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FACT SHEET

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

PUBLIC NOTICE START and END DATES: July 24, 2008 – August 22, 2008

PUBLIC NOTICE NUMBER: NH-014-08

NPDES PERMIT NO.: NH0100013

CONTENTS: 29 pages including Attachments A through G**.**

NAME AND ADDRESS OF APPLICANT:

City of Berlin, New Hampshire
City Hall
168 Main Street
Berlin, New Hampshire 03570

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Berlin Pollution Control Facility
10 Shelby Street
Berlin, New Hampshire 03570

RECEIVING WATER: Androscoggin River (Hydrologic Basin Code: 01040001)

CLASSIFICATION: B

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I. Proposed Action, Type of Facility, and Discharge Location.

The applicant has applied to the U.S. Environmental Protection Agency for reissuance of its NPDES permit to discharge treated effluent into the Androscoggin River. The Berlin Pollution Control Facility (BPCF) is a publicly owned treatment works (POTW) that collects and treats domestic (household/sanitary), commercial wastewaters and storm water runoff. The treatment plant is a secondary wastewater treatment facility, with an activated sludge system, at a design flow of 2.64 million gallons per day (mgd). In addition to the one outfall from the wastewater treatment facility (outfall 001), the City has one combined sewer overflow (CSO) outfall designated as outfall 002. About five percent of the collection system is a combined storm and sanitary sewer.

The locations of the treatment facility, outfalls 001 and 002, and the receiving water are shown in **Attachment A.** These locations have not changed since the existing permit was issued.

A permit was issued for this facility on September 29, 2000 and expired on November 28, 2005. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance within the prescribed time period as per 40 Code of Federal Regulations (C.F.R.) §122.6.

II. Description of Discharges and Attainment with State Water Quality Standards.

A quantitative description of the significant effluent parameters based on the discharge monitoring data for the five year period May 2002 through April 2007 are shown in **Attachment B**.

New Hampshire's 2006 Clean Water Act Section 303(d) list that EPA approved on August 30, 2007 identifies the water quality limited segments in the Androscoggin River for both river assessment units and impoundment assessment units. This list also includes the State's 305(b) reporting results. The impoundment assessment unit downstream from the BPCF discharge is a 303(d) listed water impaired for Mercury with atmospheric deposition as the source. The adjacent river assessment units are also 303(d) listed waters impaired for Mercury. The three pollutant scans completed as part of the expanded effluent data testing required for the NPDES permit application did not detect Mercury in the effluent samples.

III. Limitations and Conditions.

The effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit. The draft permit contains effluent limitations and monitoring requirements at outfall 001 for the following parameters: five-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, *Escherichia coli* (*E. Coli*) bacteria, Total Residual Chlorine (TRC), and Whole Effluent Toxicity (WET). It also contains monitoring requirements for flow and for the following parameters associated with the WET test requirements: hardness, ammonia nitrogen (as nitrogen), and total recoverable aluminum, cadmium, chromium, copper, lead, nickel, and zinc. The draft permit also contains an effluent limitation and monitoring requirements for *Escherichia coli* at outfall 002. The basis for each limit and condition is discussed below in Section IV of this Fact Sheet.

IV. Permit Basis and Explanation of Effluent Limitation Derivation.

A. Background

Congress enacted the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into waters of the United States from any point source, except as authorized by specified permitting sections of the CWA, one of which is Section 402. See CWA §§ 301(a) and 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (NPDES). Under this section of the CWA, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 C.F.R. Parts 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, POTWs must meet performance based requirements based on available wastewater treatment technology. CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment". Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS, and pH. 40 C.F.R. Part 133.

Water quality-based effluent limits are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards…established pursuant to any State law or regulation…" See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect State water quality standards, "including State narrative criteria for water quality")(emphasis added) and 122.45(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that States develop water quality standards for all water bodies within the State. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria" consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(a); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Ws 1700 et seq. See generally, Title 50, Water Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A. The antidegradation requirements of the regulations are found in Env-Ws 1708. These Regulations were adopted on December 3, 1999, and became effective on December 10, 1999. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards. The 1999 NH Standards remain in effect for the development of NPDES permit limits and other CWA purposes. The recently adopted New Hampshire water quality standards, Chapter Env-Wq 1700 Surface Water Quality Regulations that became effective on May 21, 2008 have not been sent to EPA and these Standards have not been approved by EPA. See 40 C.F.R. § 131.21.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from a State's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. 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). The maximum daily limit as measured with a grab sample is protective of acute toxicity impacts. Therefore, the Region establishes maximum daily and average monthly limits for chemical specific toxic pollutants, such as Total Residual Chlorine. The dilution provided by the receiving water is factored into the effluent limit. Furthermore, narrative criteria from the state's water-quality standards are often used to limit toxicity in discharges where: (1) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (2) toxicity cannot be traced to a specific pollutant. EPA notes the basis for the average weekly limit for POTWs under 40 C.F.R. § 122.45(d) derives from the secondary treatment requirements (BOD5 and TSS) and this basis does not relate to assure achievement of water-quality standards based on acute and chronic criteria.

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 C.F.R. § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. Parts 122, 124, 125, and 136.

