

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA NEW ENGLAND
OFFICE OF ECOSYSTEM PROTECTION
ONE CONGRESS STREET
SUITE 1100 (MAIL CODE: CPE)
BOSTON, MASSACHUSETTS 02114-2023**

FACT SHEET

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

PUBLIC NOTICE START AND END DATES:

PUBLIC NOTICE NUMBER:

CONTENTS: 17 pages including 4 Attachments A through D.

NPDES PERMIT NO.: NH0100901

NAME AND MAILING ADDRESS OF APPLICANT:

City of Concord, New Hampshire
City Manager
41 Green Street
Concord, New Hampshire 03301

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Hall Street Wastewater Treatment Facility
Wastewater Treatment Plant Supt.
125 Hall Street
Concord, New Hampshire 03301

RECEIVING WATER: Merrimack River (Hydrologic Basin Code: 01070002)

CLASSIFICATION: B

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

The Hall Street facility is a publicly owned treatment works, or municipal POTW. The applicant applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the Merrimack River.

The facility collects and treats: (1) domestic wastewater from the City of Concord and from parts of the Town of Bow; (2) domestic septage from 45 communities in New Hampshire; and (3) industrial wastewater from 25 local industries.

The Hall Street POTW has primary and secondary treatment with a design flow of 10.1 million gallons per day (mgd). Raw wastewater is carried into the treatment plant where screening and grit removal first occurs. The wastewater then enters primary clarifiers for removal of solids. Effluent from the primary clarifiers flows into an intermediate wetwell and is pumped into biological treatment units (bio-towers and aeration) that remove dissolved and suspended organic material. Secondary clarifiers remove solids produced during biological treatment and the effluent is then disinfected with sodium hypochlorite. Any excess residual chlorine is removed by the addition of sodium bisulfate prior to effluent discharge to the Merrimack River. Sludge produced during treatment of the wastewater is dewatered and stabilized prior to beneficial reuse as fertilizer supplement or in topsoil production.

A permit was issued for this facility on September 30, 1998, and expired on October 30, 2003. 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 (CFR) §122.6.

The existing permit authorizes a discharge from Outfall 001 (Treatment Plant) year round and that discharge period will be continued in the draft permit. The location of the treatment facility, Outfall 001 and the receiving water are shown in **Attachment A** and their locations are unchanged from the existing permit.

II. Description of Discharge.

A quantitative description of significant effluent parameters based on discharge monitoring data from the two year period June 2001 to May 2003 are shown in Attachment B.

III. Limitations and Conditions.

The draft permit contains limitations for five-day Biochemical Oxygen Demand (BOD₅), 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, nitrogen, hardness, metals and phosphorous. The effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit. The basis for each limit and condition is discussed below in Section IV of this Fact Sheet.

IV. Permit Basis and Explanation of Effluent Limitations Derivation.

A. Background

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement

technology and water-quality based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136. Many of these regulations consist primarily of management requirements common to all permits.

The EPA is required to consider technology and water-quality based criteria in addition to the existing permit conditions when developing permit limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (See 40 CFR Part 125, Subpart A). Secondary Treatment Technology guidelines (effluent limitations) represent the minimum level of control required for Publicly-Owned Treatment Works (POTW) and those guidelines can be found in 40 CFR Part 133.

In general, all statutory deadlines for meeting various technology-based guidelines (effluent limitations) established pursuant to the CWA have expired. For instance, compliance with POTW technology-based effluent limitations is, effectively, from date of permit issuance (40 CFR §125.3(a)(1)). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA can not be authorized by a NPDES permit.

Water-quality based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water-quality standards. See Section 301(b) (1)(C) of the ACT. A water-quality standard consists of three elements: (1) beneficial designated use or uses for a water body or a segment of a water body; (2) a numeric or narrative water-quality criteria sufficient to protect the assigned designated use(s); and (3) an antidegradation requirement to ensure that once a use is attained it will not be eroded. Receiving water requirements are established according to numerical and narrative standards in the state's water quality standards adopted under state law for each stream classification.

