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 Town of Hooksett, New Hampshire

is authorized to discharge from the Wastewater Treatment Plant located at

1 Egawes Drive
Hooksett, New Hampshire 03106

to receiving waters named

Merrimack River (Hydrologic Basin Code: 01070002)

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 Hooksett Wastewater Treatment Plant collection system.

This permit will become effective on the first day of the calendar month immediately following sixty days after signature.

This permit expires at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 6, 2007.

This permit consists of **Part I (**15 pages including effluent limitations and monitoring requirements); **Attachment A** (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages) and **Part II (**25 pages including NPDES Part II Standard Conditions, January 2007).

Signed this 5th day of August, 2013.

/S/ SIGNATURE ON FILE

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Ken Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
Region I
Boston, Massachusetts

PART I
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated domestic, commercial and industrial wastewater from outfall serial number 001 to the Merrimack 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 a location that provides a representative analysis of the discharge.

Effluent Characteristic	Discharge Limitations			Monitoring Requirements	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[3]
Flow, Hooksett WWTF; MGD	Report	---	Report	Continuous Recorder[1]	
BOD_5; lb/day (mg/l)	275 (30)	413 (45)	460 (50)	2/Week[2]	24-Hour Composite
TSS; lb/day (mg/l)	275 (30)	413 (45)	460 (50)	2/Week[2]	24-Hour Composite
pH Range[4]; Standard Units	6.0 to 8.0 (See I.H.5., State Permit Conditions)			1/Day	Grab
Total Residual Chlorine[5,6]; mg/l	1.0	---	1.0	1/Day	Grab
Escherichia coli[5,7]; Colonies/100 ml	126	---	406	3/Week	Grab
Total Phosphorus; mg/l	Report	---	---	1/Month	24-Hour Composite
Total Recoverable Aluminum[11]; ug/l	Report	---	---	1/Quarter	24-Hour Composite
Total Recoverable Arsenic; mg/l	Report	---	---	1/Month	24-Hour Composite
Whole Effluent Toxicity LC50 [8,9,10]; Percent	≥ 50			2/Year	24-Hour Composite
Hardness[11]; mg/l	---	---	Report	2/Year	24-Hour Composite
Ammonia Nitrogen as N[11] mg/l	---	---	Report	2/Year	24-Hour Composite
Total Recoverable Aluminum[11]; mg/l	---	---	Report	2/Year	24-Hour Composite
Total Recoverable Cadmium[11]; mg/l	---	---	Report	2/Year	24-Hour Composite
Total Recoverable Copper[11]; mg/l	---	---	Report	2/Year	24-Hour Composite
Total Recoverable Nickel[11]; mg/l	---	---	Report	2/Year	24-Hour Composite
Total Recoverable Lead[11]; mg/l	---	---	Report	2/Year	24-Hour Composite
Total Recoverable Zinc[11]; mg/l	---	---	Report	2/Year	24-Hour Composite

See pages 3 and 4 for footnotes

FOOTNOTES

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

2. Effluent sampling frequency. The influent shall be sampled twice per month using 24-hour composite samples and be reported as both monthly average and daily maximum.

3. 24-hour composite samples will consist of at least eight (8) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow, as described in Part II Standard Conditions.

4. State certification requirement.

5. Monitoring for *Escherichia coli* bacteria as described in footnote (7) below shall be conducted concurrently with the daily monitoring for total residual chlorine (TRC) as described in footnote (6) below.

6. Total residual chlorine shall be measured using any one of the following three methods listed in 40 CFR Part 136:
   a. Amperometric direct.
   b. DPD-FAS.
   c. Spectrophotometric, DPD.

7. The average monthly value for *Escherichia coli* shall be calculated as a geometric mean. *Escherichia coli* shall be tested using an approved method as specified in 40 Code of Federal Regulations (CFR) Part 136, List of Approved Biological Methods for Wastewater and Sewage Sludge.

8. LC50 (lethal concentration 50 percent) is the concentration of wastewater causing mortality to 50 % of the test organisms. 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.

9. The permittee shall conduct 48-hour static acute toxicity tests on effluent samples following the February 2011 USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol (**Attachment A**). The two species for these tests are the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*). Toxicity test samples shall be collected and tests completed during the calendar quarters ending June 30th and September 30th. Toxicity test results are to be postmarked by the 15th day of the month following the end of the quarter sampled (*i.e.*, October 15).

10. 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).

11. For each whole effluent toxicity test the permittee shall report on the appropriate discharge monitoring report, (DMR), the concentrations of the hardness, ammonia nitrogen as nitrogen, cadmium, 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 7 of 8, or as amended. Also the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

    Note that the aluminum result from each WET test may be reported to satisfy the aluminum monitoring requirement for the 2nd and 3rd calendar quarter of each year.

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. The discharge shall be adequately treated to ensure 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.

4. The permittee's treatment facility shall maintain a minimum monthly average of 85 percent removal of both BOD_5 and TSS. The percent removal shall be calculated using the average monthly influent and effluent concentrations.

5. When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 2.2 mgd design flow (1.76 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.

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

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. Limitations for Industrial Users

a. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

b. The permittee shall submit to EPA and NHDES-WD the name of any Industrial User (IU) 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) who commences discharge to the POTW after the effective date of this permit.

This reporting requirement also applies to any other IU who discharges an average of 25,000 gallons per day or more of process wastewater into the POTW (excluding sanitary, noncontact cooling and boiler blowdown 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 to adversely affect the wastewater treatment facility'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 and NHDES-WD.

B. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the Outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit and shall be reported 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

   In accordance with the requirements in the 2007 permit, the permittee prepared and submitted maps of the sewer collection systems it owns. The collection system maps 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

In accordance with the requirements in the 2007 permit, the permittee prepared and submitted a Collection System Operation and Maintenance Plan. The plan shall be kept up-to-date and available for review by federal, state, or local agencies. The plan shall include the information listed below. The bolded language is information that has been added to the 2007 permit requirements.

a. **A description of the collection system management goals, staffing, information management, and legal authorities;**
b. A preventative maintenance and monitoring program for the collection system;
c. Sufficient staffing to properly operate and maintain the sanitary sewer collection system;
d. Sufficient funding and the source(s) of funding for implementing the plan;
e. 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;
f. **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
g. 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 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 2.2 mgd design flow (1.76 mgd) based on the daily flow for three consecutive months 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. 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. 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. This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf. Appropriate conditions contain the following elements:

   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - 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.

• 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.

9. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge use or disposal or when the sludge is disposed of in a MSWLF. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such cases, the permittee is required only to submit an annual report by February 19th of each year containing the following information:

   a. Name and address of the contractor responsible for sludge use and disposal.

b. Quantity of sludge in dry metric tons removed from the facility.

Reports shall be submitted to the address contained in the reporting section of the permit.

F. 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.

2. WET Test Frequency Adjustment

The permittee may submit a written request to the EPA-New England requesting a reduction in the frequency (to not less than once per year) of required toxicity testing, after completion of a minimum of the most recent four (4) successive toxicity tests of effluent, all of which must be valid tests and demonstrate compliance with the permit limits for whole effluent toxicity. Until written notice is received by certified mail from the EPA-New England indicating that the WET testing requirement has been changed, the permittee is required to continue testing at the frequency specified in the respective permit.

3. Antidegradation Evaluation

Federal regulation at 40 CFR 131.12, Antidegradation Policy, require that States shall implement methods to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Accordingly, the New Hampshire Surface Water Quality Regulations Env-Ws 1708 require that permittees proposing new or increased activity submit information to identify existing uses and characterize the existing instream water quality to determine if the receiving water will be degraded by the increased activity.

Hooksett WWTP has proposed an increase in flow from 1.1 mgd to 2.2 mgd. In accordance with 40 CFR 131.12 and Env-Ws 1708, the Town of Hooksett conducted a study of existing water quality in the Merrimack River to show EPA and NHDES that the increased discharge will not degrade existing water quality or existing uses in the

Merrimack River. This permit authorizes the increased discharge of 2.2 mgd, and includes adjustments to effluent limits that will ensure that antidegradation requirements are achieved.

G. 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 DMRs postmarked no later than the 15th day of the month following the completed reporting period. All reports required under the permit, including NHDES MORs, shall be submitted as an attachment to the DMRs. Signed and dated original DMRs and all other reports (with the exception of pretreatment 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

All pretreatment reports shall be submitted to:

US Environmental Protection Agency
Attn: Justin Pimpare
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100
OE P06-03
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.

H. 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).

   For this permit issuance, the permittee has already gone through the procedure outlined above to adjust the pH range to 6.0 to 8.0 S.U. This demonstration will need to be performed for each permit issuance.

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

ATTACHMENT A

FRESHWATER ACUTE
TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

Methods should follow those recommended by EPA in:

Weber, C.I. et al. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. August 1993, EPA/600/4-90/027F.

Any exceptions are stated herein.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S).** Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (°C)	20 ± 1° C or 25 ± 1°C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 25 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	Feed YCT and Selenastrum while holding organisms prior to initiating test as per manual.
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^R or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution factor	≥ 0.5

15. Number of dilutions[3]	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement of body or appendages on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19. Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA/600/4-90/027F.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE FATHEAD MINNOW (*PIMEPHALES PROMELAS*) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (°C):	20 ± 1 ° C or 25 ± 1°C
3.	Light quality:	Ambient laboratory illumination
4.	Photoperiod:	16 hr light, 8 hr dark
5.	Size of test vessels:	250 mL minimum
6.	Volume of test solution:	Minimum 200 mL/replicate
7.	Age of fish:	1-14 days old and age within 24 hrs of the others
8.	No. of fish per chamber	10 (not to exceed loading limits)
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration:	40
11.	Feeding regime:	Light feeding using concentrated brine shrimp nauplii while holding prior to initiating the test as per manual
12.	Aeration:	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)

13. dilution water:[2]	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^R or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution factor	$\geq$ 0.5
15. Number of dilutions[3]	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19. Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-600/4-90/027F.
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration at the beginning of the test. The following chemical analyses shall be performed for each sampling event.

