AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

The City of Claremont, New Hampshire

is authorized to discharge from the Wastewater Treatment Plant located at

338 Plains Road
Claremont, NH 03743

to receiving waters named

Sugar River (Hydrologic Basin Code: 01080106)

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

This permit supersedes the permit issued on September 28, 2006.

This permit consists of **Part I (**20 pages including effluent limitations and monitoring requirements); **Attachment A** (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages), **Attachment B** (USEPA Region 1 Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013, 7 pages), **Attachment C** (USEPA Region 1 NPDES Permit Requirement for Industrial Pretreatment Annual Report, 2 pages) and **Part II (**25 pages including NPDES Part II Standard Conditions).

Signed this July 29th day of 2016.

/S/ SIGNATURE ON FILE

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Ken Moraff, 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 and industrial wastewater from outfall serial number 001 to the Sugar 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
Flow; MGD	3.89[1]	***	***	Continuous Recorder[1]	
Flow; MGD	Report	***	Report	Continuous Recorder[1]	
$CBOD_5$; mg/l (lbs/day)	25 (811)	40 (1298)	45 (1460)	2/Week[2]	24 Hour Composite
TSS; mg/l (lbs/day)	30 (973)	45 (1460)	50 (1622)	2/Week[2]	24 Hour Composite
pH Range[3]; Standard Units	6.5 to 8.0 (See I.I.5., State Permit Conditions)			1/Day	Grab
Escherichia coli[4,5]; Colonies/100 ml	126	***	406	3/Week	Grab
June 1-October 31 Dissolved Oxygen[3]	Not Less Than 7.0 mg/l			1/Day	Grab
November 1-May 31 Dissolved Oxygen[3]	Not Less Than 7.0 mg/l			5/Week	Grab
Total Residual Chlorine[4,6]; mg/l	0.072	***	0.123	1/Day	Grab
Ammonia Nitrogen as N; mg/l (Applicable June 1-October 31)[3]	7.2	***	11.3	2/Week	24 Hour Composite
Ammonia Nitrogen as N; mg/l (lbs/day) (Applicable November 1- May31) [3]	10.9	***	Report (Report)	2/Week	24 Hour Composite
March 1 – September 30 Total Kjeldahl Nitrogen, as N[7], mg/l (lbs/day) Total Nitrate + Nitrite Nitrogen, as N[7], mg/l (lbs/day) Total Nitrogen, as N[7, 8], mg/l (lb/day)	Report (Report)	***	Report (Report)	1/Week	24 Hour Composite
October 1 – February 28 Total Kjeldahl Nitrogen, as N[7], mg/l (lb/day) Total Nitrate + Nitrite Nitrogen, as N[7], mg/l (lbs/day) Total Nitrogen, as N[7, 8], mg/l (lbs/day)	Report (Report)	***	Report (Report)	1/Month	24 Hour Composite

Effluent Characteristic	Discharge Limitations			Monitoring Requirements	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Interim Limit (first 48 months from effective date) Total Phosphorus[9], mg/l, (lbs/d) (Applicable April 1-October 31)	Report (Report)		Report (Report)	2/Month	24 Hour Composite
Total Phosphorus[9], mg/l, (lbs/d) (Applicable April 1-October 31)	Report (17.0)	***	Report (Report)	2/Month	24 Hour Composite
Total Phosphorus, mg/l, (lbs/d) (November 1 – March 31)	Report (Report)	***	Report (Report)	2/Month	24 Hour Composite
Total Phosphorus (Ambient[10]), mg/l	Report		Report	2/Year	Grab
Total Recoverable Copper, ug/l	17.32		24.64	2/Month	24 Hour Composite
Whole Effluent Toxicity[11,12,13]; Percent	Acute LC50 ≥ 100% Chronic C-NOEC ≥ 15.4%			2/Year	24 Hour Composite
Hardness[14]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Aluminum[14]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Cadmium[14]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Copper[14]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Lead[14]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Nickel[14]; mg/l	---	---	Report	2/Year	24 Hour Composite
Total Recoverable Zinc[14]; mg/l	---	---	Report	2/Year	24 Hour Composite

See pages 4 and 5 for footnotes

FOOTNOTES

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

   The annual average, monthly average, and the maximum daily flows shall be reported. The limit of 3.89 mgd is an annual average, which shall be reported as a twelve-month rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.

2. The influent concentrations of both five-day carbonaceous biochemical oxygen demand ($CBOD_5$) and total suspended solids (TSS) shall be monitored twice per month (2/Month) and using a 24-Hour Composite sample and the results reported as average monthly values.

3. State certification requirement.

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

5. 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.

6. Total residual chlorine (TRC) shall be measured using any one of the approved methods as listed in 40 CFR Part 136.

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

   The total nitrogen loading values reported each month shall be calculated as follows: Calculate daily loads of total nitrogen (lb/day) for each day that nitrogen sampling takes place. Loading (lb/day) = total nitrogen concentration (mg/l) * daily flow (millions of gallons (MG)) * 8.34. The average monthly loading shall be the average of the daily loading results.

8. See **Part I.G.1**. for requirements to evaluate and implement optimization of nitrogen removal.

9. See Section H for the Schedule of Compliance for Total Phosphorus. The interim limit of reporting only is in place during 48 month term of the compliance schedule.

10. Two (2) separate rounds of ambient total phosphorus sampling shall be collected between July 15th and September 15th. Sampling shall following a period of dry weather, which is defined for the purpose of this permit, as five (5) consecutive days with no precipitation events greater than 0.1 inch. The sampling rounds must be separated by a least a week. Ambient samples should be collected at "Site 5 – approximately 1000 feet upstream from the WWTF discharge" (July/August 2015 Sampling) therefore providing comparable data.

11. 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.

    C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The "15.4% or greater" limit is defined as a sample which is composed on 15.4% (or greater) effluent, the remainder being dilution water.

12. The permittee shall conduct 48-hour static acute toxicity tests and chronic toxicity tests on effluent samples following the February 2011 USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol (**Attachment A**) and March 2013 USEPA Region 1 Freshwater Chronic Toxicity Test Procedure and Protocol (**Attachment B**), respectively. 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 two times per year during the calendar quarters ending September 30th, and December 31st. Toxicity test results are to be postmarked by the 15th day of the month following the end of the quarter sampled (i.e., October 15th and January 15th, respectively).

13. 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).

14. For each whole effluent toxicity (WET) test, the permittee shall report on the appropriate discharge monitoring report, (DMR), the concentrations of the hardness, ammonia nitrogen as nitrogen and total recoverable aluminum, 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**. The permittee should note that all chemical parameter results must be reported in the appropriate toxicity report. Also, copper results from each WET test may be used as one of the two monthly required samples for the copper limits, respectively.

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 ensure 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 $CBOD_5$ and TSS. The percent removal shall be based on a comparison of the average monthly influent and effluent concentrations.

5. When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 3.89 MGD design flow (3.1 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-Region 1 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

The 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 Opereation and Maintenance (O&M) Plan required pursuant to Section C.5. below.

2. Preventative Maintenance Program

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

3. Infiltration/Inflow

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

4. Collection System Mapping

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

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

i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;
j. The scale and a north arrow; and
k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System Operation and Maintenance Plan

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

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

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

b. The full Collection System O&M Plan shall be submitted to EPA and NPDES and implemented **within twenty four (24) months from the effective date of this permit**. The Plan shall include:

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

6. Annual Reporting Requirement

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

a. A description of the staffing levels maintained during the year;
b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;
c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;
d. A map with areas identified for investigation/action in the coming year;
e. If treatment plant flow has reached 80% of the 3.89 mgd design flow (3.1 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. INDUSTRIAL USER CONDITIONS

1. Limitations for Industrial Users:

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

b. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial Users(s) and all other users as necessary, which together with appropriate changes in the POTW Treatment Plant’s facilities or operation, are essential to ensure continued compliance with the POTW’s NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such

notice and an opportunity to respond. Within 90 days of the effective date of this permit, the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety, and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment B – Reassessment of Technically Based Industrial Discharge Limits) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. Industrial Pretreatment Program

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

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

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

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

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

b. The permittee shall provide the EPA and the NHDES-WD with an annual report describing the permittee's pretreatment program activities for the twelve month period ending 60 days prior to the due date in accordance with 40 C.F.R. § 403.12(i). The annual report shall be consistent with the format described in

Attachment C (NPDES Permit Requirement for Industrial Pretreatment Annual Report) and shall be submitted no later than **November 1st** of each year.

c. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 C.F.R. § 403.18(c).

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

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

F. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to Section 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the permittee's sludge use and/or disposal practices, the permittee shall comply with the more stringent of the applicable 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 40 CFR Part 503 requirements include the following elements:

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

Which of the 40 CFR Part 503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1- NPDES Permit Sludge Compliance Guidance" (November 1999), may be used by the permittee to assist it in determining the applicable requirements.[1]

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) 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

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR 503.8.

7. Under 40 CFR § 503.9(r), the permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

8. The permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted to the address contained in the

[1] 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 .

reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:

a. Name and address of contractor(s) responsible for sludge preparation, use or disposal
b. Quantity of sludge (in dry metric tons) from the POTW that is transferred to the sludge contractor(s), and the method(s) by which the contractor will prepare and use or dispose of the sewage sludge

9. Compliance with the requirements of this permit or 40 CFR Part 503 shall not eliminate or modify the need to comply with applicable requirements under RSA 485-A and Env-Wq 800, New Hampshire Sludge Management Rules.

G. SPECIAL CONDITIONS

1. Nitrogen

Within one (1) year of the effective date of the permit, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen, and submit a report to EPA and NHDES-WD documenting this evaluation and presenting a description of recommended operational changes. The methods to be evaluated include, but are not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. The permittee shall implement the recommended operational changes in order to not exceed the existing mass discharge loading of total nitrogen. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be approximately 189 lbs/day.

The permittee shall also submit an annual report to EPA and NHDES-WD, by **February 15th** of each year that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous year.

2. pH Limit Adjustment

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

limit range in the respective permit.

H. SCHEDULE OF COMPLIANCE FOR TOTAL PHOSPHORUS

Compliance with the new total phosphorus water quality-based effluent limit (WQBEL) in Part I.A.1. of this permit is deferred until four (4) years after the effective date of the permit according to the following schedule:

1. Within twelve (12) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a status report relative to the planning of the facility upgrades, including wastewater treatment alternatives and alternative groundwater and surface water discharge locations, if such alternative locations are necessary or planned by the permittee to address the limits.

2. Within eighteen (18) months of the effective date of the permit, the Permittee shall complete facilities planning and initiate design of any facilities necessary to address compliance with the phosphorus limit.

3. Within thirty (30) months of the effective date of the permit, the Permittee shall issue a notice to proceed with construction of any facility improvements required to comply with the total phosphorus limit.

4. Within forty-eight (48) months of the effective date of the permit, the Permittee shall substantially complete construction of any facility improvements required to comply with the phosphorus limit. The facility improvements shall be operational and in compliance with the phosphorus limit.

5. Until the permit limit is achieved the permittee shall submit reports to EPA and NHDES at 12 months, 24 months, 36 months, and 48 months from the effective date of the permit. These reports shall describe progress towards attaining the effluent limitation, including a description of planning, design and construction of any necessary facilities.

I. MONITORING AND REPORTING

The monitoring program in the permit specifies sampling and analysis, which will provide continuous information on compliance and the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures found in 40 CFR Part 136 are required unless other procedures are explicitly required in the permit. The permittee is obligated to monitor and report sampling results to EPA and the NHDES within the time specified within the permit.

Unless otherwise specified in the permit, the permittee shall submit reports, requests and information and provide notices in the manner described in this section.

1. Submittal of Reports Using NetDMR

   The permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and NHDES no later than the 15th day of the month electronically using NetDMR. When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or NHDES.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the permittee shall electronically submit all reports to EPA and NHDES as NetDMR attachments rather than as hard copies. This includes the NHDES Monthly Operating Reports (MORs). (See Part I.J.6. for more information on State reporting.) Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA and NHDES using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Pretreatment Related Reports

   All reports and information required of the permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Office of Ecosystem Protection's Pretreatment Coordinator in Region 1 EPA's Office of Ecosystem Protection (OEP). These requests, reports and notices include:

   A. Annual Pretreatment Reports,
   B. Pretreatment Reports Reassessment of Technically Based Industrial Discharge Limits Form,
   C. Revisions to Industrial Discharge Limits,
   D. Report describing Pretreatment Program activities, and
   E. Proposed changes to a Pretreatment Program

   This information shall be submitted to EPA/OEP as a hard copy to the following address:

   U.S. Environmental Protection Agency
   Office of Ecosystem Protection
   Regional Pretreatment Coordinator
   5 Post Office Square - Suite 100 (OEP06-03)
   Boston, MA 02109-3912

4. Submittal of Requests and Reports to EPA/OEP

   The following requests, reports, and information described in this permit shall be submitted to the EPA/OEP NPDES Applications Coordinator in the EPA Office Ecosystem Protection (OEP).

A. Transfer of Permit notice
B. Request for changes in sampling location
C. Request for Reduction in WET Testing Requirement
D. Report on unacceptable dilution water / request for alternative dilution water for WET testing

These reports, information, and requests shall be submitted to EPA/OEP electronically at R1NPDES.Notices.OEP@epa.gov or by hard copy mail at the following address:

U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP NPDES Applications Coordinator
5 Post Office Square - Suite 100 (OEP06-03)
Boston, MA 02109-3912

5. Submittal of Reports in Hard Copy Form

The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to EPA.

A. Written notifications required under Part II
B. Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reporting
C. Sludge monitoring reports

This information shall be submitted to EPA/OES at the following address:

U.S. Environmental Protection Agency
Office or Environmental Stewardship (OES)
Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

All sludge monitoring reports required herein shall be submitted only to:

U.S. Environmental Protection Agency, Region 7
Biosolids Center
Water Enforcement Branch
11201 Renner Boulevard
Lenexa, Kansas 66219

6. State Reporting

Unless otherwise specified in this permit, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports,

information, requests or notifications described in Parts I.F.3, I.F.4, and I.F.5 also shall be submitted to the State electronically via email to the permittee's assigned NPDES inspector at NHDES-WD or in hard copy to the following address:

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

7. Verbal Reports and Verbal Notifications

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to NHDES. This includes verbal reports and notifications which require reporting within 24 hours. (As examples, see Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.) Verbal reports and verbal notifications shall be made to EPA's Office of Environmental Stewardship at:

U.S. Environmental Protection Agency
Office of Environmental Stewardship
617-918-1510

Verbal reports and verbal notifications shall be made to the permittee's assigned NPDES inspector at NHDES –WD.

J. STATE PERMIT CONDITIONS

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

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

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

4. Pursuant to New Hampshire Statute RSA 485-A13,I(c), any person responsible for a bypass or upset at a *wastewater facility* shall give immediate notice of a bypass or upset

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

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

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

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

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

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

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

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

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

7. For each new or increased discharge of industrial waste to the POTW, the permittee shall submit, in accordance with Env-Wq 305.10(b) an "Industrial Wastewater Discharge Request Application" approved by the permittee in accordance with Env-Wq 305.14 (a). The "Industrial Wastewater Discharge Request Application" shall be prepared in accordance with Env-Wq 305.10.

8. Pursuant to Env-Wq 305.21, at a frequency no less than every five years, the permittee shall submit to NHDES:

   a. A copy of its current sewer use ordinance if it has been revised without NHDES approval subsequent to any previous submittal to the department or a certification that no changes have been made.

   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

USEPA REGION 1 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

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

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. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}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 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. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must 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 (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

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

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o}C or 25 $\pm$ 1^{o}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 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of 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	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic 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 series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. 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 dilution water 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-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

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

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}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 each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
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 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 series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. 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 dilution water 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-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity 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 in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

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. 73 of EPA-821-R-02-012 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. 87 of EPA-821-R-02-012.

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
- 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.

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body 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. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25 values and ≥ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids[6]	x		--
Total Dissolved Solids[6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon[6]	x	x	0.5
Total Metals[5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

NPDES PERMIT REQUIREMENT
FOR
INDUSTRIAL PRETREATMENT ANNUAL REPORT

The information described below shall be included in the pretreatment program annual reports:

1. An updated list of all industrial users by category, as set forth in 40 C.F.R. 403.8(f)(2)(i), indicating compliance or noncompliance with the following:
   - baseline monitoring reporting requirements for newly promulgated industries
   - compliance status reporting requirements for newly promulgated industries
   - periodic (semi-annual) monitoring reporting requirements,
   - categorical standards, and
   - local limits;

2. A summary of compliance and enforcement activities during the preceding year, including the number of:
   - significant industrial users inspected by POTW (include inspection dates for each industrial user),
   - significant industrial users sampled by POTW (include sampling dates for each industrial user),
   - compliance schedules issued (include list of subject users),
   - written notices of violations issued (include list of subject users),
   - administrative orders issued (include list of subject users),
   - criminal or civil suits filed (include list of subject users) and,
   - penalties obtained (include list of subject users and penalty amounts);

3. A list of significantly violating industries required to be published in a local newspaper in accordance with 40 C.F.R. 403.8(f)(2)(vii);

4. A narrative description of program effectiveness including present and proposed changes to the program, such as funding, staffing, ordinances, regulations, rules and/or statutory authority;

5. A summary of all pollutant analytical results for influent, effluent, sludge and any toxicity or bioassay data from the wastewater treatment facility. The summary shall include a comparison of influent sampling results versus threshold inhibitory concentrations for the Wastewater Treatment System and effluent sampling results versus water quality standards. Such a comparison shall be based on the sampling program described in the paragraph below or any similar sampling program described in this Permit.

At a minimum, annual sampling and analysis of the influent and effluent of the Wastewater Treatment Plant shall be conducted for the following pollutants:

a.) Total Cadmium	f.) Total Nickel
b.) Total Chromium	g.) Total Silver
c.) Total Copper	h.) Total Zinc
d.) Total Lead	i.) Total Cyanide
e.) Total Mercury	j.) Total Arsenic

The sampling program shall consist of one 24-hour flow-proportioned composite and at least one grab sample that is representative of the flows received by the POTW. The composite shall consist of hourly flow-proportioned grab samples taken over a 24-hour period if the sample is collected manually or shall consist of a minimum of 48 samples collected at 30 minute intervals if an automated sampler is used. Cyanide shall be taken as a grab sample during the same period as the composite sample. Sampling and preservation shall be consistent with 40 CFR Part 136.

6. A detailed description of all interference and pass-through that occurred during the past year;

7. A thorough description of all investigations into interference and pass-through during the past year;

8. A description of monitoring, sewer inspections and evaluations which were done during the past year to detect interference and pass-through, specifying parameters and frequencies;

9. A description of actions being taken to reduce the incidence of significant violations by significant industrial users; and,

10. The date of the latest adoption of local limits and an indication as to whether or not the permittee is under a State or Federal compliance schedule that includes steps to be taken to revise local limits.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

Note: See 40 CFR §122.41(a)(2) for complete "Duty to Comply" regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or permittee;
(2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).

c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly 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 this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
(3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
(4) The permittee complied with any remedial measures required under B.3. above.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by

imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
(2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. Anticipated noncompliance. The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. Twenty-four hour reporting.

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)

(3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.

h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States", including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" measured during the calendar week divided by the number of "daily discharges" measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

(a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

(b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.

(c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

(d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source", or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See "Point Source" definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States", the waters of the "contiguous zone", or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise "effluent limitations".

EPA means the United States "Environmental Protection Agency".

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable "daily discharge" concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as "maximum concentration" or "Instantaneous Maximum Concentration" during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean "a value that shall not be exceeded" during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program".

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants";

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source"; and

(d) Which has never received a finally effective NPDES permit for discharges at that "site".

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants", the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System".

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved" State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a "POTW".

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality".

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a "primary industry category".

Section 313 water priority chemical means a chemical or chemical category which:

(1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);

(2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and

(3) satisfies at least one of the following criteria:

(i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
(ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
(iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of "sludge use or disposal practices" any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a "treatment works treating domestic sewage", where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;

(b) All interstate waters, including interstate "wetlands";

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination or organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis on information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to:, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	"Whole effluent toxicity" is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	"Chronic (Long-term Exposure Test) – No Observed Effect Concentration". The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	"Acute (Short-term Exposure Test) – No Observed Effect Concentration" (see C-NOEC definition).
LC_{50}	LC_{50} is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

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.: **NH0101257**

PUBLIC NOTICE START AND END DATES: April 10th – May 9, 2015

NAME AND MAILING ADDRESS OF APPLICANT:

The City of Claremont
338 Plains Road
Claremont, NH 03743

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Claremont Wastewater Treatment Facility
338 Plains Road
Claremont, NH 03734

RECEIVING WATER: **Sugar River (Hydrologic Basin Code: 01080106)**

RECEIVING WATER CLASSIFICATION: **B**

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I. PROPOSED ACTION

The City of Claremont, New Hampshire ("City" or "Permittee") has applied to the U.S Environmental Protection Agency ("EPA") for reissuance of its National Pollutant Discharge Elimination System ("NPDES") permit to discharge into the designating receiving water, the Sugar River.

The discharge is from the Claremont Wastewater Treatment Facility ("WWTF"), a publically owned treatment works ("POTW") engaged in the collection and treatment of wastewater generated by a population of approximately 8,000 in the City of Claremont, NH.

The existing permit was issued on September 28, 2006 and became effective on December 1, 2006. The permit was modified by letter on July 31, 2007 to include a newly approved test method for the analysis of E. coli. The modification made no change in the permit limits. The permit expired on November 30, 2011. The existing permit has been administratively extended as the applicant filed a complete application for permit reissuance in accordance with the Administrative Procedures Act (5 U.S.C. 558(cc)) and 40 CFR § 122.6. This permit is hereafter referred to as the "2006 permit" or "the existing permit".