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

The basis for the average weekly limit for POTWs under 40 CFR §122.45(d), derives from the secondary treatment requirements for BOD₅ and TSS and is not directly related to achieving chemical specific water-quality standards for toxic pollutants based on acute (short-term) and chronic (long-term) criteria. Since it would be impracticable to rely only on monthly or weekly average limits to ensure that Water Quality Standards for toxic pollutants are met. The Region believes it's necessary to establish a maximum daily limit, Therefore, the Region establishes maximum daily and average monthly limits for chemical specific toxic pollutants, such as Total Residual Chlorine. The POTW's design flow is used when deriving constituent limits for daily and monthly time periods as well as weekly periods where appropriate. Also, the dilution provided by the receiving water is factored into this process. 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.

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 criterion. See CFR Section 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers: (1) existing and planned controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit's reissuance application, Monthly Discharge Monitoring Reports (DMRs), 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 Control, 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 New Hampshire statutes and administrative rules (50 R.S.A. §485-A:8, Env-Ws 1705.02), available dilution for discharges to freshwater receiving waters is based on a known or estimated value of the annual seven (7) consecutive-day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the discharge. Furthermore, 10 % of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01. The current set of these Regulations, newly revised, were adopted on December 3, 1999, and became effective on December 10, 1999. Hereinafter, these New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

The permit may not be renewed, reissued or modified with less stringent limitations or conditions than those conditions in the previous permit unless in compliance with the antibacksliding requirement of the CWA [See Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions found in 40 CFR §122.44(l) prohibit the relaxation of permit limits, standards, and conditions unless certain conditions are met. Therefore, unless those conditions are met the limits in the reissued permit must be at least as stringent as those in the previous permit.

The CWA requires that EPA obtain state certification which states that all water-quality standards will be satisfied. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the CWA (40 CFR §124.53 and §124.55). EPA regulations pertaining to permit limits based upon water-quality standards and state requirements are contained in 40 CFR §122.44(d).

The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards. To protect the existing quality of the State's receiving waters, the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) adopted Antidegradation requirements (Env-Ws 1708) in their NH Standards.

B. Conventional Pollutants

Five-Day Biological Oxygen Demand (BOD₅) and Total Suspended Solids (TSS)

All the concentration and mass-based effluent limits for BOD₅ 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 CFR §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 BOD₅ and TSS are based on requirements under Section 301(b)(1)(B) of the CWA as defined for Secondary Treatment Standards in 40 CFR Section 133.102(a) and (b). Furthermore, the average monthly and average weekly mass-based limits for BOD₅ and TSS corresponding to the respective concentration-based limits in the draft permit are based on 40 CFR 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 10.1 MGD and the appropriate constituent concentration for the respective time period being limited. See Attachment C for the equation used to calculate each of these mass-based limits.

Percent removal limits for BOD₅ and of TSS, required under 40 CFR Section 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 CFR Section 122.44.

Consistent with the July 19, 1999, EPA/NHDES-WDEffluent Monitoring Guidance, the compliance monitoring frequency for BOD₅ and TSS is two per week in the draft permit.

pH and Bacteria (*E. Coli*) Limits Including Related Conditions

Effluent limitations for pH and Escherichia coli bacteria (*E. Coli*) 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 CFR §122.44(1). The permittee has been able to achieve consistent compliance with those limits.

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 limit for *E. Coli* is based on requirements in the State's Statutes (N.H. RSA 485-A:8) for non-designated beach area. Consistent with the July 19, 1999, EPA/NHDES-WD Effluent Monitoring Guidance, the compliance monitoring frequency for *E. Coli* and pH in the draft permit is 3/week and 1/day, respectively. Samples for *E. Coli* compliance monitoring must be taken concurrently with samples for total residual chlorine.

A change in the pH range in the draft permit due to in-stream dilution would be considered at the request of the permitte provided the permittee could demonstrate that the in-stream standards for pH would be protected. If the State approves results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR 122.44(l)(2)(i)(B).

Accordingly, a special condition has been carried forward from the existing permit into the draft permit that allows for a modification to the pH limit(s) using a certified letter from EPA-New England. However, the pH limit range cannot be less restrictive than 6.0 - 9.0 S.U. found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for the facility.

C. Available Dilution and Nonconventional 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 know 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, such as the fast acting toxicant chlorine and metals.

Available Dilution

The dilution factor, indicating the available dilution afforded the POTW's effluent by the receiving water, was determined to be 37 in the existing permit. This value has been carried forward unchanged into the draft permit since the Agency believes it's the best estimate currently available. The dilution factor was calculated using the plant's design flow of 10.1 MGD, an estimate of the 7Q10 low flow of 622 CFS in the Merrimack River at the treatment plant's outfall, and 90 percent of the Assimilative Capacity Reserve (saving 10 percent for future needs in accordance with NH Regulation Env-Ws 1705.01).