Parameter	Effluent	Diluent	Minimum Quantification Level (mg/L)
Hardness[*1]	x	x	0.5
Alkalinity	x	x	2.0
pH	x	x	---
Specific Conductance	x	x	---
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Residual Chlorine (TRC)[*2]	x	x	0.05
Dissolved Oxygen	x	x	1.0
Total Metals			
Cd	x		0.001
Cr	x		0.005
Pb	x	x	0.005
Cu	x	x	0.0025
Zn	x	x	0.0025
Ni	x	x	0.004
Al	x	x	0.02
Mg, Ca	x	x	0.05

Superscripts:

[*1] Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater. 18th Edition.

[*2] Total Residual Chlorine

Either of the following methods the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses.
-Method 4500-CL E Low Level Amperometric Titration Method (the preferred method); or
-Method 4500-CL G DPD Colorimetric Method
or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 77 of EPA 600/4-90/027F for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 94 of EPA 600/4-90/027F.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

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

NPDES PERMIT NO.: NH0100129

PUBLIC NOTICE START/FINISH DATE: March 21, 2013 – April 19, 2013

CONTENTS: 28 pages including Attachments A through E

NAME AND MAILING ADDRESS OF APPLICANT:

Town of Hooksett
Att: Bruce Kudrick, Superintendent
1 Egawes Drive
Hooksett, New Hampshire 03106

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Town of Hooksett
Hooksett Wastewater Treatment Facility
1 Egawes Drive
Hooksett, New Hampshire 03106

RECEIVING WATER: Merrimack (Hydrologic Unit Code: 01070002)

CLASSIFICATION: B

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

The Hooksett Wastewater Treatment Plant (WWTP) is a publicly owned treatment works, or municipal POTW. The applicant applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the Merrimack River. The facility collects and treats domestic, commercial and industrial wastewater from the Town of Hooksett. The Hooksett WWTP provides secondary treatment and discharges the treated wastewater from Outfall 001 to the Merrimack River. Wastewater treatment processes include screening, grit removal, activated sludge biological treatment, secondary clarification, and chlorine disinfection. A recent upgrade, completed in 2011, converted the plant from a conventional activated sludge process to an Integrated Fixed-Film Activated Sludge (IFAS) process and a variation of the Bardenpho^{TM} process for Biological Nutrient Removal (BNR). This upgrade also increased the facility's capacity from 1.1 MGD to 2.2 MGD. The facility currently serves a population of 4,700 people in the Town of Hooksett and about 1,700 people at the Southern NH University in the City of Manchester.

The previous permit was issued on September 6, 2007 and expired on August 31, 2012. The existing permit ("2007 permit") was administratively extended because the applicant filed a complete application for permit reissuance pursuant to 40 Code of Federal Regulations (C.F.R.) Section 122.6.

Impaired water quality conditions have been identified in the Merrimack River, resulting in its listing on the State of New Hampshire's 2010 *Final List of Threatened or Impaired Waters That Require a TMDL*, also referred to as the 303(d) list. According to the 303(d) list, aquatic life uses in the stretch of the river receiving the Hooksett WWTF's discharge are threatened by aluminum and dissolved oxygen saturation, and pH and primary contact recreational uses are threatened by *Escherichia coli* bacteria.

The location of the facility, Outfall 001, and receiving water are shown in Attachment A.

II. Description of Discharge.

A quantitative description of significant effluent parameters based on Discharge Monitoring Reports (DMRs) is shown in Attachment B. The data are from January 2008 through April 2012.

III. Limitations and Conditions.

Effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation.

A. General Regulatory Background

Congress enacted the Clean Water Act (CWA) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into waters of the United States from any point source, except as authorized by specified permitting sections of the CWA,

one of which is Section 402. See CWA §§ 301(a) and 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (NPDES). Under this section of the CWA, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

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

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

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

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Env-Ws 1700 et seq. See generally, Title 50, Water Management and Protection, Chapter 485-A, Water Pollution and Waste Disposal. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH standards.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from a State's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. When a State has not established a numeric water quality criterion for a

specific 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 § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or in certain circumstances, based on an "indicator parameter". 40 C.F.R. § 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. See 40 C.F.R. § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. Parts 122, 124, and 136.

B. Introduction

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 C.F.R. 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 applications, monthly discharge monitoring reports, and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, March 1991, EPA/505/2-90-001 in Section 3; and where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire Standards (RSA 485-A:8VI, Env-Ws 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

2. 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. Unless certain limited exceptions are met, "backsliding" from effluent limitations contained in previously issued permits is prohibited. 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.

3. State Certification

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

However, 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. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that 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. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

4. Antidegradation

In this permit reissuance, the permittee is being granted authorization to discharge an increased flow of 2.2 mgd. The NH Surface Water Quality Regulations Env-Ws 1708 require the Town of Hooksett to conduct an antidegradation water quality study before an increase in flow will be permitted. This study was performed and the results, detailing necessary permit limits, are contained within a letter from NHDES to the Town of Hooksett dated February 4, 2008. See Attachment C for the permit limit calculation model used in this study. The limits in the draft permit are consistent with this study.

C. Flow

As described above, a recent upgrade to the Hooksett WWTF has increased the facility's design capacity from 1.1 mgd to 2.2 mgd. Several permit limits derived below are based upon this study, and the increased flow rate is used to calculate available dilution as discussed below. If the effluent flow rate exceeds 80 percent of the 2.2 mgd design flow (1.76 mgd) for a period of three (3) consecutive months then the permittee must notify EPA and the NHDES-WD and implement a program to maintain satisfactory treatment levels.

D. Conventional Pollutants

1. BOD_5 and TSS

Average monthly, average weekly and maximum daily allowable mass-based (load) limitations for BOD_5 and TSS shown in the draft permit are based on the antidegradation water quality study done by NHDES in February of 2008. Consistent with antidegradation requirements, and because the receiving water is impaired for dissolved oxygen saturation, the mass limits are set to maintain the loadings of BOD_5 and TSS at the level in the 2007 permit. The BOD_5 and TSS concentration-based limits in the draft permit are **30 mg/L**, **45 mg/L** and **50 mg/L** for average monthly, average weekly and maximum daily, respectively. Meeting both the mass-based and concentration-based limits are required, therefore when flows are higher than 1.1 mgd, the concentrations will need to decrease in order to meet the mass-based limits. For example, when the facility is at design flow (2.2 mgd), the average monthly concentration necessary in order to meet the mass-based limit will be 15 mg/l.

All the mass-based effluent limits for BOD_5 and TSS in the draft permit are the same as the limits in the 2007 permit and, therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(1).

Percent removal limits for BOD_5 and of TSS, required under 40 CFR Section 133.102 (a) (3) and (b)(3), respectively, are the same as the limits in the 2007 permit and in accordance with the antibacksliding requirements found in 40 CFR Section 122.44.

2. pH

The 2007 permit limits for pH, specifying a range of 6.5-8.0 S.U., was based upon State Certification Requirements and RSA 485-A:8, which states that "The pH range for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes."

The 2007 permit included a condition that allowed a relaxation of pH limits if the permitte conducted a pH demonstration study showing that relaxed limits are protective of in-stream water quality standards.

The permittee conducted such a study in May and June of 2012 and submitted a request to NHDES and EPA to relax the lower limit to 6.0 S.U. In a letter dated December 10, 2012, NHDES approved this request and supports a permit limit range of 6.0 to 8.0 S.U. Hence, the draft permit contains a limit of 6.0 to 8.0 S.U. Note that this demonstration will need to be performed for each permit issuance.

This limit is in accordance with the federal effluent limitation guideline regulation for pH for secondary treatment found in 40 CFR 133.102(c), which states that, in no case, shall the above procedure result in pH limits outside the range of 6.0 to 9.0 S.U.

3. Escherichia coli

The average monthly and maximum daily limitations for *Escherichia coli* bacteria are in accordance with Class B water quality standards established by the State of New Hampshire in

RSA 485-A:8.II and the anti-backsliding requirements mentioned above.

The average monthly and maximum daily limitations for *Escherichia coli* bacteria (*E. coli*) is based on requirements in the State's Statutes (N.H. RSA 485-A:8) for non-designated beach area, and Env-Wq 1703.06 (b), which requires that bacteria criteria shall be applied at the end of a wastewater treatment facility's discharge pipe. The average monthly discharge of *E. coli* is determined by calculating the geometric mean. Effluent limitations for *E. coli* in the draft permit are the same as the limits in the 2007 permit and, therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(1).

During the review period (see Attachment B) the facility had 4 daily maximum violations and 1 monthly average violation of its *E. coli* permit limits. As stated previously, the segment of the Merrimack River receiving the WWTF's discharge is impaired for *E. Coli*.

The compliance monitoring frequencies for *E. coli* in the draft permit is 3/week. Samples for *E. coli* compliance monitoring must be taken concurrently with samples for total residual chlorine.

E. Non-Conventional and Toxic Pollutants

Water quality-based limits for specific toxic pollutants were 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 an acute aquatic life criterion to protect against short-term effects, such as death, and a chronic aquatic life criterion to protect against long-term effects, such as poor reproduction or impaired growth. 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 a pollutant specific draft permit limit.

1. 7Q10 Flow and Available Dilution

The 7Q10 just downstream of the Hooksett WWTP was estimated using the flow at the U.S. Geological Survey gaging station at Goff's Falls below the outfall (0109200) and flows from gages upstream of the Hooksett WWTP. The Hooksett WWTP is about 8 miles upstream of the Goffs Falls gage and about 30 miles downstream of the Merrimack River gage at Franklin Junction. There are gages on six tributary rivers entering the Merrimack between the Franklin and Goff's Falls gages, including: the Contoocook River at the Hopkinton dam, the Warner River at Davisville, the Blackwater River near Webster, the Soucook River on Pembrook Road near Concord, the Suncook River at North Chichester and the Piscataquog River near Goffstown. The Piscataquog River enters the Merrimack River downstream of the Hooksett WWTP.