The draft permit, upon final issuance, shall supersede the 2006 permit.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The Claremont WWTF is an activated sludge, secondary wastewater treatment facility which is engaged in the collection and treatment of sanitary, commercial and industrial wastewater. The treated effluent is discharged to the Sugar River (See Figure 1). The facility has a design flow of 3.89 million gallons per day (MGD) and the annual average daily flow rate for 2011 was 1.40 MGD. The collection system is 99% separate sanitary sewer. There is one (1) significant industrial user, APC Paper Company, which contributes 180,000 gallons per day (GPD) of process water and 2,700 GPD of non-process wastewater. The company is subject to the new source pretreatment standards at 40 CFR Part 430.57, Subpart E, the Papergrade Sulfite Subcategory of the Pulp, Paper, and Paperboard Point Source Category and also to local limits established by the City through its industrial pretreatment program.

The wastewater treatment process is as follows: incoming wastewater passes through the headworks and then to primary clarification. Following primary treatment, the wastewater receives treatment from the following unit processes: aeration, secondary clarification, chlorine disinfection, and dechlorination prior to discharge to the Sugar River. A flow diagram of the treatment process can be found at Figure 2

Settled solids in the primary and secondary clarification units are collected and processed through a gravity thickener and sludge tanks prior to polymer addition and sludge dewatering.

The final sludge is composted onsite for land application.

III. DESCRIPTION OF DISCHARGE

A quantitative description of the discharge in terms of significant effluent parameters based on monitoring data submitted by the permittee from October 2010 to November 2014 is shown in Attachment A of this fact sheet and metals data submitted by the permittee from December 2009 to September 2014 is shown in Attachment B of this fact sheet.

IV. LIMITATIONS AND CONDITIONS

The draft permit contains limitations for outfall serial number 001 for five-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), pH, *Escherichia coli* (*E. coli*) bacteria, dissolved oxygen, total residual chlorine (TRC), ammonia nitrogen, total phosphorus, total recoverable copper and whole effluent toxicity ("WET"). The draft permit also contains effluent monitoring requirements for flow, hardness, and total recoverable metals (aluminum, cadmium, copper, lead, nickel and zinc). These proposed limitations and conditions, the basis of which are discussed throughout this fact sheet, may be found in Part I of the draft permit.

V. STATUTORY AND REGULATORY AUTHORITY

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act ("CWA" or the "Act"), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (CWA § 101(a)). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402 (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 Act, 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) and (2)).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: technology-based effluent limitations and water quality-based effluent limitations (see CWA §§ 301, 303, 304(b). Also see 40 CFR Parts 122, 125 and 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 which are based upon secondary treatment. The secondary treatment technology guidelines (effluent limits) consisted of effluent limitations for BOD_5 (or $CBOD_5$), TSS and pH

(see 40 CFR Part 133).

Water quality-based effluent limits are developed and incorporated in the NPDES discharge permits 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) of the CWA 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 CFR §§ 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 40 CFR §122.44(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 (see CWA § 303). Water quality standards consist of three elements: (1) one or more designated use for each waterbody or waterbody 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 waterbody without impairing the designated use(s) of that waterbody; and (3) an antidegradation provision focused on protecting high quality waters and protecting and maintaining the level of water quality necessary to protect existing uses (CWA § 303(c)(2)(A) and 40 CFR § 131.12). The limits and conditions contained with the draft permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards within the receiving water.

The applicable state water quality standards can be found in the New Hampshire Code of Administrative Rules, Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq. See generally, Title 50, Water Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A. These regulations were readopted effective May 21, 2008.

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 and chronic aquatic life criteria are generally implemented through maximum daily limits and average monthly limits, respectively. 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 the reasonable potential to cause or contribute to a violation of narrative criterion within a water quality standard, the permitting authority must establish limits in one or more of the following ways: (1) 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 uses; (2) on a case-by-case basis using water quality criteria published under CWA § 304(a); supplemented as necessary by other relevant information; or (3) in certain circumstances, based on an indicator parameter (40 CFR § 122.44(d)(1)(vi)(A-C)).

Under Section 301(b)(1) of the CWA, POTWs must have achieved effluent limitations based upon secondary treatment by July 1, 1997. Since all statutory deadlines for meeting technology-

based effluent limitations established pursuant to the CWA have expired, the deadline for compliance with technology-based effluent limits for a POTW is the date of permit issuance (40 CFR § 125.3(a)). Extended compliance deadlines cannot be authorized by a NPDES permit if statutory deadlines have passed. The federal regulations governing EPA's NPDES permit program are generally found at 40 CFR Parts 122, 124, and 136.7

B. Development of Water Quality-based Effluent Limitations

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

1. Reasonable Potential

In determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a narrative or numeric criterion within a state water quality standard, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) the variability of the pollutant or pollutant parameter in the effluent; (3) the sensitivity of the species to toxicity testing; (4) where appropriate, the dilution of the effluent in the receiving water; and (5) the statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Control*, Section 3 (USEPA, March 1991 [EPA/505/2-90-001])(see also 40 CFR § 122.44(d)(1)(ii)). In accordance with New Hampshire water quality standards (RSA 485-A:8,VI, Env-Wq 1705.02) the 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 (for carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, ten 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-Wq 1705.02).

C. Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. 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. The limitation and conditions contained within the draft permit satisfy the applicable anti-backsliding requirements.

D. State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitation and state water quality standards. 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).

VI. DESCRIPTION OF THE RECEIVING WATER

The Sugar River in the vicinity of the discharge is classified as a Class B water by the New Hampshire State Legislature. Waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies.

Sections 305(b) and 303(d) of the CWA require that States complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires States to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a Total Maximum Daily Load (TMDL) for each pollutant that is prohibiting a designated use(s) from being attained. The results of the 305(b) assessments are used in the development of the State of New Hampshire's 303(d) lists, which are published every two years and identifies the waterbodies that are not meeting (or are not expected to meet) water quality standards, identifies the designated use(s) that is impaired and also the pollutant(s) causing the impairments.

The segment of the Sugar River that receives the Claremont WWTF discharge (NHRIV801060407-16) begins just downstream of the Coy Paper Dam and continues to the confluence with the Connecticut River, and remains on the New Hampshire 2012 303(d) list of impaired waters[1]. This segment has been identified as violating water quality standards for Aquatic Life (Aluminum and pH).

In 1993, NHDES completed the Sugar River Wasteload Allocation Study, Sunapee to Claremont, NH[2]. The wasteload allocation study (WLA) indicated that there was a potential for dissolved oxygen (DO) violations downstream of the Coy Paper Dam in Claremont, NH. The two discharges to that segment of the Sugar River were the Claremont WWTF and the Coy Paper Company. Following the completion of the WLA, the Coy Paper Company went out of business and ceased discharging to the Sugar River. Subsequent re-modeling, however, indicated that even without the paper company discharge, there was the potential for instream violation of the DO standard. In 1996, NHDES completed a TMDL for the lower Sugar River that was approved by EPA on September 29, 2000[3]. The TMDL established the pollutant loading that the lower Sugar River could assimilate without violating water quality standards for DO, and served as the basis for discharge limits for the Claremont WWTF for existing and future conditions. TMDLs were established for carbonaceous biochemical oxygen demand ($CBOD_5$) and ammonia nitrogen (NH3-N) for the summer and winter months. TMDLs have not been prepared for Aluminum, pH or E. coli.

Based on the most current information available, EPA believes that the limitations and conditions contained in the draft permit represent the minimum level of control necessary to ensure protection of all designated uses in the receiving waters.

VII. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. Effluent Flow

The annual (long-term) average design flow of the Claremont WWTF (3.89 mgd) was used in the calculation of water quality-based limitations including total residual chlorine, ammonia nitrogen as N, total phosphorus, total recoverable copper, and whole effluent toxicity, as well as, in the calculation of mass-based limits for $CBOD_5$ and TSS, in accordance with the requirements found at 40 CFR § 122.45(b).

Sewage treatment plant discharge is encompassed within the definition of "pollutant" and is subject to regulation under the CWA. The CWA defines "pollutant" to mean, *inter alia*, "municipal . . . waste" and "sewage…discharged into water." 33 U.S.C. § 1362(6).

[1] *http://des.nh.gov/organization/divisions/water/wmb/swqa/2012/documents/2012-final-303d_submitted.pdf*
[2] *Sugar River WLA Study, Sunapee to Claremont, NH;* NHDES-WAPCD-93-1, March 1993.
[3] Linda M. Murphy, Director, Office of Ecosystem Protection, USEPA to Harry T. Stewart, P.E., Director, Water Division, NHDES, dated September 29, 2000.

EPA may use design flow of effluent both to determine the necessity for effluent limitations in the permit that comply with the Act, and to calculate the limits themselves. EPA practice is to use design flow as a reasonable and important worst-case condition in EPA's reasonable potential and water quality-based effluent limitations (WQBEL) calculations to ensure compliance with water quality standards under Section 301(b)(1)(C). Should the effluent discharge flow exceed the flow assumed in these calculations, the instream dilution would decrease and the calculated effluent limits may not be protective of WQS. Further, pollutants that do not have the reasonable potential to exceed WQS at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying the Region's reasonable potential analyses and derivation of permit effluent limitations remain sound for the duration of the permit, the Region may ensure its "worst-case" effluent wastewater flow assumption through imposition of permit conditions for effluent flow. Thus, the effluent flow limit is a component of WQBELs because the WQBELs are premised on a maximum level of flow. In addition, the flow limit is necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQS.

Using a facility's design flow in the derivation of pollutant effluent limitations, including conditions to limit wastewater effluent flow, is consistent with, and anticipated by NPDES permit regulations. Regarding the calculation of effluent limitations for POTWs, 40 C.F.R. § 122.45(b)(1) provides, "permit effluent limitations…shall be calculated based on design flow." POTW permit applications are required to include the design flow of the treatment facility. *Id.* § 122.21(j)(1)(vi).

Similarly, EPA's reasonable potential regulations require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," 40 C.F.R. § 122.44(d)(1)(ii), which is a function of *both* the wastewater effluent flow and receiving water flow. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. EPA accordingly is authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its design flow when assessing reasonable potential.

The limitation on sewage effluent flow is within EPA's authority to condition a permit in order to carry out the objectives of the Act. *See* CWA §§ Sections 402(a)(2) and 301(b)(1)(C); 40 C.F.R. §§ 122.4(a) and (d); 122.43 and 122.44(d). A condition on the discharge designed to protect EPA's WQBEL and reasonable potential calculations is encompassed by the references to "condition" and "limitations" in 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including antidegradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of wastewater effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 C.F.R. § 122.41(e), the permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facilities wastewater treatment systems as designed includes operating within the facility's design effluent flow. Thus, the permit's effluent flow limitation is necessary to ensure proper facility operation, which in turn is a requirement applicable to all NPDES permits. *See* 40

C.F.R. § 122.41.

The permit contains an effluent flow limit of 3.89 mgd. The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months. Additionally, if the effluent flow rate exceeds 80 percent of the 3.89 mgd design flow (3.11 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.

Between October 2010 and November 2014, the average flow was 1.43 MGD, with a monthly average flow range from 1.01-2.01 MGD. The maximum daily flow range was from 1.23-3.60 MGD.

B. Conventional Pollutants

1. Five-Day Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

As previously discussed, a TMDL established the pollutant loading that the lower Sugar River can assimilate without violating water quality standards (WQS) for DO and served as the basis for discharge limits for the Claremont WWTF for existing and future conditions. The TMDL evaluated the combined effect of carbonaceous biochemical oxygen demand ($CBOD_5$) and ammonia nitrogen (NH3-N) on DO saturation for both the summer and winter months. The TMDL established the following concentration limits for $CBOD_5$: 25 mg/l as an average monthly, 40 mg/l as an average weekly and 45 mg/l as a maximum daily.

The average monthly, average weekly and maximum daily mass limits for $CBOD_5$ correspond to the respective concentration limits in the draft permit and the POTW's daily design flow of 3.89 MGD. Mass limits are required by 40 CFR Section 122.45(f). The calculations for the mass limits are shown below.

$CBOD_5$ Mass Loading Calculations:

$L = C_d \times Q_d \times 8.34$ where:

L = Maximum allowable load in lbs/day
C_d = Maximum allowable effluent concentration for reporting period in mg/l
Q_d = Design flow of facility in MGD
8.34 = Factor to convert effluent concentration in mg/; and design flow in MGD to a mass in lbs/day

$CBOD_5$ (average monthly, weekly, and daily maximum calculations, respectively):

25 mg/l x 8.34 x 3.89 MGD = 811 lbs/day
40 mg/l x 8.34 x 3.89 MGD = 1298 lbs/day

45 mg/l x 8.34 x 3.89 MGD = 1460 lbs/day

Between October 2010 and November 2014, there were no violations of the $CBOD_5$ effluent limitations. Based on Discharge Monitoring Reports (DMRs) submitted by the permittee, the average concentration for $CBOD_5$ was 4.3 mg/l, the monthly average ranged from 2.9-9.6 mg/l, the weekly average ranged from 3.3-13.5 mg/l and the maximum daily ranged from 3.5-15.9 mg/l.

All the concentration and mass effluent limits for $CBOD_5$ in the draft permit are the same as the limits in the 2006 permit and, therefore, are consistent with antibacksliding requirements found in 40 CFR §122.44(1). The permittee has been able to achieve consistent compliance with those limits.

Percent removal limits for $CBOD_5$, required under 40 CFR Section 133.102 (a) (3) and (b)(3), are the same as the limits in the 2006 permit and in accordance with the antibacksliding requirements found in 40 CFR Section 122.44. The monthly average percent removal for $CBOD_5$ shall not be less than 85%.

The monitoring frequency for $CBOD_5$ remains two per week in the draft permit.

2. Total Suspended Solids (TSS)

The monthly and weekly average concentration limits for TSS are based on the requirements under Section 301(b)(1)(B) of the CWA as defined in the Secondary Treatment Standards in 40 CFR Section 133.102(b). The maximum daily limit is based on antibacksliding requirements. The monthly average limit is 30 mg/l, the weekly average limit is 45 m/l, and the daily maximum limit is 50 mg/l.

The average monthly, average weekly and maximum daily mass limits for TSS correspond to the respective concentration limits in the draft permit and the POTW's daily design flow of 3.89 MGD. Mass limits are required by 40 CFR Section 122.45(f). The calculations for the mass limits are shown below.

TSS Mass Loading Calculations:

$L = C_d \times Q_d \times 8.34$ where:

L = Maximum allowable load in lbs/day
C_d = Maximum allowable effluent concentration for reporting period in mg/l
Q_d = Design flow of facility in MGD
8.34 = Factor to convert effluent concentration in mg/; and design flow in MGD to a mass in lbs/day

TSS: (average monthly, weekly, and daily maximum calculations, respectively):

30 mg/l x 8.34 x 3.89 MGD= 973 lbs/day
45 mg/l x 8.34 x 3.89 MGD= 1460 lbs/day
50 mg/l x 8.34 x 3.89 MGD= 1622 lbs/day

Between October 2010 and November 2014, there were no violations of the TSS effluent limitations. Based on Discharge Monitoring Reports (DMRs) submitted by the permittee, the average concentration for TSS was 4.64 mg/l, the monthly average ranged from 2.30-11.40 mg/l, the weekly average ranged from 2.90-16.80 mg/l and the maximum daily ranged from 3.3-20.30 mg/l.

All the concentration and mass effluent limits for TSS in the draft permit are the same as the limits in the 2006 permit and, therefore, are consistent with antibacksliding requirements found in 40 CFR §122.44(1). The permittee has been able to achieve consistent compliance with those limits.

Percent removal limits for TSS, required under 40 CFR Section 133.102 (a) (3) and (b)(3), are the same as the limits in the 2006 permit and in accordance with the antibacksliding requirements found in 40 CFR Section 122.44. The monthly average percent removal for TSS shall not be less than 85%.

The monitoring frequency for TSS remains two per week in the draft permit.

3. pH

The pH limit in the draft permit is based upon State Certification Requirements and the state's water quality standards for Class B waters established at RSA 485-A:8 II, requiring that "The pH range for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." The pH limitation in the draft permit is the same as that in the existing permit in keeping with the antibacksliding requirements of 40 CFR § 122.44(l) and is at least as stringent as the requirements of 40 CFR § 133.102(c).

The compliance monitoring frequency for pH is once per day.

Between October 2010 and November 2014 there were no violations of the pH effluent limitations. Based on Discharge Monitoring Reports (DMRs) submitted by the permittee, the values for pH ranged between 6.6 and 7.6, which is within the effluent limit range.

The draft permit includes a provision allowing a relaxation of the pH limits if the permittee performs an in-stream dilution study that demonstrates that the in-stream standards for pH would be protected. If the State approves results from a pH demonstration study, this permit's pH limit range may be relaxed. The notification of the relaxation must be made by certified letter to the permittee from EPA-Region 1. The pH limit range cannot be less restrictive than 6.0 - 9.0 S.U., the limitations included in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for the facility.

4. Escherichia coli

The limitations for *Escherichia (E. coli)* in the draft permit are an average monthly limit of 126 colonies per 100 millimeters (ml) and a maximum daily limit of 406 colonies per 100 ml, which are based on the water quality standards for Class B waters (non-designated beach areas) found at RSA 485-A:8 II. The average monthly value shall be reported as the geometric mean of the sampling results for the reporting month. Compliance with the average monthly value shall be determined from the reported geometric mean.

These limitations are identical to those in the existing permit, and are therefore consistent with the antibacksliding requirements of 40 CFR § 122.44(l).

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

Between October 2010 and November 2014 there were no violations of the bacteria effluent limitations. Based on Discharge Monitoring Reports (DMRs) submitted by the permittee, the average value for E. coli was 5.10 cu/100 ml, the monthly average ranged from 1.20 – 21.40 cfu/100 ml) and the maximum daily ranged from 2-372.60 cfu/100 ml).

5. Dissolved Oxygen

The Lower Sugar River TMDL was developed to establish loads which prevent violations of the State's water quality standards for DO in the Sugar River. The model, which was the basis for the TMDL, was run assuming flow conditions equivalent to 7Q10 and an effluent DO of 7.0 mg/l. In order to assure the limits for $CBOD_5$ are protective and consistent with the results of the TMDL, the draft permit includes an effluent DO limit of not less than 7.0 mg/l. This limit is the same as in the existing permit. The limit was established in the existing permit as a state certification requirement.

A review of recent DMR data, between October 2010 and November 2014, shows that the minimum daily values ranged between 7.0 and 10.70 mg/l. There were no violations of the effluent limit during the review period.

C. Non-conventional and Toxic Pollutants

Water quality-based effluent limitations for specific toxic pollutants are based on numeric chemical-specific criteria derived from extensive scientific studies. The EPA has summarized and published toxicity criteria for specific toxic pollutants in the *Quality Criteria for Water* (USEPA 1986 [EPA440/5-86-001]) commonly referred to as the federal "Gold Book". The Gold Book includes acute aquatic life criteria (to protect against the effects of short-term exposure, such as death) and chronic aquatic life criteria (to protect against the effects of long-term exposure, such as impaired growth). The State of New Hampshire adopted the Gold Book criteria (with certain exceptions) into the State's Surface Water Quality Regulations, which were

readopted effective May 21, 2008. EPA uses the pollutant-specific criteria contained within the state standards along with the available dilution in the receiving water in the development of water quality-based effluent limitations.

7Q10 Flow and Available Dilution

In accordance with New Hampshire's Water Quality Standards (RSA-A:8, VI, Env-Wq 1705.02), the 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 flow). The 7Q10 is used for aquatic life and human health criteria for non-carcinogens, while the long-term harmonic mean flow is used for human health (for carcinogens only) in the receiving water (See Env-Wq 1702.44). Furthermore, ten 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-Wq 1705.01.

The design flow for the Claremont WWTF is 3.89 MGD or 6.02 cubic feet per second (cfs). The updated 7Q10 flow at the USGS West Claremont gage, located just upstream of the WWTF, is 37.23 cfs based on the hydrologic record from 1930 to 2001. The drainage area contributing to the gage location is 269 square miles (mi^2). The additional drainage area between the Claremont Gage and the WWTF is 1.69 mi^2. NHDES has estimated the 7Q10 immediately upstream of the Claremont outfall to be 37.46 cfs. The 7Q10 value was calculated by prorating the 7Q10 flow at the Claremont gage as follows:

$[Q_{\text{Claremont Gage}}] + [Q_{\text{Claremont Gage}} * (\text{drainage area between Claremont Gage and WWTF/total drainage area for Claremont Gage})] = 7Q10$

$$[37.23 \text{ cfs}] + [(37.23) * (1.69 \text{ mi}^2 / 269 \text{ mi}^2)] = 37.46 \text{ cfs}$$

DILUTION FACTOR

New Hampshire regulations require the reserve of 10% of the receiving waters assimilative capacity. The calculated dilution factor is 6.5. This is the same as in the previous permit.

$$\text{Dilution Factor} = \frac{(Qs) + (Qd)}{(Qd)} * 0.9$$

where:

Qs = Upstream 7Q10 flow
Q_d = Treatment plant's design flow
0.9 = Factor to reserve 10% assimilative capacity.

$$\text{Dilution Factor} = \frac{(37.46 \text{ cfs} + 6.02 \text{ cfs})}{6.02 \text{ cfs}} * 0.9$$

Dilution Factor = 6.5

1. Total Residual Chlorine

The acute and chronic aquatic life criteria specified in the New Hampshire water quality standards are 19 ug/l and 11 ug/l, respectively (See Env-Wq. 1703.21, Table 1703.1). The current permit includes a monthly average chlorine limit of 0.072 mg/l and a maximum daily limit of 0.12 mg/l.

