AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §1251 et seq.; the "CWA"),

The City of Dover, New Hampshire

is authorized to discharge from the Wastewater Treatment Plant located at

484 Middle Road
Dover, New Hampshire 03820

to receiving waters named

Piscataqua River (Hydrologic Unit Code: 010600031001)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein including, but not limited to, conditions requiring the proper operation and maintenance of the City of Dover collection system.

The permit will become effective on *

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on August 3, 2006.

This permit consists of **Part I (**17 pages including effluent limitations and monitoring requirements); **Attachment A** (Marine Acute Toxicity Test Procedure and Protocol, September 1996), **Attachment B** (Reassessment of Technically Based Industrial Discharge Limits), **Attachment C** (NPDES Permit Requirement for Industrial Pretreatment Annual Report), and **Part II (**25 pages including General Conditions and Definitions).

Signed this day of

_____
Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
Region I
Boston, Massachusetts

* If comments on the draft permit are received during the Public Notice, the permit will become effective no sooner than 30 days after signature. If no comments are received the permit will become effective on the date of signature.

DRAFT

PART I
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall Serial Number 001 treated domestic, commercial, and industrial wastewater effluent to the Piscataqua River. Such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at end of all processes, including disinfection, or at an alternative representative location approved by the EPA and NHDES-WD.

Effluent Parameter	Effluent Limit			Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum Daily	Frequency	Sample Type
Flow, MGD	Report	---	Report	Continuous	Recorder[1]
BOD_5; mg/l (lb/d)	30 (1176)	45 (1764)	50 (1960)	2/Week[2]	24 Hour Composite
TSS; mg/l (lb/d)	30 (1176)	45 (1764)	50 (1960)	2/Week[2]	24 Hour Composite
pH Range[3]; Standard Units	6.0 to 8.0 (See Section I.J.5)			1/Day	Grab
Fecal Coliform[3,4,7]; colonies/100 ml	14	---	Report	1/Day	Grab
Enterococci Bacteria[3,4,8]; colonies/100ml	35	---	104	1/Day	Grab
Total Residual Chlorine[4,5,6]; mg/l	0.75	---	1.0	2/Day	Grab
Total Ammonia Nitrogen[9]; mg/l	Report	---	Report	2/Week	24 Hour Composite
Total Kjeldahl Nitrogen[9]; mg/l	Report	---	Report	2/Week	24 Hour Composite
Total Nitrate/Nitrite Nitrogen[9]; mg/l	Report	---	Report	2/Week	24 Hour Composite
Total Nitrogen[9]; mg/l (lb/d)	3.0 (118)	---	Report	2/Week	24 Hour Composite
(Applicable April 1 through October 31)					
Total Ammonia Nitrogen[9]; mg/l	Report	---	Report	2/Week	24 Hour Composite
Total Kjeldahl Nitrogen[9]; mg/l	Report	---	Report	2/Week	24 Hour Composite
Total Nitrate/Nitrite Nitrogen[9]; mg/l	Report	---	Report	2/Week	24 Hour Composite
Total Nitrogen[9]; mg/l (lb/d)	Report	---	Report	2/Week	24 Hour Composite
(Applicable November 1 through March 31)					
Whole Effluent Toxicity					
LC50[10,11,12]; Percent Effluent	---	---	100	1/Year	24 Hour Composite
Total Recoverable Aluminum[13]; mg/l	---	---	Report	1/Year	24 Hour Composite
Total Recoverable Cadmium[13]; mg/l	---	---	Report	1/Year	24 Hour Composite
Total Recoverable Chromium[13]; mg/l	---	---	Report	1/Year	24 Hour Composite
Total Recoverable Copper[13]; mg/l	---	---	Report	1/Year	24 Hour Composite
Total Recoverable Lead[13]; mg/l	---	---	Report	1/Year	24 Hour Composite
Total Recoverable Nickel[13]; mg/l	---	---	Report	1/Year	24 Hour Composite
Total Recoverable Zinc[13]; mg/l	---	---	Report	1/Year	24 Hour Composite

FOOTNOTES TO PART I.A.1 on page 2.

(1) The effluent flow shall be continuously measured and recorded using a flow meter and totalizer.

(2) To monitor the 85 percent removal of BOD_5 and TSS required in Part I.A.5, the influent concentrations of both BOD_5 and TSS shall be monitored twice per month using a 24-Hour Composite sample and the results reported as average monthly values.

(3) State certification requirement.

(4) Monitoring for fecal coliform and enterococci bacteria shall be conducted concurrently with a total residual chlorine sample when chlorine is being employed.

(5) Monitoring for total residual chlorine shall only be required when chlorination is employed.

(6) Total residual chlorine shall be measured using an approved testing method found in 40 Code of Federal Regulations (CFR) Part 136.

(7) Fecal coliform shall be tested using an approved method as specified in 40 CFR Part 136, List of Approved Biological Methods for Wastewater and Sewage Sludge.

The average monthly value for fecal coliform shall be determined by calculating the geometric mean using the daily sample results. Not more than 10 percent of the collected samples (over a monthly period) shall exceed a Most Probable Number (MPN) of 43 per 100 ml for a 5-tube decimal dilution test. Each month the percentage of collected samples that exceeds an MPN of 43 per 100 milliliters for the 5-tube decimal dilution test shall be reported as the daily maximum value. Furthermore, all fecal coliform data collected must be submitted with the monthly Discharge Monitoring Reports (DMRs).

(8) The average monthly value for enterococci shall be determined by calculating the geometric mean using the daily sample results. Enterococci shall be tested using an approved method as specified in 40 C.F.R. Part 136, List of Approved Biological Methods for Wastewater and Sewage Sludge. All enterococci data collected must be submitted with the monthly Discharge Monitoring Reports (DMRs).

(9) Total kjeldahl nitrogen, ammonia nitrogen, and nitrate/nitrite nitrogen samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen (total nitrogen = total kjeldahl nitrogen + total nitrate/nitrite nitrogen).

During the period November 1 through March 31 the permittee shall optimize the operation of the treatment facility for the removal of total nitrogen using all available treatment equipment in place at the facility. The addition of a carbon source that may be necessary in order to meet the total nitrogen limit from April 1 through October 31 is not required during the period November 1 through March 31.

(10) LC50 (lethal concentration 50 percent) is the concentration of wastewater (effluent) causing mortality to 50 percent (%) of the test organisms. The "100 % limit" is defined as a sample which is composed of 100 percent effluent. Therefore, a 100 % limit means that a sample of 100 % effluent (no dilution) shall cause no greater than a 50 % mortality rate in that effluent sample.

(11) The permittee shall conduct acute survival toxicity testing on effluent samples following the protocol in Attachment A (dated September 1996). The two species for these tests are *Menidia beryllina* and *Mysidopsis bahia*. Toxicity test samples shall be collected and tests completed once per year during the third quarter (*i.e.*, July, August, September). Toxicity test results are to be reported by the 15th day of the month following the end of the quarter tested (*i.e.*, October 15th).

(12) This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits such as for metals, 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 Section 122.62(a)(2).

(13) For each Whole Effluent Toxicity (WET) test the permittee shall report on the appropriate Discharge Monitoring Report (DMR), the concentrations of the total recoverable aluminum, cadmium, chromium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the Minimum Quantification Level shown in **Attachment A** on page A-8, or as amended. Also the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to assure attainment and maintenance of water quality

4. The discharge shall be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.

5. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both BOD_5 and TSS. The percent removal shall be based on a comparison of average monthly influent versus effluent concentrations.

6. When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 4.7 MGD design flow (3.76 MGD), the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever treatment necessary to achieve permit limits cannot be assured, the permittee may be required to submit plans for facility improvements.

7. All POTWs must provide adequate notice to both EPA-New England and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) of the following:

    a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category (see 40 CFR §122 Appendix A as amended) discharging process water; and

    b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

    c. For purposes of this paragraph, adequate notice shall include information on:

        (1) the quantity and quality of effluent introduced into the facility; and

        (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the facility.

8. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.

9. Limitations for Industrial Users

   a. A user may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference with the operation or performance of the treatment works. The terms "user", "pass through" and "interference" are defined in 40 CFR Section 403.3.

   b. The permittee shall submit to EPA-New England and NHDES-WD the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40CFR§403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended) **who commences discharge to the POTW after the effective date of this permit.** This reporting requirement also applies to any other IU that discharges an average of 25,000 gallons per day or more of process wastewater into the POTW (excluding sanitary, noncontact cooling and boiler blow down wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry-weather hydraulic or organic capacity of the POTW; or is designated as such by the Control Authority as defined in 40 CFR §403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR §403.8(f)(6)].

   c. In the event that the permittee receives reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR §403.6 and 40 CFR Chapter I, Subchapter N, (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended) the permittee shall forward all copies of these reports within ninety (90) days of their receipt to EPA-New England and NHDES-WD.

B. UNAUTHORIZED DISCHARGES

The permit only authorizes discharges in accordance with the terms and conditions of this permit and only from the Outfall listed in Part I.A.1 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 to EPA and NHDES in accordance with Part II, Section D.1.e. of the General Requirements of this permit (twenty-four hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions. The permittee is required to

complete the following activities for the collection system which it owns:

1. Maintenance Staff

   The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. This requirement shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

2. Preventative Maintenance Program

   The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. This requirement shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

3. Infiltration/Inflow

   The permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to control I/I shall be described in the Collection System O & M Plan required pursuant to Section C.5. below.

4. Collection System Mapping

Within 30 months of the effective date of this permit, the permittee shall prepare a map of the sewer collection system it owns (see page 1 of this permit for the effective date). The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up to date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

   a. All sanitary sewer lines and related manholes;
   b. All combined sewer lines, related manholes, and catch basins;
   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combined manholes);
   d. All outfalls, including the treatment plant outfall(s), CSOs, combined manholes, and any known or suspected SSOs;
   e. All pump stations and force mains;
   f. The wastewater treatment facility(ies);
   g. All surface waters (labeled);
   h. Other major appurtenances such as inverted siphons and air release valves;
   i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and
k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System Operation and Maintenance Plan

The permittee shall develop and implement a Collection System Operation and Maintenance Plan.

a. **Within six (6) months of the effective date of the permit**, the permittee shall submit to EPA and NHDES

    1. A description of the collection system management goals, staffing, information management, and legal authorities;
    2. A description of the overall condition of the collection system including a list of recent studies and construction activities; and
    3. A schedule for the development and implementation of the full Collection System O & M Plan including the elements in paragraphs b.1. through b.7. below.

b. **Within twenty four (24) months from the effective date of this permit, t**he full Collection System O & M Plan shall be implemented and submitted to EPA and NHDES-WD. The Plan shall include:

    1. The required submittal from paragraph 5.a. above, updated to reflect current information;
    2. A preventative maintenance and monitoring program for the collection system;
    3. Sufficient staffing to properly operate and maintain the sanitary sewer collection system;
    4. Sufficient funding and the source(s) of funding for implementing the plan;
    5. Identification of known and suspected overflows and back-ups, including combined manholes, a description of the cause of the identified overflows and back-ups, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;
    6. A description of the permittee's program for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts; and
    7. An educational public outreach program for all aspects of I/I control, particularly private inflow.

6. Annual Reporting Requirement

The permittee shall submit a summary report of activities related to the implementation of its Collection System O & M Plan during the previous calendar year. The report shall be submitted to EPA and NHDES annually by March 31. The first annual report shall be due the first March 31st following the submittal of the Collection System O & M Plan required by Part I.C.5.b of this permit. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;
b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;
c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;
d. A map with areas identified for investigation/action in the coming year;
e. If treatment plant flow has reached 80% of the 4.7 MGD design flow (3.76 MGD) or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternate power source with which to sufficiently operate the wastewater facility, as defined at 40 C.F.R. § 122.2, which references the definition at 40 C.F.R. § 403.3(o). Wastewater facility is defined by RSA 485A:2.XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge.

E. INDUSTRIAL PRETREATMENT PROGRAM

1. Limitations for Industrial Users:

a. A user may not introduce into a POTW any pollutant(s) which cause pass through or interference with the operation or performance of the treatment works. The terms “user”, “pass through”, and “interference” are defined in 40 C.F.R. § 403.3.

b. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial Users(s) and all other users as necessary, which together with appropriate changes in the POTW Treatment Plant’s facilities or operation, are essential to ensure continued compliance with the POTW’s NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of this permit, the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and

effluent pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety, and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment B – Reassessment of Technically Based Industrial Discharge Limits) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. Following EPA approval, the permittee shall submit the proposed changes to the New Hampshire Legislature for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. Industrial Pretreatment Program

a. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program and the General Pretreatment Regulations, 40 C.F.R. §403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

1. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP, but in no case less than once per year, and maintain adequate records.

2. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

3. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.

4. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.

b. The permit shall provide the EPA and the NHDES-WD with an annual report describing the permittee's pretreatment program activities for the twelve month period ending 60 days prior to the due date in accordance with 40 C.F.R. §403.12(i). The annual report shall be consistent with the format described in Attachment C (NPDES Permit Requirement for Industrial Pretreatment Annual Report) and shall be submitted no later than February 15th of each year.

c. The permittee must obtain approval from EPA prior to making any significant changes to

the industrial pretreatment program in accordance with 40 C.F.R. §403.18(c).

d. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 C.F.R. §405 et. seq.

e. The permittee must modify its pretreatment program to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the Industrial Pretreatment Program. The permittee must provide EPA, in writing, within 180 days of the effective date of this permit, proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the permittee must address in its written submission the following areas: (1) enforcement response plan; (2) revised sewer use ordinances; (3) slug control evaluations. The permittee will implement these proposed changes pending EPA's approval under 40 C.F.R. §403.18.

F. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal & state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state (Env-Ws 800) or federal (40 CFR Part 503) requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to facilities which perform one or more of the following use or disposal practices.

    a. Land application - the use of sewage sludge to condition or fertilize the soil.

    b. Surface disposal - the placement of sewage sludge in a sludge only landfill.

    c. Placement of sludge in a municipal solid waste landfill (See 40 CFR Section 503.4).

    d. Sewage sludge incineration in a sludge only incinerator.

4. The 40 CFR Part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions do not apply to facilities which do not dispose of sewage sludge during the life of the permit, but rather treat the sludge (lagoons-reed beds), or are otherwise excluded under 40 CFR Section 503.6.

5. The permittee shall use and comply with the NPDES Permit Sludge Compliance Guidance, November 1999, to determine appropriate conditions. Appropriate conditions contain the following elements:

a. General requirements;
b. Pollutant limitations;
c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements);
d. Management practices;
e. Record keeping;
f. Monitoring; and
g. Reporting.

Depending upon the quality of material produced by a facility all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction for the permittee's chosen sewage sludge use or disposal practices at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.

Volume of Sewage Sludge (dry metric tons per year)	**Monitoring Frequency**
less than 290	1/Year
290 to less than 1,500	1/Quarter
1,500 to less than 15,000	6/Year
15,000 plus	1/Month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR Section 503.8.

8. The permittee shall submit an annual report containing the information specified in the attached Sludge Compliance Guidance document. Reports are **due annually by February 19th**. Reports shall be submitted to both addresses (EPA-New England and NHDES-WD) contained in the reporting section of the permit.

G. SPECIAL CONDITIONS

1. pH Limit Adjustment

The permittee may submit a written request to the EPA-New England requesting a change in the permitted pH limit range to be not less restrictive than 6.0 to 9.0 Standard Units found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for this facility. The permittee's written request must include the State's approval letter containing an original signature (no copies). The State's letter shall state that the permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit

range. Until written notice is received by certified mail from the EPA-New England indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

H. REQUIREMENTS FOR POTWS WITH EFFLUENT DIFFUSERS

1. The facility shall maintain elastomeric check valves on the diffuser ports to prevent marine water intrusion into the outfall pipe.