First, the 7Q10 flows at the USGS gaging station sites were calculated using Log-Pearson Type III statistics, using the gaging station records for years during which flow regulation was the same as is occurring today. The selected periods of record for each of the USGS gages were as follows:

- Merrimack River at Goffs Falls (1943-2006) – 638.65 cfs
- Piscataquog River near Goffstown (1966-1978) – 9.84 cfs
- Contoocook at Hopkinton Dam (1965-1989 and 2003-2006) – 38.05 cfs

- Warner River at Davisville (1941-1978 and 2003-2006) – 5.28 cfs
- Blackwater River near Webster (1943-1989) – 12.81 cfs
- Merrimack River at Franklin Junction (1943-1978 and 2003-2006) – 477.83 cfs
- Soucook River at Pembroke Road near Concord (1989-2006) – 6.93 cfs
- Suncook River at North Chichester (1950-1970) – 3.97 cfs

The resulting upstream 7Q10s were subtracted from the Goffs Falls gage to find the actual 7Q10 for the watershed "intervening area**"** between the Goffs Falls gage and the upstream gages. The result was 83.95 cfs (638.65-9.84-38.05-5.28-12.81-477.83-6.93-3.97 = 83.95).

Next, the Dingman[1] equation was used to estimate the proportion of the intervening area 7Q10 that is tributary to the Merrimack River upstream from Hooksett. This proportion is assumed to be equal to the ratio of the Dingman equation 7Q10 flow from the watershed area lying between the upstream gages and Hooksett (24.81 cfs) to the Dingman equation 7Q10 flow for the watershed area lying between the upstream gages and Goffs Falls gage (30.20 cfs). The resulting ratio was 24.81/30.20, equaling 0.821.

Finally, the 7Q10 flow at the Hooksett WWTP was calculated by multiplying the 7Q10 for the intervening watershed area between the upstream gages and the Goff Falls gage (83.95 cfs) by the ratio 0.821, and then adding in all upstream gaged flows (includes all listed above except the Piscataquog River near Goffstown, since it is downstream of the Hooksett WWTP). The resulting upstream 7Q10 is 613.81 cfs.

For this draft permit, the dilution factor was calculated using the recalculated 7Q10 flow of 613.81 cfs and a plant design flow of 2.2 mgd (See Attachment D). The revised dilution factor is **162**.

2. Total Chlorine Residual

Effluent limitations for total residual chlorine (TRC) in the draft permit are the same as the limits in the existing permit and, therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(1). The New Hampshire water quality standards specify the chronic and acute aquatic-life criterion for chlorine at 0.011 mg/l and 0.019 mg/l, respectively, for freshwater; and 0.0075 mg/l and 0.013 mg/l, respectively, for marine water. Chlorine and chlorine compounds, such as "organo-chlorines", produced by the chlorination of wastewater can be extremely toxic to aquatic life. Section 101(a)(3) of the Act, and New Hampshire standards at Env-Ws 1703.21(a) prohibit the discharge of toxic pollutants in toxic amounts. Therefore, to reduce the potential for the formation of chlorinated compounds during the wastewater disinfection process and to be protective of the States' narrative standards, EPA-Region 1 has, historically, established a maximum Total Residual Chlorine (TRC) limitation of 1.0 mg/l for both the average monthly and the maximum daily limitations. In this situation, the 1.0 mg/L maximum limit for both average monthly and maximum daily effluent limits are more stringent than the 1.8 and 3.1 mg/L limits that would be allowed based on available dilution and the NH Standards for chronic and acute aquatic-life criteria of 0.011 and 0.019 mg/L. Hence, TRC monthly average and daily maximum limits of **1.0 mg/L** are carried forward in the draft permit as a grab sample to be monitored once per day. As indicated in Attachment B, the applicant has

1 Dingman, S.L., and S.C. Lawlor, 1995. Estimating Low-Flow Quantiles from Drainage-Basin Characteristics in New Hampshire and Vermont, American Water Resources Association, Water Resources Bulletin, pp. 243-256.

been able to achieve consistent compliance with these limitations.

3. Ammonia Nitrogen as N

NHDES's "One Stop" database, containing data collected by the Ambient River Monitoring Program (ARMP), provided in-stream sampling results from August 18, 2009 about 2 miles upstream of the Hooksett WWTF outfall. The concentration of ammonia nitrogen as N was 0.051 mg/L. In addition, the ammonia nitrogen criterion is as low as 3 mg/L using a pH of 7.8 S.U. and a temperature of 20°C.

To calculate the effluent concentration of ammonia (as N) that would cause an exceedance of the water quality criteria, the following mass balance equation was applied:

$$Q_d C_d + Q_S C_S = Q_r C_r (0.90)$$

rewritten as:

$$C_d = \frac{Q_r C_r (0.90) - Q_S C_S}{Q_d}$$

where:

Q_d = effluent flow (design flow = 2.2 mgd = 3.4 cfs)
C_d = effluent concentration
Q_S = stream flow upstream ($Q_S = Q_r - Q_d$ = 613.81 cfs – 3.40 cfs = 610.41 cfs)
C_S = background in-stream concentration (median)
Q_r = estimated 7Q10 just downstream of Outfall 001 (613.81 cfs)
C_r = criterion (3 mg/l, using a pH of 7.8 and a temperature of 20°C)
0.90 = factor to reserve 10 % assimilative capacity

Solving for the effluent ammonia concentration (C_d), the maximum allowable concentration that would meet the water quality criteria is 478 mg/l. This is significantly greater than the maximum daily discharge of 22.00 mg/l reported the 2012 application, based on 11 samples. Hence, the facility does not have reasonable potential to violate the recommended in-stream water quality-based ammonia (as N) concentration.

Although the facility does not have reasonable potential related to ammonia, monitoring will continue to be required as part of the whole effluent toxicity tests done twice each year. Should this monitoring demonstrate a concern in the levels of ammonia being discharged, the permit may be reopened to include an appropriate limit.

4. Total Phosphorus

NHDES's "One Stop" database, containing data collected by the ARMP, provided in-stream sampling results from July 27, 2010 just upstream of the Hooksett WWTF outfall. The concentration of phosphorus was 0.017 mg/l. The recommended Gold Book concentration is 100 ug/l (0.100 mg/l).

To calculate the effluent concentration of phosphorus that would cause an exceedance of the Gold Book criteria, the following mass balance equation was applied:

$$Q_d C_d + Q_S C_S = Q_r C_r (0.90)$$

rewritten as:

$$C_d = \frac{Q_r C_r (0.90) - Q_S C_S}{Q_d}$$

where:

Q_d = effluent flow (design flow = 2.2 mgd = 3.4 cfs)
C_d = effluent concentration
Q_S = stream flow upstream ($Q_S = Q_r - Q_d$ = 613.81 cfs – 3.40 cfs = 610.41 cfs)
C_S = background in-stream concentration (median = 0.017 mg/l)
Q_r = estimated 7Q10 just downstream of Outfall 001 (613.81 cfs)
C_r = recommended Gold Book concentration (0.100 mg/l)
0.90 = factor to reserve 10 % assimilative capacity

Solving for the effluent phosphorus concentration (C_d), the maximum allowable concentration that would meet the Gold Book criterion is 13.2 mg/l. This is significantly greater than the maximum daily discharge of 3.2 mg/l reported the 2012 application, based on 3 samples. Hence, the facility does not have reasonable potential to violate the recommended in-stream water quality-based phosphorus concentration.

As mentioned above, the Merrimack River is impaired for dissolved oxygen saturation in the segment receiving this discharge. Although the facility does not have reasonable potential related to in-stream phosphorus concentrations, a monitoring requirement is being placed in the draft permit in order to provide information that will help assess the impact of the discharge of phosphorus on the level of oxygen in the river. The monitoring will be done as a 24-hour composite sample to be measured once per month. Should this monitoring demonstrate a concern in the levels of phosphorous being discharged, or should additional water quality information become available that shows the need for a phosphorus limit, the permit may be reopened to include an appropriate limit.

5. Metals

Certain metals in water can be toxic to aquatic life. Metals concentrations measured in the facility's effluent (from Whole Effluent Toxicity reports submitted between June 2008 and September 2011) were used to determine reasonable potential for toxicity caused by aluminum, cadmium, chromium, copper, lead, nickel and zinc.

Metals may be present in both dissolved and particulate forms in the water column. However, extensive studies suggest that it is the dissolved fraction that is biologically available, and therefore, presents the greatest risk of toxicity to aquatic life inhabiting the water column. This conclusion is widely accepted by the scientific community both within and outside of EPA (Water Quality Standards Handbook: Second Edition, Chapter 3.6 and Appendix J, EPA 1994 [EPA 823-B-94-005a]. Also see http://www.epa.gov/waterscience/standards/handbook/chapter03.html#section6). As a result, water quality criteria are established in terms of dissolved metals.

However, many inorganic components of domestic wastewater, including metals, are in the particulate form, and differences in the chemical composition between the effluent and the

receiving water affects the partitioning of metals between the particulate and dissolved fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water. Regulations at 40 CFR 122.45(c) require, with limited exceptions, that metals limits in NPDES permits be expressed as total recoverable metals.

The facility's effluent concentrations (from Attachment B) were characterized assuming a lognormal distribution in order to determine the estimated 95th percentile of the daily maximum. For metals with hardness-based water quality criteria, the criteria were determined using the equations in NH standards Env-Wq 1703.24, using the appropriate factors for the individual metals found in the NH Standards (see table below). The downstream hardness was calculated to be 12.4 mg/l as $CaCO_3$, using a mass balance equation with the design flow, receiving water 7Q10, an upstream median hardness of 12 mg/l as $CaCO_3$ and an effluent median hardness of 40 mg/l as $CaCO_3$. Since this downstream hardness is below 25 mg/l, the default value of 25 mg/l specified in the NH standards Env-Wq 1703.22(f) was used to determine the total recoverable metals criteria. The following table presents the factors used to determine the acute and chronic total recoverable criteria for each metal:

Metal	Parameters				Total Recoverable Criteria	
	ma	ba	mc	bc	Acute Criteria (CMC)* (ug/L)	Chronic Criteria (CCC)** (ug/L)
Aluminum	—	—	—	—	750	87
Cadmium	1.1280	-3.6867	0.7852	-2.7150	0.95	0.83
Chromium III	0.819	3.7256	0.819	0.6848	579.32	27.69
Copper	0.9422	-1.7000	0.8545	-1.702	3.79	2.85
Lead	1.273	-1.46	1.273	-4.705	13.98	0.54
Nickel	0.846	2.255	0.846	0.0584	145.21	16.14
Zinc	0.8473	0.884	0.8473	0.884	37.02	37.02

*Acute Criteria (CMC) = exp{ma*ln(hardness)+ba}
**Chronic Criteria (CCC) = exp{mc*ln(hardness)+bc}