In this draft permit, the limits are the same since neither the dilution factor nor criteria has changed. The TRC average monthly and maximum daily limitations are based on the chronic and acute aquatic-life criteria, respectively, found in New Hampshire's Surface Water Quality Regulations (Env-Wq 1703.21, Table 1703.1). The draft permit limits were calculated by multiplying the chronic criterion (0.011 mg/L) and acute criterion (0.019 mg/L) by the dilution factor for the receiving water (Sugar River).

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(11 ug/l * 6.5) = 71.5 ug/l = 0.072 mg/l

(acute criteria * dilution factor) = Acute (Maximum Daily)
(19 ug/l * 6.5) = 123.5 ug/l = 0.124 mg/l

Between October 2010 and November 2014, there were no violations of either the TRC effluent limitations. Based on Discharge Monitoring Reports (DMRs) submitted by the permittee, the average monthly and daily maximum values were all non-detects.

2. Ammonia as Nitrogen

Elevated ammonia levels present two distinct environmental threats. First, short-term acute effects of high levels of ammonia will cause death of aquatic organisms. Long-term chronic effects of an elevated average ammonia levels will cause reproductive and growth difficulties. Secondly, high levels of ammonia can catalyze the growth of nitrifying bacteria. Nitrification caused by the bacteria beaks down ammonia and combines the freed nitrogen with oxygen to produces nitrites which are further metabolized by bacteria to nitrates. If the WWTF's effluent is discharged with high ammonia levels, the nitrification induced by the ammonia can cause the dissolved oxygen levels of the receiving water to drop because oxygen is taken out if the solution from the receiving water to form the nitrogen compounds. For example, the oxygen required to oxidize ammonia is approximately 4.3 mg oxygen/mg ammonia-nitrogen (Metcalf & Eddy, 1991).

The existing permit includes seasonal effluent limits for ammonia nitrogen. The summer (June-October) effluent limits are an average monthly limit of 7.2 mg/l and a maximum daily limit of 11.3 mg/l. During the winter period (November-May), there is an average monthly limit of 10.9

mg/l and a report-only requirement for maximum daily. These limits were established by the lower Sugar River TMDL to prevent violations of the DO standard when met in combination with the $CBOD_5$ limits discussed above. Although these limits were not established to address the potential of aquatic toxicity from ammonia nitrogen, the limits established in the TMDL are significantly lower than the limits that would be calculated using the NH water quality regulations and the dilution factor. EPA will maintain the ammonia nitrogen limits from the existing permit which were established by the TMDL and are protective of both instream DO levels and prevent instream toxicity from ammonia nitrogen.

A review of DMRs submitted between October 2010 and November 2014 show that effluent values are significantly less than the limits in the existing permit. Data from the summer period has a range of 0.20-1.1 mg/l average monthly and 0.30-4.6 mg/l maximum daily. Values for the winter period range from 0.10-0.70 mg/l for average monthly and 0.10-1.50 mg/l for maximum daily.

Ammonia Nitrogen as N Mass Loading Calculations:

The ammonia nitrogen mass limits in the draft permit are the same as those in the current permit.

Calculations of maximum allowable loads for average monthly and average weekly ammonia nitrogen as N are based on the following equation:

$L = C_d \times Q_d \times 8.34$ where:

L = Maximum allowable load in lbs/day.
C_d = Maximum allowable effluent concentration for reporting period in mg/l.
Q_d = Design flow of facility, in MGD
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to a mass in lbs/day.

Ammonia Nitrogen as N, (June – October) (average monthly and daily maximum calculations, respectively):

7.2 mg/l * 8.34* 3.89 MGD= 234 lbs/day
11.3 mg/l * 8.34 * 3.89 MGD = 367 lbs/day

Ammonia Nitrogen as N, (November – May) (average monthly calculation):

10.9 mg/l * 8.34 * 3.89 MGD= 354 lbs/day

3. Nitrogen

The Sugar River is tributary to the Connecticut River. In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load

(TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25 % reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames, Rivers, respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on recent information and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Table 1: Estimated Point Source Nitrogen Loadings to the Connecticut, Housatonic and Thames Rivers Watersheds

Basin	**Baseline Loading[1] lbs/day**	**TMDL Target[2] lbs/day**	**Current Loading[3] lbs/day**
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	**26,211**	**19,657**	**17,002**

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loading from 2004 – 2005 DMR data – detailed summary attached as **Attachment C**.

The TMDL target of a 25 % aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36 %.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25 % reduction is maintained. Such a requirement has been included in this permit.

Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited

to, operational changes designed to enhance nitrification (seasonal or year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and the NHDES **within one year of the effective date** of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 189 lbs/day (see **Attachment C**). The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years. The draft permit includes a requirement for the facility to be operated in such a way that discharges of total nitrogen are minimized. The draft permit also includes average monthly and maximum daily reporting requirements for total nitrogen (TN), total Kjeldahl nitrogen (TKN), total nitrite nitrogen (NO_2), and total nitrate nitrogen (NO_3).

The agencies will annually update the estimate of all out-of-basin nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

4. Phosphorus

Phosphorus is both an essential and limiting nutrient in freshwater systems which, when present in excess quantities, stimulate plant productivity within the system. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by (1) increasing the oxygen demand within the water body (to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter); (2) causing an unpleasant appearance and odor; (3) interfering with navigation and recreation; (4) reducing water clarity; and (5) reducing the quality and availability of suitable habitat for aquatic life. Cultural (or accelerated) eutrophication is the term used to describe plant growth in a water body in response to excess nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agricultural runoff, and stormwater are examples of human-derived (i.e., anthropogenic) sources of nutrients in surface waters.

The New Hampshire Surface Water Quality Regulations do not contain numeric criteria for phosphorus and instead include a narrative criterion requiring that the phosphorus contained in effluent shall not impair a water body's designated use. Specifically, Env-Wq 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-Wq 1703.14 further

states that, "Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Wq 1702.15 as, "…the human-induced addition of wastes containing nutrients to surface waters which results in excessive plant growth and/or a decrease in dissolved oxygen." Although numeric nutrient criteria have not yet been developed in New Hampshire, a total phosphorus concentration of 0.05 mg/l is considered by the NHDES as a level of concern (NHVRAP & NHDES 2002, 2003, and 2005).

In the absence of numeric criteria for phosphorus, EPA uses nationally-recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents which contain recommended instream criteria for total phosphorus. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") (USEPA 1986 [EPA 440/5-86-001]) recommends that instream phosphorus concentrations not exceed 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharged directly to lakes or impoundments, and 0.025 mg/l within a lake or reservoir.

EPA released recommended ecoregional nutrient criteria in December 2001, which were established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters within each specific ecoregion which are minimally impacted by human activities, and thus are representative of waters without cultural eutrophication. Claremont is located within Ecoregion VIII, Nutrient Poor Largely Glaciated Upper Midwest and Northeast. The recommended criteria for this ecoregion is a total phosphorus concentration of 10 ug/l (0.010 mg/l) and chlorophyll *a* criteria of 0.63 ug/l (0.00063 mg/l) (*Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII* (USEPA December 2001[EPA 822-B-01-015].

In conjunction with the New England states, Mitchell, Liebman, Ramseyer, and Card developed potential nutrient criteria for rivers and streams in New England (in draft 2004). Using several river examples representative of typical conditions for New England streams and rivers, they investigated several approaches for the development of river and stream nutrient criteria that would be dually protective of designated uses in both upstream reaches and downstream impoundments. Based on this investigation an instream total phosphorus concentration of 0.020 – 0.022 mg/l was identified as protective of designated uses for New England rivers and streams. The development of these New England-wide total phosphorus criteria was based on more recent data than that used in the development of the Ecoregional nutrient criteria, and has been subject to quality assurance measures. Additionally, the development of the New England-wide concentration included reference conditions presumed to be protective of designated uses.

EPA has decided to apply the Gold Book criterion (0.100 mg/l) when developing limitations for NPDES because it was developed from an effects-based approach rather than the reference conditions-based approach used in the derivation of the ecoregional criteria. The effects-based approach is preferred in this case because it is more directly associated with impairments to designated uses (i.e. recreation, aquatic life, etc.). The effects-based approach provides a

threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a casual variable (i.e. phosphorus) and a response variable (i.e. algal growth) associated with impairment of designated uses. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent minimally impacted conditions.

Although the Sugar River is not listed as impaired due to phosphorus; phosphorus loadings may be impacting water quality. Sampling conducted by NHDES in the summer of 2012 found macrophytes blanketing the bottom of the river approximately one-third mile downstream of the Claremont WWTF discharge (Personal communication with David Neils, NHDES, August 2, 2013).

EPA's regulation at 40 CFR 122.44(d)(1) establishes the basis for determining if there is an excursion of numeric or narrative water quality criteria. Section (ii) of that regulation states "*When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria with in a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water."*

The Claremont WWTF reported in its 2011 permit application a maximum daily effluent phosphorus concentration of 1.3 mg/l; based on 3 samples. Dividing this effluent value by the dilution factor of 6.5, results in an instream concentration of 0.2 mg/l (this assumes there is no phosphorus in the background). Since this in-stream concentration is greater than the recommended Gold Book concentration of 0.1 mg/l, even without considering background phosphorus concentrations, the facility has the reasonable potential to cause or contribute to an in-stream water quality violation under critical conditions.

When setting an effluent limit, EPA takes into account the concentration of the pollutant upstream of the discharge and the available dilution. There are no recent phosphorus data from the Sugar River upstream of the discharge. Due to the lack of background phosphorus data for the Sugar River, EPA used 0.02 mg/l which is the average value for minimally impacted streams in Ecoregion VIII[4]. As stated above, there is reasonable potential for the discharge to cause or contribute to the Sugar River downstream of the Claremont WWTF to exceed the Gold Book criterion (0.100 mg/l), leaving 10% allocation for future needs (0.090 mg/l).

To address this reasonable potential, a mass-based effluent limit for phosphorus will be imposed. To ensure a mass-based limit is protective under worst-case conditions, the limit is calculated using the lowest expected receiving water flow and effluent flow. Hence, the upstream 7Q10 receiving water flow (24.21 mgd) and the lowest monthly average effluent flow during the

[4] See page B-8 of http://www2.epa.gov/sites/production/files/documents/rivers8.pdf.

review period (1.01 mgd, See Attachment A) are used. The numeric mass-based limit is determined based upon the following equations:

$$Q_dC_d + Q_sC_s = Q_rC_r \ (0.90)$$

and

$$M_d = Q_dC_d * 8.345$$

Substituting (Q_dC_d) with (Md/8.345) in the first equation and solving for M_d results in:

$$M_d = (Q_rC_r(0.90) - Q_sC_s)*8.345$$

where:

M_d = mass-based phosphorus limit
Q_d = effluent flow in mgd (lowest effluent monthly average flow = 1.01 mgd)
C_d = effluent phosphorus concentration in mg/l
Q_s = upstream 7Q10 flow (24.21 mgd)
C_s = upstream river phosphorus concentration (0.020 mg/l)
Q_r = downstream 7Q10 flow ($Q_s + Q_d$ = 25.22 mgd)
C_r = downstream river phosphorus concentration (Gold Book target = 0.100 mg/l)
0.90 = factor to reserve 10% assimilative capacity
8.345 = factor to convert from *mgd * mg/l* to *lb/d*

Solving for M_d gives the maximum allowable mass the facility may discharge without violating water quality standards. This allowable discharge is 14.9 lb/d, which is equivalent to approximately 0.46 mg/l at design flow and approximately 1.8 mg/l at the lowest monthly average flow of 1.01 mgd. This mass-based limit is applied seasonally, from April 1st through October 31st, as a monthly average limit to be monitored twice per month, as indicated in the draft permit.

EPA recognizes that the permittee may not be able to meet the effluent phosphorus limit upon permit issuance. In these situations EPA would typically issue an Administrative Order to the permittee with a schedule for compliance with this new effluent limitation. Also, State of New Hampshire water quality standards at Env-Wq 1701.01 authorizes the use of compliance schedules in NPDES permits for discharges to New Hampshire waters. EPA invites comment on the limit, a reasonable compliance schedule, and the means for specifying a compliance schedule through an Administrative Order or in the final permit.

5. Metals

Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation of the

concentration of metals in the facility's effluent (from WET Test Reports and DMRs submitted between December 2009-September 2014) was used to determine reasonable potential for effluent discharges to cause exceedances of the water quality criteria for 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 to toxicity to aquatic life inhibiting 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 effluent was characterized using a statistical analysis of effluent metals data, as reported in monthly discharge monitoring reports from 2009 to 2014 (see Attachment B), to establish the 95^{th} percentile of the lognormal distribution of the effluent data, which represents the maximum effluent concentration that can be expected to occur 95 percent of the time (i.e., the upper bound of the lognormal distribution of the data) (see Attachment D for statistical approach).

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 33 mg/l as $CaCO_3$ using a mass balance equation with the design flow, receiving water 7Q10, an upstream median hardness of 22.96 mg/l as $CaCO_3$ and an effluent median hardness of 97.39 mg/l as $CaCO_3$ (See Attachment E). The following table present the factors used to determine the acute and chronic total recoverable criteria for each metal:

Table 2: Applicable Water Quality Criteria

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	1.29	1.03
Chromium III	0.819	3.7256	0.819	0.6848	727.23	34.76
Copper	0.9422	-1.7000	0.8545	-1.702	4.93	3.62
Lead	1.273	-1.46	1.273	-4.705	19.91	0.78
Nickel	0.846	2.255	0.846	0.0584	183.65	20.42
Zinc	0.8473	0.8840	0.8473	0.8840	46.83	46.83

*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 exceedance 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 = 3.89 mgd = 6.02 cfs)
C_d = effluent metals concentration in ug/L (95th percentile[5])
Q_S = stream flow upstream (7Q10 upstream = 37.46 cfs)
C_S = background in-stream metals concentration in ug/L (median)

[5] Note that for sample sizes of 10 or greater, the 95th percentile of the effluent is calculated and used for C_d in determining reasonable potential.

Q_r = resultant in-stream flow, after discharge ($Q_S + Q_d$ = 43.48 cfs)
C_r = resultant in-stream concentration in ug/L

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.

Table 3: Mass Balance Equations for Determining Reasonable Potential and Effluent Limits

Metal	Q_d	C_d[1] (Effluent 95th Percentile)	Q_s	C_s[2] (Ambient Median)	$Q_r=Q_s+Q_d$	$C_r = (Q_dC_d + Q_sC_s)/Q_r$	Criterion * 0.9		Reasonable Potential ?	Limit = $(Q_rC_r*0.9-Q_sC_s)/Q_d$	
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	Chronic (ug/l)	C_r> Criteria * 0.9	Acute (ug/l)	Chronic (ug/l)
Aluminum[3]	6.02	102.99	37.46	60	43.48	65.95	675	78.30	N	N/A	N/A
Cadmium		0		0		0	1.16	0.93	N	N/A	N/A
Chromium		0		0		0	654.50	31.28	N	N/A	N/A
Copper		26.78		4.6		7.67	4.44	3.26	Y (Acute and Chronic)	4.93[4]	3.62[4]
Lead		0		0		0	17.92	0.70	N	N/A	N/A
Nickel		8.34		0		1.15	165.29	18.38	N	N/A	N/A
Zinc		72.86		12.8		21.12	42.15	42.15	N	N/A	N/A

[1] Effluent values calculated using DMR data (See Attachment B).
[2] Median upstream data taken from Whole Effluent Toxicity (WET) testing on the Sugar River just upstream from the Claremont WWTF (See Attachment F).
[3] The water quality standard for Aluminum is acid soluble but we consider it total recoverable until such time as side by side test for acid soluble and total recoverable are done on the river upstream such that the river specific ratio can be determined.
[4]Background concentration for Copper is greater than 90% of both the acute and chronic criteria, so the limits are set at the criterion.

As shown in the table above, reasonable potential also exists for the discharge to cause or contribute to excursions above both the chronic and acute criteria for copper. The background concentration of copper is greater than 90% of both the acute and chronic criteria; therefore, the acute and chronic effluent limits are set at the criteria of 4.93 ug/l and 3.62 ug/l, respectively. These limits are more stringent than the previous limits due to consideration of the ambient concentration of copper in the Sugar River in the calculations as well as updated 7Q10 and hardness values.

There is no reasonable potential (under either acute or chronic conditions) that the discharge of aluminum, cadmium, chromium, lead, nickel, zinc will cause or contribute to an exceedances of the applicable water quality criteria; therefore, limitations for these metals are not included. The draft permit maintains all of the aforementioned metals in conjunction with WET tests with the exception of chromium, as the current WET test protocol no longer requires its analysis.

The monitoring frequency will be twice per month which is consistent with the EPA/NHDES's 1999 Effluent Monitoring Guidance.

EPA recognizes that the permittee may not be able to meet the effluent copper limit upon permit issuance. In these situations EPA would typically issue an Administrative Order to the permittee with a schedule for compliance with this new effluent limitation. Also, State of New Hampshire water quality standards at Env-Wq 1701.01 authorizes the use of compliance schedules in NPDES permits for discharges to New Hampshire waters. EPA invites comment on the limit, a reasonable compliance schedule, and the means for specifying a compliance schedule through an Administrative Order or in the final permit.

D. Whole Effluent Toxicity (WET) Testing

EPA's *Technical Support Document for Water Quality Based Toxics Control* (USEPA 1991 [EPA/505/2-90-001]) 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 waters of the nation's waterways. EPA-Region I adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant-specific approaches such as those in the Gold Book and state regulations address individual chemicals, whereas whole effluent toxicity (WET) approaches evaluate interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additive" and/or "antagonistic" effects of individual chemical pollutants, which pollutant-specific approaches do not; thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states that, "all waters shall be free from toxic substances or chemical constituents in concentrations or combinations that injure or are inimical to plants, animals, humans or aquatic life;…"(NH RSA 485-A:8, VI and the NH Code of Administrative Rules, PART Env-Wq 1703.21). 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 criteria for toxicity. Inclusion of the whole effluent limit in the draft permit will demonstrate the compliance with narrative water quality criteria of "no toxics in toxic amounts" found in both the CWA and State of New Hampshire regulations.

The current policy of EPA-Region I is to require toxicity testing in all NPDES permits issued to POTWs, with the type of whole effluent toxicity test(s) (acute and/or chronic) and the effluent limitation(s) required by the permit being based on the available dilution. NPDES permits issued to municipal discharges (i.e., POTWs) having a dilution factor of less than 10 typically include an acute and chronic WET limit.

The draft permit contains an LC50 limit of 100% which is based on the dilution factor of 6.5. This is the same limit as that in the existing permit. The acute limit (LC_{50}) is the percentage of effluent in a sample that must not cause more than a 50% mortality rate in the test organisms. Therefore, an acute (LC_{50}) limit of 100% means that a sample of 100% effluent (no dilution) shall be lethal to no more than 50% of the test organisms.

The existing permit also contains a chronic (Chronic-No Observed Effect Concentration (C-NOEC)) limitation of 15.4%, which is based on the dilution factor of 6.5. The C-NOEC is defined as the highest concentration to which test organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival or reproduction during a specific time of observation. The C-NOEC is determined as the receiving water concentration (RWC) and is calculated by dividing one by the dilution factor and multiplying by 100.

$$RWC = (1/6.5) * 100 = 15.4$$

The results of WET tests conducted from 2010 to 2014 are summarized in Attachment A.

In December 2013, the permittee sent a letter[6] to EPA requesting a reduction in the frequency of required testing. This request is consistent with Section I. Special Conditions of the 2006 permit. EPA reviewed the results of Claremont's WET tests conducted between October 2010 and April 2014 and has concluded that the testing meets the criteria set forth in the permit for test frequency reduction. Claremont is authorized to reduce the frequency of testing on the species *Ceriodaphnia dubia and Pimephales promelas* to twice per year; once during the July through September calendar quarter and once during the October through December calendar quarter.

The Sugar River should be improving which should make the upstream water acceptable as diluent. As such, the permittee shall use the Sugar River as diluent, if that doesn't work, then the permittee may use lab water. Regardless, all tests should include two sets of controls; Sugar River water and a laboratory water control.

The draft permit requires that WET tests shall continue to be conducted two (2) times per year during the calendar quarters ending September 30th and December 31st.

The draft permit also maintains the requirement in the 2006 permit for the reporting of several selected parameters, including hardness; and total recoverable aluminum, cadmium, copper, lead, nickel and zinc, the results of which are determined through analyses conducted on samples of the 100% effluent sample and the ambient sample in conjunction with WET tests. The requirement in the existing permit for the analysis of chromium in addition to the aforementioned parameters has not been included in the draft permit, as it is no longer required in accordance with the current WET test protocol (see Attachment A to the Draft Permit, *Freshwater Acute Toxicity Test Procedure and Protocol*, USEPA February 2011). The results of additional analyses, for effluent and ambient samples, conducted in conjunction with WET test from 2007-2014 are shown in Attachments B and E, respectively.

VIII. PRETREATMENT PROGRAM

The permittee is required to administer a pretreatment program based on authority granted under 40 CFR Part 403 and Section 307 of the CWA. The permittee's pretreatment program received EPA approval on July 1, 1984. Appropriate pretreatment program requirements were incorporated into the existing permit, making it consistent with the approval and federal pretreatment regulations in effect when the permit was issued.

Periodically, the Federal Pretreatment Regulations in 40 CFR Part 403 are amended. Those

[6] Lauricella, Rob; Area Manager, Utility Partners, to Hilton, Joy, Office of Environmental Stewardship, EPA Region 1, dated December 24, 2013; Re: Claremont, NH Toxicity Reduction Request NH0101257.

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

In addition to the requirements described above, the draft permit requires the permittee to submit to EPA in writing, within 180 days of the effective date of the permit, a description of proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the draft permit to ensure that the pretreatment program is consistent and up to date with all pretreatment requirements in effect. Lastly, the permittee must continue to submit, annually on June 1st a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

IX. OPERATION AND MAINTENANCE

Regulations regarding proper operation and maintenance are found at 40 CFR § 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 of 40 CFR § 122.41(e).