The value of the 7Q10 flow at the outfall was calculated using the 7Q10 flows from the nearest U.S. Geological Survey (Survey) gaging stations (streamflow measuring sites) on the Merrimack River above and below the outfall and making adjustments for the intervening drainage area between these gaging stations and the outfall. See Attachment C for the calculations of 7Q10 flow and the dilution factor.

Total Residual Chlorine

Effluent limitations for Total Residual Chlorine (TRC) 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 CFR §122.44(1). The TRC average monthly and maximum daily limitations are based on the chronic and acute aquatic-life criteria, respectively, found in New Hampshire's Surface Water Quality Regulations (Env-Ws 1703.21, Table 1703.1). As detailed in Attachment C, the existing permit limits were calculated by multiplying the chronic criterion (0.011 mg/L) and acute criterion (0.019 mg/L) by the dilution factor for the receiving water (Merrimack River). As indicated in Attachment B, the applicant has been able to achieve consistent compliance with these limitations.

Phosphorous

Merrimack River water quality data from 1986, 1989, and 1990 at the New Hampshire-Massachusetts boarder indicate total phosphorus concentrations ranging from 60 - 280 ug/l. These instream concentrations are above the Gold Book recommended total phosphorus criteria of 100 ug/l and the new national recommended total phosphorus criteria of 24 ug/l. Since current data on total phosphorous is limited, quarterly effluent monitoring at major New Hampshire point source discharges would help in understanding potential sources contributing to elevated levels at the state line. Therefore, EPA is requiring the permittee to monitor its effluent for total phosphorous on a quarterly basis.

Other Pollutants

The permittee provided expanded effluent testing results (based on 3 samples) for toxics in the discharge from outfall 001 as part of its permit application. The concentrations of these pollutants were compared to the Water Quality Criteria for Toxic Substances listed in New Hampshire's Surface Water Quality Regulations. This comparison indicated that there were no additional pollutants that showed reasonable potential for concern and which permit limits should be established.

D. Whole Effluent Toxicity (WET)

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.

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)(1)). The federal NPDES regulations at 40 CFR §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. Furthermore, results of these toxicity tests will demonstrate compliance of the POTW's discharge with the "no toxic provision of the NH Standards."

Accordingly, to fully implement the "integrated strategy" and to protect the "no toxic provision of the NH Standards," EPA-New England requires 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 as shown in the Toxicity Strategy for Municipal Permits (Attachment D).

The Toxicity Strategy for Municipal Permits (Attachment D) is the basis for the WET limits in Concord's existing permit and this draft permit. In addition, the effluent limitation in the draft permit for LC50 is the same as the existing permit and, therefore, is in accordance with the antibacksliding requirements found in 40 CFR Section 122.44(1).

The LC50 is defined as the percentage of effluent that would be lethal to 50 % of the test organisms during an exposure of 48 hours (static acute toxicity test). The existing and draft permit establish the LC50 limit at 100%, meaning a sample of 100 % effluent shall have no greater than a 50 % mortality rate in that effluent sample. The existing and draft permit require the permittee to collect and test effluent samples quarterly (calendar quarters ending March 31st, June 30th, September 30th and December 31st) using two species, *Ceriodaphnia dubia* (Daphnia) and *Pimephales promelas* (Fathead Minnow).

The permittee has been able to show consistent compliance with the Daphnia LC50, but has not been able to show consistent compliance with the Fathead Minnow LC50 limit. On September 16, 2003, EPA-New England met with the permittee and NHDES to discuss the toxicity testing results and it was suggested that the failure to consistently achieve the LC50 for the Fathead Minnow may be related to laboratory conditions leading to pH drift. As indicated in EPA's Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, pH drift during toxicity testing may contribute to artifactual toxicity when ammonia or other pH dependent toxicants are present. As pH increases, the toxicity of ammonia also increase, so upward pH drift may increase sample toxicity.

In the last quarter of 2003 and first quarter of 2004 the permittee conducted toxicity testing at a new laboratory that was better able to manage pH drift. The results thus far indicate that the Fathead Minnow LC50 is being achieved. Thus, the draft permit requires the permittee to continue quarterly WET testing. If future testing indicates a failure to consistently meet the LC50 for the Fathead Minnow, the permittee may be required to conduct a Toxicity Reduction Evaluation.