In order to determine whether the effluent has the reasonable potential to cause or contribute to an exceedence above the in-stream water quality criteria for each metal, the following mass balance is used to project in-stream metal concentrations downstream from the discharge.

$$Q_d C_d + Q_S C_S = Q_r C_r$$

rewritten as:

$$C_r = \frac{Q_d C_d + Q_S C_S}{Q_r}$$

where:

Q_d = effluent flow (design flow = 2.2 mgd = 3.4 cfs)
C_d = effluent metals concentration in ug/L (95^{th} percentile)
Q_S = stream flow upstream ($Q_S = Q_r - Q_d$ = 613.81 cfs – 3.4 cfs = 610.41 cfs)
C_S = background in-stream concentration (median)
Q_r = estimated 7Q10 just downstream of Outfall 001 (613.81 cfs)
C_r = criteria (based upon 25 mg/L hardness)
0.90 = Factor to reserve 10 % assimilative capacity

Reasonable potential is then determined by comparing this resultant in-stream concentration (for both acute and chronic conditions) with the criteria for each metal multiplied by the factor 0.9 to reserve 10% assimilative capacity. In EPA's Technical Support Document for Water Quality Based Toxics Control, EPA/505/2-90-001, March 1991, commonly known as the "TSD", box 3-2 describes the statistical approach in determining if there is reasonable potential for an excursion above the maximum allowable concentration (criteria * 0.9). If there is reasonable potential (for either acute or chronic conditions), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the criterion times 0.9 as the resultant in-stream concentration (C_r). See the table below for the results of this analysis with respect to aluminum, cadmium, chromium, copper, lead, nickel and zinc. Also, see Attachment E for a sample calculation of reasonable potential determination.

Metal	Q_d	C_d[1] (95th Percentile)	$Q_s = Q_r - Q_d$	C_s[2] (Median)	Qr	Cr = (QdCd+QsCs)/Q_r	Criteria * 0.9		Reasonable Potential	Limit = (QrCr*0.9-QsCs)/Qd	
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	Chronic (ug/l)	Cr > Criteria	Acute (ug/l)	Chronic (ug/l)
Aluminum		140.6		130		130.1	675	78.3	Chronic	N/A	87[3]
Cadmium		0		0		0	0.851	0.746	N	N/A	N/A
Chromium		0		0		0	521.39	24.92	N	N/A	N/A
Copper	3.4	39.9	610.41	0	613.81	0.22	3.41	2.57	N	N/A	N/A
Lead		2.5		0		0	12.58	0.49	N	N/A	N/A
Nickel		29		0		0.16	130.69	14.53	N	N/A	N/A
Zinc		209		5		6.1	33.31	33.31	N	N/A	N/A

[1] Values calculated using toxicity measurements from the 2008-2011 Whole Effluent Toxicity (WET) testing (see Attachment E).
[2] Median upstream data taken from WET testing on the Merrimack River just upstream of the Hooksett WWTF (see Attachment B).
[3] Since the median upstream aluminum concentration is above the chronic criterion, the discharge has reasonable potential to cause or contribute to an exceedence of water quality standards. Hence, the limit is set at the chronic criterion.

As indicated in the chart above, there is no reasonable potential (for either acute and chronic conditions) that the discharge of cadmium, chromium, copper, lead, nickel or zinc will cause or contribute to an exceedance of applicable water quality criteria. However, since the facility has discharged aluminum above the chronic criterion of 87 ug/L (see Attachment B), there is reasonable potential to cause or contribute to this impairment. As mentioned above, this segment of the Merrimack River is impaired for aluminum.

In addition, the antidegradation water quality study done by NHDES in 2008 included an evaluation of whether there would be reasonable potential for the effluent to exceed the future maximum allowable permit concentrations for toxicity caused by Al, As, Sb, Be, Cd, Cr, Cu, Pd, Hg, Ni, Se, Ag, Th, and Zn. This was done through the use of the statistical approach outlined in *Technical Support Document for Water Quality-Based Toxics Control*, March 1991, EPA/502/2-90-001 in Section 3. Of the metals analyzed in the study, the only one to have reasonable potential was aluminum. A monthly average total recoverable aluminum limit of 0.276 mg/L was recommended.

Based upon this analysis of water quality and antidegradation, the more stringent water quality-based **aluminum limit of 87 ug/l** is included in the draft permit. Total recoverable aluminum is to be monitored twice per month as a 24-hour composite sample.

In addition, the antidegradation study recommended a **monitoring requirement for arsenic** until a TMDL is approved. Hence, a monitoring requirement is being placed in the draft permit as a 24-hour composite sample to be measured once per month.

F. Whole Effluent Toxicity

EPA's **Technical Support Document for Water Quality-based Toxics Control**, **EPA/505/2-90-001, March 1991**, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. 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-Region 1 requires toxicity testing in municipal permits with the type of toxicity test(s) (acute and/or chronic) and effluent limitation(s) (LC50 and/or C-NOEC) based on the available dilution.

The draft permit WET testing frequency and limits were carried forward from the 2007 permit. With a dilution factor greater than 100 (based on the 7Q10 and plant design flow), the Toxicity Strategy for Municipal Permits requires the testing frequency of two times per year.

This draft permit establishes the LC50 limit at $\geq$ 50%**,** meaning a sample of at least 50% effluent shall have no greater than a 50% mortality rate in that effluent sample. The permittee is required to collect and test effluent samples twice per year during calendar quarters ending June 30th and September 30th using two species, *Ceriodaphia dubia* (Daphnid) and *Pimephales promelas* (Fathead Minnow).

The WET limits in the draft permit include conditions to allow EPA-Region 1 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 that its discharge, based on data for the most recent one-year period, or four sampling events, whichever yields the greater time period, causes no acute and chronic toxicity, the permitted limits will be considered eligible for a reduced frequency of toxicity testing. This reduction in testing frequency is evaluated on a case-by-case basis. Accordingly, a special condition has been carried forward from the 2007 permit into the draft permit that allows for a reduced frequency of WET testing. This permit provision anticipates the time when the permittee requests a reduction in WET testing that is approvable by both EPA-Region 1 and the NHDES-WD. As previously stated, EPA-Region 1's current policy is that after completion of a minimum of four consecutive WET tests all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to EPA-Region 1 seeking a review of the toxicity test results. EPA-Region 1's policy is to reduce the frequency of toxicity testing to no less than one (one-species) test per year. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA-Region 1 indicating a change in the permit condition. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

This draft permit, as in the 2007 permit, requires the permittee to continue reporting selected parameters from the chemical analysis of the WET tests' 100 percent effluent sample. Specifically, hardness, total ammonia nitrogen as nitrogen, cadmium, copper, lead, nickel and zinc are to be reported on the appropriate DMR for entry into EPA's data base. EPA-Region 1 does not consider these reporting requirements an unnecessary burden as reporting these constituents is already required with the submission of each toxicity testing report.

G. Pretreatment

The permittee is not required to administer a pretreatment program pursuant to 40 CFR §403.8 However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility. The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (see 40 CFR §122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: 1) report to EPA and NHDES-WD the name(s) of all Industrial Users subject to Categorical Pretreatment Standards (see 40 CFR §403 Appendix C for list) who commence discharge to the POTW after the effective date of the finally issued permit, and 2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

H. 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.

I. Sludge

Section 405(d) of the 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 standards. Part 503 regulations have a self implementing provision, however, in that the CWA requires implementation through permits. Domestic sludge, which is disposed of in a municipal solid waste landfill, is in compliance with Part 503 regulations, provided that the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 C.F.R. Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has prepared a 72-page document entitled "EPA Region I NPDES Permit Sludge Compliance Guidance" for use by the permittee in determining their appropriate sludge conditions for their chosen method of sewage sludge use or disposal practices. This guidance document is available upon request from EPA Region 1 and may be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf. 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.

The Town of Hooksett generates 176.79 dry metric tons of sewage sludge per year. A portion (81.60 dry metric tons) is shipped for treatment or blending at the Merrimack WWTF to ultimately be land applied as Class A biosolids and the remainder (95.19 dry metric tons) is disposed of in the Turnkey Recycling and Environmental Enterprises landfill.

J. Essential Fish Habitat and Endangered Species

1. 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 National Marine Fisheries Service (NMFS), the Merrimack River is EFH for Atlantic salmon (*Salmo salar*). According to the New Hampshire Fish and Game Department, Atlantic salmon are stocked further upstream in the Merrimack River watershed but not in this area. This stretch of the river is used by salmon smolts in spring months for downstream passage to the sea. Adult Atlantic salmon returning to the river from the ocean do not make it up this far because they are collected at a dam in Lawrence, Massachusetts primarily for use as broodstock.

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

- The WWTF has a dilution factor of 162.
- The permit prohibits the discharge to cause a violation of State water quality standards.
- The permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.
- The permit requires toxicity testing twice each year using two species (the daphnid and fathead minnow) to ensure that the discharge does not present toxicity problems.
- The permit contains water quality-based limits for total residual chlorine and total recoverable aluminum

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

2. 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.

EPA has reviewed the federal endangered or threatened species of fish and wildlife in Merrimack County, NH (http://www.fws.gov/newengland/pdfs/NH%20species%20by%20town.pdf) to see if any such listed species might potentially be impacted by the re-issuance of this NPDES permit. Based on the normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge. Based on this finding, no Section 7 consultation is needed for this federal action.

V. Antidegradation

Although the authorized discharge flow has increased, this draft permit is being reissued with limitations that are at least as stringent as those in the 2007 permit and there is no change in the outfall location. The State of New Hampshire has analyzed the flow increase from this facility with respect to its antidegradation policy and has indicated the proposed permit will not result in lowering of water quality or loss of existing uses.

VI. State Certification Requirements

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

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

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

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the CWA, Sections 208(e), 301, 302, 303, 306, and 307 and with the appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the

CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition.