Similarly, a permittee has a "duty to mitigate" pursuant to 40 CFR § 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 sanitary sewer overflows (SSOs)), maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration (I/I) to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

X. SLUDGE

The Claremont WWTF's dewatered waste sludge, along with sludge from the Bellows Falls

Treatment Plant, is mixed with wood ash and treated in an on-site composting facility. A total of 1581 dry metric tons of Class A biosolids is produced for land application each year.

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

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has prepared a 72-page document entitled "EPA Region 1 NPDES Permit Sludge Compliance Guidance" for use by the permittee in determining their appropriate sludge conditions for their chosen method of sewage sludge use of disposal practices. This guidance is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf . The permittee is required to submit to submit an annual report to EPA-New England and NHDES-WD annually, by February 19th, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal practices.

XI. ESSENTIAL FISH HABITAT

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat (16 U.S.C. § 1802(10)).

The Amendments broadly define "essential fish habitat" (EFH) as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802(10)). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH (50 CFR § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences or actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. § 1855(b)(a)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

According to the National Marine Fisheries Service (NMFS), the Connecticut River and its tributaries, including the Sugar River, is EFH for Atlantic salmon (*Salmo salar*). According to

the New Hampshire Fish and Game Department, Atlantic salmon have been stocked further upstream from the Claremont discharge in the Sugar River watershed. Atlantic salmon is the only managed species believed to be present during one or more life stages in the area where the Claremont WWTF discharge is located.

EPA has determined that the draft permit has been conditioned in such a way so as to minimize any adverse impacts on Atlantic salmon EFH for the following reasons:

- The permit prohibits the discharge to cause a violation of New Hampshire State Water Quality Standards.
- The permit contains water quality based limits for TSS, CBOD, total residual chlorine, ammonia, total phosphorus and total copper.
- The permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.
- The permit requires toxicity testing two (2) times per year to ensure that the discharge does not present toxicity problems.

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

XII. 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.

As the federal agency charged with authorizing the discharge from this facility, EPA has conducted a review in support of our consultation responsibilities under section 7 (a)(2) of the Endangered Species Act (ESA) for potential impacts to federally listed species. According to USFWS, the federally protected dwarf wedge mussel (*Alasmidonta heterodon*) resides in multiple locations in the Connecticut River Watershed. However, based on the information available, EPA has determined that dwarf wedge mussels are not present in the action area of Claremont WWTF. In addition, no listed species is expected to be affected by the discharge of this facility. Therefore, consultation under Section 7 of the ESA with USFWS and/or NOAA Fisheries is not required.

XIII. ANTIDEGRADATION

The New Hampshire water quality standards include an antidegradation provision that states that the existing uses and the level of water quality necessary to protect the exisiting uses shall be maintained and protected (Env-Wq 1708)

The draft permit contains limitations and conditions which are at least as stringent as those contained in the existing permit. The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing designated uses in the receiving water as a result of this permit action, and that no additional antidegradation review is warranted at this time.

XIV. MONITORING AND REPORTING

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The draft permit requires that the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR. NetDMR is a national web-based tool for regulated CWA permittees to submit DMRs electronically via a secure internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR § 122.41 and § 403.12. NetDMR is accessed from the following url: https://www.epa.gov/netdmr. Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

The Draft Permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR.

XV. STATE CERTIFICATION REQUIREMENTS

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

draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and §124.55.

XVI. 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: **Michele Cobban Barden, U.S. Environmental Protection Agency, Region 1 (New England), 5 Post Office Square - Suite 100, Mail Code OEP06-1, Boston, MA 02109-3912**. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA-New England and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA-New England's Boston office.

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

XVII. EPA-NEW ENGLAND/STATE CONTACTS

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

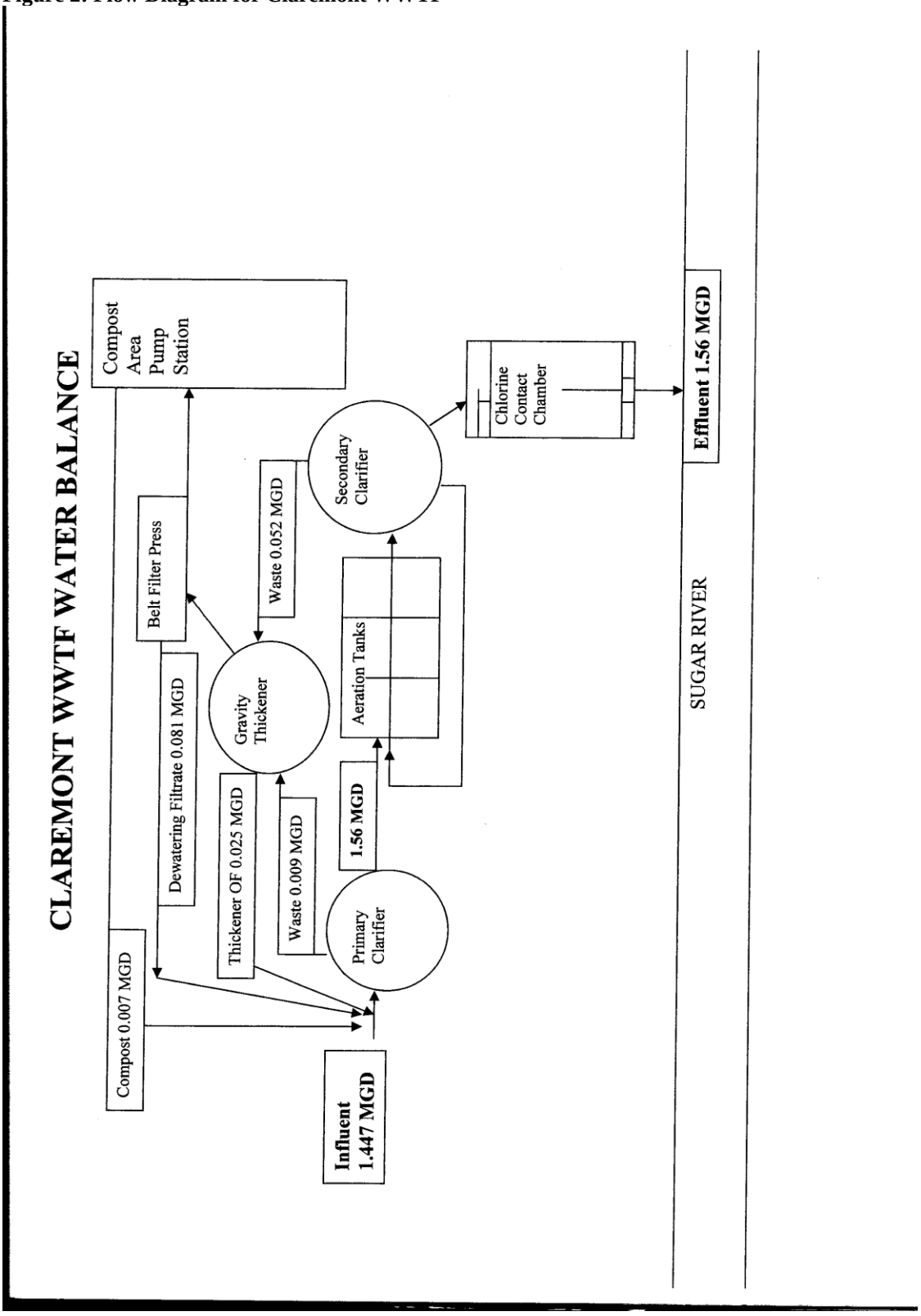
Michele Cobban Barden
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square
Suite 100, Mail Code: OEP06-1
Boston, Massachusetts 02109-3912
Telephone No.: (617) 918-1539
FAX No.: (617) 918-0539

April 9, 2015
Date:

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

Figure 1: Locus Map - Claremont WWTF

Figure 2: Flow Diagram for Claremont WWTF



DMR Data Summary (October 2010-November 2014)

	Flow		$CBOD_5$					CBOD % Removal	TSS					TSS % Removal
	(MGD)		(mg/l)			lbs/day	lbs/day	%	(mg/l)			lbs/day	lbs/day	%
	Average Monthly (Rolling Average*)	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Maximum Daily	Minimum	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Maximum Daily	Minimum
Effluent Limit	Report	Report	25	40	45	811	1460	85%	30	45	50	973	1622	85%
Nov-14	1.603	1.868	3.7	4.5	5	51	65	99%	2.4	4.2	4	33	52	99%
Oct-14	1.544	2.255	4.4	5.8	7	55	76	99%	3.7	5.9	7	45	76	99%
Sep-14	1.39	1.543	5.8	7.4	8.6	68	97	98%	4	6.2	6.3	47	74	99%
Aug-14	1.522	2.089	4.9	5.6	5.8	61	80	98%	3.6	5.4	6.7	45	82	99%
Jul-14	1.577	2.093	4.4	6	6.4	58	76	98%	4.8	8.6	11	62	135	98%
Jun-14	1.366	1.533	3.4	3.7	3.9	38	45	99%	2.9	3.4	4	32	44	99%
May-14	1.605	1.995	5	7.5	8.9	64	119	98%	5.4	9.2	10.3	68	138	98%
Apr-14	2.008	2.579	3.8	4.5	4.7	66	85	98%	4	6.2	8.3	73	160	97%
Mar-14	1.381	2.779	3.9	4.8	5.2	41	50	99%	4.5	5.5	6	47	66	98%
Feb-14	1.164	1.568	4.2	4.5	4.7	39	47	99%	4.2	5.4	6	39	63	98%
Jan-14	1.344	1.811	4.6	4.9	5.1	52	76	98%	5.7	7	9	66	109	97%
Dec-13	1.156	1.374	3.6	4.3	4.6	35	50	99%	4	4.5	5	39	54	98%
Nov-13	1.077	1.602	4.6	5.4	5.5	40	51	99%	6.4	8.9	9.3	56	86	98%
Oct-13	1.115	1.388	4.3	5	6.2	40	58	99%	8	11.2	13.7	76	127	97%
Sep-13	1.268	1.506	5.8	6.9	7.4	62	85	98%	4.6	7	7.3	49	85	99%
Aug-13	1.443	1.729	5.7	7.4	8.6	69	88	98%	5.6	7	9.7	68	125	98%
Jul-13	1.974	3.604	4.1	5.3	5.4	67	92	98%	4.8	8.1	9.3	78	154	98%
Jun-13	1.764	2.501	6.2	7.4	10.3	91	175	98%	7.1	9	11	106	200	97%
May-13	1.383	1.908	5.2	6.9	8.4	64	103	98%	5.2	7.9	9	62	109	98%
Apr-13	1.447	1.754	3.9	4.4	4.6	48	64	99%	4.4	4.8	6	53	65	98%
Mar-13	1.548	2.16	3.8	4.6	4.9	54	79	99%	4.3	5.4	6	60	90	98%
Feb-13	1.346	1.594	3.7	4.3	5.2	43	57	99%	2.8	4.7	5	32	58	99%
Jan-13	1.345	2.287	4.2	4.6	5	46	62	99%	3.6	5.1	8	40	94	99%
Dec-12	1.193	1.627	4.2	5.3	5.1	42	61	99%	5.3	8.4	9.7	54	117	99%
Nov-12	1.157	1.508	5	6.3	6.4	48	66	99%	6.9	9	10.7	67	93	99%
Oct-12	1.203	1.992	3.4	3.3	5.1	39	85	99%	3.3	3.7	5.3	38	88	99%
Sep-12	1.114	1.465	9.6	11.7	13.6	89	140	97%	5	9	11	47	113	99%
Aug-12	1.143	1.351	5.7	7.1	10.8	55	109	98%	2.9	3.9	4.7	28	48	99%
Jul-12	1.205	1.365	5.6	7.5	8	56	79	98%	4.1	6	7.7	41	77	99%
Jun-12	1.453	2.046	3.5	4.2	4.8	43	58	99%	6	8.2	8.7	75	115	98%
May-12	1.645	2.293	3.6	4	5	52	70	99%	4.4	7	7.7	63	102	98%
Apr-12	1.315	2.002	5.7	7.4	8.6	60	90	98%	8.5	11	15	90	157	97%
Mar-12	1.398	1.75	3.3	4.1	4.3	38	48	99%	5.5	7.2	8.3	64	90	97%
Feb-12	1.291	1.465	2.9	3.8	4.5	32	55	99%	2.4	3.2	3.3	27	37	99%
Jan-12	1.46	2.513	3.2	3.5	3.5	37	42	99%	3	3.7	4.7	35	57	98%

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 201-November 2014) continued

	Flow		$CBOD_5$					$CBOD_5$ % Removal	TSS					TSS % Removal
	(MGD)		(mg/l)			(lbs/day)		%	(mg/l)			(lbs/day)		%
	Average Monthly (Rolling	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Maximum Daily	Minimum	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Maximum Daily	Minimum
Effluent Limit	Report	Report	25	40	45	811	1460	85%	30	45	50	973	1622	85%
Dec-11	1.654	2.292	2.9	3.3	3.8	40	50	99%	3.5	5.9	6.7	47	88	99%
Nov-11	1.542	2.24	4.3	6.7	6.9	58	88	98%	5.3	11.3	12.3	72	157	98%
Oct-11	1.682	2.097	3.5	4.4	4.4	48	71	99%	5.8	9	10.3	81	146	97%
Sep-11	1.76	3.17	3	3.6	4.1	44	83	99%	3.2	4.5	6.3	47	88	99%
Aug-11	1.45	2.972	3.3	4.9	6.7	39	84	98%	2.8	2.9	4.7	34	70	99%
Jul-11	1.06	1.478	3.3	3.5	4	29	40	98%	4.9	5.7	8.7	44	65	98%
Jun-11	1.497	1.809	3.4	4.4	4.8	42	68	99%	3.5	6.7	8.3	44	117	99%
May-11	1.918	2.507	3.7	5.6	6.1	60	91	97%	2.6	4.5	4.7	42	70	99%
Apr-11	1.804	2.423	3.4	4.5	4.5	52	63	98%	2.3	3.4	4.3	36	80	98%
Mar-11	1.816	3.376	5.1	13.5	15.9	60	135	98%	3.2	8	9.3	37	79	98%
Feb-11	1.01	1.231	4.2	5	5	33	47	99%	5.6	9.2	12.7	46	118	97%
Jan-11	1.165	1.52	5.4	7.4	8	53	77	99%	11.4	16.2	17	117	200	95%
Dec-10	1.447	1.911	3.7	4.9	5.3	45	67	99%	6.2	10.9	13.3	75	169	97%
Nov-10	1.283	1.93	3.1	3.8	4.1	35	48	99%	3.1	3.7	4.3	35	45	99%
Oct-10	1.389	2.859	4	8.6	10.3	43	95	99%	5.1	16.8	20.3	51	187	97%
Min	1.01	1.23	2.90	3.30	3.50	29.00	40.00	97%	2.30	2.90	3.30	27.00	37.00	95%
Max	2.01	3.60	9.60	13.50	15.90	91.00	175.00	99%	11.40	16.80	20.30	117.00	200.00	99%
Avg	1.43	2.01	4.30	5.56	6.30	50.48	75.80	99%	4.64	6.99	8.36	54.26	100.38	98%
N=	50	50	50	50	50	50	50	50	50	50	50	50	50	50

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 2010-November 2014) continued

	pH		Dissolved Oxygen	Escherichia Coli		Total Residual Chlorine	
	(S.U)		mg/l	cfu/100 ml		mg/l	
	Minimum	Maximum	Minimum Daily	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Effluent Limit	6.5	8	7	126	406	0.072	0.120
Nov-14	7.2	7.4	8.6	3.8	68.2	ND	ND
Oct-14	7.1	7.3	7.6	20.4	78	ND	ND
Sep-14	7.1	7.4	7	3.6	122.3	ND	ND
Aug-14	7.1	7.3	7	8.8	153.9	ND	ND
Jul-14	7	7.5	7	3.1	25.3	ND	ND
Jun-14	7	7.3	7.4	1.8	12.1	ND	ND
May-14	6.9	7.3	8	4.1	14.6	ND	ND
Apr-14	7	7.2	9.2	9.4	43.7	ND	ND
Mar-14	6.7	7.4	9.4	12.4	44.6	ND	ND
Feb-14	7	7.3	9.5	4.8	11	ND	ND
Jan-14	7	7.4	8.8	21.4	108.1	ND	ND
Dec-13	7.1	7.5	7.6	6.1	28.8	ND	ND
Nov-13	7.1	7.5	7	10.2	81.3	ND	ND
Oct-13	7.1	7.4	7	9.1	29.5	ND	ND
Sep-13	7.1	7.4	7	13.5	110	ND	ND
Aug-13	7.1	7.4	7	6.6	24.9	ND	ND
Jul-13	7.1	7.4	7	7.8	372.6	ND	ND
Jun-13	7	7.4	7	6.4	34.5	ND	ND
May-13	7	7.3	7.2	2.1	20.1	ND	ND
Apr-13	7.1	7.4	8.1	4.8	14.6	ND	ND
Mar-13	7.2	7.5	8.9	3.1	10.9	ND	ND
Feb-13	7.2	7.5	9.2	1.5	4.1	ND	ND
Jan-13	7	7.6	7.7	2.2	7.5	ND	ND
Dec-12	7	7.4	8	2.6	12.2	ND	ND
Nov-12	7	7.4	7.5	3.5	10.8	ND	ND
Oct-12	6.9	7.5	7.2	3.4	11	ND	ND
Sep-12	6.8	7.5	7.1	13.4	306.3	ND	ND
Aug-12	7.1	7.4	7.7	3.2	14.5	ND	ND
Jul-12	7	7.4	7	2.8	7.5	ND	ND
Jun-12	7	7.4	7.1	1.8	6.3	ND	ND
May-12	6.8	7.5	7	2	11.4	ND	ND
Apr-12	6.7	7.5	7.6	3.4	25.6	ND	ND
Mar-12	6.7	7.4	8.7	3.1	14.5	ND	ND
Feb-12	6.6	7.4	8.8	2.5	18.7	ND	ND
Jan-12	6.8	7.5	8.9	1.2	2	ND	ND
Dec-11	6.9	7.5	8	2.6	10.9	ND	ND

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 2010-November 2014) continued

	pH		Dissolved Oxygen	Escherichia Coli		Total Residual Chlorine	
	(S.U.)		mg/l	cfu/100 ml		mg/l	
	Minimum	Maximum	Minimum Daily	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Effluent Limit	6.5	8	7	126	406	0.072	0.120
Nov-11	7	7.3	8.1	4.3	13.5	ND	ND
Oct-11	7	7.3	8.6	9.4	35	ND	ND
Sep-11	7	7.3	8.2	7	15.8	ND	ND
Aug-11	7	7.3	7.7	3.7	9.8	ND	ND
Jul-11	6.7	7.3	7.6	1.4	5.2	ND	ND
Jun-11	6.8	7.2	8.1	2	8.5	ND	ND
May-11	6.9	7.3	9.1	1.2	3.1	ND	ND
Apr-11	6.8	7.2	9.9	1.4	9.7	ND	ND
Mar-11	6.8	7.3	10.7	1.4	4.1	ND	ND
Feb-11	6.7	7.1	8.7	1.5	187.2	ND	ND
Jan-11	6.9	7.3	7.9	1.2	2	ND	ND
Dec-10	6.6	7.3	8.3	1.6	4.1	ND	ND
Nov-10	6.9	7.3	7.9	2.7	9.8	ND	ND
Oct-10	6.9	7.3	7	3.7	15.8	ND	ND
Min	6.60	7.10	7.00	1.20	2.00	***	***
Max	7.20	7.60	10.70	21.40	372.60	***	***
Avg	6.95	7.37	7.97	5.10	43.92	***	***
N=	50	50	50	50	50	50	50

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 2010-November 2014) continued

	Ammonia Nitrogen as N							
	mg/l		lbs/day		mg/l		lbs/day	
	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (November 1- May 31)	Maximum Daily (November 1- May 31)	Average Monthly (November 1- May 31)	Maximum Daily (November 1- May 31)
Effluent Limit	7.2	11.3	234 lbs/day	367 lbs/day	10.9	Report	354 lbs/day	Report
Nov-14	***	***	***	***		0.1	0.5	1.3
Oct-14	0.2	0.6	1.8	6.6	***	***	***	***
Sep-14	1	4.6	11.1	51.8	***	***	***	***
Aug-14	0.2	0.3	3	4.1	***	***	***	***
Jul-14	0.5	1.4	6	17.2	***	***	***	***
Jun-14	0.2	0.2	1.7	2.5	***	***	***	***
May-14	***	***	***	***	0.2	0.3	1.9	3.6
Apr-14	***	***	***	***	0.1	0.4	2.2	5.2
Mar-14	***	***	***	***	0.2	0.4	2.2	4.3
Feb-14	***	***	***	***	0.3	0.3	2.5	3.1
Jan-14	***	***	***	***	0.2	0.3	2.2	3.2
Dec-13	***	***	***	***	0.3	0.9	3.1	9.6
Nov-13	***	***	***	***	0.4	0.4	3.2	3.7
Oct-13	0.3	1.3	3.4	13.6	***	***	***	***
Sep-13	0.4	0.7	4.4	8	***	***	***	***
Aug-13	0.5	0.6	5.6	7.7	***	***	***	***
Jul-13	0.5	0.7	7.4	10.2	***	***	***	***
Jun-13	0.5	0.7	6.6	8.6	***	***	***	***
May-13	***	***	***	***	0.3	0.8	3.5	8.4
Apr-13	***	***	***	***	0.3	0.7	4	9.7
Mar-13	***	***	***	***	0.7	1.1	9.3	14.7
Feb-13	***	***	***	***	0.6	0.8	6.8	9.3
Jan-13	***	***	***	***	0.5	1.1	5.6	11.7
Dec-12	***	***	***	***	0.4	0.7	4.1	7.1
Nov-12	***	***	***	***	0.3	0.5	2.4	4.3
Oct-12	0.3	0.5	2.6	4.9	***	***	***	***
Sep-12	0.5	1.7	4.8	17.5	***	***	***	***
Aug-12	0.2	0,5	2	5.1	***	***	***	***
Jul-12	0.3	0.4	2.8	4.1	***	***	***	***
Jun-12	0.2	0.4	2.9	5.9	***	***	***	***
May-12	***	***	***	***	0.1	0.3	2.1	4.9
Apr-12	***	***	***	***	0.3	0.6	3.6	5.8
Mar-12	***	***	***	***	0.2	0.3	2.6	3.9
Feb-12	***	***	***	***	0.2	0.3	1.7	3.6
Jan-12	***	***	***	***	0.2	0.4	2.7	4.8
Dec-11	***	***	***	***	0.2	0.4	3.1	5.6
Nov-11	***	***	***	***	0.2	0.2	2.2	3