B. Introduction

The NPDES 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 has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 C.F.R. § 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

The Berlin facility discharges to the Androscoggin River which is classified as a Class B waterway by the New Hampshire Department of Environmental Services, Water Division. This discharge is from outfall 001 that is located about 0.5 mile downstream from Unity Street. Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, and shall contain a dissolved oxygen content of at least 75 percent saturation. See RSA 485-A:8. Designated uses are for the protection and propagation of aquatic life and wildlife, and for swimming and other recreational purposes, and after treatment for water supplies.

a. Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit applications, monthly discharge monitoring reports, and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) 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. In accordance with the NH Standards (RSA 485-A:8VI, Env-Ws 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10 low flow) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent of the receiving water's assimilative capacity is held in reserve for future needs in accordance with Env-Ws 1705.01.

b. Anti-backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations, which are found at 40 C.F.R. § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

c. State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitation and state water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required…no final permit shall be issued…unless the final permit incorporated the requirements specified in the certification under § 124.53(e)." see 40 C.F.R. § 124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary" to assure compliance with, among other things, State water quality standards, see 40 C.F.R. § 124.53(e)(2), and shall also include "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," see 40 C.F.R. § 124.53(e)(3). EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

C. Design Flow

The design flow for effluent limit calculations is based on the treatment plant design flow (see 40 C.F.R. § 122.45(b). The following effluent limits in existing permit are determined using the design flow: mass-based limits (average monthly, average weekly, and maximum daily) for BOD_5 and TSS, TRC, and WET. In addition, the existing permit includes a narrative requirement that the permittee submit projected effluent loadings, a program to maintain satisfactory treatment levels, and plans for facility improvements. This narrative requirement is effective when the effluent flow exceeds 80 percent of the design flow for three consecutive months. The design flow rate is 2.64 mgd at outfall 001 according to Berlin's NPDES permit reapplication Form 2A, item A.6.

The BPCF has been exceeding the 2.64 mgd design flow in certain months primarily due to excessive inflow/infiltration in the sewer collection system during high rainfall events in combination with snowmelt events at times. The effluent flow during the period May 2002 to April 2007 is shown in **Attachment G.** The average monthly flow exceeded the 2.64 mgd value for 17 months during this period. In some of these 17 months, there were also exceedances of certain effluent limitations.

The New Hampshire Department of Environmental Services, Water Division (NHDES-WD) has provided the City with specific information required under applicable State Regulations in response to specific exceedances to the design flow value. On December 28, 2006, the NHDES-WD requested that Berlin submit any new sewer connections for review and approval in accordance with the Standards of Design and Construction for Sewerage and Wastewater Treatment Facilities, Env-Wq 703.07(a)(3). On February 26, 2007, the NHDES-WD notified the City that a request to increase the flow above the "permitted" flow should include water quality information listed in the State's Surface Water Quality Regulations, Env-Ws 1707 and 1708. This letter mentioned possible options to consider other than the design flow increase

request including water conservation programs, ground water discharge for all or a portion of the wastewater, and removal of infiltration and inflow to the sewer collection system.

As mentioned in Section I.V.K (Operation and Maintenance) of this fact sheet, the draft permit includes specific permit conditions for proper operation and maintenance of the sewer system in Part I.D (Operation and Maintenance of the Sewer System). These conditions include developing and implementing an ongoing program to identify and remove sources of inflow and infiltration and to prevent inflow related effluent violations, including the 80 percent of the design flow requirement, at the wastewater treatment plant. EPA expects that results from this ongoing I/I program will help to minimize the occurrences of monthly flows exceeding the 2.64 mgd value. The City should be able to utilize the results from the 2007 inflow/infiltration study to begin removal of inflow and infiltration from the collection system.

D. Conventional Pollutants

a. BOD_5 and TSS

All the concentration and mass-based effluent limits for BOD_5 and TSS in the draft permit are the same as the limits in the existing permit and, therefore, are in accordance with antibacksliding requirements found in 40 C.F.R. §122.44(1). The permittee has been able to achieve consistent compliance with those limits. In addition, average monthly and average weekly concentration-based limits for BOD_5 and TSS are based on requirements under Section 301(b)(1)(B) of the CWA as defined for Secondary Treatment Standards in 40 C.F.R. Section 133.102(a) and (b). Furthermore, the average monthly and average weekly mass-based limits for BOD_5 and TSS corresponding to the respective concentration-based limits in the draft permit are based on 40 C.F.R. Section 122.45(f) which requires the Agency to apply these Secondary Treatment Standards (concentration-based) as mass-based limits.

Average monthly, average weekly and maximum daily allowable mass-based (load) limitations for BOD5 and TSS shown in the draft permit are based on the POTW's daily design flow of 2.64 mgd and the appropriate constituent concentration for the respective time period being limited. See **Attachment D** for the equation used to calculate each of these mass-based limits.

Percent removal limits for BOD5 and TSS, required under 40 C.F.R. Sections 133.102 (a)(3) and (b)(3), respectively, are the same as the limits in the existing permit and in accordance with the antibacksliding requirements found in 40 C.F.R. Section 122.44(l).

Consistent with the July 19, 1999, EPA/NHDES-WD Effluent Monitoring Guidance, the compliance monitoring frequency for BOD_5 and TSS is two per week in the draft permit.

b. *E. Coli*

The limit for *E. Coli* is based on requirements in the state's statutes (N.H. RSA 485-A:8) for a nondesignated beach area. Consistent with the July 19, 1999, EPA/NHDES-WD Effluent Monitoring Guidance, the compliance monitoring frequency for *E. Coli* in the draft permit is 3/week. Samples for *E. Coli* compliance monitoring must be taken concurrently with samples

for total residual chlorine. The recently approved test method for *E. Coli* as specified in 40 C.F.R. § 136 is imposed in the draft permit.

c. pH

The limit for pH is based upon State Certification Requirements and RSA 485-A:8, which states that "The pH range for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." The existing permit included a special permit condition that allowed a change in the pH range under specific requirements that included an adequate pH demonstration study followed by approval of the study results by the NHDES.

On November 28, 2001, EPA approved a decrease in the lower pH limit for the Berlin facility from 6.5 S.U. to 6.0 S.U. in accordance with the pH adjustment conditions in the existing permit because Berlin had satisfied those permit requirements. This decrease in the pH limit to 6.0 S.U. was in effect until the expiration of the existing permit as mentioned in the EPA approval letter and it is not continued in this draft permit. The permittee will need to follow the special conditions for a change in the pH range that are included in Part I. The pH limit range is 6.5 to 8.0 S.U. in this draft permit.