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

VII. Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to: **Mr. Michael Cobb, 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-Region 1 and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA-Region 1's Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

VIII. EPA-Region 1 Contact

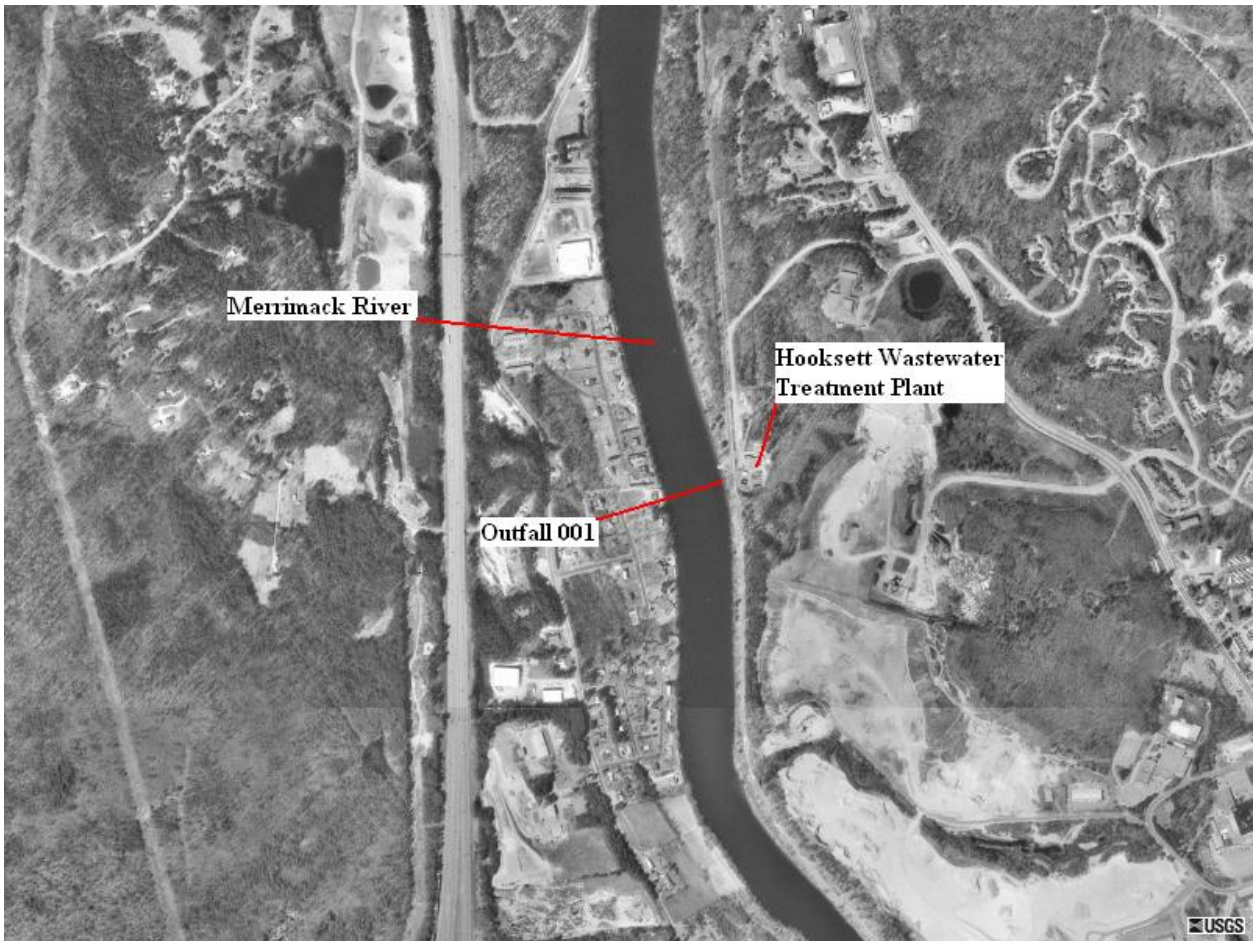
Additional information concerning the draft permit may be obtained between the hours of 9:00 A.M. and 5:00 P.M. (8:00 A.M. and 4:00 P.M. for the state), Monday through Friday, excluding holidays from:

Mr. Michael Cobb, Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square
Suite 100, Mail Code: OEP06-1
Boston, Massachusetts 02109-3912
Telephone No.: (617) 918-1369
FAX No.: (617) 918-0369

1/30/2013
Date:

Ken Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

ATTACHMENT A – HOOKSETT WWTF LOCATION



* Aerial photo obtained from **www.terraserver.microsoft.com**. Photo taken April 11, 1998.

ATTACHMENT B – DMR SUMMARY OUTFALL 001

Monitoring Period End Date	BOD5							TRC		E. Coli	
	MO AVG		WKLY AVG		DAILY MX		MO AV MN	MO AVG	DAILY MX	MO GEO MN	DAILY MX
	275 lb/d	30 mg/L	413 lb/d	45 mg/L	460 lb/d	50 mg/L	85 %	1 mg/L	1 mg/L	126 #/100mL	406 #/100mL
01/31/2008	110.	14.	129.	16.5	136.	19.	95.	0.6	1.	85.	216.
02/29/2008	181.	18.	172.2	16.	248.	29.	91.	0.6	1.	37.	215.
03/31/2008	208.	18.	349.	32.	459.	40.	91.	0.724	1.	67.	203.
04/30/2008	158.	15.	194.	18.	217.	22.	94.	0.7	1.	63.	143.
05/31/2008	119.	17.	138.	23.	144.	24.	94.	0.75	1.	90.	306.
06/30/2008	64.	14.	76.3	16.	88.	19.	96.	0.683	1.	117.	343.
07/31/2008	68.	14.	96.3	16.	135.	17.	95.	0.6	1.	115.	344.
08/31/2008	81.	16.	96.	24.	113.	28.	94.	0.7	1.	**128.**	326.
09/30/2008	105.	18.	141.	29.	169.	36.	94.	0.6	1.	91.	278.
10/31/2008	128.	19.	152.	22.5	176.	24.	93.	0.64	1.	96.	343.
11/30/2008	159.	23.	194.	28.	207.	30.	92.	0.6	1.	94.	165.
12/31/2008	132.	15.	173.	21.	228.	28.	94.	0.49	0.8	53.	**882.**
01/31/2009	107.	16.	114.6	18.5	133.	19.	94.	0.57	0.9	38.	115.
02/28/2009	136.	20.	160.	24.	203.	29.	93.	0.5	0.88	41.	132.
03/31/2009	209.	24.	261.	29.	328.	34.	90.	0.61	1.	54.	277.
04/30/2009	140.	16.	169.4	17.	185.	18.	93.	0.523	0.9	99.	326.
05/31/2009	114.	17.	118.	19.	126.	20.	93.	0.56	0.97	35.	190.
06/30/2009	143.	20.	186.	23.	238.	29.	91.	0.52	1.	98.	233.
07/31/2009	152.	19.	184.	28.	200.	29.	90.	0.62	1.	74.	277.
08/31/2009	98.	16.	136.	19.	118.	19.	94.	0.55	1.	51.	268.
09/30/2009	**298.**	**59.**	352.	**68.**	**516.**	**104.**	**80.**	0.5	0.96	30.44	165.
10/31/2009	162.	**34.**	285.	**62.**	396.	**90.**	89.	0.64	1.	34.	124.
11/30/2009	167.	**31.**	207.	42.	226.	44.	88.	0.63	0.92	30.	368.
12/31/2009	172.	27.	228.	37.	303.	44.	89.	0.7	0.9	51.	240.
01/31/2010	105.	18.	188.	28.	139.	26.	93.	0.6	0.9	56.	362.
02/28/2010	130.	20.	157.	26.	218.	27.	92.	0.7	1.	8.	231.
03/31/2010	147.	17.	200.	24.	258.	28.	90.	0.68	**1.23**	10.	197.
04/30/2010	137.	19.	152.3	22.	181.	27.	90.	0.54	0.7	3.	41.
05/31/2010	144.	28.	154.	31.	189.	39.	88.	0.4	0.67	1.	2.
06/30/2010	196.	**43.**	234.	**47.**	234.	**56.**	85.	0.5	0.89	3.	**2419.**
07/31/2010	143.	**34.**	193.	**47.**	211.	**52.**	88.	0.5	0.9	2.	11.
08/31/2010	165.	**41.**	223.	**56.**	223.	**56.**	89.	0.4	0.8	2.	4.
09/30/2010	155.	**36.**	271.	**60.**	271.	**63.**	85.	0.41	0.8	3.	263.
10/31/2010	187.	**42.**	276.	**63.**	278.	**64.**	**84.**	0.4	0.9	2.	106.
11/30/2010	140.	29.	173.	38.	190.	38.	91.	0.6	0.9	1.	2.
12/31/2010	85.	17.	120.	23.	107.	22.	95.	0.46	0.72	1.	2.
01/31/2011	62.	14.	88.	21.	97.	21.	95.	0.4	1.	2.	241.
02/28/2011	48.	10.	52.6	13.	59.	14.	96.	0.6	0.8	2.	46.
03/31/2011	108.	15.	174.	21.	180.	22.	92.	0.58	0.96	6.1	328.2
04/30/2011	85.	12.	120.	19.	113.	17.	96.	0.58	0.88	4.7	238.
05/31/2011	129.	19.	148.	20.	196.	30.	92.	0.48	0.89	8.5	203.5

06/30/2011	107.	20.	144.7	28.	185.5	37.	92.	0.56	0.93	31.5	344.1
07/31/2011	83.5	18.	105.1	24.	159.	37.	95.	0.46	1.	13.2	325.5
08/31/2011	101.	24.	187.2	42.5	201.	46.	92.	0.45	0.73	4.9	22.8
09/30/2011	189.	**33.**	294.	**51.**	**493.**	**85.**	87.	0.5	0.9	2.6	**629.4**
10/31/2011	179.	24.	246.	26.	325.	33.	87.	0.58	0.96	2.7	**689.3**
11/30/2011	134.	19.	158.	24.	183.	28.	91.	0.53	0.99	1.7	35.
12/31/2011	162.	23.	203.	26.	219.	33.	89.	0.58	0.89	3.9	123.4
01/31/2012	83.	14.	92.	17.5	110.	18.	94.	0.54	1.	1.4	131.4
02/29/2012	56.	10.	85.	15.	95.	18.	96.	0.54	**1.2**	1.6	11.
03/31/2012	62.	10.	92.	16.	116.	21.	96.	0.51	0.89	5.1	167.9
04/30/2012	147.	25.	228.	37.	351.	**58.**	89.	0.56	0.89	25.5	328.2
Maximum	298.	59.	352.	68.	516.	104.	96.	0.75	1.23	128.	2419.
Minimum	48.	10.	52.6	13.	59.	14.	80.	0.4	0.67	1.	2.
Average	132.3	21.8	174.4	29.1	209.1	34.8	91.5	0.6	0.9	36.2	268.9