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 2010-November 2014) continued

	Ammonia Nitrogen							
	mg/l		lbs/day		mg/l		lbs/day	
	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (June 1- October 31)	Maximum Daily (June 1- October 31)	Average Monthly (November 1- May 31)	Maximum Daily (November 1- May 31)	Average Monthly (November 1- May 31)	Maximum Daily (November 1- May 31)
Effluent Limit	7.2	11.3	234	367	10.9	Report	354	Report
Oct-11	0.4	0.9	5.3	14	***	***	***	***
Sep-11	0.3	0.6	5.2	12.2	***	***	***	***
Aug-11	0.2	0.3	2.8	4.5	***	***	***	***
Jul-11	0.4	0.6	3.3	6.8	***	***	***	***
Jun-11	1.1	2.5	13	28.1	***	***	***	***
May-11	***	***	***	***	0.2	0.2	2.9	4.2
Apr-11	***	***	***	***	0.2	0.7	3.7	9.8
Mar-11	***	***	***	***	0.24	0.55	3.52	10.48
Feb-11	***	***	***	***	0.59	1.5	5.05	14.07
Jan-11	***	***	***	***	0.25	0.33	2.41	2.92
Dec-10	***	***	***	***	0.2	0.3	2.27	3.17
Nov-10	***	***	***	***	0.2	0.2	1.94	2.47
Oct-10	0.2	0.4	2.2	3.31	***	***	***	***
Min	0.20	0.20	1.70	2.50	0.10	0.10	0.50	1.30
Max	1.10	4.60	13.00	51.80	0.70	1.50	9.30	14.70
Avg	0.40	0.97	4.66	11.27	0.29	0.52	3.22	6.13
N=	21	20	21	21	28	29	29	29

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 2010-November 2014) continued

	Total Copper		LC50-Ceriodaphnia	LC50 - Pimephales	NOEC-Ceriodaphnia	NOEC - Pimephales
	mg/l		%	%	%	%
	Average Monthly	Maximum Daily	Maximum Daily	Maximum Daily	Maximum Daily	Maximum Daily
Effluent Limit	18.55	24.64	100	100	15.4	15.4
Nov-14	***	***	***	***	***	***
Oct-14	***	***	***	***	***	***
Sep-14	13.13	17.25	100	100	100	100
Aug-14	***	***	***	***	***	***
Jul-14	***	***	***	***	***	***
Jun-14	10.9	13.8	100	100	100	100
May-14	***	***	***	***	***	***
Apr-14	***	***	***	***	***	***
Mar-14	8.9	10	100	100	100	100
Feb-14	***	***	***	***	***	***
Jan-14	***	***	***	***	***	***
Dec-13	10.6	12.2	100	100	100	100
Nov-13	***	***	***	***	***	***
Oct-13	***	***	***	***	***	***
Sep-13	10.15	12.6	100	100	100	100
Aug-13	***	***	***	***	***	***
Jul-13	***	***	***	***	***	***
Jun-13	12.48	14.95	100	100	100	100
May-13	***	***	***	***	***	***
Apr-13	***	***	***	***	***	***
Mar-13	14.37	24.4	100	100	100	100
Feb-13	***	***	***	***	***	***
Jan-13	***	***	***	***	***	***
Dec-12	15.8	19.6	100	100	100	100
Nov-12	***	***	***	***	***	***
Oct-12	***	***	***	***	***	***
Sep-12	19.65	23.3	100	100	100	100
Aug-12	***	***	***	***	***	***
Jul-12	***	***	***	***	***	***
Jun-12	17.8	21.6	100	100	100	100
May-12	***	***	***	***	***	***
Apr-12	***	***	***	***	***	***
Mar-12	15.6	20.2	100	100	100	100
Feb-12	***	***	***	***	***	***
Jan-12	***	***	***	***	***	***
Dec-11	12.2	15.3	100	100	100	100

ND=Non-detect
Red Text= Exceedance

DMR Data Summary (October 2010-November 2014) continued

	Total Copper		LC50-Ceriodaphnia	LC50-Pimephales	NOEC-Ceriodaphnia	NOEC - Pimephales
	mg/l		%	%	%	%
	Average Monthly	Maximum Daily	Minimum Daily	Minimum Daily	Minimum Daily	Minimum Daily
Effluent Limits	18.55	24.64	100	100	15.4	15.4
Nov-11	***	***	***	***	***	***
Oct-11	***	***	***	***	***	***
Sep-11	16.2	21.3	100	100	100	100
Aug-11	***	***	***	***	***	***
Jul-11	***	***	***	***	***	***
Jun-11	16.7	21.3	100	100	100	100
May-11	***	***	***	***	***	***
Apr-11	***	***	***	***	***	***
Mar-11	21.1	25.2	100	100	50	100
Feb-11	***	***	***	***	***	***
Jan-11	***	***	***	***	***	***
Dec-10	13.7	17.3	100	100	100	100
Nov-10	***	***	***	***	***	***
Oct-10	***	***	***	***	***	***
Min	8.90	10.00	100.00	100.00	50.00	100.00
Max	21.10	25.20	100.00	100.00	100.00	100.00
Avg	14.33	18.14	100.00	100.00	96.43	100.00
N=	16	16	16	16	16	16

ND=Non-detect
Red Text= Exceedance

DMR Effluent Metals Data Summary (December 2009-September 2014)

	Total Recoverable Aluminum	Total Recoverable Cadmium	Total Recoverable Chromium	Total Recoverable Copper	Total Recoverable Lead	Total Recoverable Nickel	Total Recoverable Zinc
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
	Maximum Daily	Maximum Daily	Maximum Daily	Maximum Daily	Maximum Daily	Maximum Daily	Maximum Daily
Effluent Limit	Report	Report	Report	Report	Report	Report	Report
9/30/2014	110	0	0	17.25	0	7	48.8
6/30/2014	0	0	0	13.8	5	0	27.2
3/31/2014	30	0	0	10	0	0	51.5
12/31/2013	0	0	0	12.2	0	4	42.3
9/30/2013	30	0	0	12.6	0	0	29.2
6/30/2013	20	0	0	14.95	0	0	56.2
3/31/2013	40	0	0	24.4	0	0	79.3
12/31/2012	20	0	0	19.6	0	0	71.3
9/30/2012	40	0	0	23.3	0	0	55.1
6/20/2012	40	0	0	21.6	0	0	55.2
3/31/2012	0	0	0	20.2	0	0	48.5
12/31/2011	30	0	0	15.3	0	0	45.8
9/30/2011	40	0	0	21.3	0	5	43.3
6/30/2011	20	0	0	21.3	0	11	37.3
3/31/2011	170	0	0	25.2	0	0	60.8
12/31/2010	60	0	0	17.3	0	0	48.7
9/30/2010	0	0	0	17.5	0	0	37.2
6/30/2010	30	0	0	20.3	0	0	44.7
3/31/2010	60	0	0	19	0	0	54.2
12/31/2009	60	0	0	19.3	0	5	38.2
Minimum	0	0	0	10	0	0	27.2
Maximum	170	0	0	25.2	0	11	79.3
Median	30	0	0	19.15	0	0	48.6
Number	20	20	20	20	20	20	20
Avg	40	0	0	18.32	0.25	1.6	48.74

Exhibit A
Nitrogen Loads

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
NEW HAMPSHIRE					
Bethlehem Village District	NH0100501	0.340	0.220	19.600	35.962
Charlestown WWTF	NH0100765	1.100	0.360	19.600	58.847
Claremont WWTF	NH0101257	3.890	1.610	14.060	188.789
Colebrook WWTF	NH0100315	0.450	0.230	19.600	37.597
Groveton WWTF	NH0100226	0.370	0.290	19.600	47.405
Hanover WWTF	NH0100099	2.300	1.440	30.000	360.288
Hinsdale WWTF	NH0100382	0.300	0.300	19.600	49.039
Keene WWTF	NH0100790	6.000	3.910	12.700	414.139
Lancaster POTW	NH0100145	1.200	1.080	8.860	79.804
Lebanon WWTF	NH0100366	3.180	1.980	19.060	314.742
Lisbon WWTF	NH0100421	0.320	0.146	19.600	23.866
Littleton WWTF	NH0100153	1.500	0.880	10.060	73.832
Newport WWTF	NH0100200	1.300	0.700	19.600	114.425
Northumberland Village WPCF	NH0101206	0.060	0.060	19.600	9.808
Sunapee WPCF	NH0100544	0.640	0.380	15.500	49.123
Swanzey WWTP	NH0101150	0.167	0.090	19.600	14.712
Troy WWTF	NH0101052	0.265	0.060	19.600	9.808
Wasau Paper (industrial facility)	NH0001562		5.300	4.400	194.489
Whitefield WWTF	NH0100510	0.185	0.140	19.600	22.885
Winchester WWTP	NH0100404	0.280	0.240	19.600	39.231
Woodsville Fire District	NH0100978	0.330	0.230	16.060	30.806
New Hampshire Total		**24.177**	**19.646**		**2169.596**
VERMONT					
Bellows Falls	VT0100013	1.405	0.610	21.060	107.141
Bethel	VT0100048	0.125	0.120	19.600	19.616
Bradford	VT0100803	0.145	0.140	19.600	22.885
Brattleboro	VT0100064	3.005	1.640	20.060	274.373
Bridgewater	VT0100846	0.045	0.040	19.600	6.539
Canaan	VT0100625	0.185	0.180	19.600	29.424
Cavendish	VT0100862	0.155	0.150	19.600	24.520
Chelsea	VT0100943	0.065	0.060	19.600	9.808
Chester	VT0100081	0.185	0.180	19.600	29.424
Danville	VT0100633	0.065	0.060	19.600	9.808
Lunenberg	VT0101061	0.085	0.080	19.600	13.077
Hartford	VT0100978	0.305	0.300	19.600	49.039
Ludlow	VT0100145	0.705	0.360	15.500	46.537
Lyndon	VT0100595	0.755	0.750	19.600	122.598
Putney	VT0100277	0.085	0.080	19.600	13.077
Randolph	VT0100285	0.405	0.400	19.600	65.386
Readsboro	VT0100731	0.755	0.750	19.600	122.598
Royalton	VT0100854	0.075	0.070	19.600	11.442

St. Johnsbury	VT0100579	1.600	1.140	12.060	114.662

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
Saxtons River	VT0100609	0.105	0.100	19.600	16.346
Sherburne Fire Dist.	VT0101141	0.305	0.300	19.600	49.039
Woodstock WWTP	VT0100749	0.055	0.050	19.600	8.173
Springfield	VT0100374	2.200	1.250	12.060	125.726
Hartford	VT0101010	1.225	0.970	30.060	243.179
Whitingham	VT0101109	0.015	0.010	19.600	1.635
Whitingham Jacksonville	VT0101044	0.055	0.050	19.600	8.173
Cold Brook Fire Dist.	VT0101214	0.055	0.050	19.600	8.173
Wilmington	VT0100706	0.145	0.140	19.600	22.885
Windsor	VT0100919	1.135	0.450	19.600	73.559
Windsor-Weston	VT0100447	0.025	0.020	19.600	3.269
Woodstock WTP	VT0100757	0.455	0.450	19.600	73.559
Woodstock-Taftsville	VT0100765	0.015	0.010	19.600	1.635
Vermont Totals		**15.940**	**10.960**		**1727.302**
MASSACHUSETTS					
Amherst	MA0100218	7.100	4.280	14.100	503.302
Athol	MA0100005	1.750	1.390	17.200	199.393
Barre	MA0103152	0.300	0.290	26.400	63.851
Belchertown	MA0102148	1.000	0.410	12.700	43.426
Charlemont	MA0103101	0.050	0.030	19.600	4.904
Chicopee	MA0101508	15.500	10.000	19.400	1617.960
Easthampton	MA0101478	3.800	3.020	19.600	493.661
Erving #1	MA0101516	1.020	0.320	29.300	78.196
Erving #2	MA0101052	2.700	1.800	3.200	48.038
Erving #3	MA0102776	0.010	0.010	19.600	1.635
Gardner	MA0100994	5.000	3.700	14.600	450.527
Greenfield	MA0101214	3.200	3.770	13.600	427.608
Hadley	MA0100099	0.540	0.320	25.900	69.122
Hardwick G	MA0100102	0.230	0.140	14.600	17.047
Hardwick W	MA0102431	0.040	0.010	12.300	1.026
Hatfield	MA0101290	0.500	0.220	15.600	28.623
Holyoke	MA0101630	17.500	9.700	8.600	695.723
Huntington	MA0101265	0.200	0.120	19.600	19.616
Monroe	MA0100188	0.020	0.010	19.600	1.635
Montague	MA0100137	1.830	1.600	12.900	172.138
N Brookfield	MA0101061	0.760	0.620	23.100	119.445
Northampton	MA0101818	8.600	4.400	22.100	810.982
Northfield	MA0100200	0.280	0.240	16.800	33.627
Northfield School	MA0032573	0.450	0.100	19.600	16.346
Old Deerfield	MA0101940	0.250	0.180	9.200	13.811
Orange	MA0101257	1.100	1.200	8.600	86.069
Palmer	MA0101168	5.600	2.400	18.800	376.301
Royalston	MA0100161	0.040	0.070	19.600	11.442
Russell	MA0100960	0.240	0.160	19.600	26.154
Shelburne Falls	MA0101044	0.250	0.220	16.900	31.008
South Deerfield	MA0101648	0.850	0.700	7.900	46.120
South Hadley	MA0100455	4.200	3.300	28.800	792.634
Spencer	MA0100919	1.080	0.560	13.600	63.517
Springfield	MA0103331	67.000	45.400	4.300	1628.135

Sunderland	MA0101079	0.500	0.190	8.700	13.786
Templeton	MA0100340	2.800	0.400	26.400	88.070

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
Ware	MA0100889	1.000	0.740	9.400	58.013
Warren	MA0101567	1.500	0.530	14.100	62.325
Westfield	MA0101800	6.100	3.780	20.400	643.114
Winchendon	MA0100862	1.100	0.610	15.500	78.855
Woronoco Village	MA0103233	0.020	0.010	19.600	1.635
Massachusetts Totals		**166.010**	**106.950**		**9938.820**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 13,836 lbs/day
MA (41 facilities) = 9,939 lbs/day (72%)
VT (32 facilities) = 1,727 lbs/day (12%)
NH (21 facilities) = 2170 lbs/day (16%)
TMDL Baseline Load = 21,672 lbs/day

TMDL Allocation = 16,254 lbs/day (25% reduction)

MA Discharges to Housatonic River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
MASSACHUSETTS					
Crane	MA0000671		3.100	8.200	212.003
Great Barrington	MA0101524	3.200	2.600	17.000	368.628
Lee	MA0100153	1.000	0.870	14.500	105.209
Lenox	MA0100935	1.190	0.790	11.800	77.745
Mead Laurel Mill	MA0001716		1.500	6.400	80.064
Mead Willow Mill	MA0001848		1.100	4.600	42.200
Pittsfield	MA0101681	17.000	12.000	12.400	1240.992
Stockbridge	MA0101087	0.300	0.240	11.100	22.218
West Stockbridge	MA0103110	0.076	0.018	15.500	2.327
Massachusetts Totals			**22.218**		**2151.386**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 2151.386 lbs/day

TMDL Baseline Load = 3,286 lbs/day
TMDL Allocation = 2,464 lbs/day (25% reduction)

MA Discharges to Thames River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
MASSACHUSETTS					
Charlton	MA0101141	0.450	0.200	12.700	21.184
Leicester	MA0101796	0.350	0.290	15.500	37.488
Oxford	MA0100170	0.500	0.230	15.500	29.732
Southbridge	MA0100901	3.770	2.900	15.500	374.883
Sturbridge	MA0100421	0.750	0.600	10.400	52.042
Webster	MA0100439	6.000	3.440	17.400	499.199
Massachusetts Totals		**11.820**	**7.660**		**1014.528**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 1014.528 lbs/day

TMDL Baseline Load = 1,253 lbs/day

TMDL Allocation = 939 lbs/day (25% reduction)

Statistical Approach to Characterizing the Effluent for Determining Reasonable Potential

EPA bases its determination of "reasonable potential" on a characterization of the upper bound of expected effluent concentrations based on a statistical analysis of the available monitoring data. As noted in the *Technical Support Document for Water Quality Based Toxics Control* (EPA 1991) ("TSD"), "[a]ll monitoring data, including results for concentrations of individual chemicals, have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty." Thus with a limited data set, the maximum concentration that has been found in the samples may not reflect the full range of effluent concentration.

To account for this, EPA has developed a statistical approach to characterizing effluent variability when the monitoring dataset includes 10 or more samples.[1] As "experience has shown that daily pollutant discharges are generally lognormally distributed," *TSD* at App. E, EPA uses a lognormal distribution to model the shape of the observed data, unless analysis indicates a different distributional model provides a better fit to the data. The model parameters (mean and variance) are derived from the monitoring data. The model parameter μ is the mean of the natural logs of the monitoring data values, while σ is the standard deviation of the natural logs of the monitoring data values.

The lognormal distribution generally provides a good fit to environmental data because it is bounded on the lower end (i.e. you cannot have pollutant concentrations less than zero) and is positively skewed. It also has the practical benefit that if an original lognormal data set X is logarithmically transformed (i.e. Y = ln[X]) the resulting variable Y will be normally distributed. Then the upper percentile expected values of X can be calculated using the z-score of the standardized normal distribution (i.e. the normal distribution with mean = 0 and variance = 1), a common and relatively simple statistical calculation. The p_{th} percentile of X is estimated by

$$X_p = \exp(\mu_y + z_p \times \sigma_y),$$

where μ_y = mean of Y
σ_y = standard deviation of Y
Y = ln[X]
z_p = the z-score for percentile "p"

For the 95_{th} percentile, $z_{95} = 1.645$, so that

$$X_{95} = \exp(\mu_y + 1.645 \times \sigma_y)$$

The 95th percentile value is used to determine whether a discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard. The combination of the upper bound effluent concentration with dilution in the receiving water is calculated to determine whether the water quality criteria will be exceeded.

[1] A different statistical approach is applied where the monitoring data set includes less than 10 samples.

Datasets including non-detect values

The *TSD* also includes a procedure for determine such percentiles when the dataset includes non-detect results, based on a delta-lognormal distribution. In the delta-lognormal procedures, nondetect values are weighted in proportion to their occurrence in the data. The values above the detection limit are assumed to be lognormally distributed values.

The statistical derivation of the delta-lognormal upper bounds is quite complex and is set forth in the TSD at Appendix E. Calculation of the 95th percentile of the distribution, however, involves a relatively straightforward adjustment of the equations given above for the lognormal distribution, as follows.

For the deltalognormal, the pth percentile of X, referred to here as X_p*, is given by

$$X_p^* = \exp(\mu_y^* + z_p^* \times \sigma_y^*),$$

where μ^*= mean of Y values for data points above the detection limit;
σ_y^*= standard deviation of Y for data points above the detection limit;
$Y = \ln[X^*]$;
X^*= monitoring data above detection limit; and
z_p^* = an adjusted z score that is given by the equation:

$$z_p^* = \text{z-score}[(p - \delta)/(1 - \delta)]$$

where δ is the proportion of nondetects in the monitoring dataset.
k = total number of dataset
r = number of nondetect values in the dataset
$\delta = r/k$

For the 95th percentile, this takes the form of $z_p^* = \text{z-score}[(.95 - \delta)/(1 - \delta)]$. The resulting values of z_p^* for various values of δ is set forth in the table below; the calculation is easily performed in excel or other spreadsheet programs.

Example calculations of z_p^* for 95th percentile

δ	**(0.95 - δ)/ (1 - δ)**	**zp***
0	0.95	1.645
0.1	0.94	1.593
0.3	0.93	1.465
0.5	0.90	1.282
0.7	0.83	0.967

Ambient and Effluent Hardness

(March 2007-March 2014)

Date	Hardness	
	Ambient	Effluent
9/30/2014	23.40	80.94
6/30/2014	26.82	116
3/31/2014	22.96	88.9
12/31/2013	26.85	78.63
9/30/2013	19.48	96.9
6/30/2013	15.43	106.2
3/31/2013	18.9	93.32
12/31/2012	32.98	134.4
9/30/2012	35.93	185.8
6/20/2012	23.2	111.5
3/31/2012	18.02	109.2
12/31/2011	17.06	117.7
9/30/2011	24.1	96.58
6/30/2011	24.6	104.3
3/31/2011	20.26	80.05
12/31/2010	19.73	109.7
9/30/2010	33.08	97.39
6/30/2010	16.47	116.6
3/31/2010	22.05	81.73
12/31/2009	18.1	88.98
9/30/2009	15.16	118.2
6/30/2009	26.63	104.5
3/31/2009	21.82	88.56
12/31/2008	24.75	95.2
9/30/3008	32.15	95.19
6/30/2008	12.46	113.1
3/31/2008	14.46	99.47
12/31/2007	42.9	68.5
9/30/2007	29.27	71.05
6/30/2007	23.88	105.74
3/31/2007	15.2	72.57
Minimum	**12.46**	**68.5**
Maximum	**42.9**	**185.8**
Median	**22.96**	**97.39**
Number	**31**	**31**

Hardness Calculations:

The theoretical hardness of the Sugar River downstream of the treatment plant during critical low flow periods and design discharge flow was calculated based on the median ambient and effluent hardness reported in the facility's Whole Effluent Toxicity (WET) tests conducted from 2007-2014.