Consistent with the July 19, 1999, EPA/NHDES-WD Effluent Monitoring Guidance, the compliance monitoring frequency for pH is 1/day.

E. Non-conventional and Toxic Pollutants

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, metals, etc. are determined from chemical specific numeric criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are popularly known as the "Gold Book Criteria" which EPA summarized and published in Quality Criteria for Water, 1986, EPA 440/5-86-001 (as amended). The State of New Hampshire adopted these "Gold Book Criteria", with certain exceptions, and included them as part of the State's Surface Water Quality Regulations adopted on December 3, 1999. EPA-New England uses these pollutant specific criteria, along with available dilution in the receiving water, to determine a specific pollutant's draft permit limit.

a. Available Dilution

The dilution factor indicates the available dilution afforded the POTW's effluent by the receiving water. The available dilution (as mentioned previously in the reasonable potential discussion) in the Androscoggin River is calculated using the 7Q10 low flow upstream of outfall 001, the plant's design flow (2.64 mgd), and the 10 percent reserve assimilative capacity. This 7Q10 low flow value is determined using the daily streamflow data measured at the nearby U.S. Geological Survey (USGS) gaging station (No. 01054000) in Gorham, New Hampshire. Inflows or discharges between the gaging station and the outfall are also considered.

This gaging station (see **Attachment A**) is located about 1.3 river miles downstream from the outfall 001 and the streamflow at this location includes treatment plant discharges from the

BPCF and the Fraser Cascade Mill Facility at 4.1 cubic feet per second (cfs) and 13.5 cfs, respectively. Additional inflows are considered to be negligible. The 7Q10 low flow at this gaging station is computed as 1349 cfs using the daily streamflows for the period 1963 – 2006 (see **Attachment C** for a summary of the 7Q10 flows for the Androscoggin River in Berlin). This time period reflects the post log drive period and it is selected for this low flow analysis because it represents the current flow regime in the Androscoggin River. The 7Q10 low flow upstream of outfall 001 is 1331 cfs (1349 – 13.5 – 4.1) and the dilution factor is 293 using the equation shown in **Attachment D.**

This dilution factor is revised from the 290 value calculated for the existing permit. For the draft permit, the dilution factor is determined using an updated 7Q10 low flow value for the Androscoggin River based on the time period representing the current flow regime and the adjustments for the additional discharges to the River mentioned above. In the existing permit, the 7Q10 low flow at the gaging station is 1285 cfs for the period 1928-1981. This value is not adjusted for inflow or discharges as above.

The revised dilution factor at 293 does not change the TRC or WET effluent limits from those limits previously determined for the existing permit. The following discussion provides the basis for the TRC and WET limits in this draft permit.

b. Total Residual Chlorine

The average monthly and maximum daily limitations for TRC of 1.0 and 1.0 mg/l, respectively, in the draft permit are based upon limitations in the existing permit in accordance with the antibacksliding requirements found in 40 C.F.R. §122.44(1) since the permittee has been able to achieve compliance with these limitations. Chlorine and chlorine compounds, such as "organo-chlorines", produced by the chlorination of wastewater can be extremely toxic to aquatic life. Section 101(a)(3) of the ACT and State law N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 1703.21 (a) prohibits the discharge of toxic pollutants in toxic amounts. Therefore, to reduce the potential for the formation of chlorinated compounds during the wastewater disinfection process, EPA-New England established a limitation of 1.0 mg/l for the average monthly and the maximum daily Total Residual Chlorine (TRC). For the BPCF, these limitations are more stringent than the State's Surface Water Regulations would allow after factoring available dilution. For example, by applying the chronic and acute aquatic-life criterion of 0.011 and 0.019 mg/l, the average monthly and maximum daily effluent limitations would be 3.2 and 5.6 mg/l, respectively, based on available dilution. See **Attachment D** for the equation used to calculate these water-quality based TRC limits.

For the BPCF, EPA does not believe that use of the dilution factor yields sufficiently protective effluent limits because mixing of the discharge with the receiving water is not instantaneous . See 40 C.F.R. § 122.44(d)(1)(ii) (providing EPA with discretion to use dilution when determining reasonable potential to violate criteria only "where appropriate"). Chlorine and chlorine compounds can be extremely toxic to aquatic life. See USEPA, 1986 ; and Metcalf & Eddy, Inc., 1991, *Wastewater Engineering: Treatment, Disposal, Reuse* (revised by George Tchobanoglous & Frank Burton), McGraw-Hill, Inc.

EPA believes more stringent limits are necessary to protect the aquatic life in the receiving water. EPA is continuing the average monthly and maximum daily TRC limits of 1.0 mg/l in this draft permit. These limits are easily achievable by a well designed and operated chlorine disinfection system.

c. Phosphorous

On May 20, 2005 EPA issued a Section 308 letter to the City of Berlin requiring that the discharge from the Berlin Pollution Control Facility be monitored for total phosphorous and ortho-phosphorous during the period June through September in 2005. This monitoring request was continued in 2006 and 2007. This monitoring was necessary to support ambient water quality studies to determine the facility's contribution of these pollutants to the Androscoggin River. A review of the total phosphorous and ortho-phosphorous data indicated further monitoring of these pollutants is not necessary. Therefore, the draft permit excludes phosphorous monitoring.

F. Whole Effluent Toxicity

EPA's Technical Support Document for Water Quality-based Toxics Control, **EPA/505/2-90-001, March 1991**, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, Whole Effluent Toxicity (WET) approaches evaluate interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additivity" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 1730.21(a). The federal NPDES regulations at 40 C.F.R. § 122.44(d) (1) (v) require whole effluent toxicity 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. Inclusion of the whole effluent toxicity limit in the draft permit will demonstrate the compliance with narrative water quality criteria of "no toxics in toxics amounts" found in both the CWA and State of New Hampshire regulations.

