AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

The Town of Pittsfield, New Hampshire

is authorized to discharge from the Wastewater Treatment Plant located at

127 South Main Street
Pittsfield, New Hampshire 03263

to receiving waters named

Suncook River

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 Pittsfield Wastewater Treatment Plant collection system.

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

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

This permit supersedes the permit issued on September 25, 2002.

This permit consists of **Part I (**15 pages including effluent limitations and monitoring requirements); **Attachment A** (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages); **Attachment B** (USEPA Region 1 Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013, 7 pages); and **Part II (**25 pages including NPDES Part II Standard Conditions).

Signed this 21st day of January, 2015

/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 Suncook 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	Report	---	Report	Continuous Recorder[1]	
$CBOD_5$; mg/l (lb/day)	25 (83)	40 (134)	45 (150)	1/Week[2]	Grab
TSS; mg/l (lb/day)	30 (100)	45 (150)	50 (167)	1/Week[2]	Grab
Total Phosphorus; lb/d (Applicable April 1 - October 31)	1.5	---	Report	1/Week	Grab
pH Range[3]; Standard Units	6.5 to 8.0 (See I.H.5., State Permit Conditions)			1/Day	Grab
Total Residual Chlorine[4,6]; ug/l	57	---	99	1/Day	Grab
Escherichia coli[4,5]; Colonies/100 ml	126	---	406	2/Week	Grab
Total Recoverable Copper; ug/l	15		Report	2/Month[10]	Grab
Ammonia Nitrogen as N; mg/l (Applicable June 1 - October 31)	15.7	---	Report	1/Week	Grab
Whole Effluent Toxicity[7,8,9]; Percent	Acute $LC_{50} \geq 100\%$ Chronic C-NOEC $\geq 19.2\%$			1/Year	Grab
Hardness[10]; mg/l	---	---	Report	1/Year	Grab
Ammonia Nitrogen as N[10]; mg/l	---	---	Report	1/Year	Grab
Total Recoverable Aluminum[10]; mg/l	---	---	Report	1/Year	Grab
Total Recoverable Cadmium[10]; mg/l	---	---	Report	1/Year	Grab
Total Recoverable Copper[10] mg/l	---	---	Report	1/Year	Grab
Total Recoverable Lead[10]; mg/l	---	---	Report	1/Year	Grab
Total Recoverable Nickel[10]; mg/l	---	---	Report	1/Year	Grab
Total Recoverable Zinc[10]; mg/l	---	---	Report	1/Year	Grab

See pages 3 and 4 for footnotes

FOOTNOTES

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

2. Effluent sampling frequency. The influent shall be sampled twice per month using 24-hour composite samples.

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 shall be measured using any methods listed in 40 Code of Federal Regulations (CFR) Part 136 which has a minimum level (ML) at or below the permitted average monthly limit of 55 ug/l (e.g., SM 4500-Cl E). Any measured value below the ML shall be reported as zero unless written notice is received by certified mail from EPA indicating some value other than zero is to be reported.

7. 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 “19.2 % or greater" limit is defined as a sample which is composed of 19.2 % (or greater) effluent, the remainder being dilution water.

8. 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 once per year during the third calendar quarter (July through September). 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).

9. 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).

10. 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, the copper effluent results from each WET test may be used as one of the two monthly required samples for the copper limit.

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 calculated using the average monthly influent and effluent concentrations.

5. When the effluent discharged for a period of 3 consecutive months exceeds 80 percent of the 0.4 mgd design flow (0.32 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 and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) of the following:

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

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

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

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

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

8. Limitations for Industrial Users

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

    b. The permittee shall submit to EPA and NHDES-WD the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended) who commences discharge to the POTW after the effective date of this permit.

        This reporting requirement also applies to any other IU who discharges an average of 25,000 gallons per day or more of process wastewater into the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW; or is designated as such by the Control Authority as defined in 40 CFR § 403.12(a) on the basis that the industrial user has a reasonable potential to adversely affect the wastewater treatment facility's operation, or for violating any pretreatment standard or requirement (in accordance with 40 CFR § 403.8(f)(6)).

    c. In the event that the permittee receives reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended), the permittee

shall forward all copies of these reports within ninety (90) days of their receipt to EPA and NHDES-WD.

B. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the outfall(s) listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit and shall be reported to EPA and NHDES in accordance with Part II, Section D.1.e of the General Requirements of this permit (twenty four hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions. The permittee is required to complete the following activities for the collection system which it owns:

1 Maintenance Staff

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

2. Preventative Maintenance Program

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

3. Infiltration/Inflow

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

4. Collection System Mapping

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 NHDES 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 0.4 mgd design flow (0.32 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 CFR § 122.2, which references the definition at 40 CFR § 403.3(o). Wastewater facility is defined by RSA 485A:2.XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge.

E. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal 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 (Env-Wq 800) 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 the following sludge 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 requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements including 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 4, 1999), may be used by the permittee to assist it in determining the applicable requirements.[1]

[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

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 +	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 reporting section of this 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.

F. SPECIAL CONDITIONS

pH Limit Adjustment

The permittee may submit a written request to the EPA-Region 1 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-Region 1 indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

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

1. Submittal of DMRs 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 Parts I.G.5 and I.H.9 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 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. Request for changes in sampling location
B. Request for reduction in testing frequency
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 to 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

4. 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

5. 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.G.2, I.G.3, and I.G.4 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

6. 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
Boston, MA 02109-3912
617-918-1510

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

H. STATE PERMIT CONDITIONS

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

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

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

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

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

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, an "Industrial Wastewater Discharge Request Application" approved by the permittee in accordance with Env-Wq 305.14.

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. The sewer use ordinance shall include local limits pursuant to Env-Wq 305.04(a).

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

   c. A list of all permitted indirect dischargers; and

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

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

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

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 ± 1^{o}C or 25 ± 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	≥ 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 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.: NH0100986

PUBLIC NOTICE START/FINISH DATE: **September 26, 2014 – October 25, 2014**

NAME AND MAILING ADDRESS OF APPLICANT:

Town of Pittsfield
P.O. Box 98
South Main Street
Pittsfield, New Hampshire 03263

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Pittsfield Wastewater Treatment Facility
127 South Main Street
Pittsfield, New Hampshire 03263

RECEIVING WATER: Suncook River (Hydrologic Basin Code: 01070006)

CLASSIFICATION: B

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I. Proposed Action, Type of Facility and Discharge Location

The above named applicant has applied to the U.S. Environmental Protection Agency for reissuance of its NPDES permit to discharge into the designated receiving water. The Town of Pittsfield Wastewater Treatment Facility (WWTF) collects and treats domestic and commercial wastewater from the Town of Pittsfield. The secondary treatment facility is designed to treat 0.4 million gallons per day (mgd) using aerated facultative lagoons. Treatment systems include influent screening and grit removal, three aerated lagoons with aerators in all lagoons, and a sodium hypochlorite disinfection system. The treatment facility outfall pipe discharges to the Suncook River. Outfall 001 is approximately at Latitude 43^0 17' 28" and Longitude 71^0 19' 33".