2. Effluent diffusers shall be maintained when necessary to ensure proper operation. Proper operation means that the plumes from each port will be balanced relative to each other and that they all have unobstructed flow. Maintenance may include dredging in the vicinity of the diffuser, cleaning out of solids in the diffuser header pipe, removal of debris and repair/replacement of riser ports, and duckbill valves.

3. Any necessary maintenance dredging must be performed only during the marine construction season authorized by the New Hampshire Fish and Game Department and only after receiving all necessary permits including those from the NHDES Wetlands Bureau, U.S. Coast Guard, and the U.S. Army Corps of Engineers.

4. To determine if maintenance will be required, the permittee shall have a licensed diver or licensed marine contractor inspect and videotape the operation of the diffuser. The inspections and videotaping shall be performed once every two years with the first inspection required during the first calendar year following final permit issuance.

5. Copies of a report summarizing the results of each diffuser inspection shall be submitted to EPA and NHDES-WD by December 31st of the year the inspection occurred. Where it is determined that maintenance will be necessary, the permittee shall also provide the proposed schedule for the maintenance.

I. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit,** the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit,** the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

   a. Submittal of Reports Using NetDMR

      NetDMR is accessed from: http://www.epa.gov/netdmr. **Within one year of the effective date of this permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is

able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request").

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the NHDES Monthly Operating Reports (MORs), as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA or to NHDES.

b. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

And

Attn: Compliance Supervisor
New Hampshire Department of Environmental Services (NHDES)
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under the permit, including NHDES Monthly Operating Reports, shall be submitted as an attachment to the DMRs. Signed and dated original DMRs and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following address:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA-New England and to NHDES-WD.

2. The permittee shall immediately notify the Shellfish Section of the NHDES-WD of possible high bacteria/virus loading events from the facility or its sewage collection infrastructure. Such events include:

   a. Any lapse or interruption of normal operation of the WWTF disinfection system, or other event that results in the discharge of sewage from the WWTF or sewer infrastructure (pump stations, sewer lines, manholes, etc.) that has not undergone full treatment including disinfection as specified in the NPDES permit.

   b. Average daily flows in excess of 4.02 mgd.

   c. Daily post-disinfection effluent sample results of 43 fecal coliform/100 ml or greater. Notification shall also be made for instances where bacteria sampling required in this NPDES permit is not completed or where the results of such sampling are invalid.

   Notification shall be made to the Shellfish Section of the NHDES-WD using the program's cell phone as well as on the program's pager. Upon initial notification of a possible high bacteria/virus loading event, Shellfish Program staff will determine the most suitable interval for continued notification and updates on an event by event basis.

J. STATE PERMIT CONDITIONS

1. The permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).

2. This NPDES discharge permit is issued by EPA under federal and state law. Upon final issuance by EPA, the New Hampshire Department of Environmental Services-Water Division (NHDES-WD) may adopt this permit, including all terms and conditions, as a state permit pursuant to RSA 485-A:13.

3. EPA shall have the right to enforce the terms and conditions of this permit pursuant to federal law and NHDES-WD shall have the right to enforce the permit pursuant to state law, if the permit is adopted. Any modification, suspension, or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of the permit as issued by the other agency.

4. Pursuant to New Hampshire Statute RSA 485-A13,I(c), any person responsible for a bypass or upset at a *wastewater facility* shall give immediate notice of a bypass or upset to all public or privately owned water systems drawing water from the same receiving water and located within 20 miles downstream of the point of discharge regardless of whether or not it is on the same receiving water or on another surface water to which the receiving water is tributary. Wastewater facility is defined at RSA 485-A:2XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge. The permittee shall maintain a list of persons, and their telephone numbers, who are to be notified immediately by telephone. In addition, written notification, which shall be postmarked within 3 days of the bypass or upset, shall be sent to such persons.

5. The pH range of 6.5 to 8.0 Standard Units (S.U.) must be achieved in the final effluent unless the permittee can demonstrate to NHDES-WD: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits outside the range of 6.0 – 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 CFR 133.102(c).

6. Pursuant to New Hampshire Code of Administrative Rules, Env-Wq 703.07(a):

   (a) Any person proposing to construct or modify any of the following shall submit an application for a sewer connection permit to the department:

   (1) Any extension of a collector or interceptor, whether public or private, regardless of flow;

   (2) Any wastewater connection or other discharge in excess of 5,000 gpd;

   (3) Any wastewater connection or other discharge to a WWTP operating in excess of 80 percent design flow capacity based on actual average flow for 3 consecutive months;

(4) Any industrial wastewater connection or change in existing discharge of industrial wastewater, regardless of quality or quantity; and

(5) Any sewage pumping station greater than 50 gpm or serving more than one building.

7. For each new or increased discharge of industrial waste to the POTW, the permittee shall submit, in accordance with Env-Ws 904.14(e) an "Industrial Wastewater Discharge Request Application" approved by the permittee in accordance with 904.13(a). The "Industrial Wastewater Discharge Request Application" shall be prepared in accordance with Env-Ws 904.10.

8. Pursuant to Env-Ws 904.17, at a frequency no less than every five years, the permittee shall submit to NHDES:

   (a) A copy of its current sewer use ordinance. The sewer use ordinance shall include local limits pursuant to Env-Ws 904.04 (a).

   (b) A current list of all significant indirect dischargers to the POTW. At a minimum, the list shall include for each significant indirect discharger, its name and address, the name and daytime telephone number of a contact person, products manufactured, industrial processes used, existing pretreatment processes, and discharge permit status.

   (c) A list of all permitted indirect dischargers; and

   (d) A certification that the municipality is strictly enforcing its sewer use ordinance and all discharge permits it has issued.

9. In addition to submitting DMRs, monitoring results shall also be summarized for each calendar month and reported on separate Monthly Operations Report Form(s) (MORs) postmarked or submitted electronically using NetDMR no later than the 15th day of the month following the completed reporting period. Signed and dated MORs, which are not submitted electronically using NetDMR shall be submitted to:

New Hampshire Department of Environmental Services (NHDES)
Water Division
Wastewater Engineering Bureau
29 Hazen Drive, P.O. Box 95
Concord, New Hampshire 03302-0095

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
FIVE POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

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

PUBLIC NOTICE START AND END DATES: January 6, 2012 – March 5, 2012

PUBLIC NOTICE NUMBER: NH-005-12

CONTENTS: 47 pages including Attachments A through D

NPDES PERMIT NO.: NH0100311

NAME AND MAILING ADDRESS OF APPLICANT:

City of Dover
Wastewater Treatment Facility
288 Central Avenue
Dover, New Hampshire 03820

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

City of Dover
Wastewater Treatment Facility
484 Middle Road
Dover, New Hampshire 03820

RECEIVING WATER: Piscataqua River (Hydrologic Unit Code: 010600031001)

CLASSIFICATION: B

Table of Contents

I. Proposed Action, Type of Facility and Discharge Location

The above named applicant has requested that the U.S. Environmental Protection Agency reissue its NPDES permit to discharge into the designated receiving water. The facility is engaged in the collection and treatment of domestic, commercial, and industrial wastewaters. The wastewater treatment facility is a conventional activated sludge secondary (biological) treatment plant, and utilizes ultraviolet light for disinfection. The design flow of the facility is 4.7 million gallons per day (MGD). The long term average flow to the facility is about 2.9 MGD; about 0.5 MGD of that flow is estimated to be from infiltration and inflow.

The Town's previous permit was issued on August 3, 2006. The previous permit (hereafter referred to as the "2006 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.

A map showing the location of facility, Outfall 001 and the receiving water is provided in Attachment A.

II. Description of Discharge

Quantitative descriptions of the discharge in terms of significant effluent parameters based on the permit application and in terms of recent effluent-monitoring data (October 2006 through February 2011) are shown in Attachment B.

III. Limitations and Conditions

The draft permit contains limitations for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH, total nitrogen, fecal coliform, enterococci bacteria, total residual chlorine (TRC), and whole effluent toxicity (WET). It also contains monitoring requirements for flow, ammonia nitrogen, total kjeldahl nitrogen, total nitrate + nitrite nitrogen, and certain metals. 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 VI of this Fact Sheet.

IV. Statutory and Regulatory Authority

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act (CWA or Act), "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 the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402. CWA §§ 301(a), 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 Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. 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. CWA §§ 301, 303, 304(b); 40 CFR 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. 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, on the other hand, are designed to ensure that state water quality standards are achieved, irrespective of the technological or economic considerations that inform technology-based limits. Under the CWA, states must 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 applicable New Hampshire water quality standards are in Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq (NH Standards). See generally, Title 50, Water Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A.

Under NPDES regulations, a permit must include limits for 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 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. An NPDES permit must contain effluent limitations and conditions in order to ensure that the discharge does not cause or contribute to water quality standard violations. Section 301(b)(1)(C) (requiring achievement of "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation...."); 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") and 122.44(d)(5) (in part providing that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

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 the 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.

Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an "indicator parameter." 40 CFR § 122.44(d)(1)(vi)(A-C).

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. 40 CFR § 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. NH Standards do not authorize schedules of compliance to achieve water quality-based effluent limitations.

The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

B. Development of Water Quality-based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

1. 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 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 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 New Hampshire water quality standards (RSA 485-A:8,VI, Env-Wq 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) 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. Available dilution for tidal waters is based on conditions that result in dilution that is exceeded 99 percent of the time.

C. 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.

D. 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. 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)." 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, 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," 40 C.F.R. 124.53(e)(3).

When EPA reasonably believes that a State water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. 40 C.F.R. §§ 122.44(d)(1) and (5). Under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations, or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. § 124.55(c). In such an instance, the regulations provide that, "the Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id.

V. Description of Receiving Water

The Dover facility discharges to the Piscataqua River, within the tidal portion of the river, approximately 4 miles upstream of the confluence with Little Bay. The Piscataqua River in the vicinity of the discharge is classified as a Class B water by the New Hampshire State Legislature. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies (where applicable).

Section 303(d) of the Clean Water Act requires states to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls. As a result of the documented water quality impairments, portions of the Great Bay Estuary, including its tributaries, have been included on the State of New Hampshire's Section 303(d) list. New Hampshire's 2008 List of Threatened or Impaired Waters that Require a TMDL contains the portion of the Piscataqua River that receives the discharge from the Dover Wastewater Treatment Facility. A summary of these impairments and sources are provided in the table below. The assessment unit for this stretch of the Piscataqua River is

NHEST600031001-01-02.

Section 303(d) Listing Parameters for the Piscataqua River Assessment Unit NHEST600031001-01-02		
Use Description	**Impairment**	**Source**
Aquatic Life	Estuarine Bioassessments	Source Unknown
	Light Attenuation Coefficient	Source Unknown
	Nitrogen (Total)	Source Unknown
Fish Consumption	Mercury	Atmospheric Deposition – Toxics Source Unknown
	Polychlorinated biphenyls	Source Unknown
Primary Contact Recreation	Enterococcus	Source Unknown
Shellfishing	Dioxin (including 2,3,7,8 TCDD)	Source Unknown
	Mercury	Atmospheric Deposition – Toxics Source Unknown
	Polychlorinated biphenyls	Source Unknown

According to "Amendment to the New Hampshire 2008 Section 303(d) List Related to Nitrogen and Eelgrass in the Great Bay Estuary" (NHDES(a), 2009), the Piscataqua River is also impaired for biological and aquatic community integrity as manifested by significant eelgrass loss. According to the 303(d) list, the indicators showing biological and aquatic community integrity impairment are estuarine bioassessments for eelgrass, total nitrogen and water clarity. Detailed information pertaining to nitrogen impacts can be found below in Section VI.C.3.

VI. Permit Basis and Explanation of Effluent Limitation Derivation

A. Flow

Effluent flow must be continuously measured. If the effluent discharged for a period of three consecutive months exceeds 80 percent of the 4.7 MGD design flow (3.76 MGD), the permittee must notify EPA and NHDES-WD, and implement a program for maintaining satisfactory treatment levels. See Part I.A.6 of the proposed draft permit.

The facility's design flow rate of 4.7 MGD is used to calculate the mass-based limits for five-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), as discussed below.

B. Conventional Pollutants

1. Five-Day Biological Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

Average monthly and average weekly concentration-based limits of 30 mg/l and 45 mg/l for BOD_5 and of 30 mg/l and 45 mg/l for TSS are based on requirements under Section 301(b)(1)(B) of the CWA and Secondary Treatment Standards in 40 CFR §§133.102(a) and (b).

The average monthly and average weekly mass-based limits for BOD_5 and TSS in the draft permit are based on 40 CFR § 122.45(f). Average monthly, average weekly and maximum daily allowable mass-based (load) limitations for BOD_5 and TSS in the draft permit are calculated using the POTW's daily design flow of 4.7 MGD and the corresponding monthly, weekly or daily concentration-based limit. See Attachment C for the equation used to calculate

each of these mass-based limits.

The existing permit and the draft permit require 85% removal for both BOD_5 and TSS based on 40 CFR §§ 133.102(a)(3) and (b)(3).

BOD_5 and TSS must be monitored twice per week.

2. Fecal Coliform and Enterococci Bacteria

The draft permit includes average monthly and daily maximum effluent limits for enterococci bacteria. For fecal coliform bacteria the permit contains an average monthly effluent limitation and a reporting requirement for the daily maximum value.

Bacteria criteria applicable to the marine waters (Piscataqua River) in the vicinity of the Dover WWTF outfall are found in NH RSA 485-A:8.V, which states:

> *"Tidal waters utilized for swimming purposes shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 35 enterococci per 100 milliliters, or 104 enterococci per 100 milliliters in any one sample, unless naturally occurring. Those tidal waters used for growing or taking of shellfish for human consumption shall, in addition to the foregoing requirements, be in accordance with the criteria recommended under the National Shellfish Program Manual of Operation, United States Department of Food and Drug Administration."*

The draft permit includes average monthly and maximum daily limits for enterococci bacteria for protection of swimming uses in the receiving water. The NHDES-WD has determined that the geometric mean water quality standard of 35 enterococci per 100 milliliters applies to NPDES permits as an average monthly geometric mean limit and the single sample maximum standard applies as a maximum daily limit. The criteria have been incorporated as end of pipe effluent limitations (i.e., no dilution) in accordance with the NH Standards (see NH Code of Administrative Rules, Part Env-Wq 1703.06)

The draft permit also includes average monthly and maximum daily limits for fecal coliform bacteria for protection of shellfishing uses. The Shellfish Program Manual referenced in NH RSA 485-A: 8.V includes recommended criteria for either total coliform bacteria or fecal coliform bacteria. The draft permit is based on the fecal coliform bacteria recommendations in the Shellfish Program Manual, which requires that the geometric mean fecal coliform most probable number (MPN) not exceed 14 per 100 milliliters and not more than 10 percent of the samples exceed an MPN of 43 per 100 milliliters for a 5-tube decimal dilution test. The NHDES-WD has determined that the geometric mean fecal coliform value of 14 colonies per 100 milliliters applies to NPDES permits as an average monthly geometric mean limit, and the requirement that not more than 10 percent of the samples exceed an MPN of 43 per 100 milliliters applies as a maximum daily limit. The average monthly value is determined by calculating the geometric mean of the daily sample values. The fecal coliform criteria have been incorporated as end of pipe effluent limitations (i.e., no dilution) in accordance with the NH Standards (see NH Code of Administrative Rules, Part Env-Wq 1703.06)

3. pH

The water quality criteria for Class B waters are found in 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 2006 permit include limits of 6.0-8.0, based on a July 17, 2000 study demonstrating that these limitations were sufficient to ensure that the water quality criteria were achieved, and a September 6, 2000 letter from NHDES concurring with this finding. The pH limits of 6.0 to 8.0 were included in the 2006 permit and have been carried forward in this draft permit.

The pH range may not be modified to be less stringent than 6.0 – 9.0 S.U as specified in the federal secondary treatment standards found at 40 CFR §133.102.