The current policy of EPA-NEW England is to require toxicity testing in all municipal permits with the type of toxicity test(s) (acute and/or chronic) and effluent limitation(s) (LC50 and/or C-NOEC) based on the available dilution. The toxicity tests and frequency are shown in the attached Toxicity Policy for Major and Minor Municipal Permits (**Attachment E**). With a

dilution factor of 293, this Toxicity Policy requires the testing frequency of two times per year as in the existing permit.

Permittees who consistently demonstrated that no potential toxicity exists as a result of the pollutants in its discharge, based on data for the most recent one year period, or four sampling events, whichever yields the greater time period, will be considered for a reduced frequency of testing. If the above criteria are met, the permit may be formally modified.

As a special condition of this draft permit (See applicable paragraph in the SPECIAL CONDITIONS requirements), the frequency of WET testing may be reduced by a certified letter from EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After completion of a minimum of four consecutive WET tests, all of which must be valid tests and must demonstrate compliance with the permitted limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and other pertinent information to make a determination. The frequency of toxicity testing may be reduced to as little as once per year. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

On October 28, 1993, EPA authorized the permittee to use a standard dilution water for the WET tests because the analytical laboratory experienced problems when using the receiving water diluent in WET Testing. While the existing permit continued the use of the standard dilution water, the WET Test requirements for each test also included two separate controls: laboratory water, and receiving water. The eight most recent WET test reporting results (**Attachment F**) indicate these tests using receiving water as the control water are acceptable Whole Effluent Toxicity tests. The survival percentage was $\geq$ 95 percent in all eight tests for both species. Accordingly, the Androscoggin River is to be used for the dilution water in future WET testing. In a future situation with a toxic receiving water, the annual DMR instructions (NPDES Permit Program Instructions for the Discharge Monitoring Report Forms) include a guidance document with a species-specific, self-implementing policy to change to an alternate dilution water where the receiving water is toxic or unreliable (NPDES Whole Effluent Toxicity Testing, Monitoring and Reporting Guidance , Attachment G, pgs G 4 to G 6). The annual DMR instructions are available at: http://www.epa.gov/ne/enforcementandassistance/dmr.html . This draft permit continues the WET testing at twice per year. The 100% limit means that a sample of 100% effluent shall have no greater than a 50% mortality rate. The permittee is required to collect and test effluent samples twice per year during calendar quarters ending September 30th and December 31st using two species, Ceriodaphia dubia (Daphnia) and Pimephales promelas (Fathead Minnow).

The WET limits in the draft permit include conditions to allow EPA-New England to modify, or alternatively, revoke and reissue to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any State water quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified as provided in 40 C.F.R. §122.62(a) (2).

This draft permit, as in the existing permit, requires the permittee to continue reporting selected parameters from the chemical analysis of the WET test's 100 percent effluent sample. Specifically, hardness, total ammonia nitrogen as nitrogen, and total recoverable aluminum, cadmium, copper, chromium, lead, nickel and zinc are to be reported on the appropriate DMR for entry into EPA's data base. EPA-New England does not consider these reporting requirements an unnecessary burden as reporting these constituents is already required with the submission of each toxicity testing report.

G. Sludge

Section 405(d) of the Clean Water Act (CWA) requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludge which is land applied, disposed in a surface disposal unit, or fired in a sewage sludge incinerator is subject to Part 503 technical and to State Env-Ws 800 standards. Part 503 regulations have a self-implementing provision; however, the CWA requires implementation through permits. Domestic sludge which is disposed in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 C.F.R. Part 258.

The Berlin Pollution Control Facility disposes of its sewage sludge, in the amount of 1750 wet tons, at the Androscoggin Valley Regional Refuse Disposal District's solid waste landfill located in Berlin. Several adjoining communities also dispose of their municipal solid waste at this unit. This landfill unit is regulated under 40 C.F.R. Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has included with the draft permit a 72-page document entitled "EPA Region I NPDES Permit Sludge Compliance Guidance, November 1999" for use by the permittee in determining the appropriate sludge conditions for the chosen method of sewage sludge use or disposal practices.

In addition, the permittee is required to submit to EPA-New England and to NHDES-WD annually, on February 19th, an annual report containing the information specified in the Sludge Compliance Guidance Document for the permittee's chosen method of sludge disposal.

H. Industrial Users (Pretreatment Program)

The permittee is not required to administer a pretreatment program based on the authority granted under 40 C.F.R. §122.44(j), 40 C.F.R. § 403 and Section 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility. The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (see 40 C.F.R. §122 Appendix A) is planned or if there is any substantial change in the volume or

character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: 1) report to EPA and NHDES-WD the name(s) of all Industrial Users subject to Categorical Pretreatment Standards (see 40 C.F.R. § 403 Appendix C) who commence discharge to the POTW after the effective date of the finally issued permit, and 2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

I. Combined Sewer Overflows

General Information

Combined Sewer Overflows (CSOs) are overflows from a sewer system which combines storm water and wastewater into a single pipe which then discharges into a receiving water without first going through the headworks of a publicly-owned treatment works (POTWs) for treatment. CSOs occur whenever the flow in the combined sewer system exceeds the treatment plant capacity, including the capacity of its interceptor(s), regulator(s) and/or pump stations, which can occur during heavy rain storms. CSOs are distinguished from bypasses which are "intentional diversions of waste streams from any portion of a treatment facility" [40 C.F.R. § 122.41(m)].

Flows in combined sewers can be classified into two categories: wet-weather flow and dry-weather flow. Wet-weather flow is a combination of domestic and industrial sewage, infiltration from groundwater, and storm water flow including snow melt. Dry-weather flow is the flow in a combined sewer that results from domestic sewage, groundwater infiltration and industrial wastes with no contribution from storm water runoff or storm water induced infiltration.