The Town's existing NPDES permit was issued on September 25, 2002, became effective on December 1, 2002 and expired December 1, 2007. Because the applicant filed a complete application for permit reissuance within the time period prescribed in 40 Code of Federal Regulations (CFR) Section 122.6, the 2002 permit has been administratively extended until a new permit is issued. The 2002 permit authorizes discharge from Outfall 001 (Treatment Plant) year round and that discharge period will be continued in the draft permit. The location of the treatment facility, Outfall 001 and the receiving water are shown in Attachment A.

Sludge generated in the treatment lagoons at the facility will remain in the lagoons until a later date. The facility operated a regional septage receiving facility from 2003 through 2009. Sludge generated from septage was land applied on the Town's WWTF property. The facility ceased accepting septage in December 2009.

The State of New Hampshire's *Final – 2010 List of Threatened or Impaired Waters that Require a TMDL* does not include a listing of any impairments for the Suncook River in the vicinity of the discharge (Assessment Unit ID's: NHRIV700060501-15 immediately upstream and NHRIV700060501-16 immediately downstream).

II. Description of Discharge

A quantitative description of significant effluent parameters based on discharge monitoring data from January 2011 through March 2014 is shown in Attachment B.

III. Limitations and Conditions

PART I of the draft permit contains effluent limitations for $CBOD_5$, TSS, total phosphorus, pH, total residual chlorine, *Escherichia coli* bacteria, and chronic and acute whole effluent toxicity. The draft permit also contains monitoring conditions for flow, ammonia nitrogen as N, hardness, and total recoverable aluminum, cadmium, copper, lead, nickel, and zinc. The basis for each limit and condition is discussed in Section VI of this fact sheet.

IV. Statutory and Regulatory Authority

A. General Statutory and Regulatory Background

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

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

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

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

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

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

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

violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or in certain circumstances, based on an "indicator parameter". 40 CFR § 122.44(d)(1)(vi)(A-C).

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

B. Introduction

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

1. Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit applications, monthly discharge monitoring reports, and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, March 1991, EPA/505/2-90-001 in Section 3; and where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire Standards (RSA 485-A:8VI, Env-Wq 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Wq 1705.01.

2. Anti-Backsliding

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

3. State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitation and state water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 CFR § 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 CFR § 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 CFR 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 CFR 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 CFR §§ 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 CFR § 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 CFR § 122.4(d) and 40 CFR § 122.44(d).

C. Flow

The Pittsfield WWTP has a design flow of 0.4 mgd (0.62 cfs). This flow rate is used to calculate available dilution as discussed below. If the effluent flow rate exceeds 80 percent of the 0.4 mgd design flow (0.32 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.

During the review period, the average monthly discharge from the treatment facility was approximately 0.19 mgd (see Attachment B). The reporting requirement to monitor flow continuously has been carried forward from the 2002 permit.

D. Conventional Pollutants

1. $CBOD_5$ and TSS

The average weekly, average monthly and concentration limits in the draft permit for $CBOD_5$ and TSS are technology-based limits required under Section 301(b)(1)(B) of the Clean Water Act, and 40 CFR §133.102. Additionally, the average monthly, average weekly and maximum daily concentration limits for $CBOD_5$ and TSS are based on limits in the 2002 permit in accordance with the anti-backsliding requirements found in 40 CFR §122.44(l). The permittee has been able to achieve compliance with these limits.

The mass limits for $CBOD_5$ and TSS in the draft permit are based on 40 CFR Section 122.45(f) which requires effluent limits to be expressed in terms of mass. The mass limitations for $CBOD_5$ and TSS are based on the POTW's design flow of 0.4 mgd. See Attachment C for the equation used to calculate each of these mass-based limits.

The monitoring frequency for both $CBOD_5$ and TSS is once per week.

The percent removal limits for $CBOD_5$ and TSS are based on the requirements of 40 CFR Section133.102 (a) (4)(iii) and (b) (3), respectively.

2. pH

The limit for pH is based upon State Certification Requirements and RSA 485-A:8, which states that "The pH range for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes."

The draft permit includes a provision allowing a relaxation of the pH limits if the permittee performs a 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. 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. The compliance monitoring frequency for pH in the draft permit is once per day.

3. E. coli

The average monthly and maximum daily limitations for *Escherichia coli* bacteria (*E. coli*) are in accordance with Class B water quality standards established by the State of New Hampshire in RSA 485-A:8.II and the anti-backsliding requirements mentioned above.

The average monthly and maximum daily limitations for *E. coli* is based on requirements in the State's Statutes (N.H. RSA 485-A:8) for non-designated beach area, and Env-Wq 1703.06 (b), which requires that bacteria criteria shall be applied at the end of a wastewater treatment facility's discharge pipe. The average monthly discharge of *E. coli* is determined by calculating the geometric mean. Effluent limitations for *E. coli* in the draft permit are the same as the limits in the 2002 permit and, therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(1).

During the review period (see Attachment B) the facility had no daily maximum or monthly average violations of its *E. coli* permit limits.

The compliance monitoring frequencies for *E. coli* in the draft permit is 2/week. Samples for *E. coli* compliance monitoring must be taken concurrently with samples for total residual chlorine.

E. Non-Conventional and Toxic Pollutants

Water quality based limits for specific toxic pollutants were determined from numeric chemical

specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in *Quality Criteria for Water*, 1986, EPA440/5-86-001 as amended, commonly known as the federal "Gold Book". Each pollutant generally includes an acute aquatic life criterion to protect against short term effects, such as death, and a chronic aquatic life criterion to protect against long term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions, and included them as part of the State's Surface Water Quality Regulations adopted on December 10, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a pollutant specific draft permit limit.

1. 7Q10 Flow and Available Dilution

Available dilution for the Pittsfield WWTF effluent afforded by the Suncook River was determined to be 6.7 in the 2002 permit. For the 2014 draft permit, the dilution factor was revaluated and the location of the calculated 7Q10 was corrected from an upstream value to a downstream value. This resulted in a dilution factor of 5.0.

The dilution factor was determined using the plant's design flow, an estimate of the 7Q10 flow at the treatment plant's outfall, and a reduction factor (0.9) to account for reserving 10 percent of the river for future needs (Env-Wq 1705.01). Calculations are shown at the end of this section.

Since a gaged value of the 7Q10 flow was not available at the outfall, one was estimated using data from a U.S. Geological Survey (USGS) gaging station (Gage No. 01089500) 4.1 river miles downstream of the Pittsfield WWTF outfall and a statistical equation (The Dingman Equation[1]).

First, the 7Q10 was determined to be 4.09 cfs at USGS Gage No. 01089500 using a Log Pearson Type III distribution for the following period of record: 1950-1970, 2009.