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 CFR §122.62(a)(2). Alternately, if a permittee has consistently demonstrated on a maximum daily basis that its discharge, based on data for the most recent one-year period, or four sampling events, whichever yields the greater time period, causes no acute and chronic toxicity, the permitted limits will be considered eligible for a reduced frequency of toxicity testing. This reduction in testing frequency is evaluated on a case-by-case basis.

Accordingly, a special condition has been carried forward from the existing permit into the draft permit that allows for a reduced frequency of WET testing using a certified letter from EPA-New England. This permit provision anticipates the time when the permittee requests a reduction in WET testing that is approvable by both EPA-New England and the NHDES-WD. As previously stated, EPA-New England's current policy is that after completion of a minimum of four consecutive WET tests all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to EPA-New England seeking a review of the toxicity test results. EPA-New England's policy is to reduce the frequency of toxicity testing to no less than one (one-species) test 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-New England indicating a change in the permit condition. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

This draft permit, as in the existing permit, requires the permittee to continue reporting selected parameters from the chemical analysis of the WET tests' 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 Permit Compliance System'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.

E. 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 of 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 of 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 CFR 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.

The permittee is required to submit an annual report to EPA-New England and NHDES-WD, by February 19th each year, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal practices.

Concord's Hall Street facility disposes of Concord's sludge and receives sludge for disposal from two other New Hampshire POTWs: Sunapee and Warner. Concord reported on its sewage sludge permit application dated March 27, 2003, that annually, it generates about 2,200 metric tons and receives from Sunapee and Warner about 55 and 10 metric tons, respectively. The sludge is dewatered, amended and lime-stabilized (to pH > 12) in a thermo-blender, and pasteurized to produce a finished biosolid that is land applied. The permittee identified Resource Management Inc. of Ashland, NH, as the company that land applies the sludge at 10 sites providing nutrients for feed crops (i.e., hay, corn silage or grain).

F. Industrial Users (Pretreatment Program)

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and Section 307 of the ACT. The Concord Hall Street pretreatment program received EPA approval on **October 12, 1984**, as a result, appropriate pretreatment program requirements were incorporated into previous permits commensurate with that approval and Federal Pretreatment Regulations in effect when the permit was issued.

The Federal Pretreatment Regulations at 40 CFR §403 have been amended since the Concord Hall Street pretreatment program was approved. Those amendments established new requirements for implementation of pretreatment programs. By reissuing this NPDES permit, the permittee is obligated to modify, if necessary, and implement its pretreatment program to be consistent with current Federal Regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) Develop and enforce specific effluent limits (technically-based local limits); (2) revise its local sewer-use ordinance, as appropriate, to be consistent with Federal Regulations; and (3) develop an enforcement response plan. These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices.

In addition to the requirements described above, the draft permit requires the permittee to provide to EPA in writing, within 90 days of the permit's effective date, a technical report analyzing the adequacy of existing local limits and the need for additional local limits. Lastly, the permittee must continue to submit, annually on June 1 a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

G. Antidegradation

This draft permit is being reissued with allowable wasteloads and parameter coverages identical to those in the current permit with no change in outfall location. The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted at this time.

H. 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 CFR § 122.41(j), § 122.44(i) and § 122.48. In the draft permit, compliance monitoring frequency and sample type for Flow, BOD₅, TSS, pH, TRC, and Escherichia coli bacteria have been established in accordance with the latest version of EPA/NHDES-WD's Effluent Monitoring Guidance (EMG) mutually agreed upon and first implemented in March 1993 and last revised on July 19, 1999. In addition, the WET test monitoring requirements have been set according to EPA-New England's Municipal Toxicity Policy.

It's the intent of EPA-New England and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits that (1) make sense from environmental and human health perspective; and, (2) are in accordance with the EMG. 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 CFR §122.41(j), §122.44(i) and §122.48.

The remaining conditions of the permit are based on the NPDES regulations 40 CFR, Parts 122 through 125, and consist primarily of management requirements common to all permits.