Dry-weather overflows from CSOs are illegal. They must be reported immediately to EPA-New England and the NHDES-WD and eliminated as expeditiously as possible.

CSO Outfall Description and Sewer System Summary

The CSO outfall is at the Watson Street Pump Station that is located in the collection system prior to the BPCF (see outfall 002, **Attachment A**). During periods of heavy rainfall with snowmelt at times, the combined stormwater and sanitary wastewater volume in the sewer line exceeds the pumping capacity at the pump station resulting in discharges from the CSO outfall 002 to the Androscoggin River. As part of the existing permit, these CSO discharges have been monitored for volume and bacteria at least once per year, and for the occurrence of discharge events at other times. During the years from 2001 to 2006, the number of annual CSO events ranged from none in 2001 to four in 2005 and 2006(**Attachment B**).

In 2006, the City completed the upgrades to the various pump stations within the collection system including the Watson Street Pump Station where the CSO outfall is located. In 2007, an inflow/infiltration study was initiated to identify a potential 225,000 gpd inflow to be removed in a portion of the sewer system.

CSO Control Policy

The objectives of the National CSO Control Policy are to: (1) ensure that if the CSO discharges occur, they are only as a result of wet weather; (2) bring all wet- weather CSO discharge points into compliance with the technology based requirements of the Clean Water Act and applicable Federal and State water quality standards; and (3) minimize water quality, aquatic biota, and human health impacts from wet- weather flows.

The existing permit contains specific requirements of the National CSO Policy. In June 1998, the City of Berlin submitted a letter report (dated June 8, 1998) documenting implementation of the Nine Minimum Controls for their one CSO discharge. Requirements to implement the National CSO Control Policy were included in the existing permit and these requirements are continued in this draft permit because that one CSO discharge (outfall 002) has not been eliminated.

Effluent Standards

CSOs are point sources subject to NPDES permit requirements for both water-quality based and technology-based requirements but are not subject to secondary treatment regulations applicable to POTWs.

Section 301(b)(1)(C) of the ACT of 1977 mandates compliance with Federal and State Water Quality Standards by July 1, 1977. Technology based permit limits must be established for Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) and Best Available Technology Economically Achievable (BAT) based on Best Professional Judgment (BPJ) in accordance with Section 301(b) and Section 402(a) of the Water Quality Act Amendments of 1987 (WQA).

The NH Standards in Env-Ws 1703.06(c) specifies a bacteria limit as a technology requirement for CSO that discharge to non-tidal waters such as the Androscoggin River. According to those Standards, this limit is to be applied at the end of the CSO discharge pipe. The draft permit continues the *Escherichia coli* bacteria limit of 1000 colonies per 100 milliliters limit, in Part I.A.1.b, that was established in the existing permit. This bacteria limit is as a wet-weather maximum value at CSO outfall 002 which discharges into the Androscoggin River. This bacteria limitation for the CSO discharge pipe (outfall 002) is continued from the existing permit. The applicable instream criteria for *Escherichia coli* bacteria remain as given in the New Hampshire Statute's RSA 485-A:8.

In the event of a CSO discharge, a wet-weather monitoring requirement with a grab sample collected during normal business hours at least once per year is continued from the existing permit to the draft permit. EPA-New England requires the minimum yearly monitoring frequency because CSO discharge events have been minimal.

Conditions for Discharge

The draft permit prohibits dry-weather discharges from CSO outfalls. During wet weather, the discharges must not cause violation of Federal and State Water Quality Standards. Dry-weather discharges must be reported immediately to EPA-New England and the NHDES-WD. Wet-weather

discharges must be monitored and reported as specified in the permit.

Nine Minimum Controls (NMC)

The permittee must comply with BPJ derived BCT/BAT controls, which at a minimum include the following: (1) proper operation and maintenance of the sewer system and outfalls; (2) maximum use of the collection systems for storage; (3) review pretreatment programs to assure CSO impacts are minimized; (4) maximization of flow to the POTW for treatment; (5) prohibition of dry weather overflows; (6) control of solid and floatable materials in the discharge; (7) pollution prevention programs which focus on contaminant reduction activities; (8) public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and (9) monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

Documentation

The City of Berlin submitted to EPA-New England in June 1998 a letter report documenting implementation of the nine minimum controls. These nine minimum controls are specified in this draft permit. Implementation of the nine minimum controls is a requirement set forth in Part I.B.2 of the draft permit.

Reopener/Additional CSO Control Measures

This permit is conditioned to require an annual certification, no later than January 15th of each year that states that all discharges from the CSO discharge pipe (outfall 002) were recorded, and other appropriate records and reports were maintained for the previous calendar year.

This permit may be modified or reissued upon the completion of a long-term CSO control plan. Such modification may include performance standards for the selected controls, a post construction water quality assessment program, monitoring for compliance with water quality standards, and a reopener clause to be used in the event that the selected CSO controls fail to meet water quality standards. Section 301(b)(1)(C) of the Water Quality Act requires that a permit include limits that may be necessary to protect Federal and State water quality standards.

J. Unauthorized Discharges

The draft permit includes a provision indicating that discharges from outfalls 001 and 002, as provided in Part I A.1, are authorized in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Part II Standard Conditions, Section D.1.e.(1) of this permit.

K. Operation and Maintenance

The BPCF is a Publicly Owned Treatment Works (POTW). A POTW is a treatment works, as defined by CWA § 212, that is owned by the State or municipality. The regulatory definition

found at 40 C.F.R. § 403.3 includes the systems and devices used in the storage treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. This definition also includes sewers, pipes, and other conveyances that convey wastewater to a POTW treatment plant.

Regulations regarding proper operation and maintenance are found at 40 C.F.R. § 122.41(e). These regulations require, "that the permittee shall at all times operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The treatment plant and collection system are included in the definition "facilities and systems of treatment and control" and are therefore subject to proper operation and maintenance requirements.