Next, in order to find the 7Q10 flow at the WWTF outfall, a ratio of calculated 7Q10 at the WWTF and at the gage was developed using an empirical equation developed by Dingman. This empirical equation estimates 7Q10 stream flow in un-gaged, unregulated streams in New Hampshire and Vermont as a function of watershed characteristics. The formula variables are watershed (basin) area, mean basin elevation, and the percent of the basin underlain by coarse-grained stratified drift in contact with streams. This formula was used to calculate the ratio of the 7Q10 stream flow at the WWTF outfall to the 7Q10 stream flow at the USGS gage.

Lastly, the 7Q10 at the WWTF outfall was calculated by multiplying the 7Q10 value at the USGS gage by the "Dingman ratio." The calculations and results are summarized below:

7Q10 at the USGS Gage No. 01089500 (1950-1970, 2009):	4.09 cfs
Dingman 7Q10 above USGS Gage No. 01089500:	7.37 cfs
Dingman 7Q10 at the Pittsfield WWTF outfall:	6.23 cfs
Ratio of the two Dingman 7Q10's:	6.23/7.37 = 0.845

7Q10 flow at the WWTF's outfall = USGS Gage Flow x Dingman Ratio
= 4.09 cfs x 0.845 = 3.46 cfs

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

This is considered to be a *downstream* 7Q10 flow (i.e., the 7Q10 flow just downstream of the WWTF's outfall, rather than just upstream of the WWTF's outfall) because the discharger's water source, a surface water treatment plant at Berry Pond, is located within the outfall's basin.

Thus the dilution factor for the Pittsfield WWTF is as follows:

$$\frac{Qr}{Qd} \times 0.9 = \text{DF}$$

Where:

Q_r = downstream flow (3.46 cfs * 0.646 mgd/cfs = 2.24 mgd)
Q_d = design flow (0.4 mgd)

$$\frac{2.24 mgd}{0.4 mgd} \times 0.9 = \underline{5.0}$$

2. Total Residual Chlorine

The effluent limitations for total residual chlorine (TRC) in the 2002 permit are 74 and 127 ug/l as average monthly and maximum daily, respectively. 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). As indicated in Attachment B, the applicant has been able to achieve consistent compliance with the existing limitations.

In this draft permit, the average monthly limit is being reduced to **55 ug/l** and the maximum daily limit is being reduced to **96 ug/l**. This change is due to the revised dilution factor (from 6.7 to 5.0). The dilution factor is used in this analysis because the background concentration for TRC is assumed to be zero. 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 (5.0) for the receiving water (Suncook River). The compliance monitoring frequency for TRC in the draft permit is 1/day.

3. Ammonia Nitrogen as N

The 2002 permit requires ammonia sampling of the treatment plant effluent and the receiving water upstream of the discharge once per quarter as part of chemical-specific sampling performed in conjunction with whole effluent toxicity (WET) testing. A summary of the effluent and ambient monitoring data from January 2011 through March 2014 is provided in Attachment B. The ambient data shows that the ammonia concentration in the receiving water upstream of the discharge is minimal. All 13 samples from the WET tests were reported as zero with a detection limit of 0.1 mg/l (see Attachment B). Hence, background ammonia is considered to be zero.

Section Env-Wq 1703.25 of the New Hampshire standards includes equations for calculating freshwater acute and chronic toxicity criteria for ammonia. Acute criteria are a function of receiving water pH, and are calculated using two equations: one for waters where salmonids may be present; and another for waters where salmonids are not present. Chronic criteria are calculated as a function of receiving water pH and temperature using two equations: one for waters where early life stages of fish are present and another for waters where early life stages of fish are absent.

Ammonia criteria were calculated for summer (June 1 to October 31) and winter (November 1 through May 31) based on a receiving water pH of 7.0, a maximum summer monthly average water temperature of 25 degrees Celsius, a maximum winter monthly average water temperature of 10 degrees Celsius, using the equations that are based on salmonids and early life stages of fish being present in the receiving water (See calculations in Attachment D). The resulting criteria are shown in the table below.

Season	June 1 – Oct 31 (warm)	Nov 1 – May 31 (cold)
Receiving water pH	7.0	7.0
Water Temperature °C	25	5
Fish Early Life Stages	Present	Present
Salmonids	Present	Present
Chronic Criteria (mg/l as N)	3.01	5.91
Acute Criteria (mg/l as N)	24.1	

Based on a dilution factor of 5.0, the maximum allowable effluent ammonia concentration for warm weather chronic exposure is 15 mg/l (5.0 x 3.01 mg/l) and the corresponding chronic value for cold weather is 30 mg/l (5.0 x 5.91 mg/l). The maximum allowable effluent ammonia concentration for acute exposure is 121 mg/l (5.0 x 24.1 mg/l).

In order to determine if the data has the reasonable potential to cause or contribute to a violation of water quality standards, the above maximum allowable concentrations were compared to the effluent values reported in the WET tests. The effluent data used for this analysis is summarized in the table below.

Monitoring Period End Date	Ammonia Nitrogen as N	
	June 1 – Oct 31 (warm)	Nov 1 – May 31 (cold)
3/31/2011	--	27.
6/30/2011	17.	--
9/30/2011	0.1	--
12/31/2011	--	0.29
3/31/2012	--	19.
6/30/2012	8.7	--
9/30/2012	0.1	--
12/31/2012	--	1.4
3/31/2013	--	19.
6/30/2013	3.1	--
9/30/2013	0.28	--
12/31/2013	--	6.
3/31/2014	--	0.25
Average	4.9	10.4
Maximum	17.	27.
# of Measurements	6	7

Comparing the maximum warm weather and cold weather effluent values with the respective allowable concentrations, it was determined that none of the monitoring results exceed the maximum allowable acute value (121 mg/l) and similarly, the highest cold weather measurement (27 mg/l) was below the maximum allowable chronic value (30 mg/l). However, the highest of the warm weather measurements (17 mg/l) exceeded the maximum allowable effluent concentration (15 mg/l). Therefore, a warm weather (June-October) average monthly effluent limit of 15 mg/l is proposed in the draft permit.

4. Phosphorus

Phosphorus and other nutrients (i.e. nitrogen) can promote the growth of nuisance and rooted aquatic plants. Typically, elevated levels of nutrients will cause excessive algal and/or plant growth resulting in reduced water clarity and poor aesthetic quality. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce instream dissolved oxygen concentrations to levels that could negatively impact aquatic life and/or produce strong unpleasant odors.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria for Water (Gold Book) recommends instream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within a lake or reservoir.

In December 2000, EPA released "Ecoregional Nutrient Criteria" (USEPA 2000), which was established as part of an effort to reduce problems associated with excess nutrients in water bodies located within 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. Pittsfield and the Suncook River are located in Ecoregion VIII, *Nutrient Poor Largely Glaciated Upper Midwest and Northeast*. Recommended criteria for this ecoregion are a total phosphorus concentration of 10 ug/l (0.01 mg/l) and a chlorophyll *a* concentration of 0.63 ug/l (0.00063 mg/l). These recommended criteria are found in *Ambient Water Quality Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII* (USEPA 2001).