Monitoring Period End Date	**TSS**							**Flow**		**pH**	
	MO AVG		**WKLY AVG**		**DAILY MX**		**MO AV MN**	**MO AVG**	**DAILY MX**	**MINIMUM**	**MAXIMUM**
	275 lb/d	**30 mg/L**	**413 lb/d**	**45 mg/L**	**460 lb/d**	**50 mg/L**	**85 %**	**MGD**	**MGD**	**6.5 SU**	**8 SU**
01/31/2008	105.	13.	132.	14.5	156.	18.	97.	1.01	1.314	6.5	7.5
02/29/2008	176.	18.	178.1	18.5	224.	25.	93.	1.23	1.83	6.5	7.3
03/31/2008	219.	19.	**486.**	44.	**735.**	**64.**	91.	1.436	2.067	**6.23**	6.95
04/30/2008	111.	10.	146.	16.	191.	20.	97.	1.25	1.724	6.6	6.9
05/31/2008	106.	15.	126.	19.	143.	21.	96.	0.847	1.254	6.52	7.01
06/30/2008	61.	13.	77.	16.	95.	19.	97.	0.571	0.719	6.5	7.1
07/31/2008	53.	11.	62.3	14.	92.	20.	96.	0.573	0.952	6.6	7.3
08/31/2008	48.	9.	65.	12.	71.	17.	97.	0.627	0.846	6.6	7.4
09/30/2008	64.	11.	88.	18.	99.	21.	97.	0.814	1.728	6.7	7.6
10/31/2008	69.	11.	103.	20.	166.	34.	96.	0.78	1.052	6.7	7.5
11/30/2008	72.	10.	100.	15.	124.	18.	97.	0.865	1.125	6.75	7.47
12/31/2008	116.	14.	163.	18.	169.	22.	95.	1.051	1.572	6.76	7.49
01/31/2009	124.	18.	133.4	19.5	164.	22.	94.	0.818	0.985	6.59	7.23
02/28/2009	163.	24.	194.	29.	294.	42.	94.	0.82	0.973	6.6	7.2
03/31/2009	252.	28.	305.	35.	338.	41.	91.	1.069	1.373	6.59	7.23
04/30/2009	135.	16.	194.5	22.	218.	20.	93.	1.026	1.385	6.5	6.99
05/31/2009	135.	20.	166.	24.	167.	24.	91.	0.797	0.969	6.5	7.14
06/30/2009	134.	19.	194.	24.	206.	27.	92.	0.868	1.211	6.5	7.3
07/31/2009	118.	15.	158.	24.	206.	30.	93.	1.035	1.61	6.6	7.1
08/31/2009	79.	13.	132.	19.	167.	23.	95.	0.766	1.131	6.6	7.2
09/30/2009	114.	22.	154.	29.	198.	38.	93.	0.605	0.791	6.85	7.25
10/31/2009	84.	18.	130.	32.	159.	36.	94.	0.602	0.755	6.81	7.32
11/30/2009	56.	10.	59.5	11.	77.	14.	96.	0.676	0.838	6.6	7.2
12/31/2009	82.	13.	105.	17.	151.	22.	95.	0.724	0.853	6.5	7.2
01/31/2010	81.	14.	97.	18.	145.	27.	95.	0.711	1.001	6.6	7.1

02/28/2010	79.	13.	95.	13.	136.	16.	96.	0.761	1.642	6.6	7.4
03/31/2010	94.	11.	117.	15.	138.	16.	94.	1.088	2.036	6.57	7.13
04/30/2010	76.	10.	121.3	12.	126.	12.	95.	0.871	1.368	6.6	7.2
05/31/2010	71.	14.	85.	18.	96.	19.	95.	0.624	0.781	**5.9**	7.2
06/30/2010	88.	19.	114.	26.	150.	28.	95.	0.571	0.643	6.6	7.2
07/31/2010	78.	19.	103.	26.	125.	31.	94.	0.486	0.529	6.6	7.2
08/31/2010	69.	17.	79.	20.	88.	22.	96.	0.473	0.513	6.9	7.3
09/30/2010	88.	20.	106.	24.	126.	28.	95.	0.507	0.541	6.9	7.3
10/31/2010	121.	24.	107.	28.	135.	32.	93.	0.53	0.659	6.5	7.3
11/30/2010	110.	22.	141.	29.	175.	34.	95.	0.595	0.677	6.5	7.1
12/31/2010	71.	14.	101.	20.	103.	25.	96.	0.587	0.734	6.5	7.
01/31/2011	76.	17.	94.	21.	111.	24.	96.	0.54	0.599	6.5	7.2
02/28/2011	63.	13.	82.	16.	86.	16.	97.	0.595	0.67	6.5	6.9
03/31/2011	101.	14.	126.	18.	151.	23.	94.	0.933	1.474	**6.21**	6.89
04/30/2011	80.	12.	92.	15.	126.	19.	97.	0.852	1.095	6.51	6.75
05/31/2011	86.	13.	112.	15.	116.	16.	95.	0.776	1.002	6.5	7.1
06/30/2011	92.	17.	109.2	21.	125.	25.	95.	0.681	0.84	**6.37**	7.11
07/31/2011	77.3	17.	101.6	19.5	130.	23.	97.	0.556	0.679	6.5	7.1
08/31/2011	136.	30.	220.3	**50.**	222.	**51.**	90.	0.566	0.792	6.5	6.8
09/30/2011	152.	27.	191.1	34.	214.	40.	90.	0.703	0.974	**6.3**	6.7
10/31/2011	171.	23.	222.	28.	294.	35.	90.	0.876	1.277	**6.3**	6.9
11/30/2011	134.	19.	151.	21.5	164.	22.	92.	0.89	1.114	**6.16**	6.95
12/31/2011	138.	19.	172.	24.	180.	27.	92.	0.86	1.318	**6.3**	7.12
01/31/2012	105.	18.	112.	21.	119.	23.	93.	0.715	0.951	6.5	7.7
02/29/2012	102.	17.	118.	21.	121.	22.	95.	0.706	0.822	6.51	7.37
03/31/2012	95.	16.	106.	19.	127.	23.	95.	0.714	0.827	**6.47**	6.87
04/30/2012	94.	16.	119.	19.	133.	22.	94.	0.684	0.856	**6.39**	7.36
Maximum	252.	30.	486.	50.	735.	64.	97.	1.436	2.067	6.9	7.7
Minimum	48.	9.	59.5	11.	71.	12.	90.	0.473	0.513	5.9	6.7
Average	103.9	16.4	135.5	21.6	164.8	25.8	94.4	0.8	1.1	6.5	7.2

Monitoring Period End Date	Al	Cd	Cr	Cu	Pb	Ni	Zn	Hardness	Ammonia-N	LC50 48Hr Acute Daphnid	LC50 48Hr Acute Pimephales
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MN	DAILY MN
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	50 %	50 %
06/30/2008	0.03	0.0005	0.005	0.017	0.0013	0.015	0.11	48.	23.	100.	100.
09/30/2008	0.07	0.0005	0.001	0.011	0.0011	0.0041	0.057	43.	24.	100.	100.
06/30/2009	0.05	0.0005	0.002	0.009	0.0005	0.006	0.037	39.	0.1	100.	100.
09/30/2009	0.05	0.0005	0.002	0.021	0.0005	0.011	0.057	40.	25.	100.	100.
06/30/2010	0.074	0.0005	0.002	0.011	0.0005	0.005	0.044	39.	17.	100.	100.
09/30/2010	0.07	0.0005	0.002	0.012	0.0009	0.01	0.069	40.	22.	100.	100.
06/30/2011	0.047	0.0005	0.002	0.013	0.0005	0.007	0.045	42.	0.61	100.	100.
09/30/2011	0.034	0.0005	0.002	0.014	0.0005	0.009	0.041	40.	0.1	100.	100.
Maximum	0.074	0.0005	0.005	0.021	0.0013	0.015	0.11	48.	25.	100.	100.
Minimum	0.03	0.0005	0.001	0.009	0.0005	0.0041	0.037	39.	0.1	100.	100.
Average	0.053	0.0005	0.002	0.014	0.001	0.008	0.058	41.4	13.98	100.	100.

Receiving Water Upstream of Outfall 001

Monitoring Period End Date	Al	Cd	Cr	Cu	Pb	Ni	Zn	Hardness
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
09/30/2008	0.13	---	---	0.	0.00061	0.	0.015	12.
06/30/2009	0.15	0.	---	0.	0.	0.	0.005	11.
09/30/2009	0.05	0.	---	0.	0.	0.	0.012	12.
06/30/2010	0.25	0.	---	0.004	0.0005	0.	0.005	8.2
09/30/2010	0.098	0.	0.	0.003	0.001	0.	0.018	12.
06/30/2011	0.15	0.	0.	0.	0.	0.	0.003	8.8
09/30/2011	0.028	0.	0.	0.	0.	0.	0.	16.
Median	**0.13**	**0.**	**0.**	**0.**	**0.**	**0.**	**0.005**	**12.**

ATTACHMENT C – PERMIT LIMIT CALCULATOR MODEL

The permit limit calculator model uses the mass balance equation to compute allowable WWTF discharge concentrations using:

- The remaining assimilative capacity downstream
- The 10% reserve capacity concentration
- The maximum allowable downstream river concentration to ensure that no more than 20% of the remaining assimilative capacity is used by the WWTF proposed increased discharge

The maximum allowable downstream river concentration is calculated as follows:

(0.9 * Criteria Conc. – Existing Conc.) * 0.2 + Existing Conc.

Then, a proposed downstream loading is determined as follows:

Allowable Downstream River Conc. * Downstream 7Q10 Flow

Finally, the maximum allowable WWTF loading (mass-based) is calculated as follows:

Proposed Loading – Upstream Ambient Loading

This maximum allowable WWTF loading can also be calculated as a concentration-based limit as follows:

(Proposed Loading – Upstream Ambient Loading) / (Proposed WWTF Flow)

ATTACHMENT D – DILUTION FACTOR CALCULATION

Equation used to calculate available dilution factor at Outfall 001:

$$DilutionFactor = \frac{(Q_{001})}{Q_{PDF} \times 1.547} \times 0.9$$

$$DilutionFactor = \frac{613.81 cfs}{2.2 mgd \times 1.547 cfs/mgd} \times 0.9 = 162.2$$

where:

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

ATTACHMENT E – EXAMPLE REASONABLE POTENTIAL CALCULATION

The following is an example for determining reasonable potential, using aluminum (Al) and the relevant acute water quality criterion.

