level of control and 2) the development of parametric monitoring and flow management routines for the ECF and disinfection process units to ensure compliance with the applicable TMDL WLAs and water quality requirements. The Monitoring Plan will require monitoring of WWTF influent and effluent for pollutants of concern and characterization, critical process unit operating parameters, final effluent quality and process measurements and flow management routines for wet weather. Such characteristic will include the following: e coli, total nitrogen, total phosphorus, TSS, NTU, flow rate, additive addition, disinfection addition, residence time, residual chlorine, and other relevant process parameters. The condition further requires that following implementation of the Monitoring Plan, the permittee shall submit for EPA review and approval a Performance Assessment containing the results and findings of the Monitoring Plan. The Performance Assessment must correlate key process unit operation parameters with pollutant loadings. After EPA approval of the parametric analysis included in the Performance Assessment, EPA may reopen the permit to establish parametric monitoring and compliance requirements in the permit. The use of parametric monitoring will ensure continuous real time process optimization and compliance monitoring.

Flow requirements for Outfall 001 discharges - The flow requirements for discharges from Outfall 001 have been changed to reflect that construction of the nitrification/denitrification facilities has been completed.<sup>11</sup>

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<sup>11</sup> Outfall 002 discharges effluent that has undergone complete treatment. Influent to the treatment train originates from conveyance system and the tunnel dewatering treatment train. Outfall 001 discharges effluent after disinfection from the tunnel dewatering treatment train that cannot be treated by Blue Plains secondary treatment. In the LTCP and its update, DC Water demonstrated to EPA's satisfaction that 001 is a CSO-related bypass. EPA is continuing to designate Outfall 001 as an approved CSO-related bypass in this permit, on the basis of the following: the bypass comports with the requirements of the CSO Policy and 40 C.F.R. § 122.41(m); the permit requires immediate compliance with the WQBELS per the Phase II permitting requirements of the CSO Policy; and there exists a federal Consent Decree that establishes a compliance schedule for implementation of the LTCP. The permit



**B. Combined Sewer System Permit Conditions.**

1. Nine Minimum Controls

a. The table of CSO outfalls has been updated to remove Outfall 059 at Luzon Valley, which has been converted to a storm water only outfall that is now authorized under the District of Columbia MS4 permit. The table has been further revised to reflect that Outfalls 006, 031, 037, 053, 057 and 058 have been separated.

b. Minor revisions to the Nine Minimum Controls (NMC) Program section found at Section B, Technology-Based Requirements, have been made, as follows:

- Part III.B.1.a. Inspection and maintenance requirements have been added for green infrastructure
- Part III.B.1.b. Part III.B.1 Reporting requirements have been added for green infrastructure
- Part III.B.1 After the Blue Plains and Anacostia Tunnel are placed in service, the Northeast Boundary Swirl Facility, the Structure 24 inflatable dams and the netting system at CSO 018 will no longer be needed because the tunnel controls will be in place. These facilities may be demolished and/or abandoned after the tunnel is in place and operational. In addition, the catch basin cleaning frequency in the CSOs controlled by the tunnel may be returned to the frequency matching the rest of the system since solids and floatables control will be provided by the tunnel system.

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provides that the CSO-related bypass is only approved provided that the permittee remains in compliance with the LTCP implementation schedule requirements of the March 23, 2005 LTCP Consent Decree, as amended. The permit continues to prescribe the specific flow parameters under which EPA will exercise its enforcement discretion, as well as to specify that the flow discharged from Outfall 001 will receive a minimum of primary clarification, solids and floatable removal and disposal and disinfection (including dechlorination). The permit also includes a requirement that the permittee report each discharge from Outfall 001 within 24 hours from commencement of the discharge. Further, the permit provides that the approval for the CSO-related bypass will be reviewed and that it may be modified or terminated if there is a substantial increase in the volume or character of pollutants being introduced to the POTW.

1. Water Quality Based Requirements for Combined Sewer System<sup>12</sup>.

- a. In order to address the pollutant loads from CSOs and to achieve District WQS, the LTCP consists of an integrated system of controls designed to: 1) reduce the amount of combined stormwater runoff and sewage discharged into the affected water bodies; and 2) maximize the amount of combined sewer flow transported to Blue Plans for treatment. On January 14, 2016, the United States District Court for the District of Columbia entered the First Amendment to Consent Decree in the case of U.S. et al, v. District of Columbia Water and Sewer Authority and District of Columbia (Civil Action No. 1:00CV00183TFH) (CD Amendment). This amends the 2005 Consent Decree with DC Water and the District of Columbia. The 2005 Decree resolved claims by the United States for Clean Water Act violations by the District of Columbia Water and Sewer Authority.<sup>13</sup> Under the original Decree, DC Water was required to implement a LTCP to reduce combined sewer overflows (CSOs). The LTCP primarily called for the construction of a system of pumps and three underground storage tunnels in the District to store excess flows from storm events until the flows could eventually be sent to the BPAWWTP. The CD Amendment provides that DC Water will 1) reduce the volume of the tunnel in the Potomac River and install Green Infrastructure (GI) on 133 acres of impervious surface and 2) eliminate the tunnel in Rock Creek replacing it with GI on 365 acres of impervious surface.<sup>14</sup> The CD Amendment also grants DC Water a five-year extension to certain deadlines in the original CD. The LTCP performance standards have been changed to reflect the changes in the LTCP incorporated in the CD Amendment. As with the 2010 permit, these performance standards are immediately effective. The compliance schedule for achievement of these performance standards, is contained in the CD Amendment, consistent with the 1994 CSO Policy.
- b. Section 8 (formerly Section c. 6) which describes tunnels storage capacity has been modified to be consistent with the CD Amendment as follows: Anacostia River and Northeast Boundary Tunnels - 157 million gallons; and Potomac River Tunnel - 30 million gallons