I. Essential Fish Habitat.

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

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

EFH Species

Atlantic salmon (*Salmo salar*) is the only species for which EFH has been designated in this stretch of the Merrimack River. New Hampshire Fish and Game Department is attempting to restore Atlantic salmon to the Merrimack and its tributaries through an annual stocking program. The section of river in close proximity to the facility's outfall is not likely to provide salmon rearing habitat due to the relatively low current velocities. However, salmon smolts will pass through this area during their seaward migration from rearing habitat located in upstream tributaries. In addition, Atlantic salmon broodstock are released into the Merrimack in support of a limited sport fishery and may be present at times in the general vicinity of the discharge.

Analysis of Effects

This draft permit has been written to satisfy NH Standards which are considered by EPA-New England and the NHDES-WD to be protective of all aquatic species including those fish listed under

EFH, in this case Atlantic salmon, as well as other lesser aquatic organisms. Therefore, there should be no impacts to the water quality or the habitat of the receiving water as a result of this discharge for the EFH species of concern.

EPA-New England's Opinion of Probable Impacts

The permit limitations and requirements specified in the draft permit are designed to protect aquatic species and, therefore, this authorized discharge is not likely to adversely affect the federally managed species, their forage or their habitat in the receiving water. If adverse effects do occur in the receiving water as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then NMFS will be notified and consultation will be promptly initiated.

Mitigation

The EPA-New England considers the conditions in this draft permit to be sufficient to protect the EFH species of concern, namely Atlantic salmon; therefore, does not consider further mitigation to be warranted at this time.

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 contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to certify as set forth in 40 CFR §124.53. State Water Quality Standards contain three major elements: Beneficial uses; Water Quality Criteria; and an Antidegradation Policy, all of which are part of the State's Water-Quality Certification under Section 401 of the Act. **The only exception to this is that sludge conditions/requirements are not part of the Section 401 State Certification.** The staff of the NHDES-WD has reviewed the draft permit and advised EPA-New England that the limitations are adequate to protect water quality. EPA-New England has requested permit certification by the State and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and §124.55.

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: Mr. Roger A. Janson, Director NPDES Permit Program for Municipal Permits, U.S. Environmental Protection Agency, One Congress Street, Suite 1100 (Mail Code: CPE Boston, Massachusetts 02114-2023). Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA-New England 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 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-New England's 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.

VII. EPA-New England/State Contacts.

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

**Mr. Dan Brown, Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection
One Congress Street
Suite 1100, Mail Code: CAQ
Boston, Massachusetts 02114-2023
Telephone No.: (617) 918-1532
FAX No.: (617) 918-0532**

_____ **Date:**

**Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency**

ATTACHMENT A

This attachment is for the overview map of the area—that is the USGS Topographic Map.

OVERVIEW MAP ATTACHED BY STAPLE TO BACK OF THIS PAGE

ATTACHMENT B**CONCENTRATIONS OF EFFLUENT CHARACTERISTICS AT OUTFALL 001**

The following effluent characteristics were derived from analysis of discharge-monitoring data collected from Outfall 001 during the two year period June 2001 through May 2003. Data were extracted from the monthly Discharge Monitoring Reports submitted by the Hall Street Wastewater Treatment Plant. The effluent values characterize treated sanitary and industrial wastewaters discharged from this facility.

Effluent Characteristic	Average of Average Monthly	Range of Average Monthly	Average of Average Weekly	Range of Average Weekly	Average of Maximum Daily	Range of Maximum Daily
Flow (MGD)	4.57	3.86-6.53	--	--	5.51	4.53-7.94
BOD ₅ (lbs/day)	639	354-1451	741	392-1605	905	513-1656
BOD ₅ (mg/l)	16	10 - 27	19	11-37	22	14-40
BOD ₅ (Percent Removal)	95	91-97	--	--	--	--
TSS (lbs/day)	567	310-1261	678	338-1528	838	414-1877
TSS (mg/l)	14	9 - 25	17	10 - 31	21	12-34
TSS (Percent Removal)	95	89-98	--	--	--	--
pH (Standard Units) ¹	--	--	--	--	--	6.93-7.85
<i>E. coli</i> (colonies/100 ml)	42	11-90	--	--	220	22-1560
Total Residual Chlorine (mg/l)	0.3	0.25-0.36	--	--	49	0.37-0.64
Total Ammonia ² as N (mg/l)	2.6	0.23-13	--	--	4.7	0.6-25
Whole Effluent Toxicity (LC50 in % Effluent)						
<i>Ceriodaphnia dubia</i>					100	100-100
<i>Pimephales promelas</i>					84	71-100

1. Numbers listed for pH are minimum and maximum of daily values

ATTACHMENT C

CALCULATIONS OF MASS-BASED LIMITS

Calculations of maximum allowable loads for average monthly BOD₅ and TSS are based on the following equation.

$$L = C \times Q_{PDF} \times 8.345$$

where:

- L = Maximum allowable load, in lbs/day, rounded to nearest 1 lbs/day.
- C = Maximum allowable effluent concentration for average monthly reporting period, in mg/L.
- 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.