Similarly, a permittee has a "duty to mitigate" pursuant to 40 C.F.R. § 122.41(d), which requires the permittee to "take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affection human health or the environment."

The draft permit requires the permittee to provide an alternate power source sufficient to operate its POTW as defined above. This requirement is necessary to maintain compliance with the terms and conditions of this permit.

General requirements for proper operation and maintenance, and mitigation are in Part II, Standard Conditions. Specific permit conditions are also included in Parts I.C, I.D, and I.E. These requirements include reporting of unauthorized discharges including sanitary sewer overflows (SSOs), maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and infiltration/inflow related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

L. Additional Requirements and Conditions

The effluent monitoring requirements in the draft permit have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 C.F.R. §122.41(j), §122.44(i) and §122.48. The remaining conditions of the permit are based on the NPDES regulations 40 C.F.R., Parts 122 through 125, and consist primarily of management requirements common to all permits.

M. Essential Fish Habitat.

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 National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) if EPA's actions, or proposed actions that EPA funds, permits, or undertakes, may adversely impact any essential fish habitat. 16 U.S.C. 1855(b). The Amendments broadly define essential fish habitat as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. 1802(10). Adverse effect means any impact which reduces the quality

and/or quantity of EFH. 50 C.F.R. 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.

EFH is only designated for species for which Federal Fisheries Management Plans exist (16 U.S.C. 1855(b)(1)(A)). EFH designations were approved for New England by the U.S. Department of Commerce on March 3, 1999.

The Androscoggin River is designated EFH for Atlantic salmon (*Salmo salar).* According to New Hampshire Fish and Game Department (NHFGD), there is presently no Atlantic salmon stocking effort in the New Hampshire waters of the Androscoggin River, and there are no plans for stocking in the near future. The river is heavily managed for hydroelectric power. There are six dams located downstream of and within one mile of the facility. No provisions have been made for upstream or downstream fish passage at any of these dams. There has been no salmon habitat evaluation conducted to date by the NHFGD in the vicinity of the Berlin Pollution Control Facility.

The presence of the numerous impoundments in the vicinity of the plant provides for limited spawning habitat for any landlocked salmon found in the vicinity. The nearest area of suitable spawning habitat (i.e., areas of cobble and gravel) is near Shelburne, New Hampshire, approximately 10 miles downstream of Berlin. Surplus salmon fry are stocked in upstream sections of the Androscoggin River and connected lakes in order to provide a landlocked salmon sport fishery. It is unlikely that many of the landlocked salmon will succeed in migrating to the sea and it is even less of a possibility that such fish could migrate back to spawn given the lack of viable upstream fish passage.

EPA has concluded that the limits and conditions contained in the draft permit minimize adverse effects to EFH including Atlantic salmon for the following reasons: The permit prohibits the discharge to cause a violation of State water quality standards; the permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts; the permit requires semiannual toxicity testing to ensure that the discharge does not present toxicity problems; and the permit contains total residual chlorine limits more stringent than the water quality criteria based limit.

EPA believes the draft permit adequately protects the Androscoggin River EFH and therefore additional mitigation is not warranted. A formal EFH consultation with NMFS is not required. NMFS will be notified and EFH consultation will be reinitiated if adverse impact to EFH are detected as a result of this permit action or if new information becomes available that changes the basis for these conclusions.

N. Endangered Species

The Endangered Species Act (16 U.S.C. 1451 et seq), Section 7, requires the EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely affect its critical habitat**.**

EPA believes that the authorized discharge from this facility is not likely to adversely affect and federally listed species or their habitats. EPA informally consulted with the USFWS to confirm this determination. USFWS has indicated that no federally listed or proposed, threatened or endangered species or critical habitat are known to occur in the area of the Berlin wastewater discharge; and further Endangered Species Act consultation is not required unless additional information on listed or proposed species becomes available (A.P. Tur, USFWS, NPDES wastewater discharge, Berlin, NH letter, June 9, 2009).

O. Antidegradation.

This draft permit is being reissued with allowable wasteloads for BOD_5 and TSS identical to those in the existing permit with no change in outfall location. This permit includes the same parameter coverage as in the existing permit. EPA expects the State of New Hampshire to indicate there will be no lowering of water quality and no loss of existing uses as a result of this proposed reissuance; consequently, no additional antidegradation review is warranted.

V. State Certification Requirements.

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate New Hampshire's Surface Water Quality Regulations or waives its right to certify as set forth in 40 C.F.R. §124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES-WD, Wastewater Engineering Bureau is the certifying authority. EPA has discussed this draft permit with the staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 C.F.R. §§ 124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the CWA, Sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public notice of the draft permit. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition.

Reviews and appeals of limitations and conditions attributable to State Certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures set forth in 40 C.F.R. Part 124.

VI. 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:

William Wandle
U.S. Environmental Protection Agency
Region I, Office of Ecosystem Protection
One Congress Street, Suite 1100 (CMP)
Boston, Massachusetts 02114-2023
Telephone (617) 918-1605, FAX No.: (617) 918-0605

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. 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 Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, 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.

VII. EPA Contact.

Additional information concerning the draft permit may be obtained from the contact person named above between the hours of 8:30 A.M. and 4:30 P.M., Monday through Friday, excluding holidays.

July 18, 2008
Date:

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

ATTACHMENT A

Location of the Berlin Pollution Control Facility

Aerial Photo (May 15, 1999) from www.terraserver.microsoft.com .

ATTACHMENT B

Effluent Characteristics at Outfall 001

The following effluent characteristics were derived from analysis of discharge-monitoring data collected from Outfall 001 during the five year period, May 2002 through April 2007. These data were retrieved from EPA's Integrated Compliance Information System (ICIS) data base that obtains the effluent data from the monthly Discharge Monitoring Reports (DMRs) submitted by the Berlin's Pollution Control Facility.