Calculation of hardness in the Sugar River, downstream of the Claremont WWTF:

Where

Qs = streamflow above the point of discharge = 37.46 cfs
Cs = background in-stream concentration = 22.96 mg/l
Qd = effluent (design)flow = 3.89 mgd = 6.02 cfs
Cd = effluent concentration = 97.39 mg/l
Qr = resultant in-streamflow, after discharge = 43.48 cfs
Cr = resultant in-stream concentration (after complete mixing occurs)

$$Cr = \frac{(6.02 \text{ cfs} * 97.39 \text{ mg/l}) + (37.46 \text{ cfs} * 22.96 \text{ mg/l})}{43.48 \text{ cfs}}$$

Cr = 33.27 mg/l

Therefore, a hardness of 33 mg/l as CaCO3 was used to calculate the total recoverable metals criteria.

Ambient Data from WET Test Reports
2010-2014

Reporting Qtr	Aluminum (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Lead (ug/l)	Nickel (ug.l)	Zinc (ug/l)
12/31/2014	50	nd	nd	4.6	nd	nd	4.3
9/30/2014	140	nd	nd	4.6	nd	nd	23.4
6/30/2014	150	nd	nd	4.6	5	nd	15.5
3/31/2014	ice	ice	ice	ice	ice	ice	ice
12/31/2013	30	nd	nd	2.8	nd	nd	8.2
9/30/2013	90	nd	nd	3.8	nd	nd	12.2
6/30/2013	50	nd	nd	6.3	nd	nd	8.3
3/31/2013	60	nd	nd	3.3	nd	nd	14.2
12/31/2012	30	nd	nd	3.6	nd	nd	13.2
9/30/2012	90	nd	nd	5.6	nd	nd	21.4
6/20/2012	30	nd	nd	4.3	nd	nd	6.7
3/31/2012	50	nd	nd	6.4	nd	nd	13.8
12/31/2011	110	nd	nd	8.6	nd	nd	15.8
9/30/2011	50	nd	nd	8.5	nd	nd	17.7
6/30/2011	220	nd	nd	6.3	nd	nd	4.8
3/31/2011	100	nd	nd	4.7	nd	nd	81.5
12/31/2010	210	nd	nd	2.6	nd	nd	12.8
9/30/2010	100	nd	nd	4.2	nd	29	11.5
6/30/2010	60	nd	nd	5.2	nd	nd	11.3
3/31/2010	40	nd	nd	3	nd	nd	9.2
Minimum	30	***	***	2.6	0	0	4.3
Maximum	220	***	***	8.6	5	29	81.5
Median	60	***	***	4.6	0	0	12.8
Number	19	***	***	19	19	19	19
Average	87	***	***	4.89	0.263	1.5	16.1
MDL	<20	<1	<5	<2.5	<5	<4	<2.5

nd = non-detect, treated as zero (0).
ice = ice on river, unable to sample

July 6, 2016
RESPONSE TO COMMENTS
NPDES PERMIT NO. NH0101257
CLAREMONT WASTEWATER TREATMENT FACILITY
CLAREMONT, NEW HAMPSHIRE

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the draft NPDES Permit # NH0101257. The response to comments explains and supports the EPA determinations that form the basis of the Final Permit. From April 10, 2015 to May 9, 2015, the United States Environmental Protection Agency ("EPA" or "the Region") and the New Hampshire Department of Environmental Services ("NHDES") (together, the "Agencies") solicited public comments on a draft NPDES permit # NH0101257, developed pursuant to a permit application from City of Claremont for the reissuance of a National Pollutant Discharge Elimination System ("NPDES") permit to discharge treated wastewater from outfall number 001 to the Sugar River in Claremont, New Hampshire.

After a review of the comments received, EPA and NHDES have made a final decision to issue this permit authorizing these discharges. The Final Permit is substantially identical to the Draft Permit that was available for public comment with the addition of interim requirements and a schedule of compliance for total phosphorus.

Although EPA's decision-making process has benefitted from the comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit. However, as a result of the comments made on the Draft Permit, EPA improved certain analyses, revised certain permit conditions and made certain minor changes and clarifications. The analyses underlying these changes are explained in the responses to individual comments that follow and are reflected in the Final Permit. A summary of the changes made in the Final Permit is presented below. Copies of the Final Permit may be obtained by writing or calling Michele Barden of EPA's NPDES Municipal Permits Branch (Mail Code: OEP06-1), Office of Ecosystem Protection, 5 Post Office Square, Suite 100, Boston, MA 02109-3912; Telephone: (617) 918-1539; Email barden.michele@epa.gov. Copies may also be obtained from the EPA Region 1 web site at http://www3.epa.gov/region1/npdes/index.html.

Summary of Changes in the Final Permit

1. Corrections

   Correction: Several typographical corrections were made to the Final Permit that include adjustment in line spacing, adjustment in sentence spacing, adjustment in numbering, adjustment in format and correction of grammar, punctuation, capitalization or spelling errors. No further rationale is warranted.

Correction: Several permit conditions included in the Final Permit may appear in footnotes and/or parts that differ from the footnote and/or part in which the permit condition was proposed in the Draft Permit. No further rationale is warranted.

Correction: Several adjustments to grammar or word phrasing were made to the Final Permit which do not add any new permit condition. Any permit condition included in the Final Permit to which adjustments were made for this reason remains substantially similar to the permit condition as proposed in the Draft Permit. No further rationale is warranted.

2. Cover Page

Deletion: The permit effective date reference "*Pursuant to 40 CFR 124.15(b)(3), if no comments requesting change to the Draft Permit are received, the permit will become effective upon the date of signature." has been removed since public comment was received.

Deletion: The "DRAFT" footer was removed.

3. Part I.A.

Change: The measurement frequency for dissolved oxygen has been changed from daily throughout the year to daily from June 1 to October 31 and then five (5) times per week from November 1 to May 31. See response to comment 3.

Addition: Added the phrase "as N" to specify that the reporting requirements for total Kjeldahl nitrogen, total nitrate + total nitrite nitrogen and total nitrogen should all be reported as nitrogen. See the response to comment 5.

Addition: Added an interim reporting requirement for total phosphorus. See the response to comment 6.

Change: The load limit for total phosphorus has been changed from 14.7 lbs/day in the Draft Permit to 17.0 lbs/day. See the response to comment 6.

Addition: Added a twice per year ambient total phosphorus monitoring requirement. See the response to comment 6.

Change: The average monthly copper limit has been changed to 17.32 ug/l and the maximum daily copper limit has been changed to 24.64 ug/l. See the response to comment 7.

Change: Footnote 9 in the Draft Permit is now Footnote 11 in the Final Permit.

Addition: Footnote 9 in the Final Permit addresses the Schedule of Compliance for Total Phosphorus. See the response to comment 6.

Change: Footnote 10 in the Draft Permit is now Footnote 12 in the Final Permit.

Addition: Footnote 10 in the Final Permit defines the sampling conditions and location for the ambient samples. See the response to comment 6.

Change: Footnote 11 in the Draft Permit is now Footnote 13 in the Final Permit.

Change: Footnote 12 in the Draft Permit is now Footnote 14 in the Final Permit.

Change: Section H of the Draft Permit is now Section I.

Addition: Section H of the Final Permit is the Schedule of Compliance for Total Phosphorus. See the response to comment 6.

Change: Section I of the Draft Permit is now Section J.

Comments submitted by Scott Sweet, Assistant Director of Public Works, City of Claremont; dated May 9, 2015

Comment 1:

General: Fact Sheet, Page 1 of 36: The address of applicant is "The City of Claremont, City Hall, 58 Opera House Square, Claremont, NH 03743". Please revise the Fact Sheet accordingly.

Response to Comment 1:

EPA does not revise the fact sheet after the public notice period unless substantial new questions have been raised and a new Draft Permit is prepared. Typically, any changes to Draft Permit are documented in the response to comments. As such, EPA has noted for the record that the permittee would like to change the mailing address for the applicant from the address that was submitted in the 2011 application. The updated mailing address is documented in this response to comment and noted in the permit file.

Comment 2:

Monitoring frequency for pH, Dissolved Oxygen and Total Residual Chlorine: The Draft Permit requires a measurement frequency of 1/day. The Claremont WWTF is staffed 5 days per week. The measurement frequency of 1/day for the above parameters results in additional staffing costs to the City. The Fact Sheet provides no basis for setting the measurement frequency at 1/day. As noted in the Fact Sheet, [b]etween October 2010 and November 2014 there were no discharge violations for any of these parameters. We

request that EPA consider reduction of the monitoring frequency to 5/week so that this testing can be completed during the periods of time when the facility is regularly staffed.

Response to Comment 2:

The monitoring frequency in the Draft Permit for the parameters of pH, dissolved oxygen and total residual chlorine is the same as the existing permit which was issued on September 28, 2006; and therefore, should not result in additional staffing costs. The frequencies for pH and total residual chlorine are consistent with the recommended monitoring frequency guidance in NHDES's July 19, 1999 letter[1] to EPA-Region 1. The monitoring frequency for pH, and total residual chlorine remains as daily in the Final Permit. Please see the response to Comment 3 for the monitoring frequency for dissolved oxygen.

Comment 3:

The Draft Permit dissolved oxygen monitoring and limits are in effect at all times. According to the Fact Sheet, the basis for the dissolved oxygen limit is the TMDL study which was run assuming an effluent DO of 7.0 mg/l. The TMDL study was conducted because a previous Wasteload Allocation study (WLA) indicated that there was a potential for dissolved oxygen (DO) violations. Dissolved oxygen issues are not normally a concern during colder periods when receiving water temperatures are lower. Please confirm that this segment of the Sugar River is subject to cold weather dissolved oxygen violations based on the findings of the WLA and TMDL. If DO concerns are not a concern during colder periods, we request that the dissolved oxygen monitoring period be limited only to warmer periods, similar to Ammonia Nitrogen (i.e. June 1 – October 31).

Response to Comment 3:

NPDES regulation at § 122.44(d)(1)(vii)(B) require that NPDES permits include effluent limits that are consistent with the assumptions and requirements of any WLA that has been assigned to the discharge as part of an approved TMDL. In the case of the Claremont WWTF, the TMDL Study recommended a year-round minimal dissolved oxygen limit of 7.0 mg/l for the Claremont WWTF[2].

EPA conferred with NHDES and it was determined that dissolved oxygen in the effluent be monitored daily from June 1 through October 31 and 5 days per week from November 1 through May 31 (S. Spanos, personal communication, 7/1/2015). The less frequent sampling during the winter months is acceptable given the less potential for ambient DO issues due to lower water temperatures from November through May.

EPA has made the necessary revisions to the Final Permit.

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[1] Letter to Frederick B. Gay, Permit Engineer, EPA-Region 1 from George C. Berlandi, Sanitary Engineer, NHDES, dated July 19, 1999, Subject: Revised Joint EPA/NHDES-WD Effluent Monitoring Guidance.
[2] NHDES, 1996, "Sugar River TMDL Study", p. IV-5.

Comment 4:

Flow: The Draft Permit includes a new discharge limitation for Effluent Flow of 3.89 mgd on an annual average basis to be reported on a 12-month rolling average. The imposition of a flow limit appears to be a new EPA permit writing development with no precedent in other State of New Hampshire NPDES Final Permits. We do not understand the necessity of a flow limit because we see no direct correlation between the volume of water discharged and the resulting pollutant levels in the receiving water. Receiving water quality is adequately protected by the imposition of actual pollutant mass limits, and therefore an additional limit on effluent flow is unnecessary. We do not agree with Fact Sheet justification for imposing the limit, and we feel EPA is unnecessarily exceeding its regulatory responsibility to protect water quality. The imposition of a flow limit is essentially regulating the discharge of water to the river and in effect reclassifying water as a pollutant.

The Fact Sheet on Page 10 of 36, last paragraph, states that the imposition of a flow limitation is necessary to ensure proper facility operation by making sure it operates within its design flow. The EPA may define the "design flow" as an annual average flow; however, none of the unit treatment processes in a wastewater treatment facility are actually designed based on a 12-month average flow. Therefore, the imposition of a 12-month rolling average flow limit will provide no assurance that the facility will operate within its design flow. The flows that are actually used in the design of wastewater treatment facilities include the following:

- peak instantaneous flow
- peak hour
- maximum day
- maximum month

These are the flows that EPA should regulate if there is a permitting requirement to proactively ensure that wastewater treatment facilities operate with the facility's design flow. It should be noted that factors other than flow also factor in to the design of a wastewater treatment facility. These factors include organic and nutrient loading and temperature. It is incorrect for EPA to assert that any wastewater treatment facility has a distinct 12-month annual average design flow capacity rating and it is misguided to impose a 12-month rolling average flow limit as a means to ensure the facility operates within its design flow.

The City of Claremont understands and appreciates the value of protecting water quality and we fully support regulatory measures that are necessary to maintain the quality of our waters at the highest level achievable. We support many of EPA's efforts to impose certain requirements that go beyond strictly effluent performance based discharge standards, such as operator licensing and backup power system requirements. The necessity of these requirements is obvious. EPA asserts in the Fact Sheet that imposition of a flow limit is similarly necessary to ensure proper facility operation. However, as we have explained above, imposition of an annual average flow limit will have no direct

impact on facility operations, and will add another level of potential non-compliance. Therefore, we request that EPA reconsider imposition of an annual average flow limit in this permit.

Response to Comment 4:

The fact sheet describes multiple reasons for the inclusion of an annual average effluent flow limit. This limit is an operation and maintenance requirement designed to assure that the facility's pollutant discharges do not result in excursions above in-stream water quality criteria, in accordance with section 301(b)(1)(C) of the Act and implementing regulations. See Section I.A.1, supra; 40 C.F.R. §§ 122.4(d), 122.44(d)(1), 122.44(d)(1)(vii)(A), 122.44(d)(5).

EPA based its reasonable potential calculations on a presumed maximum effluent discharge of 3.89 mgd, or the design flow of the Claremont facility, and critical receiving water flow, or 7Q10.[3] See fact sheet at 9, 11- 12, 15-17, 19-29. From the standpoint of EPA's section 301(b)(1)(C) analyses, the use of design flow as a worst-case condition was an integral "constant." Should the discharge flow exceed the flow assumed in these calculations, the instream dilution would decrease and the pollutants that did not have the reasonable potential to exceed water quality standards (WQS) at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying the Region's reasonable potential analyses remain sound for the duration of the permit, the Region backstopped its "worst-case" effluent wastewater flow assumption through imposition of a permit condition. The flow limit is thus a component of water quality quality-based effluent limitations ("WQBELs"), because WQBELs are premised on a maximum level of flow.

It is also appropriate to limit sewage treatment plant discharge because this effluent flow is a pollutant under 35 U.S.C §1302(6). As a pollutant, effluent flow contains

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[3] As described in Section V.B.1(page 7) of the fact sheet, EPA may use design flow to both determine the necessity for effluent limitations in the permit that comply with the Act, and to calculate the limits themselves. Using a facility's design flow in the derivation of pollutant effluent limitations, including conditions to limit wastewater effluent flow, is consistent with, and anticipated by NPDES permit regulations. Regarding the calculation of effluent limitations for POTWs, 40 C.F.R. § 122.45" POTW permit applications are required to include the design flow of the treatment facility. *Id.* § 122.21(j)(1)(vi).

Similarly, EPA's reasonable potential regulations require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," 40 C.F.R. § 122.44 the wastewater effluent flow and receiving water flow. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. EPA accordingly is authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its design flow when assessing reasonable potential the wastewater effluent flow and receiving water flow. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. EPA accordingly is authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its design flow when assessing reasonable potential the wastewater effluent flow and receiving water flow. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. EPA accordingly is authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its design flow when assessing reasonable potential.

contaminants beyond those that are subject to quantitative derivation of permit limits based on design flow.

EPA has also included the effluent flow limit in the permit to minimize or prevent infiltration and inflow (I/I) that may result in unauthorized discharges and compromise proper operation and maintenance of the facility. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow added to the collection system that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity available for treatment and the operating efficiency of the treatment works and to properly operate and maintain the treatment works.

In addition, the extraneous flow due to significant I/I greatly increases the potential for sanitary sewer overflows (SSO) in separate systems. Consequently, the effluent flow limit is a permit condition that relates to the permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 C.F.R. §§ 122.41(d) and (e).

Thus, the final permit includes a condition limiting the flow of effluent discharged based on the design capacity of the facility. EPA Region 1 and NHDES have recently included such conditions in POTW permits to the Berlin Pollution Control Facility (NH0100013), Hinsdale Wastewater Treatment Plant (NH0100382), and Wallis Sands State Park (NH0020966). Moreover, States and other EPA Regions have issued permits with similar conditions in other parts of the country. EPA has determined that inclusion of an effluent flow limit condition in the Claremont permit is authorized by CWA § 402(a)(2), which provides that "[t]he Administrator shall prescribe conditions for such permits to assure compliance with the requirements of" CWA § 402(a)(1) – including, by reference, CWA §301 - "and such other requirements as [she] deems appropriate." The Claremont effluent flow limit is an operation and maintenance requirement that assures compliance with the technology- and water quality-based effluent limitations required by CWA § 301 and is "appropriate" pursuant to CWA § 402(a)(2).

Finally, EPA agrees with the commenter that "factors other than flow also factor in to the design of a wastewater treatment facility…includ[ing] organic and nutrient loading and temperature." The variability of all of these design factors are taken into account by establishing the flow limit as a 12-month rolling average.

Comment 5:

Nitrogen:

a. Nitrogen Reporting: Part I.A.1 (Effluent Limitations and Monitoring Requirements Table). It should be clarified that all species of nitrogen should be reported as N as specified for the Ammonia Nitrogen requirements.
b. G. Special Conditions: The City of Claremont participated in the New England Interstate Water Pollution Control Commission (NEIWPCC) Low Cost Retrofits for Nitrogen Removal at Wastewater Treatment Plants in the Upper Long Island Sounds Watershed Study. Please confirm that submission of this study will meet the Special Conditions requirement to submit a report to EPA and NHDES summarizing evaluation of nitrogen treatment optimization alternatives.
c. Current Nitrogen Load: The Fact Sheet references Attachment C for the basis of the current nitrogen load estimate of 189 lbs/day. The table in Attachment C indicates the basis of this value is an average flow of 1.61 mgd and total nitrogen concentration of 14.060 mg/l. It appears that the nitrogen concentration value is based on Claremont specific data and not average Massachusetts facilities data. Please provide a summary of the actual data used for our review and concurrence. Alternatively, please consider use of site specific data that was collected as part of the NEIWPCC Nitrogen study, which found the current effluent Total Nitrogen load to be 18.4 mg/l and a flow of 1.7 MGD, which equates to a current effluent mass load of 261 lbs/day. See attached except from the NEIWPCC report.

Response to Comment 5:

a. EPA has added the phrase "as N" specifying that all species of nitrogen should be reported as N.

b. EPA has reviewed the NEIWPCC study with regard to the Claremont WWTF[4]. Part I.G.1 of the permit requires the permittee to evaluate alternative methods of operating the existing WWTF to optimize the removal of nitrogen removal. The NEIWPCC study did evaluate low cost retrofits for the facility. The permit also requires the permittee to implement the recommended operational changes and to submit annual reports summarizing the activities related to continual nitrogen removal efficiencies, documenting the annual nitrogen discharge load and track the trends relative to the previous year. EPA believes that the NEIWPCC study can be an element of the required report but does not satisfy the full requirement.

The permittee may submit the NEIWPCC study with regard to the Claremont WWTF to satisfy the evaluation portion of the permit requirement. The permittee must also submit an implementation plan for the first year (this may be in the form of a letter) and then the annual reports as required by the permit, thereafter.

c. As discussed in the fact sheet, the Connecticut Department of Environmental Protection (CT DEP), now known as the Connecticut Department of Energy and Environmental Protection (CT DEEP),

[4] JJ Environmental, 2015, "Final Report - Low Cost Retrofits for Nitrogen Removal at Wastewater Treatment Plants in the Upper Long Island Sound Watershed", p. 73-77.

completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound in 2000. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25 % reduction from the baseline total nitrogen loading estimated in the TMDL.

EPA-Region 1 calculated the baseline total nitrogen load for POTWs which discharge to receiving waters that are tributaries to Long Island Sound using the mean total nitrogen effluent concentration in a 2006 USGS[5] study and the average monthly average flow from DMR data for 2004-2005. In the case of the Claremont WWTF, the average monthly average flow was 1.61 mgd and the mean total nitrogen effluent concentration was 14 mg/l.

[5] Deacon, J.R., Smith, T.E., Johnston, C.M., Moore, R.B., Weidman, R.M., and Blake, L.J., 2006, Assessment of total nitrogen in the Upper Connecticut River Basin in New Hampshire, Vermont, and Massachusetts, December 2002–September 2005: U.S. Geological Survey Scientific Investigations Report 2006–5144, p. 74.