For aluminum (Al), the maximum allowable concentration (C_d) is calculated as follows:

$$C_d = \frac{Q_r C_r (0.90) - Q_S C_S}{Q_d}$$

For acute conditions:

C_d = [(617.21 cfs)(*750 ug/l*)(0.9) – (613.81 cfs)(130 ug/l)] / 3.4 cfs = **99,000 ug/l**

For Al, the estimated effluent daily maximum (95th percentile) is calculated as follows:

The results of the WET test measurements for Al are shown in Attachment B above. See TSD Chapter 3 and Box 3-2 for a more detailed description of the steps below:

Step 1) The maximum value of these WET samples is 74 ug/l.
Step 2) CV = 0.6, when there are less than 10 measurements.
Step 3) Using Table 3-2 in the TSD, the reasonable potential multiplication factor (RPMF) for the 95% percentile is 1.9 (8 samples with CV=0.6).
Step 4) The 95th percentile of the distribution is the maximum effluent value multiplied by the RPMF: 74 ug/l * 1.9 = 140.6 ug/l.
Step 5) Therefore, since the estimated daily maximum is less than the maximum allowable, (140.6 ug/l < 99,000 ug/l), then there is **no reasonable potential** to exceed the acute water quality criteria.

In this permit all the metal sample sizes are less than 10. However, if the number of samples were greater than 10, then EPA uses box 3-2 , as well as Appendix E "Lognormal Distribution and Permit Limit Derivations" of the TSD. Also, note that non-detects are considered to be equal to 0.

RESPONSE TO COMMENTS – JULY 16, 2013
REISSUANCE OF NPDES PERMIT NO. NH0100129
TOWN OF HOOKSETT
HOOKSETT WASTEWATER TREATMENT FACILITY
HOOKSETT, NEW HAMPSHIRE

From March 21, 2013 through April 19, 2013 the U.S. Environmental Protection Agency (EPA-New England) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) solicited public comments on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Town of Hooksett, NH.

EPA-New England and NHDES-WD received comments from the Town of Hooksett (via their consultant, Hoyle, Tanner & Associates, Inc.), dated April 17, 2013 and from the City of Manchester, dated April 18, 2013. Below are the comments received and EPA's responses to those comments, including any corrections made to the public-noticed permit as a result of those comments.

A copy of the final permit may be obtained by writing or calling Michael Cobb, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1369. Copies may also be obtained from the EPA Region 1 web site at http://www.epa.gov/region1/npdes/index.html.

I. COMMENT FROM THE TOWN OF HOOKSETT

Comment I.A

On behalf of the Town of Hooksett, New Hampshire this letter is to provide comments to the draft NPDES Permit #0100129 issued for the Town's wastewater Treatment Facility. Our comments are centered around the proposed requirement limiting the discharge of Aluminum to 87 ug/l.

The Fact Sheet which accompanies the draft permit outlines the Permit Basis and provides an explanation of Effluent Limitation Derivation in Section IV. It is understood that the Town's permit must limit any pollutant 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. Further, Paragraph IV.B.1 outlines the considerations taken by EPA in determining "Reasonable Potential". We believe that EPA's determination of Reasonable Potential and thus the derivation of the proposed limit for Aluminum is flawed and appears to be based on incorrect interpretation of data collected both in stream and from the facility's discharge.

With reference to the fact sheet of the Draft National Pollutant Discharge Elimination System (NPDES) Permit to Discharge to Waters of the United States, attention is drawn to Attachment B of the fact sheet which displays a table of the DMR Summary of Outfall 001. Comparison with the discussion provided on page 14 of the Fact Sheet with the table of data on page 26 identifies discrepancies in the interpretation of aluminum discharge readings. The reported Aluminum discharge concentrations averaged 53 ug/l with a maximum recorded concentration of 74 ug/l. In contrast, the discussion on page 14 incorrectly states that the "facility has discharged

aluminum above the chronic criterion of 87 ug/l". This conclusion is unsupported by the actual reported data.

We would note that we do not feel that there are a significant number of consistent data points to come to any conclusions from the effluent and in-stream testing and that the available data does not support EPA's conclusion of Reasonable Potential. Additional sampling and testing under more controlled conditions may be warranted before any real conclusions can be drawn.

EPA Response I.A

EPA acknowledges that the facility did not report any Al discharge measurements above the chronic criterion of 87 ug/l. The statement in the fact sheet is incorrect, but was intended to convey that the statistical analysis conducted on the data to account for variability indicated it was *likely* that the maximum effluent aluminum concentration exceeded the chronic criterion.

In any event, EPA has reevaluated the procedure it uses to determine reasonable potential for very small data sets (n<10) and has decided to base its reasonable potential analysis on the actual maximum measured effluent concentration, and to use the more conservative statistical procedure to determine whether more frequent monitoring should be conducted during the permit term, in order to provide greater certainty regarding the variability of the data in future reasonable potential calculations.

While a mass balance equation using the measured maximum concentrations still projects an exceedance of the chronic aluminum water criterion downstream of the discharge [(3.4 cfs x 74 ug/l + 610.4 cfs x 130 ug/l) / 613.8 cfs = 129.7 ug/l], this exceedance is not caused or contributed to by the discharge, since the measured maximum concentration (74 ug/l) is *less than* the applicable water quality target of 78.3 ug/l (the water quality criterion of 87 ug/l times a factor of 0.9, to maintain 10 percent of assimilative capacity per the NH water quality standards). In other words, since the concentration of the pollutant is less than the applicable instream target, any downstream exceedance is solely due to the high upstream concentration. (In this case, had the measured concentration exceeded 78.3 ug/l, EPA would have included a limit in the permit.) EPA has therefore removed the monthly average (chronic) aluminum limit from the permit.

As described above, since the statistically-derived maximum concentration (140.6 ug/l; see Attachment E of Fact Sheet for derivation) would, if used, show reasonable potential, EPA has decided to require routine monitoring sufficient to ensure a more robust data set for future permitting decisions. Had this statistical analysis resulted in a concentration less than 78.3 ug/l, increased monitoring would not have been required. The monitoring frequency for aluminum has been set at once per quarter.

Comment I.B

Recent studies of the Merrimack River have concluded that the river meets all water quality criteria for both dissolved oxygen (DO) and Aluminum. There is insufficient data to adequately support the determinations that the Merrimack River is impaired for these criteria.

EPA Response I.B

The Fact Sheet references the State of New Hampshire's 2010 *Final List of Threatened or Impaired Waters That Require a TMDL*, also referred to as the 303(d) list, which indicates that aquatic life uses in the stretch of the river receiving the Hooksett WWTF's discharge (segment NHRIV700060802-14-02) are threatened by aluminum, dissolved oxygen saturation and pH and primary contact recreational uses are threatened by *Escherichia coli* bacteria. This 2010 303(d) list is the most recent one approved by EPA. EPA also notes that in the Draft 2012 303(d) list, aquatic life uses in the same segment of the Merrimack River are still listed as impaired for aluminum, dissolved oxygen saturation and pH.

Comment I.C

An extensive evaluation of a section of the Merrimack River was completed by the City of Manchester working with the NHDES. That study showed that during low flows and flows approaching the 7Q10, concentrations of aluminum were well below the chronic criteria of 87 ug/l and during high flows the acute criteria of 750 ug/l were also met. This discharge permit is based on the 7Q10 flow conditions. During such low flow conditions the ambient water quality concentrations for aluminum have been found to be well below the chronic criteria of 87 ug/l. There is no need to limit the Hooksett discharge when the receiving waters of the Merrimack River are already well within the water quality criteria.

Therefore it is inappropriate to establish a discharge limit for aluminum at this time. On behalf of the Town of Hooksett we respectfully request that the aluminum discharge limit be removed from the final permit. Thank you for consideration of this request.

EPA Response I.C

For a thorough discussion of the City of Manchester's 2011 Aluminum Study with regards to the Al criteria and various flow patterns of the Merrimack River, refer to Section II below. Also see Response I.A.

II. COMMENT FROM THE CITY OF MANCHESTER

Comment II.A

The City of Manchester is providing the following comments to the Hooksett's Draft Permit (NH0100129). The table below is from the Fact Sheet which includes the following data for metals.

Monitoring Period End Date	Al	Cd	Cr	Cu	Pb	Ni	Zn	Hardness
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
09/30/2008	0.13	---	---	0.	0.00061	0.	0.015	12.
06/30/2009	0.15	0.	---	0.	0.	0.	0.005	11.
09/30/2009	0.05	0.	---	0.	0.	0.	0.012	12.
06/30/2010	0.25	0.	---	0.004	0.0005	0.	0.005	8.2
09/30/2010	0.098	0.	0.	0.003	0.001	0.	0.018	12.
06/30/2011	0.15	0.	0.	0.	0.	0.	0.003	8.8
09/30/2011	0.028	0.	0.	0.	0.	0.	0.	16.
Median	**0.13**	**0.**	**0.**	**0.**	**0.**	**0.**	**0.005**	**12**

There are no associated river flow data provided with these concentrations. In review of Manchester's DMR's for the above indicated data points we have found the following

1. 9/30/2008 sample – 0.53 inches of rain on that day. The flow in the Merrimack was well above any 7Q10 condition. This sample should have been compared to the acute limit of 750 ug/l. The Merrimack River at 130 ug/l well within the acute WQ concentration for that day.

2. 6/30/2009 sample – There was 0.05 inches on that day and 1.45 inches of rain the day before. The flow in the Merrimack was several times the 7Q10 condition. This sample should have been compared to the acute limit of 750 ug/l in accordance with the Gold Book criteria. Merrimack River at 150 ug/l of aluminum is well within the acute WQ concentration of 750 ug/l for that day.

3. 9/30/2009 sample – No rain on the 28th, 29th or 30th. Sample measured 50 ug/l. Well within the chronic limit of 87ug/l WQ criteria standard.