DERIVATION OF 7Q10 LOW-FLOW AT OUTFALL 001

Concord Hall's treatment plant was designed to process a wastewater flow of 10.1 MGD and to discharge that treated effluent into the Merrimack River. The 7Q10 low flow on the Merrimack River just above the plant's Outfall 001 was estimated by summing the 7Q10 flow for the Survey's Merrimack River at Franklin Junction gaging station, and the estimated 7Q10 flow from the intervening drainage area between that gaging station and Outfall 001. The estimated 7Q10 flow for the intervening drainage area was determined by first obtaining a unitized flow (7Q10 flow per drainage area) for Merrimack River between Franklin Junction and Goffs Falls, and then multiply that unitized flow by the drainage area between Merrimack River at Franklin Junction gaging station and Outfall 001. Outfall 001 is located about three-quarters of a river mile above Garvin Falls Dam (See Attachment A). Turkey River is the only major drainage system contributing water to this segment of the Merrimack River.

Drainage area of Merrimack River at Outfall 001 is about 2,387 square miles (mi²) as determined by subtracting the Turkey River drainage area from that at Garvin Falls Dam. The permit writer used recent topographic maps and a planimeter to determine that Turkey River drained about 40 mi². Pertinent 7Q10 flows and the equation used to calculate 7Q10 flow for Outfall 001 are shown below and on the following page.

Merrimack River at Franklin Junction, NH;
 (Survey No. 01081500);
 Upstream of Outfall 001;
 Drainage Area (DA): 1,507 mi²;
 7Q10 low-flow value: 550.6 CFS.

Merrimack River at Garvin Falls, NH;
 (Survey No. 01088500);
 Dam just downstream of Outfall 001;
 Drainage Area: 2,427 mi²;

Merrimack River near Goffs Falls, below Manchester, NH;
 (Survey No. 01092000);
 Downstream of Garvin Falls Dam and Outfall 001;
 Drainage Area: 3,092 mi²;
 7Q10 low-flow value: 678 CFS.

$$Q_{001} = Q_{Frank} + \left(\frac{Q_{Goffs} - Q_{Frank}}{DA_{Goffs} - DA_{Frank}} \right) (DA_{001} - DA_{Frank})$$

where:

- Q_{001} = Estimated 7Q10 flow at Outfall 001, in CFS.
 Q_{Frank} = 7Q10 flow at Franklin Junction gage, in CFS.
 Q_{Goffs} = 7Q10 flow at Goffs Falls gage, in CFS.
 DA_{Goffs} = Drainage area at Goffs Falls gage, in mi².
 DA_{Frank} = Drainage area at Franklin Junction gage, in mi².
 DA_{001} = Drainage area at Outfall 001, in mi².

DILUTION FACTOR

Equation used to calculate dilution factor at Outfall 001.

$$Dilution\ Factor = \frac{(Q_{001}) + (Q_{PDF} \times 1.547)}{Q_{PDF} \times 1.547} \times 0.90$$

where:

- Q_{001} = Estimated 7Q10 flow at Outfall 001, in CFS.
 0.90 = Factor to reserve 10 % assimilative capacity
 Q_{PDF} = Treatment plant's design flow, in MGD.
 1.547 = Factor to convert MGD to CFS.

WATER QUALITY CRITERIA BASED LIMIT

Equation used to calculate average monthly and maximum daily Total Residual Chlorine limits.

$$Chlorine\ Limit = Dilution\ Factor \times Water\ Quality\ Standard$$

where water quality standards for chlorine are:

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

ATTACHMENT D

TOXICITY STRATEGY FOR MUNICIPAL PERMITS

STRATEGY ATTACHED BY STAPLE TO BACK OF THIS PAGE