USGS 432359072234001
Claremont WWTF Outfall @ Sugar River NR W Claremont, NH[6]

Date	Total Nitrogen
6/17/2003	15
7/15/2003	8.7
8/8/2003	9.3
9/8/2003	4.1
3/30/2004	11
4/27/2004	14
6/1/2004	19
7/7/2004	21
8/16/2004	15
4/12/2005	10
6/7/2005	22
7/5/2005	20
7/25/2005	12
8/9/2005	14
Mean	13.93

Given the above explanation, the requirements of Part I.G. of the Draft Permit shall remain unchanged in the Final Permit. The permittee's suggestion that EPA Region 1 use the current data from the "NEIWPCC study" would not be consistent with requirement (see 40 CFR §122.44(d)(1)(vii)(B)) to implement the Long Island Sound TMDL.

Comment 6:

Phosphorus

Regarding Sugar River not listed for water quality impairment related to phosphorus:

- As noted on Page 9 of 36 of the Fact Sheet, the Sugar River in the vicinity of the discharge is not listed for any water quality impairments related to phosphorus. As such, we question the need for [the] addition of a Total Phosphorus discharge limit in the permit. We realize that the issue of phosphorus limits has been discussed in other recent New Hampshire NPDES permits including Whitefield, Concord, Manchester, Pittsfield, etc., and we concur with the comments from the City of Manchester and others opposing phosphorus limits in similar situations (i.e. discharges to waters not impaired for phosphorus related parameters). We

[6]Jeffrey Deacon, USGS (personal communication, December 14, 2015)
http://nwis.waterdata.usgs.gov/nwis/qwdata/?site_no=432359072234001&agency_cd=USGS&inventory_output=0&rdb_inventory_output=file&TZoutput=0&pm_cd_compare=Greater%20than&radio_parm_cds=all_parm_cds&format=html_table&qw_attributes=0&qw_sample_wide=separated_wide&rdb_qw_attributes=0&date_format=YYYY-MM-DD&rdb_compression=file&submitted_form=brief_list

also realize that to date, the validity of these new phosphorus limits have been upheld by the Environmental Appeals Board (EAB) and the courts. However, the City of Claremont wishes to maintain its right to challenge the total phosphorus limits, in the event that the water quality standards are revised or the regulatory interpretation of the existing standards changes.

Regarding 2012 NHDES Sugar River sampling:

- Fact Sheet Page 21 of 36, second paragraph: Reference is made to 2012 "Sampling" conducted by NHDES in the summer 2012 found macrophytes blanketing the bottom of the river with the citation to personal communication with David Neils, NHDES, August 2, 2013. This description states that sampling was conducted which implies that tangible and objective data was developed including presumably measurement records of macrophyte coverage of the river bottom. The NHDES assertion regarding macrophyte coverage will have serious implications to the City of Claremont. We request that the actual data collected by the NHDES during 2012 sampling activities be included in the Fact Sheet so that the City may review and concur or dispute this assertion. We also feel that it is important to note that this segment of the Sugar River is not listed on the 303(d) for phosphorus related impairments, nor for any other water quality parameters that phosphorus is known to effect (i.e. dissolved oxygen, aesthetics, clarity, aquatic habitat, etc.)

Regarding total phosphorus background concentration:

- Sugar River background phosphorus concentration: Fact Sheet, Page 21 of 36: Background phosphorus concentration is assumed to be 0.02 mg/l based on Ecoregion suggested value. The City has recently begun a river sampling and testing program in order to more accurately determine actual background concentrations for phosphorus and copper. One round of sampling results was recently completed. 11 of 12 results were reported to be less than 0.01 mg/l and the last result was 0.01 mg/l. Copies of laboratory testing results are attached to this letter. Based on these initial results it appears that the Ecoregion value is not a valid approximation of the actual background phosphorus levels in the Sugar River. This value is critical in the determination of the future phosphorus discharge limits which will have a significant effect on the City of Claremont. We believe the actual background phosphorus concentration are likely lower than 0.02 mg/l. Based on other New Hampshire NPDES permitting actions, we are aware of two other communities, where actual site specific data was available and the background phosphorus levels were determined to be less than 0.02 mg/l:
- Pittsfield: Suncook River (Background phosphorus = 0.011 mg/l)
- Jaffrey: Contoocook River (Background phosphorus = 0.0155 mg/l)
  We request that EPA forego imposition of phosphorus limits until the City is afforded adequate time to collect additional site specific data to more accurately determine the actual background phosphorus concentration.

Regarding a compliance schedule for total phosphorus effluent limit:

d. The Claremont WWTF was not designed for phosphorus removal and the historical DMR data show that the current effluent quality will violate the new permit limit. We understand that the NHDES has revised its Water Quality Standards to allow the inclusion of compliance schedules within NPDES permits. We request that the Final NPDES permit include a compliance schedule for phosphorus. We also request that the EPA and NHDES meet with us to discuss the details of phosphorus compliance for this facility and to determine a reasonable compliance schedule in advance of issuance of the Final NPDES permit.

As noted above, the Claremont WWTF will need to be significantly upgraded in order to achieve reliable compliance with the new phosphorus limits. Evaluation of phosphorus treatment alternatives will be further complicated by the new copper and nitrogen standards. The City will need to procure engineering services to perform the necessary alternatives study and design of upgraded facilities. The City will also need to procure funding and possibly public authorization to appropriate the funding. The construction process to implement the improvements will be subject to regulatory permitting and approvals and the procurement of some of the specialized types of equipment necessary can also be a lengthy process. We expect it may take 3 to 5 years to complete and start up upgraded treatment facilities to meet the new permit requirements.

Response to Comment 6:

Regarding Sugar River not listed for water quality impairment related to phosphorus:

As implied by the commenter, it is well established under the Environmental Appeals Board (EAB) precedent and guidance that it is not necessary to wait for water quality violations to occur prior to imposing a protective effluent limitation in an NPDES permit, even assuming that there is no evidence of exceedances of water quality standards. The requirement to impose a permit limit is not only premised on a finding that the pollutant discharges "are" at a level that "causes" violation of the applicable water quality standards, but the requirement is also triggered by a finding that the facility's pollutant discharges "may" be at a level that "contributes" to or has the "reasonable potential" to cause a violation. 40 C.F.R. § 122.44(d)(1)(i). The regulation requires water quality-based effluent limits even when there is some degree of uncertainty regarding both the precise pollutant discharge levels and the potential casual effects of those discharges, so long as the record is sufficient to establish that there is a "reasonable potential" for that discharge to cause or contribute to a violation of water quality standards. EPA in the Final Rule Preamble for 40 C.F.R. § 122.44(d)(1) dispels any doubt over the necessity of proving an impairment and causation of that impairment prior to either deriving a numeric in-stream target to implement a narrative water quality criterion, or imposing a water quality-based effluent limitation to implement that criterion:

> "Several commenters asked if it was necessary to show in-stream impact, or show adverse effects on human health before invoking [§ 122.44(d)(1)(vi)] as the basis for establishing water quality-based limits on a pollutant of concern. It is not necessary to show adverse effects on aquatic life or human health to invoke this paragraph []. The CWA does not require such a demonstration and it is EPA's position that it is not necessary to demonstrate such effects before establishing limits on a pollutant of concern." 54 Fed. Reg. 23,868, 23,878 (June 2, 1989).

"Reasonable potential" requires some degree of certainty greater than a mere possibility, but it leaves to the permit writer's scientific and technical judgment how much certainty is necessary. The regulations, thus, require a precautionary approach when determining whether the permit must contain a water quality-based effluent limit for a particular pollutant. In this case, the permittee reported a maximum total phosphorus concentration of 1.3 mg/l in its discharge. As noted in the fact sheet (p. 21), dividing this reported effluent concentration by the dilution factor of 6.5, results in an instream concentration of 0.2 mg/l without the consideration of the background total phosphorus concentration. This is greater than the Gold Book recommendation of 0.1 mg/l; and therefore, indicates that there is reasonable potential to cause or contribute to a water quality violation under critical conditions.

In the event suggested by the commenter that the water quality standards are revised, or the regulatory interpretation of the existing standards changes, the permittee may request a permit modification at that time and the permit may be reopened and modified in accordance with such changes. The regulations for the modification of a permit can be found at 40 C.F.R. § 122.62.

Regarding 2012 NHDES Sugar River sampling:

The work done by NHDES in the summer of 2012 at sampling station 01AA-SGR included the collection of water samples which were analyzed for phosphorus and nitrogen; the collection of biomonitoring data including algal assessment; invertebrate sampling and; the collection of photographic evidence. Sampling station 01AA-SGR is located 0.3 miles downstream of the Claremont WWTF. NHDES used a modified Viewing Bucket Survey Method[7] to conduct the Rapid Periphyton Survey. Sample data sheets are attached to this response to comments (Appendix A). As discussed in the Fact Sheet, NHDES found evidence of both macrophytes and periphyton at station 01AA-SGR, downstream of the Claremont WWTF. The algal observation data documents the dominance of an aquatic macrophyte, *Podostemum ceratophyllum* (horned-leaved riverweed) in the survey area (D. Neils, personal communication, 11/12/2015).

It is important to keep in mind that the evidence of in-stream macrophytes and periphyton was simply used as a means to illustrate that there is evidence of eutrophication

[7] Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Stream and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C., p. 6-18.

downstream of the WWTP and was not the sole basis for the total phosphorus effluent limit.

As previously noted (Response to Comment 1), EPA does not update the fact sheet as part of preparing the Final Permit. EPA has appended the data, lab sheets and photos from the fieldwork to this Response to Comments (Appendix A).

Regarding total phosphorus background concentration:

The City also expressed concern with EPA's use of the ecoregion value of 0.02 mg/l as the estimated background concentration since there was no available data. The permittee states "The City has recently begun a river sampling and testing program in order to more accurately determine actual background concentrations for phosphorus and copper." At the close of the public comment period, the permittee had only completed three rounds of sampling which were submitted as part of their comments.

Unfortunately, the instream phosphorus data submitted by the permittee was collected at four locations upstream of the Claremont WWTF and the hydropower dam. Station 4, the closest to the Claremont WWTF is in the pool upstream of the dam; and therefore, is not a representative sample. The other stations are between 1.13 and 4.25 river miles upstream from the WWTF discharge. Also, river flows at the time the samples were collected significantly greater than critical conditions (See Table 1).

To better characterize total phosphorus concentrations during critical conditions, the permittee collected another round of sampling in late July/early August 2015 when river flows were close to 7Q10 conditions. The data was also collected at Site #5 which is upstream of the Claremont WWTF discharge but downstream of the dam.

Table 1: Total phosphorus results from permittee sampling

Date	Site #5 (~1000' upstream from the WWTF discharge)	Site #4 (~1500' upstream from WWTF discharge)	Site #3 (~1.13 miles upstream from WWTF discharge)	Site #2 (~2.8 miles upstream from WWTF discharge)	Site #1 (~4.25 miles upstream from WWTF discharge)	Flow at W. Claremont Gage (cfs)	Streamflow greater than 7Q10 (37.23 cfs)
4/23/2015		<0.01	<0.01	<0.01	0.01	1440	39 times
4/24/2015		<0.01	<0.01	<0.01	<0.01	1210	33 times
4/27/2015		<0.01	<0.01	<0.01	<0.01	662	18 times
7/31/2015	<0.01					58	1.56 times
8/3/2015	0.01					47	1.26 time
8/4/2015	0.01					58	1.56 times
8/5/2015	0.01					69	1.85 times
Median	0.01	0	0	0	0		

EPA finds that the median total phosphorus concentration of this new set of samples from Site # 5, 0.01mg/l, is a reasonable estimate of the background level of phosphorus upstream of the Claremont WWTF and has recalculated the seasonal total phosphorus effluent limit as shown below. EPA also used an updated period of record, March 2011 to February 2016, to determine the lowest effluent monthly average flow which is 1.06 mgd.

Using the background instream total phosphorus value of 0.01 mg/l yields a mass-bass limit of 17.0 lbs/d.

$$Q_dC_d + Q_sC_s = Q_rC_r\ (0.90)$$

and

$$M_d = Q_dC_d * 8.345$$

Substituting (Q_dC_d) with (M_d/8.345) in the first equation and solving for M_d results in:

$$M_d = (Q_rC_r(0.90) - Q_sC_s)*8.345$$

where:

M_d = mass-based phosphorus limit
Q_d = effluent flow in mgd (lowest effluent monthly average flow = 1.06 mgd)
C_d = effluent phosphorus concentration in mg/l
Q_s = upstream 7Q10 flow (24.21 mgd)
C_s = upstream river phosphorus concentration (0.010 mg/l)
Q_r = downstream 7Q10 flow ($Q_s + Q_d$ = 25.27 mgd)
C_r = downstream river phosphorus concentration (Gold Book target = 0.100 mg/l)
0.90 = factor to reserve 10% assimilative capacity
8.345 = factor to convert from mgd * mg/l to lb/d

The allowable discharge of 17.0 lb/d is equivalent to approximately 0.52 mg/l at design flow and approximately 1.92 mg/l at the lowest monthly average flow of 1.06 mgd. The seasonal total effluent has been revised from 14.9 lb/day in the draft permit to 17.0 lb/day in the final permit.

In addition, the final permit includes a monitoring requirement for upstream ambient phosphorus to supplement the limited ambient data currently available upstream of the discharge. Two (2) separate rounds of ambient total phosphorus sampling shall be collected between July 15th and September 15th, annually. Sampling shall following a period of dry weather, which is defined for the purpose of this permit, as five (5) consecutive days with no precipitation events greater than 0.1 inch. The sampling rounds must be separated by a least a week. Ambient samples should be collected at "Site 5 – approximately 1000 feet upstream from the WWTF discharge" (July/August 2015 Sampling) therefore providing comparable data.

Regarding a compliance schedule for total phosphorus effluent limit:

EPA recognizes that the Claremont WWTF was not designed for phosphorus removal. In the draft fact sheet and permit, EPA requested input on a reasonable compliance schedule for achieving the proposed total phosphorus limits. EPA has established a 48 month compliance schedule in the final permit which is similar to schedules which have been included and achieved in permits for similar Massachusetts facilities that have been upgraded to reduce total phosphorus discharges and which falls within the range provided in the permittee's comment. The inclusion of compliance schedules in New Hampshire NPDES permits is new so there are no New Hampshire-specific examples.

Comment 7: Total Recoverable Copper: The Draft Permit includes more stringent Total Recoverable Copper ("copper") limits due to the consideration of the background copper levels in the Sugar River. The basis of the background copper levels is historic Whole Effluent Toxicity (WET) testing data, which indicates that background levels are greater than 90% of the acute and chronic copper criteria. The historical DMR data indicates that the Claremont WWTF may not be able to maintain compliance with the new copper limits.

a. The City of Claremont believes that the WET data may not be an accurate representation of actual background copper values in the Sugar River. The copper criteria values are extremely low, which means that small amounts of sample contamination or interference can have a drastic impact on the accuracy of the results. When testing metals at level this low, "clean" sampling and rigorous quality assurance project plans (QAPP) should be implemented. Historically, the WET ambient metals data has not been used in the development of NPDES permit limits, and the City of Claremont has not employed "clean" techniques for the collection of river samples for WET testing. The City has recently begun a river sampling and testing program in order to more accurately determine background concentration for phosphorus and copper. The first round of copper test results were recently received. A copy of the lab results and a figure showing the sampling locations are attached. Of the first 15 laboratory testing results, 10 were non-detect at a detection limit of 0.001 mg/l. The highest test was 0.002 mg/l. This initial data indicates that the median background copper level is well below 4.6 ug/l that was calculated using historical WET data. We request that EPA forego imposition of total recoverable copper limits until the City is afforded adequate time to collect additional site specific copper data to more accurately determine the actual background total recoverable copper concentration.
b. The Draft Permit copper limit is a monthly average concentration of 3.62 ug/l (0.00362 mg/l) and a maximum daily limit of 4.93 ug/l (0.00493 mg/l). We would prefer that copper compliance be determined based on WWTF effluent mass loading rather than concentration, in a similar manner to phosphorus compliance. We do not believe there are any applicable effluent limitation guidelines adopted by NHDES or USEPA for toxic parameters from a publicly owned treatment works that would preclude issuance of mass-based limits. It should also be noted

that since May 2012 the State of Maine has mandated that metals limits in waste discharge licenses maybe expressed only as mass-based limits, unless otherwise required by an applicable effluent limitation adopted by the MEDEP. Based on the precedent set by the State of Maine, which falls under the regulatory authority of the USEPA Region 1, we assume that mass-based limits for toxics should be allowed by USEPA Region 1. We request that the concentration limit be removed from the permit (or changed to monitor only), and be replaced with a mass limit, if necessary, based on reasonable potential analysis.

c. As noted above, the Claremont WWTF may need to be significantly upgraded in order to achieve reliable compliance with the new copper limits. The steps necessary to achieve compliance with the new copper discharge limits are similar to those describe[d] above for phosphorus compliance. We request that the Final NPDES permit include a compliance schedule for copper. We anticipate that the necessary compliance schedule for copper would be similar to the phosphorus schedule, and we are amenable to working with EPA and NHDES to develop a reasonable compliance schedule.

Response to Comment 7:

EPA recognizes that the City of Claremont has concern about the validity of its self-reported copper data. EPA agrees with the commenter that there is the potential that the ambient WET samples may have been contaminated if proper sampling techniques were not used; however, the permittee has stated "There was no specific suspected cause of contamination in historical samples…Based on the experiences of the Merrimack WWTF during its most recent NPDES relicensing, our engineer experienced first[-]hand the problems that can occur from the interpretation of historical WET testing." [8] EPA notes that in the case of the Merrimack WWTF a specific source of contamination was identified. The permittee is required to correct any deficiencies in its WET testing procedures to ensure future ambient data is collected in accordance with WET protocol (Attachments A & B of the Final Permit), and EPA approved sampling methods which area permit requirements. Permittees should be aware that data collected will be used in future permitting decisions.

The permittee states in its comments, "The City has recently begun a river sampling and testing program in order to more accurately determine actual background concentrations for phosphorus and copper." At the close of the public comment period, the permittee had only completed three rounds of sampling which were submitted as part of their comments. EPA reviewed the submitted data. The ambient copper data collected by the permittee was collected at five locations upstream of the Claremont WWTF. Station 5, the closest to the Claremont WWTF is just below the hydropower dam and is the nearest and most representative station of the data submitted. The other stations are between 0.2 and 4.25 river miles upstream from there. River flows at the time of the sampling were significantly higher than the critical 7Q10 conditions (See Table 2).

[8] R. Lauricella (personal communication, September 29, 2014)

To better characterize ambient copper concentrations during critical conditions, the permittee collected another round of sampling in late July/early August 2015 when river flows were close to the 7Q10 flow of 37.23 cfs. The data was collected only at Site #5, which is just upstream of the Claremont WWTF discharge but downstream of the dam and the most representative location based on the previously sampled stations.

Table 2: Clean sampling results for copper, in mg/l, as submitted by permittee.

Date	Site #5	Site #4	Site #3	Site #2	Site #1	Flow at W. Claremont Gage (cfs)	Streamflow greater than 7Q10 (37.23 cfs)
4/23/2015	0.002	0.001	<0.001	<0.001	0.001	1440	39 times
4/24/2015	<0.001	<0.001	<0.001	<0.001	<0.001	1210	33 times
4/27/2015	<0.001	<0.001	<0.001	<0.001	<0.001	662	18 times
7/31/2015	0.001	***	***	***	***	58	1.56 times
8/3/2015	0.001	***	***	***	***	47	1.26 time
8/4/2015	0.001	***	***	***	***	58	1.56 times
8/5/2015	0.001	***	***	***	***	69	1.85 times
Median	**0.001**	**0**	**0**	**0**	**0**	***	***

Note: Less than values (non-detects) are calculated as 0.

As stated in the Fact Sheet, in order to determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria, the following mass balance equation is used to project in-stream metal concentrations downstream of the discharge.

$$Q_dC_d + Q_sC_s = Q_rC_r$$

Rewritten as:

$$Cr = \frac{Q_dC_d+Q_sC_s}{Q_r}$$

Where:

Q_d = design flow in mgd (3.89 mgd = 6.02 cfs)
C_d = effluent copper concentration in ug/l (26.78, 95th percentile)
Q_s = upstream 7Q10 flow (37.46 cfs)
C_s = median upstream river copper concentration in ug/l (1 ug/l)
Q_r = resultant downstream 7Q10 flow, after discharge ($Q_s + Q_d$ = 43.48 cfs)
C_r = downstream river copper concentration

Reasonable potential is then determined by comparing the resulting downstream copper concentration with the criteria multiplied by the factor 0.9 to reserve 10% assimilative capacity (Env-Wq 1705.01). In this case, there is reasonable potential so the appropriate limit is then calculated by rearranging the above mass balance to solve the effluent metals concentration (C_d) using the criterion times 0.9 as the downstream metals concentration.

Table 3: Reasonable Potential for Copper

Metal	Q_d	C_d[1] (Effluent 95th Percentile)	Q_s	C_s[2] (Ambient Median)	$Q_r=Q_s+Q_d$	$C_r = (Q_dC_d + Q_sC_s)/Q_r$	Criterion * 0.9		Reasonable Potential	Limit = $(Q_r*$Criterion*0.9-$Q_sC_s)/Q_d$	
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	Chronic (ug/l)	C_r> Criteria * 0.9	Acute (ug/l)	Chronic (ug/l)
Copper	6.02	26.78	37.46	1	43.48	4.57	4.44	3.26	Y (Chronic & Acute)	25.84	17.32

The calculated effluent limits are 25.84 ug/l as a maximum daily limit (acute) and 17.32 ug/l as an average monthly limit (chronic). The 2006 permit, which used an estimated hardness of 25 mg/l and did not factor in the ambient concentration of copper, included effluent limits of 24.64 ug/l as a maximum daily limit and 18.55 ug/l as an average monthly limit. Over the term of the 2006 permit the permittee has had 4 exceedances of the permit limits over a period of 109 months. Although the newly calculated maximum daily limit is higher than that in the 2006 permit, anti-backsliding regulations prohibit a permit from being reissued with effluent limits that are less stringent than the previous permit unless one of the exceptions found at 40 CFR 122.44(l)(2)(i) are met. In this case none of the anti-backsliding exceptions are applicable. Therefore EPA has established effluent limitations of 24.64 ug/l for a maximum daily limit and 17.32 ug/l for an average monthly limit.