More recently, Mitchell, Liebman, Ramseyer, and Card (in draft 2004), in conjunction with the New England States, developed a potential nutrient criteria for rivers and streams in New England. Using several river examples representative of typical conditions for New England, 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 the New England-wide total phosphorus concentration was based on more recent data than the National Ecoregional nutrient criteria, and has been subject to quality assurance measures. Additionally, the development of the New England-wide concentration included reference conditions for waters presumed to be protective of designated uses.

The New Hampshire Surface Water Quality Regulations contain a narrative criterion which states that phosphorus contained in an effluent shall not impair a water body's designated uses.

Specifically, Env-Wq 1703.14(b) states, "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(c) further states, "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."

Section 303(d) of the Clean Water Act requires States to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls and thus require the development of total maximum daily loads (TMDLs). The Suncook River has not been listed on the 303(d) list as impaired for phosphorus or other eutrophication indicators (e.g., DO or chlorophyll-a).

When analyzing both effluent and instream total phosphorus data, EPA-New England has chosen to apply the Gold Book criterion (0.1 mg/l for any stream not discharging directly to lakes or impoundments) rather than the more stringent ecoregional or New England criteria.

NHDES has conducted some monitoring along the Suncook River which is found on their One Stop Environmental Monitoring Database. The monitoring included total phosphorus (TP) measurements of 43 ug/l on July 23, 2010 and 66 ug/l on August 13, 2010 at monitoring location 07X-SNK (approximately 1.5 miles downstream of the discharge). Additionally, 3 TP measurements were taken in July through September of 2008 over 10 miles upstream (monitoring location 16-SNK) with a median value of 11 ug/l. In this analysis, 11 ug/l is used as the background TP concentration.

In the Pittsfield permit application (submitted January 25, 2006) the facility reported an average effluent phosphorus concentration of 4.3 mg/l and a maximum of 5.9 mg/l (based on 3 samples). Using the maximum effluent concentration of 5.9 mg/l and the background concentration of 0.011 mg/l, the following mass balance equation can be used to show the expected receiving water concentration downstream of 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 design flow (0.4 mgd)
C_d = maximum effluent concentration (5.9 mg/l)
Q_S = upstream 7Q10 flow (1.84 mgd)
C_S = upstream median phosphorus concentration (0.011 mg/l)
Q_r = downstream 7Q10 flow (2.24 mgd)
C_r = resultant downstream concentration

Based on this mass balance equation, the resultant downstream TP concentration (C_r) was 1.1 mg/l, far in excess of the Gold Book criterion (0.100 mg/l, or 0.090 mg/l reserving 10% of the

assimilative capacity in accordance with Env-Wq 1705.01). Based on these calculations and data collected 1.5 miles downstream, it is likely that the significant reduction in instream phosphorus concentration between the two locations is the result of phosphorus being taken up in plant growth, causing eutrophication. Therefore, EPA believes that this discharge does have reasonable potential to cause or contribute to a violation of water quality standards.

To address this potential, a mass-based effluent limit for total 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 lowest monthly average effluent flow during the review period (0.077 mgd, see July 2012 in Attachment B) and the upstream 7Q10 receiving water flow (2.24 mgd) are used. The numeric mass-based limit is determined based upon the following mass balance equation:

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

rewritten as:

$$M_d = Q_d C_d * 8.345 = (Q_r C_r (0.90) - Q_S C_S) * 8.345$$

where:

M_d = mass-based phosphorus limit
Q_d = lowest effluent monthly average flow (0.077 mgd)
C_d = effluent phosphorus concentration
Q_S = upstream receiving water 7Q10 flow (1.84 mgd)
C_S = upstream receiving water phosphorus concentration (0.011 mg/l)
Q_r = downstream flow (1.84 + 0.077 = 1.917 mgd)
C_r = resultant in-stream 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 **1.3 lb/d**, which is equivalent to 0.38 mg/l at design flow. This mass-based limit is applied seasonally, from April 1st through October 31st, as a monthly average limit to be monitored once per week, as indicated in the draft 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 Whole Effluent Toxicity reports submitted between January 2011 and March 2014) was used to determine reasonable potential for effluent discharges to cause exceedances of the water quality criteria for aluminum, cadmium, copper, lead, nickel and zinc.

Metals may be present in both dissolved and particulate forms in the water column. Extensive studies suggest that it is the dissolved fraction that is biologically available, and therefore, presents the greatest risk of toxicity to aquatic life inhabiting the water column. (Water Quality Standards Handbook: Second Edition, Chapter 3.6 and Appendix J, EPA 1994 [EPA 823-B-94-05a], http://www.epa.gov/waterscience/standards/ handbook/chapter03.html#section6). As a result, water quality criteria are established in terms of dissolved metals. However, regulations at 40 CFR

122.45(c) require, with limited exceptions, that metals limits in NPDES permits be expressed as total recoverable metals. This accounts for the potential for a transition from the particulate to dissolved form as the effluent mixes with the receiving water (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]).

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 using a mass balance equation with the design flow (0.4 mgd), downstream receiving water 7Q10 (2.24 mgd), an upstream median hardness of 9.5 mg/l as CaCO3 and an effluent median hardness of 46 mg/l as CaCO3, using the following equation.

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

Where:

C_r = downstream hardness, mg/l
C_d = effluent median hardness, mg/l
C_s = upstream median hardness, mg/l
Q_d = design flow, mgd
Q_s = upstream 7Q10 flow, mgd
Q_r = downstream 7Q10 flow ($Q_s + Q_d$), mgd

$$C_r = \frac{(0.4 * 46 + 1.84 * 9.5)}{2.24} = 16 \frac{mg}{l} \; as \; CaCO_3$$

Pursuant to NH Surface Water Quality Regulations at Env-Wq 1703.33(f), since this downstream hardness is below 25 mg/l, the default value of 25 mg/l was used to determine the total recoverable metals criteria. The following table presents the factors used to determine the acute and chronic total recoverable criteria for each metal:

Metal	**Parameters**				**Total Recoverable Criteria**	
	ma	**ba**	**mc**	**bc**	**Acute Criteria (CMC)[1] (ug/L)**	**Chronic Criteria (CCC)[2] (ug/L)**
Aluminum	—	—	—	—	750[3]	87[3]
Cadmium	1.1280	-3.6867	0.7852	-2.7150	0.95	0.83
Copper	0.9422	-1.7000	0.8545	-1.702	3.79	2.85
Lead	1.273	-1.46	1.273	-4.705	13.98	0.54
Nickel	0.846	2.255	0.846	0.0584	145.21	16.14
Zinc	0.8473	0.884	0.8473	0.884	37.02	37.02

[1] Acute Criteria (CMC) = exp{ma*ln(hardness)+ba}
[2] Chronic Criteria (CCC) = exp{mc*ln(hardness)+bc}
[3] The aluminum water quality criteria are in terms of acid soluble aluminum (based upon a letter from NHDES to EPA dated July 1, 2014). The ratio for acid soluble and total recoverable aluminum in the receiving water is assumed to be 1:1, unless otherwise determined through an aluminum study.