Effluent limitations for pH in the draft permit are the same as the limits in the existing permit and are, therefore, in accordance with antibacksliding requirements found in 40 CFR §122.44(1).

C. Non-Conventional and Toxic Pollutants

Water quality-based limits for specific toxic pollutants such as chlorine and metals are determined from numeric chemical-specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in Quality Criteria for Water, 1986, EPA440/5-86-001 as amended, commonly known as the federal "Gold Book". Each pollutant generally includes acute aquatic life criteria to protect against short term aquatic life effects, such as death; chronic aquatic life criteria to protect against long term aquatic life effects, such as poor reproduction or impaired growth; and human health criteria to protect water and fish consumption uses. 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 10, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine pollutant-specific draft permit limits.

1. Available Dilution

The Dover WWTF outfall is 1,050 feet from the shore, 15 feet below the water surface and equipped with a diffuser. The NHDES-WD modeled the discharge using the Cornell Mixing Zone Expert System (CORMIX) and determined the dilution to be 107.6:1. However, a dilution of **100:1** was used for the draft permit since this is the maximum dilution allowed by the NHDES for marine discharges. The 2006 permit and this draft permit are based on this dilution factor.

2. Total Residual Chlorine

The Dover Wastewater Treatment Facility utilizes ultraviolet (UV) disinfection in its wastewater treatment process. A chlorination system has been retained for use in the event of failure of the UV system. Accordingly, the permit includes an effluent limit and monitoring requirements for TRC, but monitoring is required only when the chlorine is being added to the discharge. The permit limits are based upon chlorine marine acute and chronic criteria of 0.013 mg/l and 0.0075 mg/l, respectively, which are found in NH RSA Env-Ws 1703.21. Using these criteria and the

available dilution, the monthly average limit is calculated as **0.75 mg/l** (100 * 0.0075 mg/l) and the maximum daily limit is calculated as 1.3 mg/l. The draft permit includes the calculated monthly average limit but includes a maximum daily limit of **1.0 mg/l** based upon best professional judgment.

These limits are the same as those in the 2006 permit, and so are in accordance with antibacksliding regulations found at 40 CFR § 122.44(l).

3. Total Nitrogen

EPA's analysis of available information, including the NHDES report "Analysis of Nitrogen Loading Reductions for Wastewater Treatment Facilities and Non-Point Sources in the Great Bay Estuary Watershed-Draft" shows that the facility's nitrogen discharge has the reasonable potential to cause or contribute to a violation of water quality standards, and that a total nitrogen effluent limitation of 3 mg/l, coupled with significant reductions in non-point source discharges of nitrogen is necessary to ensure compliance with water quality standards. EPA is therefore including a monthly average concentration limit of 3 mg/l, applicable during the months of April through October. Also, in accordance with 40 CFR §122.45(f), EPA is imposing a monthly average mass limit of 118 lbs/day, also applicable during the months of April through October. This mass limit is based on the monthly average concentration limit and the design flow of the facility.

EPA believes the combination of concentration and mass limits is reasonable and warranted given the degree of existing nitrogen impairments in the receiving waters. The concentration limit will ensure that the treatment facility is operated as efficiently as possible, thus producing a mass discharge load less than the mass limit at flows less than design flow. This protective approach is especially important in this watershed, since controls on point source loading alone will not be sufficient to ensure attainment of water quality standards, and controls on non-point sources may lag behind treatment plant construction.

While the nitrogen loading reduction analysis is a year round analysis, EPA has opted not to include nitrogen limits for November through March because these months are not the most critical period for phytoplankton and macro algae growth. EPA is, however, imposing a condition requiring the permittee to optimize nitrogen removal during the wintertime, in order to reduce nitrogen loading year round. The summer limits and the winter optimization requirements will serve to keep the annual discharge load low. In combination, the numeric limitations and the optimization requirements are designed to ensure that the discharge does not cause or contribute to any violations of applicable New Hampshire water quality standards, including its narrative water quality criterion for nutrients, in accordance with Section 301(b)(1)(C) of the CWA.

a. Background

1. Ecological Setting: Great Bay; Piscataqua River

Great Bay is one of only 28 "estuaries of national significance" under the National Estuary Program (NEP), which was established in 1987 by amendments to the Clean Water Act to

identify, restore and protect estuaries along the coasts of the United States. The centerpieces of the estuary are Great Bay and Little Bay. Great Bay proper is a tidally-dominated, complex embayment on the New Hampshire-Maine border. Great Bay is unusual because of its inland location, more than five miles up the Piscataqua River from the ocean**.** It is a popular location for kayaking, birdwatching, commercial lobstering, recreational oyster harvesting, and sportfishing for rainbow smelt, striped bass, and winter flounder. Over forty New Hampshire communities are entirely or partially located within the coastal watershed. The estuary receives treated wastewater effluent from 18 publicly owned treatment works (14 in New Hampshire and four in Maine).

The Great Bay estuary is composed of a network of tidal rivers, inland bays, and coastal harbors. The estuary extends inland from the mouth of the Piscataqua River between Kittery, Maine and New Castle, New Hampshire to Great Bay proper. In all, estuarine tidal waters cover 17 square miles with 144 miles of tidal shoreline. Five tidal rivers discharge into Great Bay and Little Bay: the Winnicut, Squamscott (called the Exeter River above the tidal dam), Lamprey, Oyster, and Bellamy Rivers. Other parts of the Great Bay Estuary include the Upper Piscataqua River (fed by the Cocheco, Salmon Falls, and Great Works Rivers), the Lower Piscataqua River, Portsmouth Harbor, and Little Harbor/Back Channel. Tidal height ranges from 2.7 meters at the mouth of the estuary to 2.0 meters at Dover Point. Because of strong tidal currents and mixing, vertical stratification of the estuary is limited. However, partial stratification may occur during periods of intense freshwater runoff particularly at the upper tidal reaches of rivers entering the estuary. Observed flushing time for water entering the head of the estuary is 36 tidal cycles (18 days) during high river flow. (Jones, 2000)

The Upper Piscataqua River, at the location of Dover's POTW, receives most of its flow from the Cocheco River and Salmon Falls River. The Cocheco River drains a watershed covering approximately 175 square miles (NHDES, 2010) and includes portions of the towns of Dover, Rollinsford, Somersworth, Rochester, Barrington, Strafford, Northwood, Farmington, New Durham, Milton, and Middleton. The Salmon Falls River drains a watershed covering approximately 235 square miles (NHDES, 2010) and includes portions of the towns of Eliot, South Berwick, Berwick, North Berwick, Rollinsford, Somersworth, Rochester, Lebanon, Sanford, Acton, Milton, Middleton, Brookfield, Wakefield, and Wolfeboro.

The Upper Piscataqua River watershed receives nitrogen loading from point sources (wastewater treatment plant), "non-point" sources (unregulated stormwater runoff and septic) and atmospheric deposition. Wastewater treatment plants in the watershed contributing to nitrogen loads in the Upper Piscataqua include facilities on the Cocheco and Salmon Falls Rivers upstream of the Dover facility, and facilities on the Lower Piscataqua River, downstream of the facility, whose discharges are carried upstream by flooding tides. The Cocheco River receives effluent from the Farmington and Rochester facilities, the Salmon Falls River receives effluent from the Berwick, South Berwick, North Berwick, Milton, Somersworth, and Rollinsford facilities, and the Lower Piscataqua River receives effluent from the Kittery, Portsmouth- Peirce Island, Portsmouth - Pease, and Newington facilities.

2. Estuarine Systems Generally; Effects of Nutrients on Estuarine Water Quality

Estuaries, especially large, productive ones like Great Bay, are extremely significant aquatic resources. An estuary is a partially enclosed coastal body of water located between freshwater

ecosystems (lakes, rivers, and streams; freshwater and coastal wetlands; and groundwater systems) and coastal shelf systems where freshwater from the land measurably dilutes saltwater from the ocean. This mixture of water types creates a unique transitional environment that is critical for the survival of many species of fish, birds, and other wildlife. Estuarine environments are among the most productive on earth, creating more organic matter each year than comparably sized areas of forest, grassland, or agricultural land (EPA, 2001).

Maintaining water quality within an estuary is important for many reasons. Estuaries provide a variety of habitats such as shallow open waters, freshwater and saltwater marshes, sandy beaches, mud and sand flats, rocky shores, oyster reefs, tidal pools, and seagrass beds. Tens of thousands of birds, mammals, fish, and other wildlife depend on estuarine habitats as places to live, feed, and reproduce. Many species of fish and shellfish rely on the sheltered waters of estuaries as protected places to spawn. Moreover, estuaries also provide a number of recreation values such as swimming, boating, fishing, and bird watching. Estuaries in addition have an important commercial value since they serve as nursery grounds for two thirds of the nation's commercial fish and shellfish, and support tourism drawing on the natural resources that estuaries supply. (EPA, 1998). Consequently, EPA believes sound environmental policy reasons favor a pollution control approach that is both protective and undertaken expeditiously to prevent degradation of these critical natural resources.

Because estuaries are the intermediary between oceans and land, both these geographic features influence their physical, chemical, and biological properties. In the course of flowing downstream through a watershed to an estuary, tributaries pick up materials that wash off the land or are discharged directly into the water by land-based activities. Eventually, the materials that accumulate in the tributaries are delivered to estuaries. The types of materials that eventually enter an estuary largely depend on how the land is used. Undisturbed land, for example, will discharge considerably fewer pollutants than an urban center or areas with large amounts of impervious cover. Accordingly, an estuary's overall health can be heavily impacted by surrounding land uses.

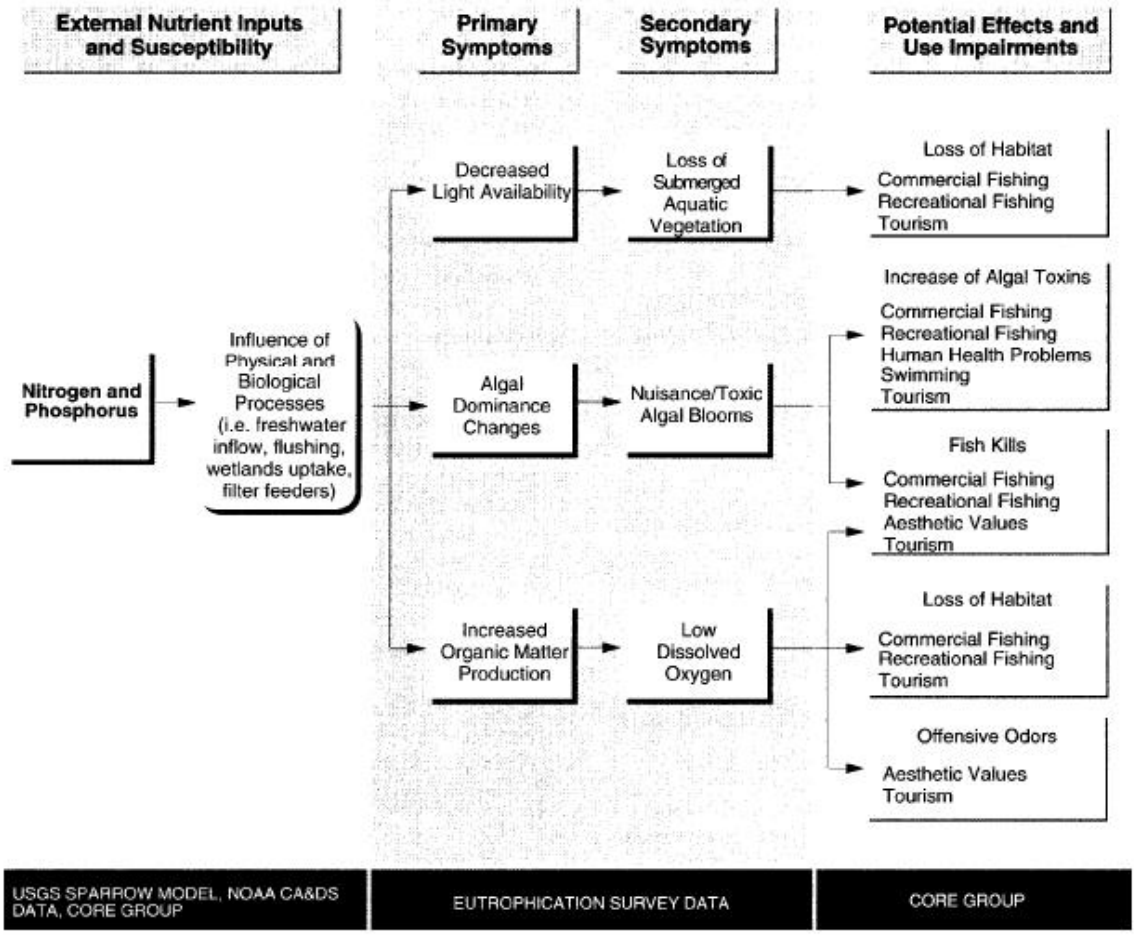
Unlike free-flowing rivers, which tend to flush out sediments and pollutants relatively quickly, an estuary will often have a lengthy retention period as up-estuary saltwater movement interacts with down-estuary freshwater flow (EPA, 2001). Estuaries are particle-rich relative to coastal systems and have physical mechanisms that tend to retain particles. These suspended particles mediate a number of activities (e.g., absorbing and scattering light, or absorbing hydroscopic materials such as phosphate and toxic contaminants). New particles enter with river flow and may be resuspended from the bottom by tidal currents and wind-wave activity. Many estuaries are naturally nutrient-rich because of inputs from the land surface and geochemical and biological processes that act as "filters" to retain nutrients within estuaries (EPA, 2001). Consequently, waterborne pollutants, along with contaminated sediment, may remain in the estuary for a long time, magnifying their potential to adversely affect the estuary's plants and animals.

The basic cause of nutrient problems in estuaries and nearshore coastal waters is the enrichment of freshwater with nitrogen (N) and phosphorus (P) on its way to the sea and by direct inputs within tidal systems (EPA, 2001). EPA defines nutrient overenrichment as the anthropogenic addition of nutrients, in addition to any natural processes, causing adverse effects or impairments to beneficial uses of a waterbody. (EPA, 2001). Eutrophication is an aspect of nutrient

overenrichment and is defined as an increase in the rate of supply of organic matter to a waterbody (EPA, 2001). Cultural eutrophication has been defined as the human-induced addition of wastes containing nutrients to surface waters that results in excessive plant growth and/or a decrease in dissolved oxygen. (Env-Wq 1702.15).

Increased nutrient inputs promote a progression of symptoms beginning with excessive growth of phytoplankton and macroalgae to the point where grazers cannot control growth (NOAA, 2007). Phytoplankton is microscopic algae growing in the water column and is measured by chlorophyll *a*. Macroalgae are large algae, commonly referred to as "seaweed." The primary symptoms of nutrient overenrichment include an increase in the rate of organic matter supply, changes in algal dominance, and loss of water clarity and are followed by one or more secondary symptoms such as loss of submerged aquatic vegetation, nuisance/toxic algal blooms and low dissolved oxygen. (EPA, 2001). In U.S. coastal waters, nutrient overenrichment is a common thread that ties together a diverse suite of coastal problems such as red tides, fish kills, some marine mammal deaths, outbreaks of shellfish poisonings, loss of seagrass and bottom shellfish habitats, coral reef destruction, and hypoxia and anoxia now experienced as the Gulf of Mexico's "dead zone." (EPA, 2001). Figure 1 shows the progression of nutrient impacts on a water body.