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<sup>12</sup> The WQS that the LTCP is designed to achieve include: 1) the designated uses for the Potomac River, the Anacostia River and Rock Creek and its tributaries, 21 DCMR 1101.1 and 1101.2; 2) the narrative standards in 21 DCMR 1104.1; and, 3) the numeric standards for bacteria and dissolved oxygen in DCMR 1104.8

<sup>13</sup> For a more detailed discussion of the LTCP, and the WQ-based limits in the 2010 permit, see the Fact Sheet for the 2010 Permit.

<sup>14</sup> The CD Amendment also includes provisions that, should DC Water determine that either the Potomac or the Rock Creek projects are not practicable in order to achieve the required storm water retention DC Water shall proceed to plan, design and construct tunnels with specified storage/ conveyance capacities, on a prescribed schedule. See CD Amendment, Appendix F, Sections II. C. 7 and Section II. D. 9.

2. Section 9.a has been updated to reflect the CD Amendment. CSO 025 and 026 have been noted as to be separated and CSO 027, 028, 029 and 049 have been noted as being controlled by green infrastructure Section D. Post Construction Monitoring section

Post – Construction monitoring to measure the effectiveness of the GI has been added.

## 11. SPECIAL CONDITIONS

### A. Whole Effluent Toxicity (WET) Testing

The 2010 permit required WET testing for Outfalls 001 and 002 in accordance with 40 C.F.R. § 122.21(j) (5) which is intended to measure the total toxic effect of the effluent upon its receiving stream - the Potomac River. The permit contains provisions for the test methods to be used, types of samples, test species, and frequency of monitoring. The purpose of these provisions is to gather data to determine whether the development of a WET effluent limit is warranted for either Outfall 001 or 002. There are no chronic WET limits prescribed at this time, however, acute limits for Outfall 001, presented as “Pass” or Fail” are prescribed.

Mixing zones may be considered for NPDES discharges provided the receiving stream has sufficient assimilative capacity and if they are allowed by state WQS. The underlying assumption for allowing a mixing zone is that a small area of concentration in excess of acute and chronic criteria, but below acutely toxic releases, can exist without causing an adverse effect to the overall water body. The initial contact with the receiving water body is where the concentration will be the greatest in the water column. Mixing zones are not allowed where they may affect a drinking water source, recreational area, breeding ground, or areas with sensitive biota.

A mixing zone is allowed for the discharge from Outfall 002 because it meets the criteria set forth in the DC Water Quality Standards, Section 1105.7.

No mixing zone is allowed for Outfall 001. This is an intermittent discharge, for which primary treatment is given. The discharge occurs under rainy conditions when flow to the plant is greatest. The permittee is required to perform acute toxicity testing to simulate worst case conditions. The test results are reported either as “pass” or “fail”. The objective of a pass or fail test is to determine if survival in 100% effluent is significantly different from survival in no effluent. If the test results are reported as “fail”, additional testing is required. If the test results are “fail” and limits are contemplated for this effluent, the permit provides for the reopening of the permit and the permittee may request that a mixing zone be considered for this discharge. If the test results are “pass”, no additional testing is required.

All WET testing that was completed in the 2010 permit showed no toxicity. The requirement for WET sampling in the permit will be discontinued. However, the Permittee will

need to submit WET sampling with its renewal application, as required by 40 C.F.R. § 121(j)(5). The permit requires that, in accordance with 40 C.F.R. 122.2(j)(5)(iv)(A), the permittee submit to EPA the results of four quarterly tests for the year preceding the permit application.

#### **B. Endangered Species Act**

Concurrent with public notice of this draft permit, EPA is submitting a proposed Biological Evaluation and Finding of Not Likely to Adversely Affect to the U.S. Fish and Wildlife Service (FWS) and The National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries). This action is consistent with requirements under Section 7 of the Endangered Species Act (50 C.F.R. 402; 16 U.S.C. 1536(c)).

#### **C. National Historic Preservation Act**

EPA has initiated consultation with the District of Columbia State Historic Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act (NHPA).

#### **D. CWA Section 401 Certification**

EPA has asked DOEE for certification under section 401 of the CWA, 33 U.S.C. § 1341.