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. Note that the 95th percentile of the effluent data is used because each metal has at least 10 samples (see Attachment E).

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

rewritten as:

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

where:

Q_d = effluent design flow (0.4 mgd)
C_d = 95th percentile effluent concentration (see Attachment B & E)
Q_S = upstream 7Q10 flow (1.84 mgd)
C_S = median upstream concentration (see Attachment B)
Q_r = downstream 7Q10 flow (2.24 mgd)
C_r = resultant downstream concentration

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. 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 (Cd) using the criterion times 0.9 as the resultant in-stream concentration (Cr). See the table below for the results of this analysis with respect to aluminum, cadmium, copper, lead, nickel and zinc.

Metal	**Qd**	**Cd [1] (95th Percentile)**	**Qs**	**Cs [2] (Median)**	**Qr = Qs + Qd**	**Cr = (QdCd+QsCs)/Qr**	**Criteria * 0.9**		**Exceedance?**	**Limit = (Qr*Criteria*0.9-Qs*Cs)/Qd**	
	mgd	**ug/l**	**mgd**	**ug/l**	**mgd**	**ug/l**	**Acute (ug/l)**	**Chronic (ug/l)**	**Cr > Criteria**	**Acute (ug/l)**	**Chronic (ug/l)**
Aluminum	0.4	69.1	1.84	84	2.24	81.3	675	78.3	Chronic[3]	N/A	N/A
Cadmium		0		0		0	0.851	0.746	N	N/A	N/A
Copper		16.98		0		3.0	3.41	2.57	Chronic	N/A	**14.4**
Lead		1.52		0		0.27	12.58	0.49	N	N/A	N/A
Nickel		2		0		0.36	130.69	14.53	N	N/A	N/A
Zinc		89		3		18.4	33.31	33.31	N	N/A	N/A

[1] Values calculated using measurements from the 2011-2014 Whole Effluent Toxicity (WET) testing noted above (see Attachment B).
[2] Median upstream data taken from 2011-2014 WET testing on the Suncook River just upstream of the Pittsfield WWTF (see Attachment B).
[3] For aluminum, although the C_r was determined to be above the chronic criterion times 0.9, the 95th percentile of the facility's effluent (C_d) is below the criterion times 0.9. Hence, EPA has determined that the facility does not have reasonable potential to contribute to a violation of water quality standards for aluminum and a permit limit is not established.

As indicated in the table above, based on the 95th percentile of the effluent concentrations and the median upstream concentrations there is no reasonable potential (for either acute or chronic conditions) that the discharge of aluminum, cadmium, lead, nickel, or zinc will cause or contribute to an exceedance of the applicable water quality criteria. For total recoverable copper, the downstream concentration (C_r) was determined to be above the chronic criterion times 0.9 and therefore an average monthly limit is proposed of 14.4 mg/l, which is the maximum concentration allowable to meet the water quality criterion downstream under critical conditions. Monitoring and reporting for all metals will continue to be required as part of the WET tests.

F. Whole Effluent Toxicity (WET)

EPA's Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both a pollutant (chemical) specific approach and a whole effluent (biological) toxicity approach to control toxic pollutants from entering the nation's waterways from permitted discharges. EPA-Region 1 adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. Both approaches are designed to protect aquatic life and human health.
Pollutant- specific approaches to control toxics, such as those in the Gold Book and State regulations, address individual chemicals, whereas, a whole effluent toxicity (WET) approach to toxics control evaluates interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additivity" and/or "antagonistic" effects of individual chemical pollutants while pollutant specific derived permit limits do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through the process of WET testing.
New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1703.21(a)(1)).

EPA-Region 1's current policy requires toxicity testing in all municipal permits with the type of toxicity test (acute and/or chronic) and effluent limitation based on a range of available dilution. EPA-Region 1's policy requires that secondary treatment facilities with a dilution factor less than 10 meet an acute toxicity limit of LC50 of 100 percent effluent, and a chronic (no observed effects) toxicity limit equal to the receiving water concentration. Therefore, the draft permit includes both LC50 and C-NOEC limits.

The LC50 is defined as the percentage of effluent lethal to 50% of the test organisms during a specific length of time. In other words, 50 percent of the test organism must survive in a sample of 100 percent effluent. This limit is the same as in the 2002 permit.

The Chronic-No Observed Effect Concentration (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. Based on the new dilution factor for the Pittsfield WWTF, the C-NOEC limit has been recalculated according to the equation below. This change based upon new information and is in accordance with backsliding regulations found at 40 CFR Part 122.44(l)(i)(B)(1).

$$\frac{1}{DilutionFactor} * 100\% = \frac{1}{5.03} * 100\% = 19.9\%$$

The test results (growth, survival or reproduction) at a specific time of observation as determined from hypothesis testing should exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the draft permit requires the permittee to report the lowest concentration where there is no observable effect.

In the 2002 permit, four (4) chronic and modified acute toxicity tests using two (2) species per test were required each year. The permittee has been able to show compliance with the LC50 and C-NOEC criteria for both *Ceriodaphnia dubia* (daphnid) and *Pimephales promelas* (fathead minnow). Only one toxicity violation was reported between 2009 and 2014 (see Attachment B).

Included in the 2002 permit was a special condition stating that if a permittee has consistently demonstrated on a maximum daily basis that its discharge, based on data for the most recent one-year period, or four sampling events, whichever yields the greater time period, causes no acute and chronic toxicity, the permitted limits will be considered eligible for a reduced frequency of toxicity testing. This reduction in testing frequency is evaluated on a case-by-case basis. EPA's current policy is that after completion of a minimum of four consecutive WET tests all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to EPA seeking a review of the toxicity test results. EPA's policy is to reduce the frequency of toxicity testing to no less than one (one-species) test per year. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

In accordance with this special condition, on September 12, 2014 the permittee requested that the WET testing requirement be reduced to once per year. EPA has evaluated the recent toxicity tests (see Attachment B) and concluded that the permittee has demonstrated compliance with the limits and is eligible for a reduction. Hence, the draft permit requires WET testing once per year during the third calendar quarter (July through September).

A modified acute toxicity test based on the 48-hour endpoint of the chronic test is no longer considered an acceptable acute toxicity test. Hence, the draft permit requires the permittee to conduct independent acute and chronic toxicity tests. 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 **once each calendar year** during the third calendar quarter (July through September).

The WET limits in the draft permit include conditions to allow EPA-Region 1 to modify, or alternatively, revoke and reissue the permit to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any State water quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified as provided in 40 CFR §122.62(a)(2).