Figure 1



Source: EPA, 2001

Estuarine nutrient dynamics are complex and are influenced by flushing time, freshwater inflow and stratification, among other factors. The deleterious physical, chemical, and biological responses in surface water, resulting from excessive plant growth, impair designated uses in both the receiving water and downstream waterbodies. Excessive plant growth can result in a loss of diversity and other changes in the aquatic plant, invertebrate, and fish community structure and habitat. For example, losses of submerged aquatic vegetation (SAV), such as eelgrass, occur when light is decreased due to turbid water associated with overgrowth of algae or as a result of epiphyte growth on leaves (NOAA, 2007 and EPA, 2001). Excess nitrogen and phosphorus cause an increased growth of phytoplankton and epiphytes (plants that grow on other plants). Phytoplankton growth leads to increased turbidity, blocking light attenuation, and epiphytic growth further blocks sunlight from reaching the SAV surface. When sunlight cannot reach SAV, photosynthesis decreases and eventually the submerged plants die. (State-EPA Nutrient Innovations Task Group, 2009). The loss of SAV can have negative effects on the ecological functioning of an estuary and may impact some fisheries because the SAV beds serve as important habitat. Because SAV responds rapidly to water quality changes, its health can be an indicator of the overall health of the coastal ecosystem.

Nutrient-driven impacts on aquatic life and habitat are felt throughout the eutrophic cycle of plant growth and decomposition. Nutrient-laden plant detritus can settle to the bottom of a water body. In addition to physically altering the benthic environment and aquatic habitat, organic materials (*i.e.*, nutrients) in the sediments can become available for future uptake by aquatic plant growth, further perpetuating and potentially intensifying the eutrophic cycle.

Excessive aquatic plant growth, in addition, degrades aesthetic and recreational uses. Unsightly algal growth is unappealing to swimmers and other stream users and reduces water clarity. Decomposing plant matter also produces unpleasant sights and strong odors. Heavy growths of algae on rocks can make streambeds slippery and difficult or dangerous to walk on. Algae and macrophytes can interfere with angling by fouling fishing lures and equipment. Boat propellers and oars may also get tangled by aquatic vegetation.

When nutrients exceed the assimilative capacity of a water body, the ensuing eutrophic cycle can negatively impact in-stream dissolved oxygen levels. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life. During the day, primary producers (*e.g.*, algae, plants) provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but respiration continues, dissolved oxygen concentrations decline. Furthermore, as primary producers die, they are decomposed by bacteria that consume oxygen, and large populations of decomposers can consume large amounts of dissolved oxygen. Many aquatic insects, fish, and other organisms become stressed and may even die when dissolved oxygen levels drop below a particular threshold level.

Nutrient overenrichment of estuaries and nearshore coastal waters from human-based causes is now recognized as a national problem on the basis of Clean Water Act Section 305(b) reports from coastal States (EPA, 2001). Most of the nation's estuarine and coastal waters are moderately to severely polluted by excessive nutrients, especially nitrogen and phosphorus (NOAA, 2007; NOAA, 1999; EPA, 2006; EPA, 2004; and EPA, 2001).

3. Water Quality Standards Applicable to Upper Piscataqua River and Great Bay Estuary

Under New Hampshire Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq. (NH Standards), surface waters are divided into water "use" classifications: Class A and B. RSA 485-A: 8; Env-Wq 1702.11. Great Bay and its tributaries have a water quality classification of B. Class B waters are designated as a habitat for fish, other aquatic life and wildlife and for primary (e.g., swimming) and secondary contact (e.g., fishing and boating) recreation. RSA 485-A: 8, II. Waters in this classification "shall have no objectionable physical characteristics." *Id.* NH Standards also provide that the discharge of sewage or waste "shall not be inimical to aquatic life or to the maintenance of aquatic life in said waters." *Id.* All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters (Env-Wq 1703.01(b)).

Class B waters are subject to class-specific narrative and/or numeric water quality criteria. Env-Wq 1703.01 and 1703.04. With respect to nutrients, Env-Ws 1703.14(b) sets forth a class-specific criterion that prohibits in-stream concentrations of phosphorus or nitrogen in waters that would impair any existing or designated uses. Meanwhile, Env-Wq 1703.14(c) establishes a minimum level of treatment for phosphorus or nitrogen discharges that "encourage cultural eutrophication." Cultural eutrophication is, in turn, defined as "human-induced addition of wastes containing nutrients to surface waters which result in excessive plant growth and/or a decrease in dissolved oxygen." Env-Wq 1702.15. Such discharges must be treated to remove phosphorus or nitrogen to the extent required to ensure and maintain water quality standards. Env-Wq 1703.14(c).

Unless naturally occurring, Class B waters are also prohibited from containing benthic deposits that have a detrimental effect on the benthic community (Env-Wq 1703.08), as well as from having slicks, odors, or surface floating solids (Env-Wq 1703.12) or color in concentrations (Env-Wq 1703.10) that will impair any existing or designated uses. Class B waters also shall not contain turbidity more than 10 NTUs (nephelometric turbidity units) above naturally occurring conditions. Env-Wq 1703.11. Class B waters, in addition, have a minimum dissolved oxygen saturation requirement of 75% (daily average), and an instantaneous minimum concentration requirement of at least 5 mg/l. Env-Wq 1703.07(b).

Regardless of classification, NH Standards furthermore require that all surface waters meet certain general water quality criteria. Env-Wq 1703.03 and 1703.04. All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters (Env-Wq 1703.01(c)). Furthermore, all surface waters must be "free of substances in kind or quantity" that:

a. Settle to form harmful deposits;
b. Float as foam, debris, scum, or other visible substances;
c. Produce odor, color, taste or turbidity which is not naturally occurring and would render it unsuitable for designated uses;
d. Result in dominance of nuisance species; or
e. Interfere with recreational activities.

Env-Wq 1703.03(c)(1)(a)-(e).

Finally, the surface waters shall support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region. Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function. Env-Wq 1703.19(a), (b).

4. Receiving Water Quality Violations

Great Bay and many of the rivers that feed it are approaching, or in the case of the Upper Piscataqua River, have reached their assimilative capacity for nitrogen and are suffering from the adverse water quality impacts of nutrient overenrichment. They are, consequently, failing to attain the many water quality standards described above. The impacts of excessive nutrients are evident throughout the Great Bay estuary and the Upper Piscataqua River.

Section 303(d) of the Clean Water Act requires states to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls. As a result of the documented water quality impairments, portions of the Great Bay Estuary, including its tributaries, have been included on the State of New Hampshire's Section 303(d) list. According to "Amendment to the New Hampshire 2008 Section 303(d) List Related to Nitrogen and Eelgrass in the Great Bay Estuary" (NHDES(a), 2009), the Upper Piscataqua River does not meet the water quality criteria for biological and aquatic community integrity (Env-Wq 1703.19). The indicators showing biological and aquatic community integrity impairment are estuarine bioassessments for eelgrass, light attenuation coefficient, and nitrogen. There is insufficient information to determine compliance with the water quality criteria for dissolved oxygen.

Relative to the dissolved oxygen criteria (Env-Wq 1703.07), sufficient data were available for assessments for dissolved oxygen, dissolved oxygen saturation, total nitrogen, and chlorophyll-a. The dissolved oxygen, dissolved oxygen saturation, and chlorophyll-a indicators met their individual criteria for Full Support. However, the total nitrogen indicator was categorized as impaired (Non Support). The dissolved oxygen data for this assessment were collected from grab samples, not datasondes, with which it is difficult to detect violations. The chlorophyll-a and total nitrogen concentrations were based on large and representative datasets. These conflicting results and the absence of datasonde data for dissolved oxygen are consistent with Insufficient Information as the correct classification for nitrogen for this assessment zone. Therefore, following a decision matrix, nitrogen concentrations in the Upper Piscataqua River were categorized as Insufficient Information (Category 3-PNS) relative to preventing violations of the dissolved oxygen standard. (NHDES(a), 2009)

Relative to the Biological and Aquatic Community Integrity criteria as manifested by significant eelgrass loss (Env-Wq 1703.19), sufficient data were available for assessments for eelgrass assessments, total nitrogen, and water clarity. All of these indicators were categorized as impaired (Non Support) based on their individual criteria. There were no conflicting results between the indicators. Therefore, following a decision matrix, nitrogen concentrations in the Upper Piscataqua River were categorized as Not Supporting (Category 5-P) relative to preventing significant eelgrass loss. (NHDES(a), 2009)

There can be only one category assigned to nitrogen for the Aquatic Life designated use. The lower (i.e., worse) category of the two was used in the Assessment Database. For this assessment zone, the lower category for nitrogen was the one for the protection of Biological and Aquatic Community Integrity. (NHDES(a), 2009)

Finally, the Amendment to the Section 303(d) list explains that the historic maps of eelgrass in the Upper Piscataqua River show 62.0 acres of habitat on the New Hampshire side of the river in 1948, 17.7 acres on the Maine side of the river in 1962, and 42.2 acres on the New Hampshire side in 1980-1981. Combining the acreages from the New Hampshire and Maine sides of the river in 1948 and 1962, respectively, the historic coverage of eelgrass in this zone was 79.7 acres. Median eelgrass cover for the 2006-2008 period was 0 acres. Therefore, 100% of the eelgrass cover in this area has been lost. The cause of the eelgrass loss is unknown. Dredging is not a possible cause as major dredging has not occurred in this assessment zone (USACE, 2005). There are several large mooring fields in this assessment zone that seem to overlap with potential eelgrass habitat. Per the assessment methodology, the Upper Piscataqua River should be considered impaired for significant eelgrass loss. The previous assessment by DES (DES, 2008b) came to the same conclusion. (NHDES(a), 2009)

These regulatory findings are consistent with a growing body of technical and scientific literature pointing toward an estuary in environmental decline as a result of nutrient overloading. In 1999, NOAA released the "National Estuarine Eutrophication Assessment: Effects of Nutrient Enrichment in the Nation's Estuaries," which undertook to comprehensively assess the scale, scope, and characteristics of nutrient enrichment and eutrophic conditions in the nation's estuaries. The assessment was based primarily on the results of the National Estuarine Eutrophication Survey, conducted by NOAA from 1992 to 1997, but was supplemented by information on nutrient inputs, population projections, and land use drawn from a variety of sources. It covers 138 estuaries, representing over 90 percent of the estuarine surface area of the coterminous United States. That report concluded that "By the year 2020, eutrophication symptoms are expected to worsen in about one-third of the systems, primarily due to increased nutrient inputs from population increases and the growth of the aquaculture industry. Of these estuaries, St. Croix River/Cobscook Bay, Great Bay, and Plum Island Sound are expected to worsen the most."(NOAA, 1999)

Additionally, NOAA's 1997 Estuarine Eutrophication Survey. Volume 3: North Atlantic Region noted, "In Great Bay, chlorophyll a concentrations range from low to high and turbidity from low to medium. Nuisance and toxic algal blooms have an impact on biological resources in subareas of the mixing and seawater zones. Nitrogen and phosphorus concentrations are medium. There are no observations of anoxia, however hypoxia is reported in small subarea of the mixing zone. SAV coverage ranges from very low to high." (NOAA, 1997). A decade later, NOAA concluded "In Great Bay, increases in dissolved inorganic nitrogen have occurred over the past 20 years. Increases in chlorophyll a and turbidity have been identified with augmented eutrophication in the inner estuary. As a result, eelgrass biomass has declined by 70% in the last 10 years and the occurrence of nuisance macroalgae is becoming more evident. Primary symptoms are high but problems with more serious secondary symptoms are still not being expressed. Nutrient related symptoms observed in the estuary are likely to substantially worsen." (NOAA 2007).

In addition to federal agencies, individual NEPs, including the Piscataqua Region Estuaries Partnership, have collected, compiled, and analyzed monitoring data to produce a "State of the Bay" report (typically issued every 3-5 years). These NEP "State of the Bay" reports are critical because they depict status and trends in the estuaries' environmental conditions. To gauge an estuary's health, each NEP develops environmental indicators — "specific, measurable markers that help assess the condition of the environment and how it changes over time." (NHEP, 2003) The environmental indicators relating to excessive levels of nutrients include dissolved oxygen, total nitrogen, and eelgrass.

The Piscataqua Region Estuaries Partnership has released three State of the Estuary Reports, each of which detail a trend of increasing nitrogen impairments in Great Bay Estuary. In its 2003 report, the Partnership noted, "Despite the increasing concentrations of nitrate+nitrite in the estuary, there have not been any significant trends for the typical indicators of eutrophication: dissolved oxygen and chlorophyll-a concentrations. Therefore, the load of nitrate+nitrite to the bay appears to have not yet reached the level at which the undesirable effects of eutrophication occur."[1]

The 2006, report concluded that "more indicators suggest that the ecological integrity of the estuaries is under stress or may soon be heading toward a decline." It observed that "dissolved oxygen concentrations consistently fail to meet state water quality standards in the tidal tributaries to the Great Bay Estuary." Additionally, the report cautioned, "nitrogen concentrations in Great Bay have increased by 59 percent in the past 25 years. Negative effects of excessive nitrogen, such as algae blooms and low dissolved oxygen levels, are not evident. However, the estuary cannot continue to receive increasing nitrogen levels indefinitely without experiencing a lowering of water quality and ecosystem changes."

Most recently, in its 2009 report, eleven of 12 environmental indicators show negative or cautionary trends – up from seven indicators classified this way in 2006. According to the 2009 report, total nitrogen is increasing and eelgrass is decreasing within the estuary. The total nitrogen load to the Great Bay Estuary has increased by 42% in the last five years. In Great Bay, the concentrations of dissolved inorganic nitrogen, a major component of total nitrogen, have increased by 44% in the past 28 years. Eelgrass cover in Great Bay has declined by 37% between 1990 and 2008 and has disappeared from the tidal rivers, Little Bay, and the Piscataqua River. Dissolved oxygen is currently exhibiting a cautionary trend. While dissolved oxygen standards are rarely violated in the bays and harbors they are often violated in the tidal rivers. The negative effects of the increasing nutrient loads on the estuary system are evident in the decline of water clarity, eelgrass habitat loss, and failure to meet water quality standards for dissolved oxygen concentrations in tidal rivers (PREP, 2009).

According to the report, the most pressing threats to the estuaries relate to population growth and the associated increases in nutrient loads and non-point source pollution (PREP, 2009). Watershed-wide development has created new impervious surfaces at an average rate of nearly 1,500 acres per year. In 2005, there were 50,351 acres of impervious surfaces in the watershed, which is 7.5 percent of the watershed's land area. Nine of the 40 sub watersheds contained over 10 percent impervious cover, indicating the potential for degraded water quality and altered

1 An earlier report—The State of New Hampshire's Estuaries (New Hampshire Estuary Project, 2000) — indicates that declining water quality, in part due to nutrient overloading, has been a concerning trend for a decade or more.

storm water flow. Land consumption per person, a measure of sprawling growth patterns, continues to increase. (PREP, 2009)

Studies by NHDES have also reported evidence of eutrophication due to excessive nitrogen input, including elevated levels of chlorophyll *a* and low levels of dissolved oxygen (NHDES(a), 2009), as well as evidence of increases in nuisance seaweeds and macro-algae (NHDES(b), 2009). As illustrated in the figures below, nitrogen concentrations have increased, water clarity has declined, and substantial quantities of eelgrass have been lost.

Figure 2 shows the gradient of total nitrogen concentrations in Great Bay. Total nitrogen concentrations are highest in the upper parts of the estuary and decline towards the mouth. Corresponding to the trend of total nitrogen concentrations, the greatest losses of eelgrass are being found in the upper parts of the estuary, with decreasing impacts towards the lower portions. Also, the highest levels of chlorophyll *a* and the greatest number of dissolved oxygen criteria violations are experienced in the upper reaches of the estuary where the highest levels of total nitrogen are present.