Effluent Characteristic	**Average of Monthly Averages**	**Average of Weekly Averages**	**Maximum Daily**
Flow (mgd)	2.26	--	9.83
BOD_5 (mg/l)	7.77	11.4	40.7
BOD_5 (lb/day)	149	255	2,360
BOD_5 (Percent Removal)	93	--	82 [2]
TSS (mg/l)	4.81	9.79	76
TSS (lb/day)	105	223	4,373
TSS (Percent Removal)	96	--	86 [2]
pH Range (S.U.)	--	--	4.88 – 7.71[1]
Total Residual Chlorine	0.48	--	2.96
Escherichia coli (Colonies/100 ml)	12.7	--	880

WET Test Results

	Ceriodaphnia dubia	Pimephales promelas
LC50 (% Effluent) [3]	100, 100, 100, 24.1	100, 100, 100, 100

Chemical Analyses from WET Tests

Parameter	Average	Maximum
Total recoverable Aluminum (mg/l)	0.065	0.14
Total recoverable Cadmium (mg/l)	0.002	0.008
Total recoverable Copper (mg/l)	0.030	0.18
Total recoverable Chromium (mg/l)	0.005	0.03
Total recoverable Lead (mg/l)	0.019	0.13
Total recoverable Nickel (mg/l)	0.004	0.011
Total recoverable Zinc (mg/l)	0.044	0.064
Hardness (mg/l)	44.2	54
Total Ammonia Nitrogen as Nitrogen (mg/l)	8.58	17

1. Minimum and maximum daily values.
2. Minimum of the average monthly value.
3. Four most recent test results.

ATTACHMENT B (continued)

Bacteria Concentrations at Outfall 002

The Escherichia coli concentrations measured annually at outfall 002 during the five year period, May 2002 through April 2007 are provided. These data were retrieved from EPA's ICIS data base that obtains the effluent data from the monthly DMRs submitted by the BPCF.

Year	Maximum Daily (Colonies/100 ml)
2002	--
2003	862
2004	--
2005	65,000
2006	101,000

Summary of Discharge Events at Outfall 002

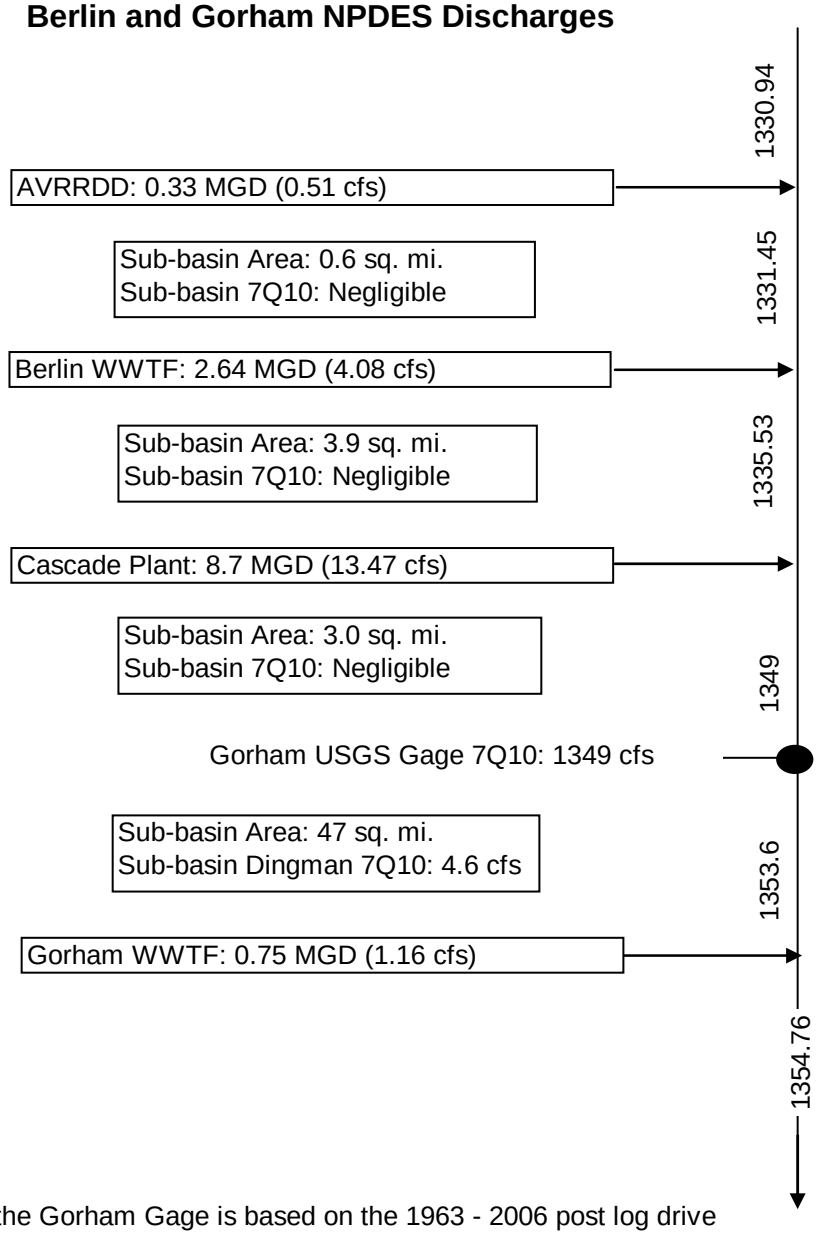
The CSO discharge events were obtained from the annual reports submitted by the BPCF as required by the existing permit.