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

G. Sludge

Section 405(d) of the Clean Water Act (CWA) requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on

March 22, 1993. Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator is subject to Part 503 technical 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 has prepared a 72-page document entitled "EPA Region I NPDES Permit Sludge Compliance Guidance" for use by the permittee in determining their appropriate sludge conditions for their chosen method of sewage sludge use or disposal practices. This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf. The permittee is required to submit an annual report to EPA and NHDES-WD, by February 19th each year, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal practices.

The Pittsfield WWTF uses facultative aerated lagoons where sludge accumulates over a period of years. In 2001, sludge was cleaned out of the lagoons, and approximately 451 dry tons were disposed of at the North Country Environmental Services in Bethlehem, New Hampshire. From 2003 through 2009, the Pittsfield WWTF accepted approximately 3 million gallons/year (not restricted to Pittsfield residents) of septic tank waste (septage), treated it onsite, and stockpiled the sludge from the septage treatment process before land applying it on the WWTF property. However, as of December 2009, the facility only accepts septage generated in Pittsfield. Septage will be stored in a tank and metered into the treatment plant.

H. Industrial Users (Pretreatment Program)

The permittee is not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and §307 of the CWA. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water-quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility. The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (See 40 CFR §122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: (1) report to EPA and NHDESWD the name(s) of all 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) and/or New Hampshire Pretreatment of Industrial Wastewater Rules (Env-Wq 305) who commence discharge to the POTW after the effective date of the permit, and (2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

I. 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.

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 SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

J. Antidegradation

This draft permit is being reissued with limitations that are at least as stringent as those in the 2002 permit and there is no change in the outfall location. Since the State of New Hampshire has indicated that there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is needed.

K. Essential Fish Habitat

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

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

loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for species for which federal Fishery Management Plans exist (16 U.S.C. § 1855(b)(1)(A)). EFH designations were approved for New England by the U.S. Department of Commerce on March 3, 1999. According to the National Marine Fisheries Service (NMFS), the Suncook River is EFH for Atlantic salmon (*Salmo salar*) juveniles. No Atlantic salmon have been stocked in the Suncook River over the past several years.

- The permit prohibits the discharge to cause a violation of State water quality standards.
- The permit contains water quality-based limits for total residual chlorine and copper.
- The permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.
- The permit requires toxicity testing four (4) 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 and EFH consultation will be reinitiated if adverse impact to EFH are detected as a result of this permit action or if new information becomes available that changes the basis for these conclusions.

L. Endangered Species

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

EPA has reviewed the federal endangered or threatened species of fish and wildlife to see if any such listed species might potentially be impacted by the re-issuance of this NPDES permit. Based on the normal distribution of these species, it is highly unlikely that any would be present in the vicinity of this discharge. Furthermore, EPA believes the proposed limits are sufficiently stringent to assure that water quality standards will be met and to ensure protection of aquatic life and maintenance of the receiving water as an aquatic habitat. If adverse effects do occur as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then EPA will notify and initiate consultation with both the USFWS and the NOAA Fisheries. A copy of the draft permit has been provided to both USFWS and NOAA Fisheries for review and comment.

V. 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 the permittee to continue to electronically report monitoring results obtained during each calendar month as Discharge Monitoring Report (DMRs) to EPA and the state using NetDMR no later than the 15th day of the month following the completed reporting period.

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: http://www.epa.gov/netdmr. Further information about NetDMR can be found on the EPA Region 1 NetDMR website located at http://www.epa.gov/region1/npdes/netdmr/index.html.

In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for the submittal of pre-treatment reports and for providing written notifications required under the Part II Standard Permit Conditions. With the use of NetDMR, the permittee is no longer required to submit hard copies of DMRs or other reports to EPA or NHDES except when otherwise specified in the draft permit.

VI. State Certification Requirements

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

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

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

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

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

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

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

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to:

Mr. Michael Cobb
U.S. Environmental Protection Agency, Region 1 (New England)
5 Post Office Square - Suite 100, Mail Code OEP06-1
Boston, MA 02109-3912

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA 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's Boston office.

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

VIII. EPA – Region 1 Contact

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

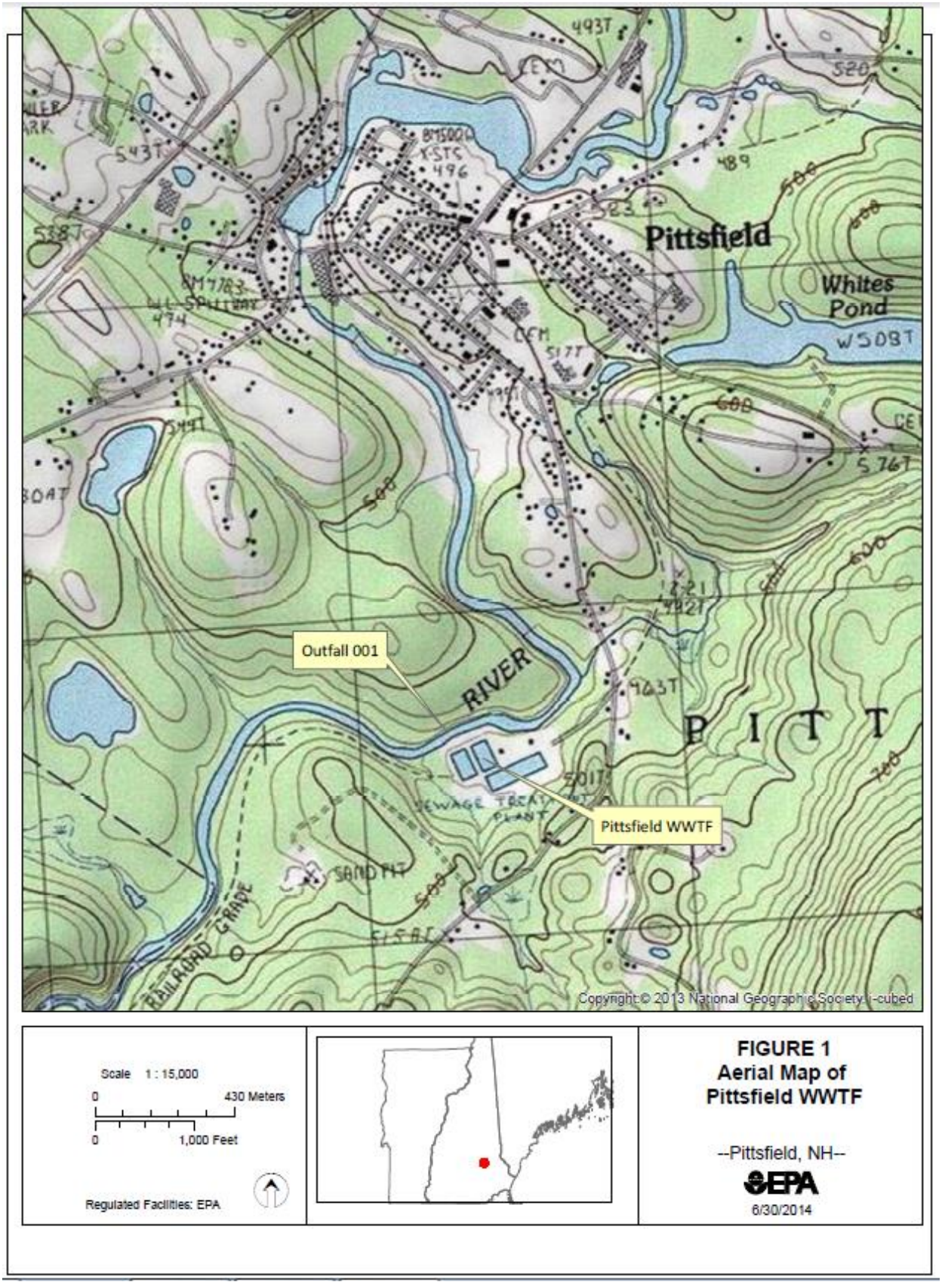
Mr. Michael Cobb, Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square
Suite 100, Mail Code: OEP06-1
Boston, Massachusetts 02109-3912
Telephone No.: (617) 918-1369
FAX No.: (617) 918-0369