FIGURE 2: GRADIENT OF NITROGEN CONCENTRATIONS
(Bars indicate range of 10th-90th percentile of samples; dark line indicates median value)

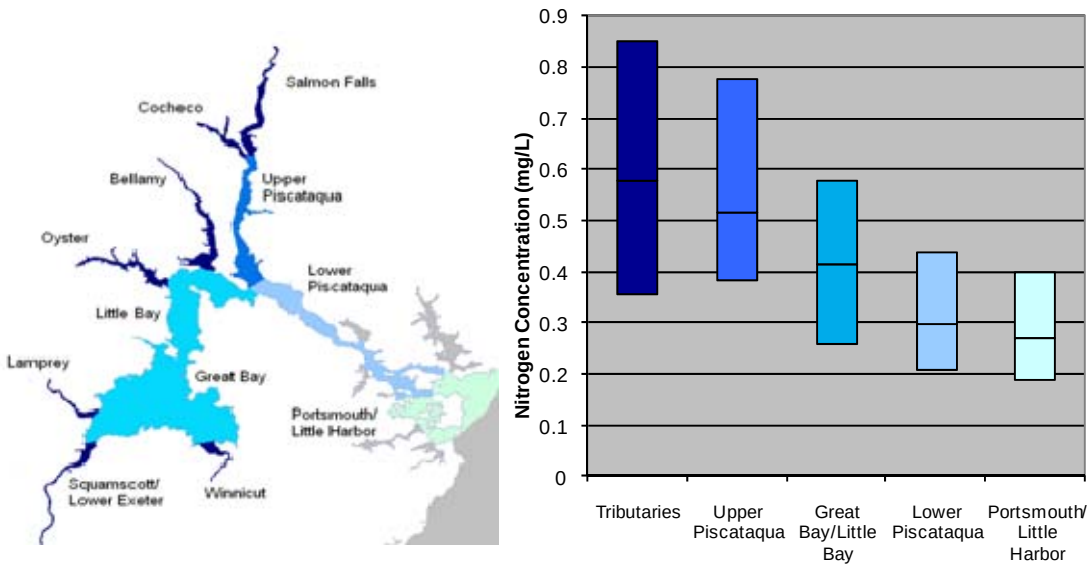
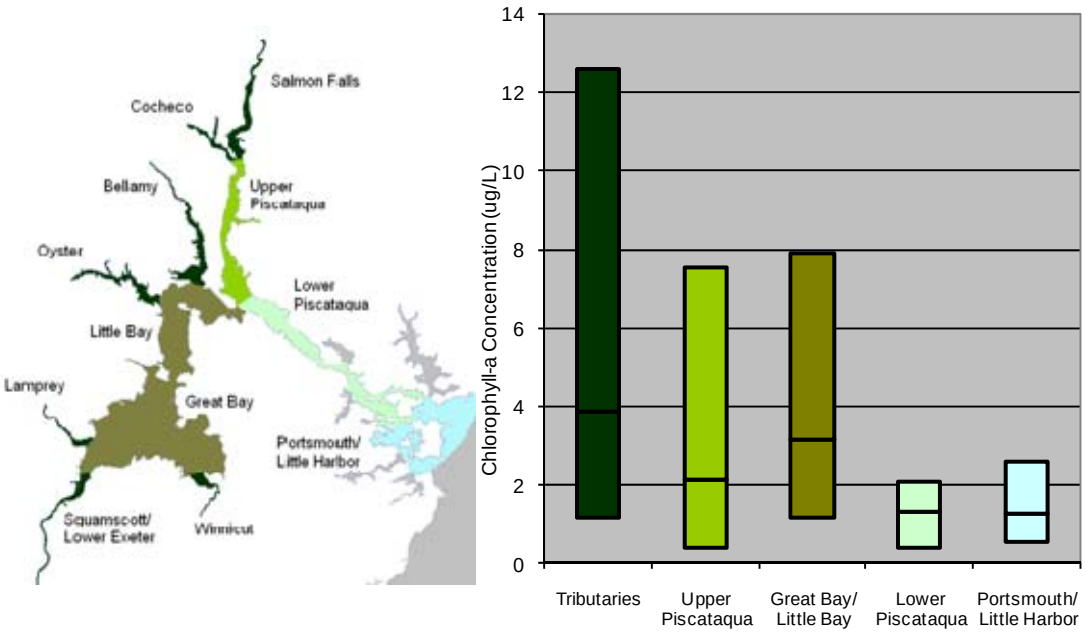


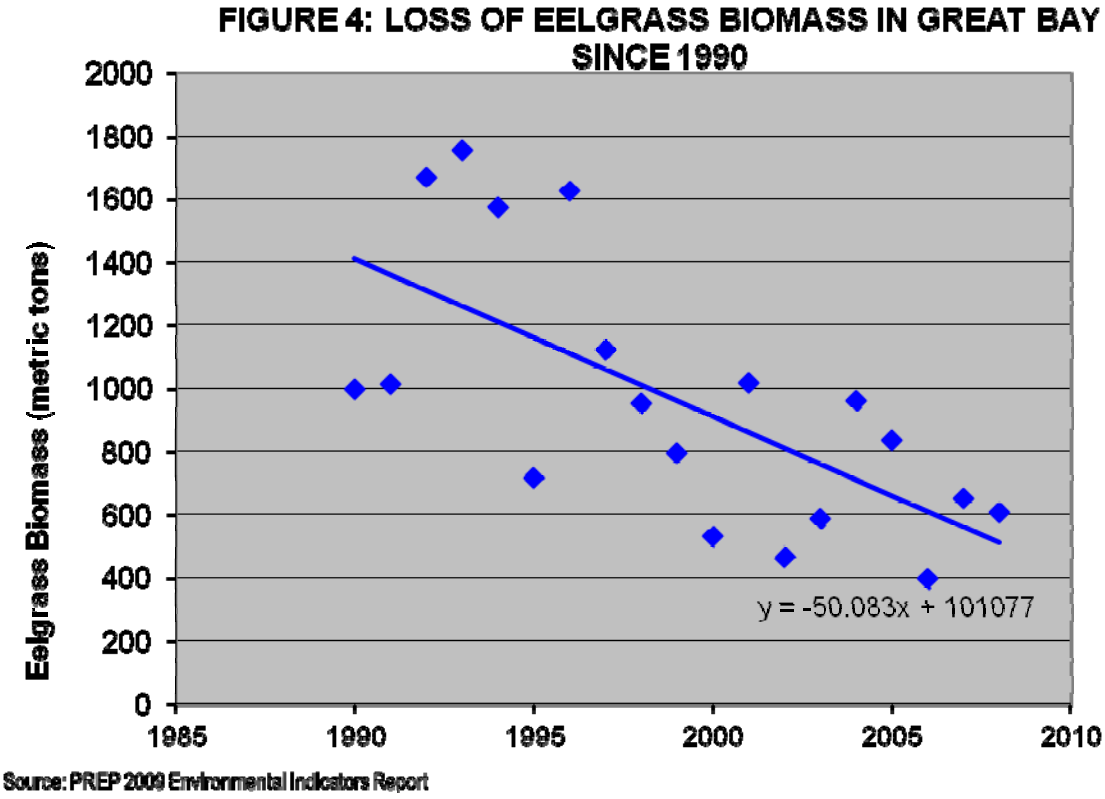
Figure 3 shows the gradient of chloroplyll *a* concentrations in Great Bay. Eutrophication in seagrass ecosystems tends to proceed toward a dominance of rapidly growing epiphytes and macroalgae that are considered superior competitors for light relative to seagrasses, and final dominance by phytoplankton at extremely high nutrient (Burkholder, et al, 2007). Increased levels of algae can also have effects on dissolved oxygen concentrations in the water column. During the day, algae produce oxygen, however in the evenings respiration takes place and depletes dissolved oxygen levels.

FIGURE 3: GRADIENT OF CHLOROPHYLL-A CONCENTRATIONS
(Bars indicate range of 10th-90th percentile of samples; dark line indicates median value)



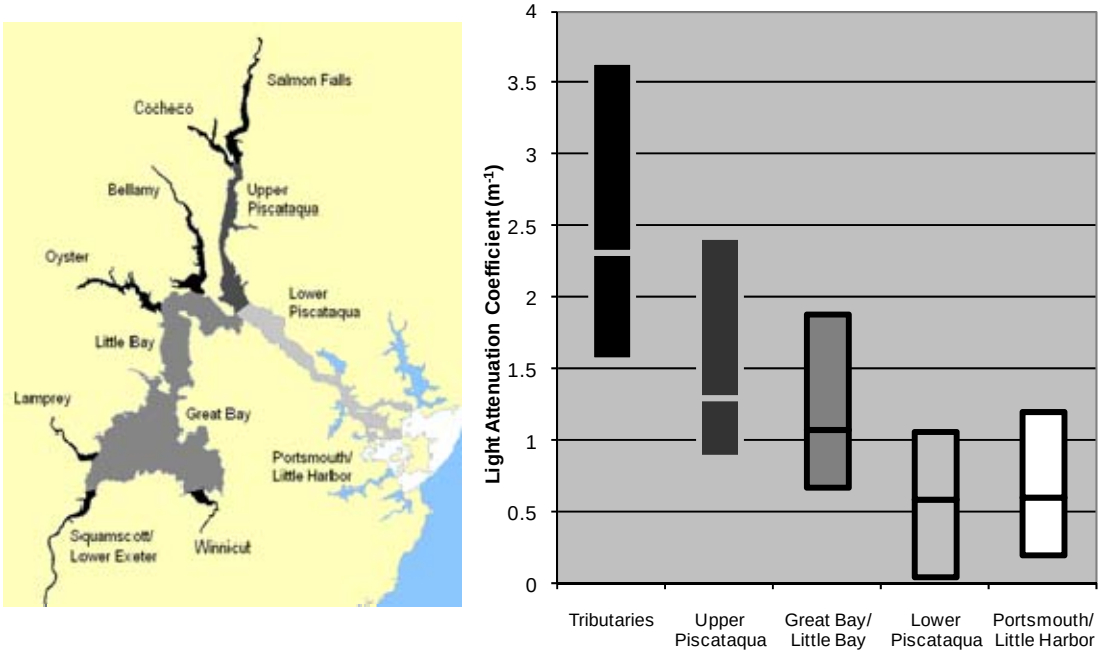
Elevated nitrogen concentrations can negatively affect seagrasses in direct and indirect ways. Elevated concentrations of nitrate and ammonia have been shown to have direct impacts by disrupting the normal physiology of eelgrass. This disruption of normal physiology leads to reduced growth, reduced disease resistance and mortality (Short and Burdick, 1996, Burkholder et al. 2007). Eelgrass has evolved over time in an environment of low nitrogen availability. Thus, it never developed a positive feedback mechanism to stop or reduce the absorption of available nitrogen. The plants will continually absorb nitrogen and use the molecules to build proteins. Protein synthesis requires carbon and without an off switch for this process, plants exposed to elevated concentrations of nitrogen can exhaust their carbon reserves. The exhaustion of carbon reserves results in plant mortality. Burkholder et al. (2007) reported significant mortality rates (75-95% shoot die-off compared to controls) in plants exposed to nitrate concentrations of <0.05 mg/l nitrate-N. Nitrate concentrations currently exceed this threshold concentration that can cause direct adverse impacts to eelgrass. The median concentration of nitrate at monitoring station NH-00057A (located near Dover's discharge) is 0.175 mg/l nitrate – N (Data obtained from the DES Environmental Monitoring Database, summary statistics for all data collected from 2002-2008).

Nitrogen and eelgrass trends in the Great Bay Estuary appear to bear out this relationship. As nitrogen levels have been increasing throughout the estuary for a number of years, eelgrass has been also declining (both total acreage and biomass). Dissolved inorganic nitrogen concentrations have increased by 44 percent in the last 28 years (PREP, 2009). See Figure 4.



Nitrogen can indirectly affect eelgrass by negatively impacting light transmission through the water column. Elevated nitrogen concentrations have been implicated in many locations with increased phytoplankton concentrations, proliferation of macroalgae and increased epiphytic load on the plants themselves. All of these outcomes reduce the amount of light making it to the plants, resulting in reduced shoot density, production, growth, depth penetration and mortality. The specific concentrations that trigger these impacts are somewhat waterbody specific, but generally range from 0.2-0.5 mg/l total nitrogen (Burkholder et al. 2007, MADEP/SMAST, 2003). Figure 5 shows the gradient of light attenuation in Great Bay.

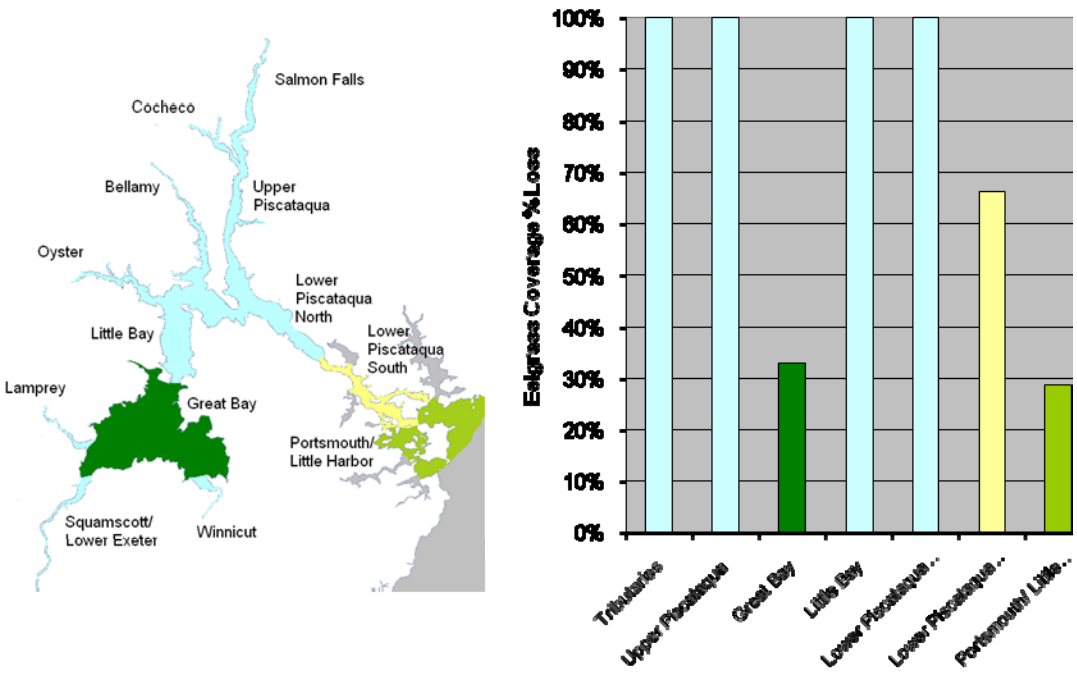
FIGURE 5: GRADIENT OF LIGHT ATTENUATION
(Bars indicate range of 90th-10th percentile of samples; dark line indicates median value)



* The light attenuation coefficient quantifies the rate at which light intensity is lost per meter of depth as a result of all absorbing and scattering components of the water column. The light attenuation of clear water is 0.1 meter.

The Great Bay Estuary and its tributaries have experienced dramatic declines in eelgrass coverage in combination with rising water column concentrations of nitrogen and suspended solids. The Squamscott, Lamprey, Oyster, Bellamy and Upper Piscataqua rivers in addition to Little Bay have lost 100% of their historical eelgrass habitats (NHDES(a), 2009). Eelgrass cover in Great Bay has declined by 37 % between 1990 and 2008 (PREP, 2009). Figure 6 shows the loss of eelgrass coverage in Great Bay.