4. 6/30/2010 sample – No rain in the Merrimack River area. River was at lower flows approaching the 7Q10. Manchester reported on its DMR a rainfall event on 6/27/10 of 0.13 inches. In the phase II Merrimack River Study a time of travel model was developed (Table 3-2) attached that demonstrates a time travel of nine to 15 days at Merrimack River flows of between 3,000 cfs and 1,500 cfs. The Aluminum Study that Manchester undertook demonstrates feeder ponds in the White Mountain National Forest have aluminum between the 200 ug/l and 250 ug/l on a consistent basis. The rain event experienced on 6/27 could have easily overflowed these feeder ponds moving the slug of highly concentrated aluminum pond discharge downstream for the three days where it was sampled by Hooksett. This would explain the unlikely high 250 ug/l reading at a time when the river was approaching 7Q10 conditions. As outlined in the Phase III Merrimack River draft study sampling protocol page 3-3 (attached, highlighted) the statement is made *that "It must be considered that long dry periods may create relatively low-level pollutant levels in the river that are reflective of extreme or uncharacteristic river conditions. Therefore, to capture typical water quality conditions and representative data for the model, dry-weather sampling events will be selected with a minimum two-day and maximum seven-day antecedent dry period based on river flow conditions and expected pollutant uptake and die-off."* In looking at Manchester's DMR for the month of June 2010 it was clear this was a low flow month with flows approaching 7Q10 levels.

5. 9/30/10 sample - There was 0.25 inches on that day and 0.18 inches on 9/28 and 0.32 inches on 9/27. The flow in the Merrimack was well above any 7Q10 condition during this sampling event. Sample should have been compared to the acute limit of 750 ug/l. Merrimack River at 98 ug/l well within the acute WQ concentration for that day.

6. 6/30/11 sample - There was 0.05 inches on that day and 1.45 inches of rain the day before. The flow in the Merrimack was well above any 7Q10 condition. Sample should have been compared to the acute limit of 750 ug/l. Merrimack River at 150 ug/l well within the acute WQ concentration for that day.

7. The 9/30/11 sample – There was no rain on this date. The river concentration was 28 ug/l. As Manchester's study demonstrated that the closer the river gets to the 7Q10 the less the metals concentration and in all cases well below half of the chronic WQ criteria and reinforced by the quote in the Phase III sampling draft in item four above.

EPA Response II.A

The distinction between acute and chronic criteria is not based on river flow conditions but rather on the magnitude, duration and frequency of exposure to increased Al concentrations. More specifically, chronic aquatic life criteria represent the 4-day average concentration not to be exceeded more than once every 3 years on average, while acute aquatic life criteria represent the 1-hour average concentration not to be exceeded more than once every 3 years on average. In order to be protective of water quality uses, these criteria must be met under all flow regimes (*i.e.*, 7Q10 low flow or higher flow). In order to account for the difference in averaging periods of the chronic and acute criteria in NPDES permits, EPA generally applies chronic criteria as monthly average limitations and acute criteria as daily maximum limitations.

In this case, only 7 daily in-stream samples during the 2008 – 2012 review period are available to characterize the river. Given this limited data, it is not clear whether these samples represent acute or chronic exposure conditions. EPA made the determination that the median value of these 7 samples sufficiently characterizes chronic exposure conditions. To be conservative, EPA also applied the same median value in characterizing acute exposure conditions. In this case, the maximum of Hooksett's Al effluent (74 ug/l) did not contribute to an excursion above either the chronic criterion (87 ug/l) or the acute criterion (750 ug/l), although the median background concentration (130 ug/l) was above the chronic criterion. However, the projected upper bound based on the small-sample statistical analysis of the effluent data (140.6 ug/l) is above the chronic criterion. Hence, the final permit contains quarterly monitoring for Al, but does not contain a limit. See EPA Response I.A for a detailed description of this decision-making process. If this monitoring indicates that the facility does discharge above the chronic criterion and thus contribute to an excursion of the water quality standards, the permit may be reopened and an Al limit may be required.

Comment II.B

Sampling protocol is critical for accurate levels of measurement in the parts per billion range. There is no associated QA/QC with the sampling program for toxicity sampling in Hooksett. In discussions with the Hooksett Superintendent, it is our understanding that field crews go just above the outfall, use an plastic bucket on the end of a sampling rod and take a sample

approximately 5 feet from shore. The samples are put in bottles provided by ESI labs and adjusted at the Hooksett WWTP lab via nitric acid. The CAS number is (CAS7697-37-2). This acid is added at between three and 10 drops to adjust below a pH of <2.0. Attached is a purity screening for Nitric Acid and as can be seen, up to 5 ug/l of aluminum may be present.

In 2007 Hooksett in association with the NHDES did sampling on the Merrimack River just south of Donati Memorial Field (Map attached) in the middle of the Merrimack River (more representative than 5 feet off shore). A fire boat was used and strict sampling protocols were followed according to an NHDES QAPP. The aluminum sampling done during the months of June through September were reviewed to compare similar time periods for the toxicity sampling. The results are as follows.

1. 7/5/2007 – Aluminum sample was 44.1 ug/l. The duplicate sample was 41.0 ug/l
2. 8/9/2007 – Aluminum sample ws 30.3 ug/l. The duplicate sample was 29.8 ug/l.
3. 8/23/2007 – Aluminum sample was 28.5 ug/l. The duplicate sample was 29.7 ug/l.

The above data confirms the City of Manchester Aluminum Study (included in its entirety as part of the comment submission) that was performed in conjunction with the NHDES. The City did an extensive evaluation of the section of the Merrimack River for aluminum above and below its outfall. In this study it was proven that during rain events, the feeder ponds in the White Mountains and headwaters of the Merrimack discharge highly laden naturally occurring aluminum waters. In review of the "One-Stop" aluminum data on the NHDES website, it confirms that the concentration of this naturally occurring aluminum actually dilutes out over the course of the descent through the lower reaches of the Merrimack River. Within Manchester's Aluminum Study, the findings were that when the Merrimack River was at 3X the 7Q10 limit or less (2,000 cfs), the background river concentration for aluminum never exceeded 32.6 ug/l for total recoverable aluminum. As the river cfs increased, the corresponding aluminum increased.

Manchester is questioning why this QAAP sampled protocol data, outlined in bullets 1-3 above, was not used for calculation purposes, but rather WET testing river sampling data was collected using typical field techniques with no QAPP protocols. As can be seen from the data, there are great differences between the QAPP sampled data and the non-QAPP field samples. This needs to be further reviewed. The NHDES CALM document states, *"Any data submitted to the NHDES is first reviewed against the existing protocols in the CALM document. In the event the CALM does not include protocols to adequately assess a particular data set, DES staff review the data in the context of the NH water quality standards and prepare a written summary that includes a review of data, the applicable water quality standards, and a recommendation of attainment status. Nothing in the CALM shall be construed as a basis for not evaluating a submitted dataset"* (CALM – Section 1.2.1 Assessment and Listing Methodology). As can be seen from the CALM the 2007 dataset should have definitely been part of the evaluation especially as it is the only dataset that was taken under an approved QAPP.

As required by our consent decree, Manchester's Aluminum Study was submitted to both the EPA and NHDES in late February 2011. We have not heard any response to our findings. The Hooksett permit narrative on aluminum does reinforce the findings within Manchester's study. The headwaters are the source of "naturally occurring" aluminum and it dilutes out as flow continues down the Merrimack River.

In the study an extensive listing of toxicity history for river aluminum was done for both Manchester and Nashua. It was demonstrated that the aluminum in the Merrimack was actually diluting out as it progressed further downstream. This was again verified in the Merrimack draft permit for aluminum with a mean in stream Aluminum concentration of 72.5 ug/l. When looking at the Hooksett in stream data of 130 ug/l from the toxicity testing (comparing the same toxicity data to Nashua, Manchester and Merrimack's Fact Sheet) it trends higher, proving that the dilution from the plant discharges and the feeder streams/rivers has not had a chance to dilute the naturally occurring aluminum discharged from the feeder ponds in the White Mountains when these flows pass the Hooksett WWTP at low-flow conditions.

Based on the findings of Manchester's 2011 Aluminum Study an aluminum potential should not have been raised due to naturally occurring aluminum within the Merrimack River. It may prove valuable to look at the data and findings from this study when developing future permits along the Merrimack River. Once EPA/NHDES review and comment on Manchester's Aluminum Study Report, this issue can be more readily addressed.

EPA Response II.B

The commenter raises two issues in this comment. First, there is concern that the QA/QC procedures are not sufficiently stringent for use in making permit decisions. More specifically, samples taken in 2007 with more stringent QA/QC procedures indicate lower Al results and nitric acid may have been a source of Al in the more recent data. Secondly, the commenter believes (based upon the City of Manchester 2011 Aluminum Study) that naturally occurring Al leads to significant Al increases at higher flows, but is not of concern at critical low flow events less than 3 times the 7Q10.

In response to the first issue, EPA acknowledges that the QA/QC procedures may not have been as stringent in the WET testing data submitted by the facility and may have resulted in higher readings of Al. Small amounts of nitric acid containing up to 5 ug/l of Al would not be expected to make a significant difference, but contamination during sample collection could potentially have a more significant effect. Nevertheless, EPA has chosen to use these recent samples and encourages the facility to employ the best QA/QC procedures it deems appropriate for future sampling, in accordance with the toxicity test procedures and protocols (see permit Attachment A). Page 2 of this protocol states the following regarding sample collection from the receiving water:

"A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist."

If future upstream samples (with or without more stringent QA/QC procedures) are submitted to EPA which indicate instream Al concentrations consistently below the chronic criterion (87 ug/l), this new data would be considered in future permitting decisions.

In response to the second issue, the Manchester 2011 Aluminum Study does indicate that non-point sources of Al are likely present in the Merrimack River and have some correlation to flow

increases. The Manchester Study indicates that Al concentrations were significantly above the chronic criterion at higher flows. Although this is likely not caused by an immediately controllable source, the designated uses of the Merrimack River must still be protected under all flow regimes down to 7Q10. If NHDES chooses to develop site-specific Al criteria based upon this study and/or other relevant information, this may be cause for modification pursuant to 40 CFR 122.62(a)(3)(i). New Regulations. In order to be approved, such criteria would need to show that local biota would not be adversely affected by Al concentrations higher than the current criteria. Until such action is taken, EPA will continue to use the existing and approved Al criteria.