8/20/2014

Date:

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

ATTACHMENT A – LOCATION OF PITTSFIELD WWTP



ATTACHMENT B – DMR DATA SUMMARY

Effluent

Monitoring Period End Date	CBOD5 83 lb/d MO AVG	CBOD5 25 mg/L MO AVG	CBOD5 134 lb/d WKLY AVG	CBOD5 40 mg/L WKLY AVG	CBOD5 150 lb/d DAILY MX	CBOD5 45 mg/L DAILY MX	CBOD5 85 % MO MIN
01/31/2011	12.3	11.5	13.5	13.3	13.5	13.3	96.
02/28/2011	11.	11.	13.	13.	13.	13.	97.
03/31/2011	27.	10.	49.	16.	49.	16.	95.
04/30/2011	20.	9.	40.	16.	40.	16.	95.
05/31/2011	9.	4.	14.	5.	14.	5.	98.
06/30/2011	3.	3.	7.	4.	7.	4.	99.
07/31/2011	9.	6.	17.	13.	17.	13.	98.
08/31/2011	7.	5.	16.	5.	16.	5.	98.
09/30/2011	6.	4.	7.	6.	7.	6.	98.
10/31/2011	3.	2.	5.	3.	5.	3.	99.
11/30/2011	3.14	1.67	3.78	2.03	3.78	2.03	99.
12/31/2011	5.3	2.3	9.3	4.7	9.3	4.7	99.
01/31/2012	5.	5.	10.	8.	10.	8.	98.
02/29/2012	4.9	4.6	5.92	5.	5.92	5.	99.
03/31/2012	5.8	4.1	7.7	5.1	7.7	5.1	99.
04/30/2012	5.	4.4	10.	7.6	10.	7.6	99.
05/31/2012	8.02	4.24	17.07	7.13	17.07	7.13	98.
06/30/2012	2.	2.	5.	2.8	5.	2.5	99.
07/31/2012	2.	3.4	7.	9.	7.	9.	99.
08/31/2012	2.	2.	4.	2.5	4.	2.5	99.
09/30/2012	3.	3.	5.	7.	5.	7.	99.
10/31/2012	3.	3.	4.	3.	4.	3.	99.
11/30/2012	2.9	2.	5.9	3.	5.9	3.	99.
12/31/2012	6.	4.	12.	6.	12.	6.	99.
01/31/2013	11.	6.	9.	6.	27.	9.	98.
02/28/2013	9.	10.	27.	12.	18.	12.	96.
03/31/2013	22.	11.	33.	12.	33.	12.	96.
04/30/2013	20.	8.	24.	9.	24.	9.	95.
05/31/2013	3.	2.	5.	4.	5.	4.	99.
06/30/2013	5.	2.	7.	2.	7.	2.	98.
07/31/2013	4.	2.	6.	2.	6.	2.	99.
08/31/2013	3.8	2.7	5.7	3.5	5.7	3.5	99.
09/30/2013	5.	4.	8.	7.	8.	7.	98.
10/31/2013	2.64	2.75	3.05	3.39	3.05	3.39	99.
11/30/2013	5.	4.	10.	8.	10.	8.	100.
12/31/2013	5.	5.	5.	5.	6.	6.	98.
01/31/2014	14.	11.	26.	19.	26.	19.	94.
02/28/2014	11.	11.	14.	10.	19.	13.	96.
03/31/2014	30.	17.	37.	19.	37.	19.	93.
04/30/2014	32.	9.	52.	12.	52.	12.	93.

Monitoring Period End Date	CBOD5	CBOD5	CBOD5	CBOD5	CBOD5	CBOD5	CBOD5
	83 lb/d	25 mg/L	134 lb/d	40 mg/L	150 lb/d	45 mg/L	85 %
	MO AVG	MO AVG	WKLY AVG	WKLY AVG	DAILY MX	DAILY MX	MO MIN
Average	8.7	5.47	14.	7.5	14.4	7.7	97.7
Maximum	32.	17.	52.	19.	52.	19.	100.
# of Samples	40	40	40	40	40	40	40
# of Violations	0	0	0	0	0	0	0

Effluent

Monitoring Period End Date	TSS	TSS	TSS	TSS	TSS	TSS	TSS
	100 lb/d	30 mg/L	150 lb/d	45 mg/L	167 lb/d	50 mg/L	85 %
	MO AVG	MO AVG	WKLY AVG	WKLY AVG	DAILY MX	DAILY MX	MO MIN
01/31/2011	25.2	23.4	28.7	25.5	28.7	25.5	88.
02/28/2011	17.	18.	18.	19.	18.	19.	90.
03/31/2011	22.	9.	25.	10.	31.	13.	92.
04/30/2011	51.	20.	68.	28.	68.	28.	88.
05/31/2011	4.	2.	5.	3.	5.	3.	99.
06/30/2011	1.	1.	6.	3.	4.	3.	99.
07/31/2011	27.	14.	88.	27.	88.	27.	93.
08/31/2011	19.	12.	46.	17.	46.	17.	96.
09/30/2011	11.	7.	19.	12.	19.	12.	97.
10/31/2011	2.	1.	6.	3.	6.	3.	99.
11/30/2011	5.33	2.4	23.02	10.	23.02	10.	98.
12/31/2011	1.2	0.5	1.6	0.5	1.6	0.5	99.
01/31/2012	0.3	0.1	1.	1.	1.	1.	99.
02/29/2012	1.	1.	1.92	2.	1.92	2.	99.
03/31/2012	1.1	0.7	2.7	1.5	2.7	1.5	99.
04/30/2012	1.	1.	2.	2.5	2.	2.5	99.
05/31/2012	1.	0.5	1.2	0.5	1.2	0.5	99.
06/30/2012	1.	1.	1.5	1.5	1.5	1.5	99.
07/31/2012	1.	1.	1.	1.	1.	1.	99.
08/31/2012	3.	3.	8.	5.5	8.	5.5	99.
09/30/2012	0.5	0.5	1.	3.	1.	0.5	99.
10/31/2012	2.	2.	3.	3.	3.	3.	99.
11/30/2012	5.9	4.7	7.2	7.	7.2	7.	98.
12/31/2012	9.	7.	8.	11.	14.	11.	98.
01/31/2013	8.	5.	8.	6.	14.	6.	98.
02/28/2013	7.	6.	14.	6.	8.5	6.	97.
03/31/2013	12.	6.	21.	12.	21.	12.	95.
04/30/2013	32.	14.	40.	16.	40.	16.	90.
05/31/2013	1.	1.	1.	1.	1.	1.	99.
06/30/2013	2.	1.	6.	3.	7.	3.	99.
07/31/2013	3.	1.	4.	2.	4.	2.	99.
08/31/2013	4.5	3.5	9.8	6.	9.8	6.	99.
09/30/2013	2.1	1.8	7.	6.	7.	6.	99.