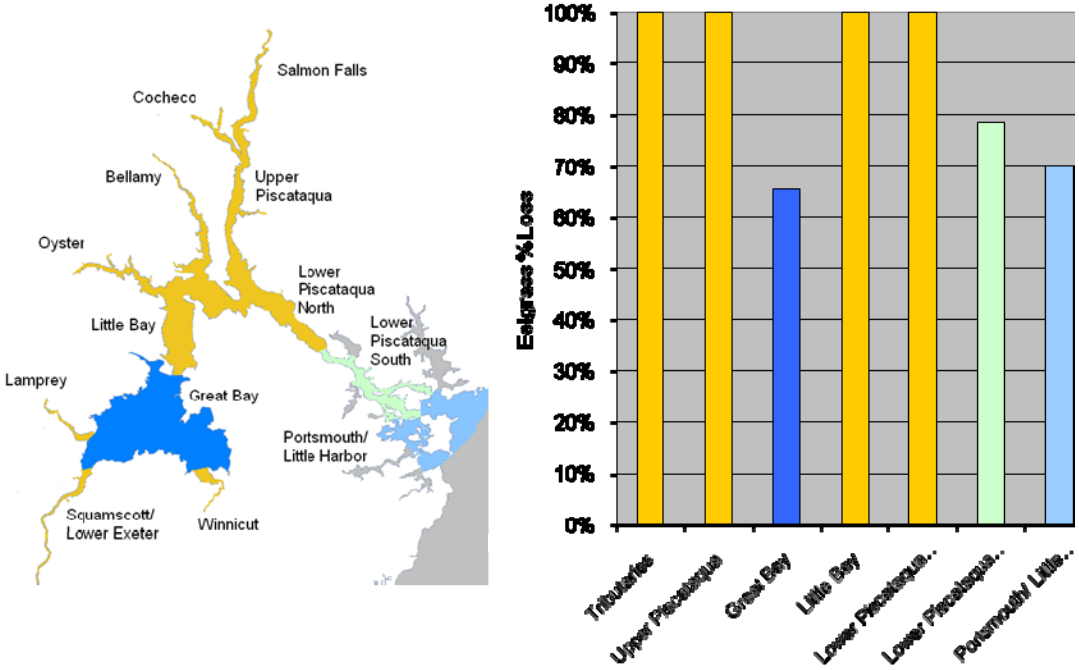
FIGURE 6: LOSS OF EELGRASS COVERAGE IN THE GREAT BAY ESTUARY
(Percent loss from peak annual values from 1990 to 2008 values)



Source: PREP 2009 Environmental Indicators Report

Great Bay eelgrass biomass has experienced an even more significant decline than eelgrass cover. Biomass is simply a measurement of the weight of eelgrass per unit area and is one parameter that scientists use to assess the health of a given eelgrass meadow. Between 1990 and 2008, the eelgrass biomass in Great Bay has declined by 64 percent (PREP, 2009). Healthy eelgrass beds perform a wide range of ecological functions including providing critical spawning and nursery habitat for a wide range of fish and shellfish, root and rhizomes stabilize sediments, the meadows reduce coastal erosion, and the plants are important primary producers contributing significant quantities of carbon to the estuarine food web (Thayer, et. al. 1984). The loss of eelgrass biomass results in the impairment of the functions that are provided by healthy eelgrass beds (Evans and Short, 2005; Fonseca, et. al. 1990). Figure 7 shows the loss of eelgrass biomass in Great Bay.

FIGURE 7: LOSS OF EELGRASS BIOMASS IN THE GREAT BAY ESTUARY
(Percent loss from peak annual values from 1990 to 2008 values)



Source: PREP 2009 Environmental Indicators Report

The Upper Piscataqua River has lost 100% of its eelgrass cover. The historic maps of eelgrass in the Upper Piscataqua River show 62.0 acres of habitat on the New Hampshire side of the river in 1948, 17.7 acres on the Maine side of the river in 1962, and 42.2 acres on the New Hampshire side in 1980-1981. Combining the acreages from the New Hampshire and Maine sides of the river in 1948 and 1962, respectively, the historic coverage of eelgrass in this zone was 79.7 acres. Median eelgrass cover for the 2006-2008 period was 0 acres. (NHDES(a), 2009)

5. Reasonable Potential Analysis and Effluent Limit Derivation

Pursuant to 40 C.F.R. § 122.44(d)(1), NPDES permits must contain any requirements in addition to technology-based limits necessary to achieve water quality standards established under Section 303 of the CWA, including state narrative criteria for water quality. In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) that the Director has determined are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality (40 C.F.R. § 122.44(d)(1)(i)). An excursion occurs if the actual or projected instream data exceeds any numeric or narrative water quality criterion.

In determining whether a discharge causes, has the reasonable potential to cause, or contribute to an excursion above a narrative or numeric criterion within a State water quality standard, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) the variability of the pollutant or pollutant parameter in the effluent; (3) the sensitivity of the species to toxicity testing; (4) where appropriate, the dilution of the effluent in the receiving water; and (5) the statistical approach outlined in the *Technical Support Document for Water Quality-based Toxics*

Control, Section 3 (USEPA, March 1991 [EPA/505/2-90-001]) (see also 40 CFR § 122.44(d)(1)(ii)). In accordance with New Hampshire's Water Quality Standards (RSA 485-A:8 VI, Env-Wq 1705.02(c)), available dilution for tidal waters is equivalent to the conditions that result in a dilution that is exceeded 99% of the time.

Numeric total nitrogen criteria have not yet been adopted into the State of New Hampshire Water Quality Standards. EPA relies therefore on existing narrative criteria to establish effluent permit limitations. When developing an effluent limitation to implement a narrative water quality standard, EPA regulations direct the Agency (in relevant part) to use one or more of the following methodologies:

A. Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such criterion may be derived using a proposed State criterion, or an explicit policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or

B. Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under Section 304(a) of the CWA, supplemented where necessary by other relevant information[.]

40 C.F.R. §§ 122.44(d)(1)(vi)(A), (B). EPA is authorized to base its permitting decision on a wide range of relevant material, including EPA technical guidance, state policies applicable to the narrative water quality criterion, and site-specific studies.

EPA's Nutrient Criteria Technical Guidance Manual – Estuarine and Coastal Marine Waters (EPA, 2001) indicates that dissolved inorganic nitrogen should be less than 0.15 mg/l in order to protect submerged aquatic vegetation. The guidance also explains that because of the recycling of nutrients in the environment it is best to limit total concentrations (i.e., total nitrogen) as opposed to fractions of the total.

The Massachusetts Department of Environmental Protection (MADEP) has identified total nitrogen levels believed to be protective of eelgrass habitats as less than 0.39 mg/l and ideally less than 0.3 mg/l and chlorophyll *a* levels as 3 -5 ug/l and ideally less than 3 ug/l (MADEP/SMAST, 2003)). For selected waterbodies, the State of Delaware has adopted a dissolved inorganic nitrogen criteria of 0.14 mg/l as N. This criterion is for the protection of submerged aquatic vegetation and is applicable from March 1 through October 31 (State of Delaware, 2004).

The aquatic life use support criteria proposed by NHDES are consistent with EPA's, Massachusetts', and Delaware's guidance. The New Hampshire Department of Environmental Services (NHDES) recently completed a report recommending numeric nitrogen criteria for the Great Bay Estuary (Numeric Nutrient Criteria for the Great Bay Estuary, June 2009). The recommended criteria are for the designated uses of Primary Contact Recreation and Aquatic Life Use Support. As explained in the Amendment to the New Hampshire 2008 Section 303(d)

List Related to Nitrogen and Eelgrass in the Great Bay Estuary (NHDES(a), 2009), the numeric nutrient criteria developed by NHDES are "considered numeric translators for the narrative criteria." For the Upper Piscataqua River, for aquatic life use support, the proposed total nitrogen criteria for maintaining dissolved oxygen levels is 0.45 mg/l and for maintaining eelgrass habitats is 0.30 mg/l.

The Upper Piscataqua River and the Great Bay estuary have reached their assimilative capacity for nutrients. Nitrogen enrichment has reached a level where it is adversely affecting the chemical, physical, and biological integrity of the receiving waters. As mentioned, according to "Amendment to the New Hampshire 2008 Section 303(d) List Related to Nitrogen and Eelgrass in the Great Bay Estuary" (NHDES(a), 2009), the Upper Piscataqua River is impaired for biological and aquatic community integrity, as indicated by estuarine bioassessments for eelgrass, light attenuation coefficient, and nitrogen.

As shown in Table 1 below, the nitrogen values measured in the Upper Piscataqua River are high compared to other portions of the Great Bay Estuary and chlorophyll *a* values are similar to or higher than other areas of the Bay which have been experiencing eelgrass loss. In Great Bay and Little Bay the median total nitrogen levels are 0.42 and 0.41 mg/l, respectively. The median chlorophyll *a* levels are 3.36 and 2.96 ug/l, respectively (chlorophyll *a* ranges are 0.17 – 24.66 ug/l for Great Bay and 0.11 – 13.69 ug/l for Little Bay) (NHDES(b), 2009). By contrast, Portsmouth Harbor and Little Harbor/Back Channel, located in the lower portion of the estuary, have median total nitrogen levels of 0.29 and 0.25, respectively. The median chlorophyll *a* levels are 1.53 and 0.98, respectively (chlorophyll *a* ranges are 0.20 – 5.25 ug/l for Portsmouth Harbor and 0.08 – 10.00 ug/l for Little Harbor/Back Channel) (NHDES(b), 2009).

For the development of *Numeric Nutrient Criteria for the Great Bay Estuary* report (NHDES(b), 2009), all available water quality data for the Upper Piscataqua River collected between 2000 and 2008 were analyzed by NHDES. The median total nitrogen concentration in the river was 0.52 mg/l. The median chlorophyll *a* was 2.14 ug/l with range of 0.08 – 78.1 ug/l.

Each of the areas described in Table ~~1 with~~1 with the exception of Portsmouth Harbor (i.e. the Piscataqua River, Great Bay, Little Bay, and Little Harbor/Back Channel) has been placed on the 303(d) list due to significant eelgrass loss. Eelgrass in Portsmouth Harbor has been experiencing a declining trend and is currently classified on the 303(d) list as threatened.

Additionally, Portsmouth Harbor is on the 303(d) list for light attenuation coefficient and nitrogen affecting the biological and aquatic community integrity. Great Bay, Little Bay, and Little Harbor Back Channel are on the 303(d) list for light attenuation coefficient and total nitrogen affecting the biological and aquatic community integrity.

TABLE 1				
Location	Total Nitrogen median (mg/l)	Total Nitrogen Range (mg/l)	Chlorophyll *a* median (ug/l)	Chlorophyll *a* Range (ug/l)
Upper Piscataqua River	0.52	0.195 – 1.093	2.14	0.08 – 78.1
Great Bay	0.42	0.20 – 1.06	3.36	0.17 – 24.66
Little Bay	0.41	0.15 – 1.09	2.96	0.11 – 13.69
Portsmouth Harbor	0.29	0.15 – 0.49	1.53	0.20 – 5.25
Little Harbor/Back Channel	0.25	0.15 – 0.94	0.98	0.08 – 10.00

The average total nitrogen concentration from the Dover discharge from February – November 2008 was 22.335 mg/l. The average discharge flow for this time period was 3.134 mgd resulting in an average total nitrogen discharge load of 584 lbs/day (106 tons/yr) (New Hampshire Estuaries Project, 2008). At the design flow of 4.7 mgd the total nitrogen discharge load would be 876 lbs/day (160 tons/yr).

The increase in receiving water total nitrogen concentration currently caused by the Dover treatment plant at the point of discharge during low flow critical conditions can be estimated by dividing the effluent concentration by the dilution factor. At a discharge concentration of 22.335 mg/l and a dilution factor of 100, the resulting receiving water concentration after initial mixing is 0.22 mg/l. Since this value only represents the increase in receiving water total nitrogen concentration due to the discharge, the actual receiving water concentration at the point of discharge would be the sum of the existing background plus the increase caused by the discharge.

At the proposed total nitrogen effluent limit of 3 mg/l, the estimated increase in receiving water concentration at the point of discharge would be 0.03 mg/l (3 mg/l divided by 100), which is less than the proposed total nitrogen instream target of 0.3 mg/l. However, in order to achieve the target of 0.3 mg/l at the point of discharge significant reductions of non-point source loadings of total nitrogen would need to occur as well.

Discharges from the Dover POTW clearly have the reasonable potential to contribute to water quality standards violations based on existing receiving water conditions (accounting for background and available dilution) and the foregoing in-stream targets.

Significant nitrogen loading reductions from municipal wastewater treatment facilities, in addition to large reductions in non-point sources, are clearly necessary to reverse the trend of declining water quality in the Great Bay Estuary and achieve the ambient nitrogen level targets for protection of aquatic life, including eelgrass habitats.

The permit contains a monthly average total nitrogen discharge limit of 3.0 mg/l for April through October and a mass limit of 118 lbs/day based on the concentration limit and the design

flow of the treatment facility. EPA has determined that an initial effluent limitation equal to the limit of technology combined with a reopener is an appropriate permitting structure at this juncture given the EPA and NHDES's shared preference to address all sources of nutrient pollution to the Great Bay estuary—both point source loading and the far greater component of non-point source loading—in a coordinated and comprehensive fashion, to the extent possible. (Technology thresholds for nitrogen treatment are typically considered to be 8.0 mg/l total nitrogen for a basic denitrification process, 5.0 mg/l for intermediate levels of denitrification and 3.0 mg/l for advanced levels of denitrification (Chesapeake Bay Program, 2002); the limit of technology for nitrogen treatment is often considered to be 3.0 mg/l. (EPA, 2008)). Additionally, the permit requires that the treatment facility be operated to optimize the removal of total nitrogen during the months of November - March, using all available treatment equipment at the facility. The addition of a carbon source that may be necessary in order to meet the total nitrogen limit during the months of April through October is not required during the months of November - March.

The 3.0 mg/l total nitrogen limit will not cause or contribute to a water quality standards violation, including those parameters identified in the approved Section 303(d) list related to dissolved oxygen and aquatic habitat (eelgrass), in the Great Bay estuary, provided achievement of the 3.0 mg/1 effluent limitation occurs in conjunction with non-point source and storm water point source reductions within the subwatershed. As previously stated, the total nitrogen criteria proposed by NHDES for aquatic life use support are 0.45 mg/l for maintaining dissolved oxygen and 0.30 mg/l for maintaining eelgrass habitats (NHDES(b), 2009). Since eelgrass was present in the Upper Piscataqua River, the applicable total nitrogen criteria to ensure its recovery is 0.30 mg/l. From 2000 to 2008, the median total nitrogen concentration in the Upper Piscataqua River was 0.519 mg/l (NHDES(b), 2009) which is significantly higher than the recommended criteria of 0.30 mg/l for the protection of eelgrass habitats. The total nitrogen level for the protection of eelgrass of 0.39 mg/l TN, used by the MADEP, is exceeded. Additionally, the dissolved inorganic nitrogen threshold of 0.15 mg/l, cited in EPA's Nutrient Criteria Technical Guidance Manual – Estuarine and Coastal Marine Waters, and the dissolved inorganic nitrogen water quality standard for the State of Delaware of 0.14 mg/l are also exceeded. The median dissolved inorganic nitrogen concentration at monitoring station NH-0057A (located near Dover's discharge) is 0.225 mg/l, (Data obtained from the DES Environmental Monitoring Database summary statistics for all data collected from 2002-2008).

The necessary magnitude of non-point source and storm water point source reductions has been estimated by the NHDES on an aggregate basis in its report entitled "Analysis of Nitrogen Loading Reductions for Wastewater Treatment Facilities and Non-Point Sources in the Great Bay Estuary Watershed" (NHDES, 2010). For each of the watersheds draining to the Great Bay Estuary, NHDES has proposed watershed nitrogen loading thresholds and percent reduction targets that are expected to result in attainment of water quality standards. The thresholds are based on an analytical, steady state watershed nitrogen loading model that predicts the flushing effect of freshwater and ocean water and thus the total nitrogen load that could be discharged and meet criteria. The average total nitrogen loading threshold for the Upper Piscataqua watershed that protects all designated uses is 462 tons per year with the average total nitrogen load is estimated to be 742 tons per year (267 tons per year point source and 475 tons per year non-point source). A 38% reduction in the average total nitrogen load is required to meet applicable criteria in the Upper Piscataqua watershed. As previously stated, the total nitrogen load from the

Dover Wastewater Treatment Facility was 106 tons in 2008. At a permit limit of 3 mg/l the total nitrogen load would be reduced by 85 tons to 21 tons per year.