Year	Dates
2001	no events
2002	April 13 to 14; June 11 to 12
2003	Oct. 15, Nov. 20, Dec. 17 to 18
2004	Aug. 12, Dec. 23
2005	April 3; July 10; Oct. 9, 15
2006	Jan. 18; Aug. 1, 21; Oct. 28

ATTACHMENT C

Summary of the 7Q10 flows for the Androscoggin River in Berlin and Gorham, New Hampshire.

7Q10 Estimate Summary
Berlin and Gorham NPDES Discharges



Notes:

The 7Q10 at the Gorham Gage is based on the 1963 - 2006 post log drive period of record.

The 7Q10 flows from the sub-basin areas from the Dead River (upstream of AVRRDD), AVRRDD, Berlin WWTF and Cascade discharges to the Gorham Gage are assumed to be negligible (see above, and the 7Q10s shown are not adjusted to correct for drainage area differences.

The 7Q10 flow from the sub-basin between the gage and the Gorham POTW is estimated to be 4.6 cfs. Other than Gorham's water supply withdrawals, there are no consumptive withdrawals in this sub-basin.

ATTACHMENT D

MAXIMUM ALLOWABLE LOADS

Equation used to calculate maximum allowable loads for BOD_5 and TSS .

$$L = C * Q_{PDF} * 8.345$$

where:

L = Maximum allowable load, in lbs/day, rounded to nearest 1 lbs/day.
C = Maximum allowable effluent concentration for reporting period, in mg/l.
Reporting periods: Average Monthly, Average Weekly and Maximum Daily.
Q_{PDF} = Treatment plant's design flow, in mgd
8.345 = Factor to convert effluent concentration, in mg/l, and plant's design flow, in mgd, to lbs/day.

DILUTION FACTOR

Equation used to calculate available dilution factor at Outfall 001.

$$\text{Dilution Factor} = \frac{(Q_{001}) + (Q_{PDF} * 1.547)}{Q_{PDF} * 1.547} * 0.9$$

where:

Q_{001} = Estimated 7Q10 flow upstream of outfall 001, in cfs.
Q_{PDF} = Treatment plant's design flow, in mgd.
1.547 = Factor to convert mgd to cfs.
0.9 = Factor to reserve of 10 % of river's assimilative capacity.

WATER-QUALITY BASED EFFLUENT LIMITS

Equation used to calculate Average Monthly and Maximum Daily Total Residual Chlorine limits, if applicable.

Total Residual Chlorine Limit = Dilution Factor X Water-Quality Criteria

The water-quality criteria for chlorine are:

0.011 = Chronic Aquatic-Life Criterion, in mg/l.
0.019 = Acute Aquatic-Life Criterion, in mg/l.

ATTACHMENT E

EPA Toxicity Policy for Major and Minor Municipal Facilities

	HIGH RISK	MED-HIGH RISK	MED-LOW RISK	LOW RISK	VERY LOW RISK
Dilution Factor	<10:1	10:1-20:1	20:1-100:1	>100:1	>1000:1
# of Sampling Events Per Year	4 (1/3 Months)	4 (1/3 Months)	Majors: 4 (1/3 Months) Minors: 1 (1/year)	Majors: 2 (1/6 months) Minors: 1 (1/year)	Majors: 2 (1/6 months) Minors: None
Toxicity Tests: Fresh Water Marine Water	 Chronic[1] Chronic & Acute	 Chronic[1] Chronic & Acute	 Acute Acute	 Acute Acute	 Acute Acute
Number of Species: Fresh Water Marine Water	 2 3	 2 3	 2 2	 2 2	 2 2
Permit Limits	LC50≥ 100% C-NOEC[2] ≥RWC[3]	LC50≥ 100%	LC50≥ 100%	LC50≥ 50%	LC50≥ 50%
Test Species: Fresh Water	Daphnid[1] (*Ceriodaphnia dubia*) Fathead Minnow[1] (*Pimephales promelas*)		Daphnid (*Ceriodaphnia dubia*) Fathead Minnow (*Pimephales promelas*)		Daphnid (*Ceriodaphnia dubia*) Fathead Minnow (*Pimephales promelas*)
Marine Water	Inland Silverside[1] (*Menidia beryllina*) Mysid Shrimp (*Mysidopsis bahia*) Sea Urchin (*Arbacia punctulata*)		Inland Silverside (*Menidia beryllina*) Mysid Shrimp (*Mysidopsis bahia*)		Inland Silverside (*Menidia beryllina*) Mysid Shrimp (*Mysidopsis bahia*)

[1] 7-Day Chronic/Modified Acute.
[2] C-NOEC is Chronic No Observed Effect Concentration.
[3] RWC is Receiving Water Concentration, in percent, as determined from dividing one by the dilution factor all multiplied by 100.

ATTACHMENT F

Percent survival summary for Acute Whole Effluent Toxicity Tests with organisms in lab water and receiving water controls.

Ceriodaphnia Dubia

Test Date	Lab Diluent Control Percent Survival	Receiving Water Control Number Dead	Number Exposed	Percent Survival
Nov. 07	100	0	20	100
Jul. 07	100	0	20	100
Oct. 06	100	0	20	100
Jul. 06	100	1	20	95
Dec. 05	100	1	20	95
Aug. 05	100	0	20	100
Nov. 04	100	0	20	100
Jul. 04	100	0	20	100

Fathead Minnow

Test Date	Lab Diluent Control Percent Survival	Receiving Water Control Number Dead	Number Exposed	Percent Survival
Nov. 07	100	0	40	100
Jul. 07	100	1	40	97.5
Oct. 06	100	0	40	100
Jul. 06	100	0	40	100
Dec. 05	97.5	1	40	97.5
Aug. 05	100	0	40	100
Nov. 04	100	0	40	100
Jul. 04	97.5	0	40	100

ATTACHMENT G

Effluent flow at the Berlin Pollution Control Facility

The average monthly flow at outfall 001 is shown for the period May 2002 to April 2007. These monthly flow data were obtained as indicated in Attachment B.