EPA has reviewed the request to apply the copper limit as a mass-based limit (instead of a concentration-based limit). In reference to the units of a limitation, 40 CFR 122.45(f)(1)(ii) states the following:

Mass limitations. All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass except:

(ii) When applicable standards and limitations are expressed in terms of other units of measurement.

In the case of copper, the relevant water quality standards are numeric criteria expressed in terms of concentration. *See* NH Surface Water Quality Standard (SWQS) at Env-Wq 1703.24. Based upon this regulation, the limit must be expressed in terms of concentration. The phosphorus limit which is referenced in the comment above is able to be expressed in terms of mass because the relevant standard for phosphorus is a narrative. *See* NH SWQS at Env-Wq 1703.14(b) & (c).

Both EPA and NHDES have concluded that a compliance schedule is unnecessary for the revised copper effluent limitations given the permittee's compliance history with the copper effluent limitations contained in the 2006 permit.

Comment 8: Ammonia Nitrogen as N: The Draft Permit retains the existing limits for Ammonia Nitrogen as N ("ammonia"). We would prefer that ammonia compliance be determined based on WWTF effluent mass loading rather than concentration, in a similar manner to phosphorus compliance. We request that the concentration limit be removed from the permit (or changed to monitor only), and be replaced with a mass limit, if necessary, based on reasonable potential analysis. The Fact Sheet indicates the basis of the Ammonia limits is the TMDL and to prevent DO violations, and that these resulting limits are significantly lower than the limits that would be calculated using water quality toxics criteria. Previously, EPA has denied requests to issue mass only limits for toxics criteria (reference Pittsfield NPDES Permit No. NH0100986). The fact that the Claremont Ammonia limits are based on dissolved oxygen criteria and not based on ammonia toxicity criteria, should be sufficient justification to allow EPA to revise the Ammonia limits to mass only standards.

Response to Comment 8:

The Lower Sugar River TMDL was necessitated by the impairment by insufficient dissolved oxygen (DO). EPA's approval of the TMDL included the review of the tables on page 3 of NHDES's letter[9] to Alison Simcox, TMDL Coordinator for EPA Region 1. The revised tables were shown as follows:

Option #1
Proposed Claremont WWTF Effluent Discharge Limits
Q = 3.89 mgd

Summer (June 1- October 31)

Parameter	ppm			lbs/day		
	Ave Monthly	Ave Weekly	Maximum Daily	Ave Monthly	Ave Weekly	Maximum Daily
DO	No less than 7 ppm					
$CBOD_5$	25	40	45	811	1298	1460
NH3-N	7.2	***	11.3	234	***	367

Winter (November 1 – May 31)

Parameter	ppm			lbs/day		
	Ave Monthly	Ave Weekly	Maximum Daily	Ave Monthly	Ave Weekly	Maximum Daily
DO	No less than 7 ppm					
$CBOD_5$	25	40	45	811	1298	1460
NH3-N	10.9	***	30.6	354	***	993

EPA's denial of the Pittsfield request for mass-based limits for ammonia was based on the fact that the relevant standard was expressed in terms of concentration. In the case of Claremont, the relevant standard is the DO standard and the TMDLs which were established for $CBOD_5$ and ammonia based on modeling.

[9] Letter to Alison Simcox, TMDL Coordinator, EPA New England from Gregg Comstock, P.E., NHDES, dated September 28, 2000, Subject: Sugar River TMDL.

40 C.F.R. § 122.44(d)(1)(vii)(B) states that when developing water quality based effluent limited under this paragraph the permitting authority shall ensure that: "Effluent limitations developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocations for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7. Since the approved TMDL contains both concentration and mass limits for ammonia the permit must be consistent with these effluent limitations.

EPA has reviewed the request to apply the ammonia limit as a mass-based limit (instead of a concentration-based limit). In reference to the units of a limitation, 40 CFR 122.45(f)(1)(ii) says the following:

Mass limitations: All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass except:
(ii) When applicable standards or limitations are expressed in terms of other units of measurement

In the case of ammonia, the relevant standard is expressed in terms of concentration. *See* NH SWQS at Env-Wq 1703.25. Based upon this regulation, the limit must be expressed in terms of concentration.

Appendix A
Sample Data Sheets, Data and Photos from Nutrient Study

1st visit - 6/26/12
2nd visit - 7/3/12
3rd visit 8/8/12
4th - 8/28/12

BIOMONITORING DATA SHEET (Page 1 of 2)

SITE ID: 01AA-SGR **TOWN:** Claremont

STREAM NAME: Sugar River

DIRECTIONS: Rt. 12 in Claremont to dirt pull in area near very high railroad bridge

SITE DESCRIPTION: Open canopy, rain past 24 hrs, currently slightly raining, moderate flow, clear water, fair - esthetics, predominately boulder bottom

LAT: 43.391455 LONG: -72.384571 DA (SQ MI): _____ ELEV(FT): _____ TYPE: WW TW CW

LENGTH OF REACH (M): _____ WIDTH (M): 1._____; 2._____; 3._____

VISITATION

V. algae count

DATE: 6/26/12 ACTIVITIES: YSI, nutrient samples PERSONNEL: LF/EC
DATE: 7/3/12 ACTIVITIES: YSI, Algae Count, nutrient samples, rock basket deployment, Algae Community assessment PERSONNEL: LF/EC/DN
DATE: 8/8/12 ACTIVITIES: Nutrients PERSONNEL: LF/EC
DATE: 8/28/12 ACTIVITIES: YSI, Rock basket collection PERSONNEL: LF/DN
DATE: _____ ACTIVITIES: _____ PERSONNEL: _____
DATE: _____ ACTIVITIES: _____ PERSONNEL: _____
ADDITIONAL INFORMATION: _____

FIELD MEASUREMENTS

DATE	TEMP (c)	SP. CONDUCTANCE (µmhos)	pH	DO (% Sat)	DO (mg/L)	meter
10:30am 6/26/12	19.62 °C	149	7.16	98.9 %	9.05 mg/L	YSI-Bio mon
7/3/12 9:50 am	24.56 °C	164	7.61	107.3 %	8.93 mg/L	YSI-Bio mon
8/28/12 1:00 pm	26.26°C	240	8.31	116.5 %	9.4 mg/L	YSI BIO mon

NUTRIENT CRITERIA DATA SHEET (Page 2 of 2)

*Rock basket #1 – rocks too large

STATEWIDE HABITAT FORM COMPLETED: Y / N DATE COMPLETED: _____

dep=0.8Ft deep 8/29/12 velocity! 0.06 FPS

INVERTEBRATE SAMPLE INFORMATION

Below 2nd Power line starting upstream moving down-stream

DATE OF ROCK BASKET DEPLOYMENT: 7/3/12 DATE COLLECTED: 8/28/12

DEPLOYMENT DEPTH (FT):: 1.1 ~~feet~~ RB CONDITIONS @ COLLECTION: 80s, Sunny/clear

STREAM VELOCITY (FT/S):: #1 .13 FT/S; #2 .05 FT/S; #3 .93 FT/S (#1 IS RIVER RT.) low flow, Filamentous algae Prevalent

ALGAL ASSESSMENT INFORMATION

QUANTITY ASSESSMENT DATE 1. 6/26/12

RECENT / CURRENT STREAMFLOW CONDITIONS: moderate streamflow fair aesthetics recent rains, below

QUANTITY ASSESSMENT DATE 2. 7/3/12

RECENT / CURRENT STREAMFLOW CONDITIONS: _____

QUANTITY ASSESSMENT DATE 3. _____

RECENT / CURRENT STREAMFLOW CONDITIONS: _____

ADDITIONAL INFORMATION: _____

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COMMUNITY ASSESSMENT DATE: 7/3/12

RECENT / CURRENT STREAMFLOW CONDITIONS: Low flow, Sunny Clear sky

aesthetics = poor

NUMBER OF SCRAPINGS: 18 TOTAL AREA (CM^2): _____

ADDITIONAL INFORMATION: _____

750mL

DATA LOGGER DEPLOYMENT INFORMATION

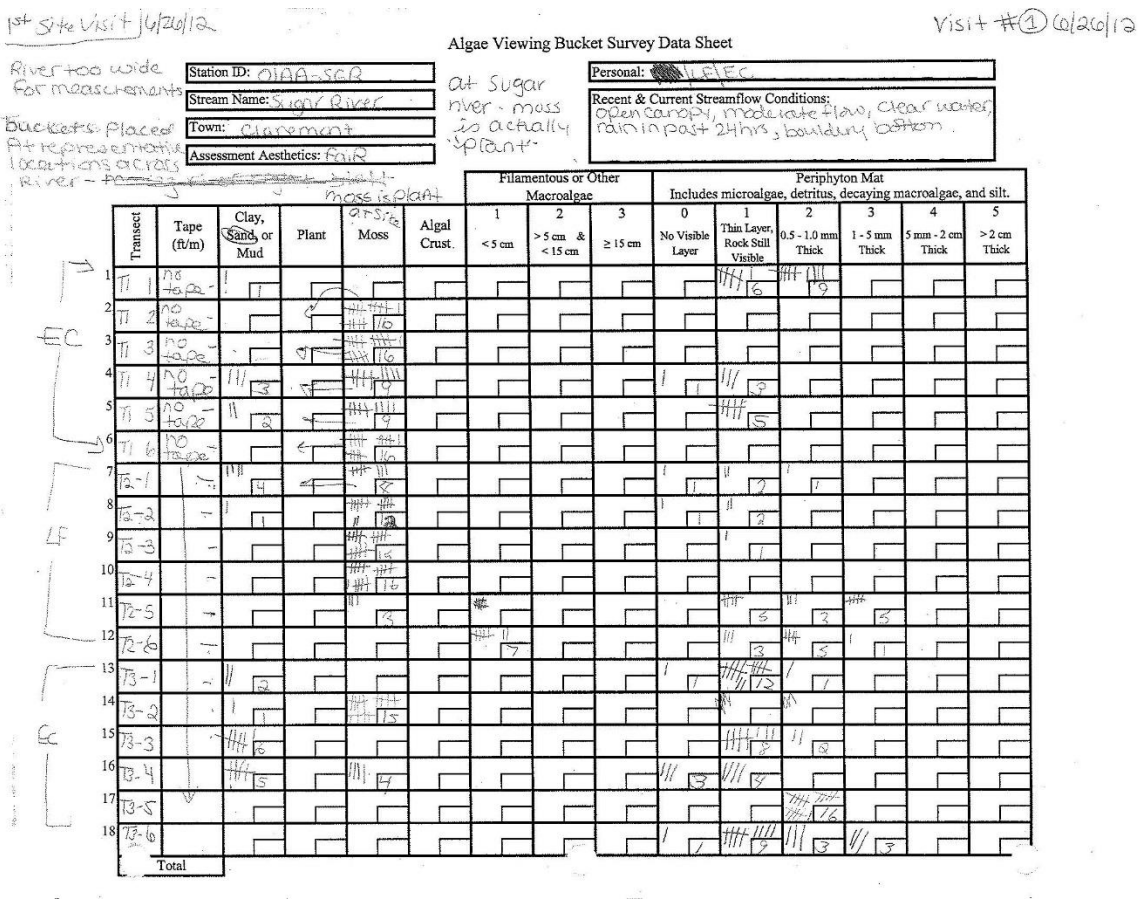
METER/SONDE:: _____

DATE DEPLOYED : _____; PERSONNEL : _____

DATE COLLECTED: _____: PERSONNEL : _____

DEPLOYMENT CONDITIONS: _____

GRADIENT ELEVATION CHANGE (FT): _____; LENGTH OF REACH (M/FT): _____



1st Site Visit 6/20/12

Visit #1 6/20/12

Algae Viewing Bucket Survey Data Sheet

River too wide for measurements

Station ID: 01AA-SGR

Stream Name: Sugar River

Town: Claremont

Assessment Aesthetics: fair

Personal: [redacted] LFIEC

Recent & Current Streamflow Conditions: open canopy, moderate flow, clear water, rain in past 24 hrs, bouldery bottom.

Buckets placed at representative locations across river – [illegible]

at Sugar river - moss is actually plant.

mass is plant

Transect	Tape (ft/m)	Clay, Sand, or Mud	Plant	Moss	Algal Crust	Filamentous or Other Macroalgae: 1 <5 cm	2 >5 cm & <15 cm	3 ≥15 cm	Periphyton Mat: 0 No Visible Layer	1 Thin Layer, Rock Still Visible	2 0.5 - 1.0 mm Thick	3 1 - 5 mm Thick	4 5 mm - 2 cm Thick	5 >2 cm Thick
T1 1	no tape	1		arsite						6	9			
T1 2	no tape			16										
T1 3	no tape			16										
T1 4	no tape	3		9					1	3				
T1 5	no tape	2		9						5				
T1 6	no tape			16										
T2-1		4		8					1	2	1			
T2-2		1		13					1	2				
T2-3				15						1				
T2-4				16										
T2-5				3						5	3	5		
T2-6						7				3	5	1		
T3-1		2							1	12	1			
T3-2		1		15										
T3-3		6								8	8			
T3-4		5		4					3	4				
T3-5											16			
T3-6									1	9	3	3		
Total														

EC

LF

EC

7/3/12
(2)

Algae Viewing Bucket Survey Data Sheet

Station ID: 01AA-SGR
Stream Name: Sugar River
Town: Claremont
Assessment Aesthetics: Poor

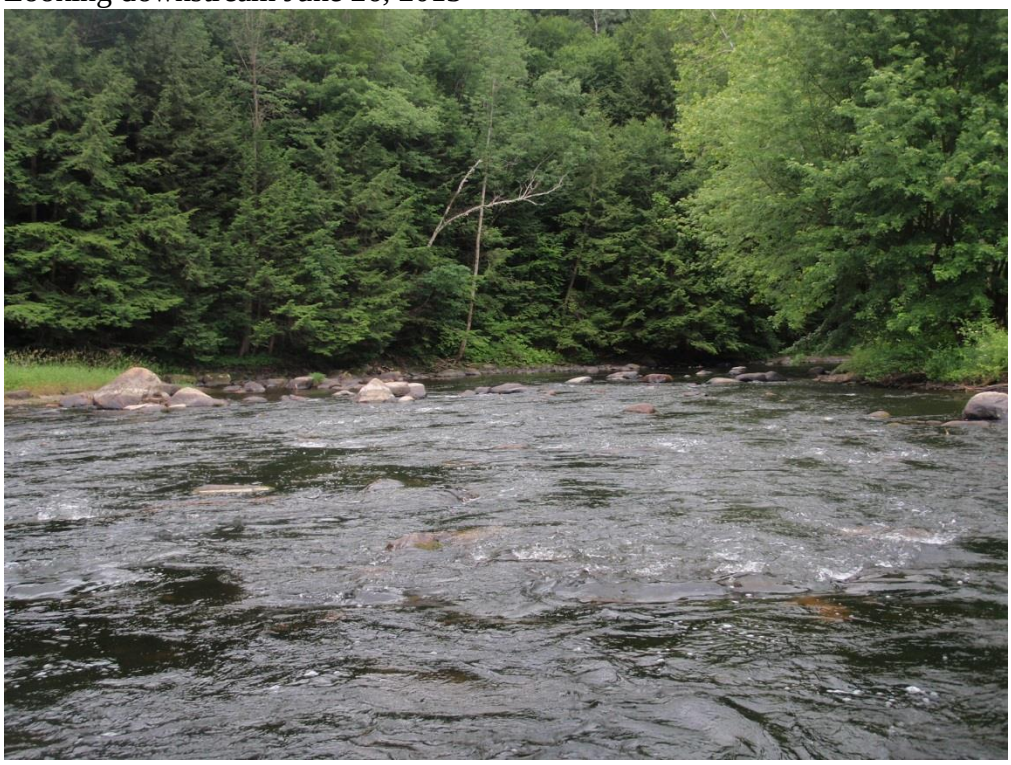
Personal: [illegible], LF, EC
Recent & Current Streamflow Conditions: Low Flow, sunny ~80°F
No rain last 5+ days
bottom substrates mottled w/ Macrophyt[e]

random zig-zag for all

						Filamentous or Other Macroalgae			Periphyton Mat Includes microalgae, detritus, decaying macroalgae, and silt.					
Transect	Tape (ft/m)	Clay, Sand or Mud	Plant	Moss	Algal Crust	1 < 5 cm	2 > 5 cm & < 15 cm	3 ≥ 15 cm	0 No Visible Layer	1 Thin Layer, Rock Still Visible	2 0.5 - 1.0 mm Thick	3 1 - 5 mm Thick	4 5 mm - 2 cm Thick	5 > 2 cm Thick
1 (EC)	No tape	5								6	5			
2										1	6	9		
3		6								8	2			
4		2								9	5			
5			16											
6		1							2	11	2			
7 (EC)		1	14							1				
8		2	4							10				
9			13							3				
10			15							1				
11			13							3				
12		5	8							3				
13 (DN)			16								0			
14			10							3	3			
15		3	13											
16		[illegible]	14								4	12		
17			16											
18			16											
	Total													

Station ID	Station Name	Town	Start Date	Start Time	Result Status	Parameter	Numeric Result	Text Result	Result Units
01AA-SGR	SUGAR RIVER	CLAREMONT	04/10/2012	13:55	FINAL	PHOSPHORUS AS P	0.02100		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	06/26/2012	12:20	FINAL	NITROGEN, NITRITE (NO2) AS N		ND	MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	06/26/2012	12:20	FINAL	NITROGEN, NITRITE (NO2) + NITRATE (NO3) AS N	0.40000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	06/26/2012	12:20	FINAL	PHOSPHORUS AS P	0.04200		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	06/26/2012	12:20	FINAL	NITROGEN, KJELDAHL		ND	MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	06/26/2012	12:20	FINAL	NITROGEN, NITRATE (NO3) AS N	0.39000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	07/03/2012	10:00	FINAL	NITROGEN, KJELDAHL	0.42000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	07/03/2012	10:00	FINAL	NITROGEN, NITRITE (NO2) AS N		ND	MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	07/03/2012	10:00	FINAL	PHOSPHORUS AS P	0.05000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	07/03/2012	10:00	FINAL	NITROGEN, NITRITE (NO2) + NITRATE (NO3) AS N	0.41000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	07/03/2012	10:00	FINAL	NITROGEN, NITRATE (NO3) AS N	0.40000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	08/08/2012	10:15	FINAL	NITROGEN, NITRATE (NO3) AS N	0.50000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	08/08/2012	10:15	FINAL	PHOSPHORUS AS P	0.08300		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	08/08/2012	10:15	FINAL	NITROGEN, KJELDAHL	1.20000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	08/08/2012	10:15	FINAL	NITROGEN, NITRITE (NO2) + NITRATE (NO3) AS N	0.51000		MG/L
01AA-SGR	SUGAR RIVER	CLAREMONT	08/08/2012	10:15	FINAL	NITROGEN, NITRITE (NO2) AS N		ND	MG/L

Looking downstream June 26, 2013



Looking upstream June 26, 2013

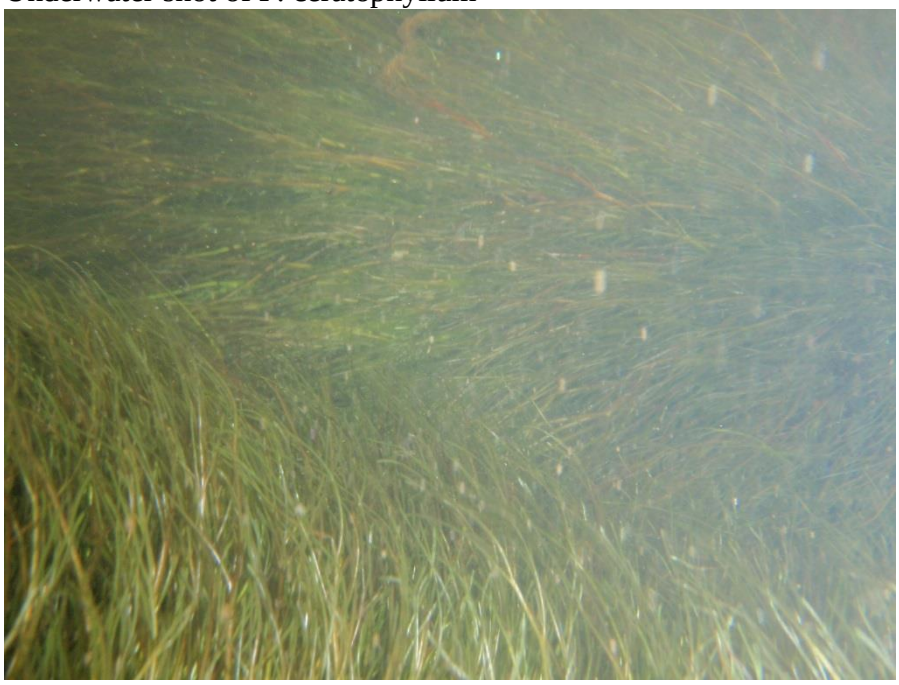
Periphyton coverage June 26, 2012

Typical Rock (Top)

(Bottom)

Abundance of Podostemum ceratophyllum (macrophyte) on river bottom

Underwater shot of P. ceratophyllum



Looking downstream July 3, 2012

Looking upstream July 3, 2012

Typical rock July 3, 2012 (bottom dominated by P. certophyllum)

Underwater photo of rocks w/out P. certophyllum

Rocks with circular area submitted for algal composition analysis, July 3, 2012

Rock Basket with long strand filamentous algae August 28, 2012

Filamentous algae August 28, 2012