Achieving the necessary non-point source and storm water point source reductions will require collaboration between the State of New Hampshire, State of Maine, and numerous public, private and commercial watershed stakeholders to: (1) complete total maximum daily load analyses, (2) complete analyses of the costs for controlling these sources, and (3) develop control plans that include:

(a) a description of appropriate financing and regulatory mechanisms to implement the necessary reductions;
(b) an implementation schedule to achieve the reductions (this schedule may extend beyond the term of the permit); and
(c) a monitoring plan to assess the extent to which the reductions are achieved.

Following issuance of the final permit, EPA will review the status of the activities described in (1), (2), and (3) above at 12-month intervals from the date of issuance. In the event the activities described above are not carried out in accordance with this section within the timeframe of the permit (5 years), EPA will reopen the permit and incorporate any more stringent total nitrogen limit required to assure compliance with applicable water quality standards.

4. Metals

A review of the available metals monitoring data indicates that metals concentrations in the plant's effluent have no "reasonable potential" to exceed the applicable water quality criteria in the NH Standards. The table below shows the acute and chronic criteria for each metal (converted to total recoverable), the maximum allowable acute and chronic effluent concentrations (the criteria multiplied by the dilution factor) and the average and maximum metal concentrations in the effluent during the review period (October 2006 to February 2011).

	Cadmium	Copper	Chromium	Lead	Nickel	Zinc
Acute Criteria Dissolved (mg/l)	0.042	0.0048	1.1	0.21	0.074	0.09
Chronic Criteria Dissolved (mg/l)	0.0093	0.0031	0.05	0.0081	0.0082	0.081
Total Recoverable Conversion Factor	0.994	0.83	0.993	0.951	0.99	0.946
Acute Total Recoverable Criteria (mg/l)	0.04225	0.00578	1.10775	0.22082	0.74747	0.09514
Chronic Total Recoverable Criteria (mg/l)	0.00936	0.00373	0.05035	0.00852	0.08283	0.08562
Dilution Factor	100	100	100	100	100	100
Acute Allowable Concentration (mg/l)	4.23	0.58	110.78	22.08	7.475	9.51
Chronic Allowable Concentration (mg/l)	0.94	0.37	5.04	0.85	0.828	8.56
Average Concentration in Effluent (mg/l)	0.000	0.016	0.000	0.000	0.003	0.045
Maximum Concentration in Effluent (mg/l)	0.000	0.028	0.000	0.000	0.005	0.058

Based upon the data presented above, none of the actual effluent concentrations exceed the allowable effluent concentrations, so there is no reasonable potential for any of the metals to cause or contribute to an exceedence of either acute or chronic criteria. Thus, the draft permit does not include metals limits. Monitoring will continue to be required once per year for each metal as part of the whole effluent toxicity (WET) testing requirements.

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. The effluent limitation in the draft permit for LC50 is the same as the 2006 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 2006 permit and this 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. Toxicity testing shall be performed using the mysid shrimp (*Mysidopsis bahia*) and the inland silverside (*Menidia beryllina*). The 2006 permit and this draft permit require the permittee to collect and test effluent samples in the third quarter of each year (*i.e.*, July, August, September) and the results shall be submitted to EPA and the NHDES-WD by October 15. Monitoring data submitted by the permittee has shown consistent compliance with both the Mysid LC50 and the Menidia LC50 limits, as shown in Attachment B.

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.

This draft permit, as in the 2006 permit, requires the permittee to continue reporting selected parameters from the chemical analysis of the WET tests' 100 percent effluent sample. Specifically, hardness, total recoverable aluminum, cadmium, copper, 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 Dover WWTF generates approximately 719 dry metric tons of sludge each year. The composted biosolids are treated in an aerobic process for 14 days or longer. During that time the temperature is higher than 40° C and the average temperature is 45° C or higher. The sludge is then placed in bags or other containers for sale or give-away for application to the land. The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards

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.

F. Industrial Users (Pretreatment Program)

The permittee is required to administer a pretreatment program based on authority granted under 40 C.F.R. Part 403 and Section 307 of the CWA. The permittee's pretreatment program received EPA approval on July 17, 1990 and, as a result, appropriate pretreatment program requirements were incorporated into the existing permit which were consistent with the approval and federal pretreatment regulations in effect when the permit was issued.

Periodically, the Federal Pretreatment Regulations in 40 C.F.R. Part 403 are amended. Those amendments establish new requirements for implementation of the pretreatment program. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with the current Federal regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) develop and enforce EPA approved specific effluent limits (technically-based local limits); (2) revise the local sewer use ordinance or regulation, as appropriate, to be consistent with Federal regulations; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of and track significant industrial users. These requirements are necessary to ensure continued compliance with the NPDES permit.

In addition to the requirements described above, the draft permit requires the permittee to submit to EPA in writing, within 180 days of the effective date of the permit, a description of proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the draft permit to ensure that the pretreatment program is consistent and up to date with all pretreatment requirements in effect. Lastly, the permittee must continue to submit, annually on February 15th a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

G. Operation and Maintenance

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 the 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 affecting human health or the environment."

General requirements for proper operation and maintenance and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.B., I.C., and I.D. of the draft permit. These requirements include mapping of the wastewater collection system, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

H. Antidegradation

This draft permit is being reissued with flow, BOD_5, TSS, TRC, pH and fecal coliform (monthly average) effluent limitations identical to those in the current permit, and additional limitations for fecal coliform (daily maximum), enterococci bacteria, and total nitrogen, 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.

I. Monitoring Requirements and Conditions

The effluent monitoring requirements in the draft permit have been established to yield data representative of the discharge in accordance with the CWA and applicable regulations. Section 308(a); 40 CFR § 122.41(j), 122.44(i) and 122.48. In the draft permit, compliance monitoring frequency and sample type for flow, BOD_5, TSS, pH, total kjeldahl nitrogen (TKN), ammonia (NH3), nitrate+nitrite, total residual chlorine, fecal coliform, and enterococci 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.

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

J. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104267), established a new requirement to describe and identify (designate) "essential fish habitat" (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils determine which area will be designated as EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The 1996 Sustainable Fisheries Act broadly defined EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse impacts may include direct (i.e., contamination, physical disruption), indirect (i.e., loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

According to the Guide to Essential Fish Habitat Designations in the Northeastern United States; Volume I: Maine and New Hampshire, March 1999, the Piscataqua River has been designated as EFH for the species listed in Attachment D.

EPA has concluded that the limits and conditions contained in this draft permit minimize adverse effects to EFH for the following reasons:

- The dilution factor for the facility is 100;
- The facility uses ultraviolet light for disinfection; however, in the event that this system fails, the permit contains water quality-based chlorine limits that are protective of aquatic organisms;
- The permit requires toxicity testing once per year using mysid shrimp and inland silversides to ensure that the discharge does not present toxicity problems;
- The permit prohibits the discharge to cause a violation of state water quality standards; and
- The permit prohibits the discharge of any pollutant or combination of pollutants in toxic amounts;

EPA believes the draft permit adequately protects EFH and therefore additional mitigation is not warranted. NMFS will be notified and an EFH consultation will be reinitiated if adverse impacts to EFH are detected as a result of this permit action or if new information is received that changes the basis for these conclusions.

K. Endangered Species

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

With respect to marine species and anadromous fish, NOAA Fisheries has advised EPA that there are no species listed under the ESA in the vicinity of Dover's discharge. Additionally, based on information currently available from USFWS there are no federally listed or proposed threatened or endangered species or critical habitat are known to occur in the project area.

VII. Monitoring and Reporting

The effluent monitoring requirements have been established to yield data representative of the discharge as authorized by the CWA and applicable regulations. 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The draft permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The draft permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request").

In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

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

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

The draft permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed

reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA or to NHDES.

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

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

VIII. State Certification Requirements

EPA may not issue a permit unless the State in which the discharge originates either certifies , or waives its right to certify, the permit as set forth in 40 CFR §124.53. **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 Region 1 that the limitations are adequate to protect water quality. EPA-Region 1 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.

IX. 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: **Dan Arsenault, U.S. Environmental Protection Agency, Region 1 (New England), 5 Post Office Square - Suite 100, Mail Code OEP06-1, Boston, MA 02109-3912**.

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. The request 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.

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 and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. 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.

X. 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:

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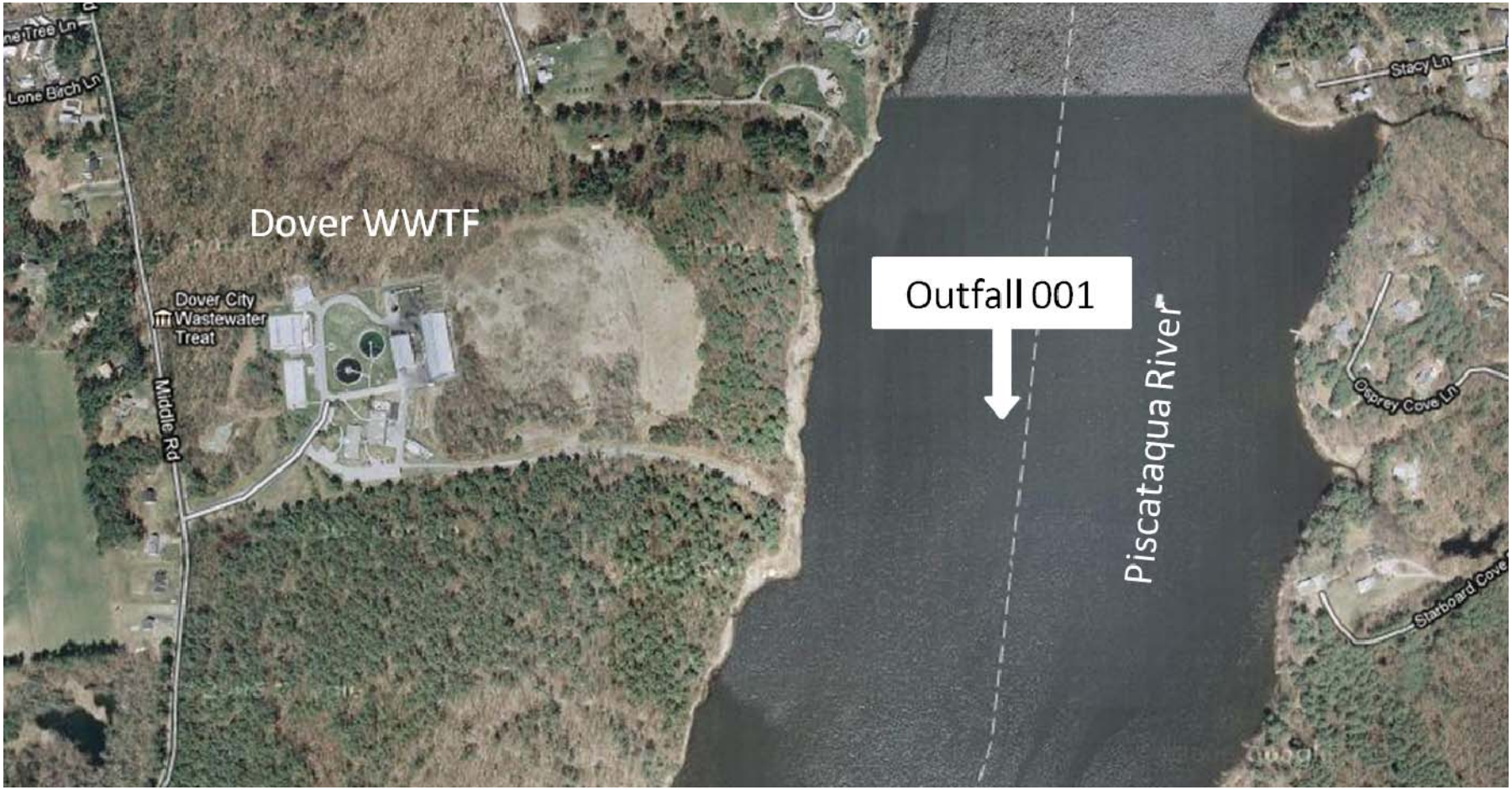
ATTACHMENT A – LOCATION OF DOVER WWTF



Aerial Image obtained from Google Maps (http://maps.google.com)

ATTACHMENT B - DMR DATA SUMMARY (OUTFALL 001)

Date	BOD Mon. Ave. (lb/d)	BOD Day Max. (lb/d)	BOD Mon. Ave. (mg/l)	BOD Day Max. (mg/l)	TSS Mon. Ave. (lb/d)	TSS Day Max. (lb/d)	TSS Mon. Ave. (mg/l)	TSS Day Max. (mg/l)	BOD Percent Removal	TSS Percent Removal
10/31/2006	166.	236.	7.6	11.8	123.	236.	5.6	9.7	96.5	97.
11/30/2006	185.	373.	6.3	9.2	126.	183.	4.4	5.1	96.	97.1
12/31/2006	160.	240.	5.9	7.8	104.	124.	3.9	4.9	96.9	96.8
01/31/2007	225.	364.	7.8	12.7	150.	253.	5.2	7.6	95.7	96.9
02/28/2007	178.	263.	9.1	13.8	122.	164.	6.3	8.6	96.7	96.9
03/31/2007	173.	233.	6.3	8.5	163.	197.	6.	7.6	96.9	96.
04/30/2007	796.	1755.	8.2	11.3	539.	**2298.**	7.2	14.8	91.2	90.3
05/31/2007	165.	239.	6.2	8.1	168.	229.	6.2	8.4	96.2	96.
06/30/2007	256.	683.	8.	13.6	202.	571.	6.2	9.7	95.1	96.8
07/31/2007	288.	555.	13.3	23.1	236.	413.	11.2	18.5	93.9	95.2
08/31/2007	270.	359.	14.1	21.	319.	753.	16.3	39.4	93.9	91.9
09/30/2007	349.	468.	19.3	24.5	246.	334.	12.9	17.5	93.5	93.6
10/31/2007	239.	347.	14.3	19.9	179.	226.	10.7	12.8	95.7	96.5
11/30/2007	228.	300.	12.9	14.8	230.	318.	13.9	18.	94.4	95.1
12/31/2007	237.	436.	14.4	20.9	160.	209.	9.9	11.8	94.3	94.7
01/31/2008	460.	569.	19.4	24.8	305.	371.	12.8	16.	91.5	92.9
02/29/2008	683.	1269.	16.1	25.5	391.	661.	9.6	15.5	89.7	93.7
03/31/2008	477.	904.	12.5	22.1	217.	306.	5.7	7.	90.9	95.8
04/30/2008	506.	903.	15.2	20.5	253.	530.	7.9	14.2	90.6	95.8
05/31/2008	327.	472.	16.5	26.7	147.	186.	6.9	9.8	91.9	96.5
06/30/2008	271.	329.	13.9	16.7	100.	137.	5.3	7.8	93.6	97.8
07/31/2008	224.	500.	10.9	19.2	197.	700.	8.6	25.5	93.3	95.1
08/31/2008	294.	521.	13.6	25.6	93.	285.	3.7	9.5	89.6	97.1
09/30/2008	243.	399.	11.9	24.4	39.	52.	1.7	2.8	93.8	98.9
10/31/2008	288.	400.	13.3	17.	**4153.**	53.	1.9	2.5	92.2	98.8
11/30/2008	365.	1000.	12.9	20.6	56.	262.	1.8	5.4	92.9	99.1
12/31/2008	351.	637.	13.	29.6	79.	140.	3.	6.5	90.8	98.1
01/31/2009	306.	426.	14.8	21.9	42.	52.	2.	2.6	92.	99.1
02/28/2009	345.	422.	15.4	18.8	53.	64.	2.4	2.9	91.4	98.9
03/31/2009	473.	619.	14.7	17.9	64.	94.	2.	2.6	88.	98.6
04/30/2009	559.	861.	18.7	21.7	45.	91.	1.4	1.9	88.3	99.2
05/31/2009	483.	585.	23.1	27.3	41.	62.	2.	3.2	87.8	99.2
06/30/2009	690.	903.	**30.8**	36.8	65.	93.	2.9	4.2	**83.**	98.7
07/31/2009	352.	1053.	13.3	30.4	34.	62.	1.3	2.2	89.	99.1
08/31/2009	364.	562.	15.4	19.7	90.	173.	4.5	9.2	93.7	97.8
09/30/2009	242.	330.	14.1	18.	157.	225.	9.1	12.2	93.3	95.7
10/31/2009	261.	460.	13.4	20.1	186.	306.	9.7	12.6	94.6	96.1
11/30/2009	196.	367.	9.3	14.8	130.	193.	6.5	8.8	96.1	96.7
12/31/2009	267.	500.	9.6	14.6	215.	287.	7.9	8.8	94.3	95.1
01/31/2010	200.	346.	7.8	10.	156.	267.	6.	7.7	95.3	96.3
02/28/2010	242.	339.	11.1	15.2	216.	270.	9.9	12.1	95.8	96.1
03/31/2010	965.	**2538.**	12.1	16.3	**1241.**	**3475.**	14.3	23.5	86.9	89.2
04/30/2010	287.	421.	10.	14.8	218.	387.	7.3	10.2	94.	96.3

Date	BOD Mon. Ave. (lb/d)	BOD Day Max. (lb/d)	BOD Mon. Ave. (mg/l)	BOD Day Max. (mg/l)	TSS Mon. Ave. (lb/d)	TSS Day Max. (lb/d)	TSS Mon. Ave. (mg/l)	TSS Day Max. (mg/l)	BOD Percent Removal	TSS Percent Removal
05/31/2010	242.	380.	11.2	15.5	193.	358.	9.	14.6	94.9	96.4
06/30/2010	169.	278.	8.9	14.2	119.	216.	6.3	10.8	96.2	97.3
07/31/2010	187.	514.	10.	19.8	172.	506.	9.2	19.5	96.1	96.3
08/31/2010	145.	262.	8.7	15.	129.	250.	7.8	15.2	97.3	97.5
09/30/2010	218.	280.	13.5	16.7	161.	225.	9.9	13.4	95.2	96.2
10/31/2010	274.	614.	15.9	31.6	125.	214.	7.4	11.6	94.	96.9
11/30/2010	185.	360.	9.7	21.8	72.	139.	3.8	5.6	96.	98.3
12/31/2010	221.	432.	9.6	12.	151.	252.	6.7	9.5	95.4	96.6
01/31/2011	259.	305.	13.4	16.5	143.	189.	7.4	9.	95.1	97.1
02/28/2011	334.	838.	14.2	25.1	196.	577.	8.1	17.3	94.2	96.8
Average	318	561	13	19	255	363	7	11	93	96
Maximum	965.	2538.	30.8	36.8	4153.	3475.	16.3	39.4	97.3	99.2
Minimum	145.	233.	5.9	7.8	34.	52.	1.3	1.9	83.	89.2

Date	pH Minimum (s.u.)	pH Maximum (s.u.)	Flow Mon. Ave. (mgd)	Flow Day Max. (mgd)	Entero-cocci Mon. Ave. (#/100ml)	Entero-cocci Day Max. (#/100ml)	Fecal Col. Mon. Ave. (#/100ml)	Fecal Col. Day Max. (#/100ml)
10/31/2006	6.37	7.31	2.864	6.49	2.	2420.	1.	1600.
11/30/2006	6.39	6.87	3.779	6.57	7.	38.	1.	60.
12/31/2006	6.39	6.99	3.295	4.42	12.	36.	1.	14.
01/31/2007	6.39	6.84	3.336	6.	1.	19.	1.	8.
02/28/2007	6.36	6.84	2.414	2.63	2.	94.	1.	300.
03/31/2007	6.38	6.91	3.422	4.62	2.	109.	2.	130.
04/30/2007	6.28	6.92	5.348	18.61	2.	200.	3.	900.
05/31/2007	6.16	6.67	3.403	4.93	2.	6.	1.	13.
06/30/2007	6.14	6.71	3.022	7.06	2.	200.	3.	1600.
07/31/2007	6.6	7.06	2.431	3.63	2.	200.	2.	13.
08/31/2007	6.67	7.31	2.329	2.8	3.	200.5	9.	170.
09/30/2007	6.73	7.33	2.172	2.85	1.22	11.1	1.84	50.
10/31/2007	6.63	7.2	2.049	2.7	2.71	200.5	2.84	1600.
11/30/2007	6.78	7.08	1.865	2.53	1.64	1.64	2.36	80.
12/31/2007	6.86	7.16	2.001	3.58	1.26	12.4	1.56	23.
01/31/2008	6.78	7.14	3.102	6.34	1.23	12.4	1.67	110.
02/29/2008	6.89	7.17	4.035	7.31	3.04	88.5	2.73	240.
03/31/2008	6.81	7.14	4.972	9.59	1.5	9.9	2.92	13.
04/30/2008	6.88	7.2	3.615	5.88	1.77	47.8	3.18	500.
05/31/2008	6.83	7.18	2.655	4.01	1.12	2.	1.3	8.
06/30/2008	6.68	7.24	2.243	2.92	1.11	3.1	1.35	8.
07/31/2008	6.56	7.12	2.507	7.32	1.19	7.5	1.62	30.
08/31/2008	6.68	7.16	2.886	5.55	1.037	3.1	1.673	23.
09/30/2008	6.61	7.13	2.936	5.89	1.37	12.4	2.03	30.
10/31/2008	6.54	7.08	2.579	3.72	1.476	45.3	2.472	130.
11/30/2008	6.77	7.17	2.757	5.82	2.904	22.2	3.621	30.
12/31/2008	6.65	7.23	3.519	7.	7.289	200.5	12.83	1600.
01/31/2009	7.	7.34	2.469	3.21	1.37	28.8	1.79	17.
02/28/2009	7.04	7.29	2.941	4.78	1.21	13.7	1.5	11.
03/31/2009	7.04	7.35	3.921	5.87	1.045	2.	1.337	4.
04/30/2009	7.06	7.37	3.374	5.73	1.22	8.7	1.67	27.
05/31/2009	7.19	7.33	2.571	3.77	1.194	9.9	1.557	50.
06/30/2009	6.97	7.3	2.722	3.78	1.247	11.1	1.857	50.
07/31/2009	6.52	7.21	3.139	5.5	1.11	4.2	1.322	23.
08/31/2009	6.64	7.25	2.499	3.67	1.13	5.3	1.7	13.
09/30/2009	6.81	7.37	1.96	2.42	1.727	47.8	1.463	22.
10/31/2009	6.61	7.04	2.19	2.96	3.559	200.5	2.644	900.
11/30/2009	6.57	6.9	2.601	5.79	2.07	28.8	2.623	23.
12/31/2009	6.46	6.86	3.286	5.45	1.33	6.4	1.328	13.
01/31/2010	6.73	6.94	2.974	6.07	1.276	200.5	1.483	1600.
02/28/2010	6.51	7.01	3.72	13.33	1.846	15.	2.63	37.
03/31/2010	6.73	7.09	6.629	20.23	3.543	200.5	6.832	1600.

Date	pH Minimum (s.u.)	pH Maximum (s.u.)	Flow Mon. Ave. (mgd)	Flow Day Max. (mgd)	Entero-cocci Mon. Ave. (#/100ml)	Entero-cocci Day Max. (#/100ml)	Fecal Col. Mon. Ave. (#/100ml)	Fecal Col. Day Max. (#/100ml)
04/30/2010	6.85	7.32	3.71	7.46	1.505	5.3	3.03	30.
05/31/2010	6.98	7.35	2.489	4.19	1.27	9.9	2.34	30.
06/30/2010	6.28	7.18	2.354	3.62	1.02	2.	1.32	300.
07/31/2010	6.63	7.36	2.019	3.23	1.408	200.5	1.924	50.
08/31/2010	6.81	7.44	2.033	4.27	1.61	200.5	2.28	1600.
09/30/2010	6.97	7.37	1.871	2.07	1.047	2.	1.231	4.
10/31/2010	6.97	7.45	2.13	4.39	1.283	15.	2.065	30.
11/30/2010	6.68	7.38	2.355	3.65	1.14	13.7	1.49	80.
12/31/2010	6.54	7.01	2.55	4.74	1.45	11.1	3.29	70.
01/31/2011	6.69	7.31	2.26	2.53	1.7	42.9	2.94	240.
02/28/2011	7.14	7.33	2.535	4.	8.22	56.	8.43	130.
Average	6.68	7.16	2.921	5.424	2.2	104.6	2.5	306
Maximum	7.19	7.45	6.629	20.23	12.0	2420.0	12.8	1600
Minimum	6.14	6.67	1.865	2.070	1.0	1.6	1.0	4

Date	Al (mg/l)	Cd (mg/l)	Cr (mg/l)	Cu (mg/l)	Pb (mg/l)	Ni (mg/l)	Zn (mg/l)	NH3 - N (mg/l)
09/30/2007	0.036	0.000	0.000	.015	0.000	0.005	.051	0.79
09/30/2008	0.000	0.000	0.000	.007	0.000	0.000	.033	9.70
09/30/2009	0.046	0.000	0.000	.028	0.000	0.003	.058	8.00
09/30/2010	0.000	0.000	0.000	.013	0.000	0.003	.038	8.50
Average	0.021	0.000	0.000	0.016	0.000	0.003	0.045	6.748
Maximum	0.046	0.000	0.000	0.028	0.000	0.005	0.058	9.700
Minimum	0.000	0.000	0.000	0.007	0.000	0.000	0.033	0.790

Date	LC50 Menidia (% Eff)	LC50 Mysid (% Eff)
09/30/2007	100.	100.
09/30/2008	100.	100.
09/30/2009	100.	100.
09/30/2010	100.	100.

ATTACHMENT C – EFFLUENT LIMIT DERIVATIONS

DERIVATION OF MASS-BASED LIMITS

Calculations of maximum allowable loads for BOD_5, TSS and Total Nitrogen 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 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 WATER QUALITY CRITERIA-BASED LIMITS

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

Chlorine Limit = Dilution Factor x Water Quality Standard

where water quality standards for chlorine are:

0.0075	= Chronic Marine Aquatic-Life Criterion, in mg/L.
0.013	= Acute Marine Aquatic-Life Criterion, in mg/L.

ATTACHMENT D – EFH DESIGNATIONS FOR GREAT BAY

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Atlantic salmon (*Salmo salar*)			F,M		
Atlantic cod (*Gadus morhua*)	S	S			
haddock (*Meanogrammus aeglefinus*)	S	S			
pollack (*Pollachius virens*)	S	S	S		
red hake (*Urophycis chuss*)			S	S	
white hake (*Urophycis tenuis*)	S		S	S	
redfish (*Sebastes fasciatus*)	n/a				
winter flounder (*Pleuronectes americanus*)	M,S	M,S	M,S	M,S	M,S
yellowtail flounder (*Pleuronectes ferruginea*)	S	S			
windowpane flounder (*Scopthalmus aquosus*)	S	S	S	S	S
Atlantic halibut (*Hippoglossus hippoglossus*)	S	S	S	S	S
Atlantic sea scallop (*Placopecten magellanicus*)			S	S	
Atlantic sea herring (*Clupea harengus*)		M,S	M,S		
bluefish (*Pomatomus saltatrix*)			M,S	M,S	
long finned squid (*Loligo pealei*)	n/a	n/a			
short finned squid (*Illex illecebrosus*)	n/a	n/a			
Atlantic mackerel (*Scomber scombrus*)	M,S	M,S	S		
surf clam (*Spisula solidissima*)	n/a	n/a			
ocean quahog (*Artica islandica*)	n/a	n/a			
spiny dogfish (*Squalus acanthias*)	n/a	n/a			

S = The EFH designation for this species includes the seawater salinity zone of the bay (salinity > or = 25.0 $^{o}/_{oo}$).

M = The EFH designation for this species includes the mixing water/brackish salinity zone of this bay (0.5 $^{o}/_{oo}$ < salinity < 25.0 $^{o}/_{oo}$).

F = The EFH designation for this species includes the tidal freshwater salinity zone of this bay or estuary (0.0 $^{o}/_{oo}$ < or = salinity < or = 0.5 $^{o}/_{oo}$)

n/a = The species does not have this life stage in its life history or has not EFH designated for this life stage.

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5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

JOINT PUBLIC NOTICE OF COMMENT PERIOD AND PUBLIC NOTICE OF A PUBLIC HEARING PERTAINING TO A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTION 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT.

DATE OF NOTICE: January 6, 2012

PERMIT NUMBER: NH0101311

PUBLIC NOTICE NUMBER: NH-005-12

NAME AND MAILING ADDRESS OF APPLICANT:

City of Dover
Dover Wastewater Treatment Facility
288 Central Avenue
Dover, New Hampshire 03820

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

City of Dover
Dover Wastewater Treatment Facility
484 Middle Road
Dover, New Hampshire 03820

RECEIVING WATER: Piscataqua River (Hydrologic Unit Code: 01060003)

RECEIVING WATER CLASSIFICATION: B

PREPARATION OF THE DRAFT PERMIT:

This draft permit authorizes the discharge of treated wastewater from the Dover Wastewater Treatment Facility. The facility is engaged in the collection and treatment of domestic, commercial, and industrial wastewaters. Secondary treatment at the facility is provided by conventional activated sludge. Treated effluent is disinfected using ultraviolet light and discharged to the Piscataqua River. The facility has a design flow of 4.7 million gallons per day.

The proposed permit contains wastewater discharge limitations consistent with the State's Surface Water Quality Regulations, appropriate conditions as adopted from the existing permit, and other Act regulations. The proposed permit also contains sludge conditions consistent with Section 405 of the Act. In addition, the proposed permit contains other effluent limitations and conditions necessary to ensure that the discharge receives adequate treatment and that the State's Class B water-quality standards are maintained in the Piscataqua River. Specific effluent limitations in the proposed permit are for biochemical oxygen demand, total suspended solids, total nitrogen, pH, total residual chlorine, fecal coliform, enterococci bacteria, and whole effluent toxicity.

The permit will expire five years from the effective date of its issuance.

INFORMATION ABOUT THE DRAFT PERMIT:

A revised fact sheet (describing the basis for the revised draft permit conditions and significant factual, legal, and policy questions considering in preparing the draft permit) may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by writing or calling EPA's contact person named below:

Dan Arsenault
U.S. Environmental Protection Agency
5 Post Office Square, Mail Code: OEP06-1
Boston, MA 02109

Phone: (617) 918-1562
E-Mail: Arsenault.Dan@epa.gov

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 am and 5:00 pm, Monday through Friday, except Holidays.

PUBLIC HEARING:

The Regional Administrator has determined, pursuant to 40 CFR § 124.12, that a significant degree of public interest exists in the proposed permit and that a public hearing should be held. A public hearing and meeting (informational session) will be held on the following time and date:

DATE: Thursday February 9, 2012

MEETING TIME: **7:00**

HEARING TIME: **7:30**

LOCATION: McConnell Center
61 Locust Street
Room 306
Dover, New Hampshire 03820

In accordance with 40 CFR § 124.12, the following is a summary of the procedures that shall be followed at the public hearing:

a. The Presiding Officer shall have the authority to open and conclude the hearing and to maintain order; and
b. Any person at such a hearing may submit oral or written statements and data concerning the draft permit.

PUBLIC COMMENT PERIOD:

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 March 5, 2012, to U.S. EPA, Office of Ecosystem Protection, 5 Post Office Square, Mail Code – OEP06-1, Boston, Massachusetts, 02109. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

FINAL PERMIT DECISIONS AND APPEALS:

Following the close of the comment period and after the public hearing, 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 for the requested notice.

HARRY T. STEWART, P.E., DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

STEPHEN S. PERKINS, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
U.S. ENVIRONMENTAL PROTECTION
AGENCY – REGION I