Monitoring Period End Date	TSS 100 lb/d MO AVG	TSS 30 mg/L MO AVG	TSS 150 lb/d WKLY AVG	TSS 45 mg/L WKLY AVG	TSS 167 lb/d DAILY MX	TSS 50 mg/L DAILY MX	TSS 85 % MO MIN
10/31/2013	1.	1.	2.	2.	2.	2.	99.
11/30/2013	1.	1.	2.	1.	2.	1.	98.
12/31/2013	3.	3.	7.	7.	7.	7.	99.
01/31/2014	8.	5.	16.	7.	16.	7.	97.
02/28/2014	4.	3.	6.	5.	6.	5.	98.
03/31/2014	10.	6.	12.	8.	12.	8.	97.
04/30/2014	21.	7.	34.	10.	34.	10.	96.
Average	8.3	5.	14.1	7.4	14.4	7.4	97.1
Maximum	51.	23.4	88.	28.	88.	28.	99.
# of Samples	40.	40.	40.	40.	40.	40.	40.
# of Violations	0	0	0	0	0	0	0

Effluent

Monitoring Period End Date	TRC .074 mg/L MO AVG	TRC .127 mg/L DAILY MX	E. coli 126 #/100mL MO GEO	E. coli 406 #/100mL DAILY MX	Flow MGD MO AVG	Flow MGD DAILY MX	pH 6.5 SU MINIMUM	pH 8 SU MAXIMUM
01/31/2011	0.	0.02	53.	164.33	0.121	0.171	7.1	7.4
02/28/2011	0.	0.09	54.	356.	0.119	0.149	7.	7.2
03/31/2011	0.	0.06	54.	193.	0.332	0.465	7.1	7.3
04/30/2011	0.	0.05	40.	89.	0.31	0.383	7.1	7.7
05/31/2011	0.	0.	25.	111.	0.272	0.383	6.5	7.3
06/30/2011	0.	0.	18.	65.	0.149	0.23	6.5	6.8
07/31/2011	0.	0.	21.	108.	0.166	0.45	6.6	7.1
08/31/2011	0.	0.06	45.	324.	0.102	0.371	6.5	8.
09/30/2011	0.05	0.1	21.	373.3	0.152	0.24	6.5	7.2
10/31/2011	0.	0.12	25.	153.	0.171	0.245	6.5	6.9
11/30/2011	0.04	0.12	24.	137.5	0.211	0.341	6.5	7.1
12/31/2011	0.	0.1	18.	65.	0.277	0.44	6.5	7.
01/31/2012	0.06	0.12	20.	59.	0.159	0.259	7.	7.9
02/29/2012	0.04	0.12	6.	45.	0.135	0.2	7.1	7.5
03/31/2012	0.01	0.04	2.	6.44	0.167	0.296	7.1	7.4
04/30/2012	0.	0.1	3.	19.56	0.139	0.429	6.9	7.3
05/31/2012	0.	0.05	4.	22.	0.202	0.287	6.5	6.9
06/30/2012	0.	0.04	13.	26.	0.151	0.288	6.5	7.6
07/31/2012	0.	0.02	11.	38.	0.077	0.123	6.5	7.2
08/31/2012	0.	0.01	30.	73.	0.124	0.316	6.7	7.9
09/30/2012	0.	0.05	15.	125.	0.105	0.368	7.1	7.6
10/31/2012	0.	0.01	40.	69.	0.158	0.363	6.9	7.1
11/30/2012	0.03	0.09	41.	244.	0.155	0.336	6.8	7.
12/31/2012	0.05	0.1	55.	196.	0.172	0.268	7.	7.4
01/31/2013	0.03	0.12	93.	171.	0.155	0.374	7.3	7.6

Monitoring Period End Date	TRC	TRC	E. coli	E. coli	Flow	Flow	pH	pH
	.074 mg/L	.127 mg/L	126 #/100mL	406 #/100mL	MGD	MGD	6.5 SU	8 SU
	MO AVG	DAILY MX	MO GEO	DAILY MX	MO AVG	DAILY MX	MINIMUM	MAXIMUM
02/28/2013	0.03	0.12	84.	239.	0.161	0.314	7.3	7.7
03/31/2013	0.	0.126	43.	234.	0.235	0.376	7.03	7.61
04/30/2013	0.	0.08	51.	212.	0.255	0.357	7.	8.
05/31/2013	0.	0.02	25.	125.	0.213	0.471	6.7	7.1
06/30/2013	0.	0.02	13.	27.	0.252	0.373	6.5	7.
07/31/2013	0.	0.02	14.	36.	0.233	0.32	6.5	6.76
08/31/2013	0.	0.02	22.	57.	0.145	0.234	6.5	6.8
09/30/2013	0.	0.03	11.	16.	0.147	0.232	6.6	6.9
10/31/2013	0.	0.02	19.	58.	0.117	0.158	6.6	7.6
11/30/2013	0.	0.02	61.	141.	0.135	0.459	6.5	6.7
12/31/2013	0.	0.04	105.	207.	0.118	0.178	6.7	7.2
01/31/2014	0.01	0.07	58.	169.	0.2	0.361	7.01	7.3
02/28/2014	0.	0.06	51.	277.	0.16	0.263	7.05	7.28
03/31/2014	0.02	0.04	50.	178.	0.206	0.245	7.1	7.2
04/30/2014	0.03	0.05	12.	41.	0.389	0.551	6.9	7.8
Average	0.01	0.06	33.75	131.25	0.18	0.32	6.79	7.31
Maximum	0.06	0.126	105.	373.3	0.389	0.551	7.3	8.
# of Samples	40.	40.	40.	40.	40.	40.	40.	40.
# of Violations	0	0	0	0	0	0	0	0

Effluent

Monitoring Period End Date	Al	Cd	Cu	Pb	Ni	Zn	Ammonia Nitrogen as N	Hardness (as CaCO3)	LC50 Acute Daphnid	LC50 Acute Pimephales	NOEC Chronic Daphnid	NOEC Chronic Pimephales
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	%	%	%	%
3/31/2011	28.	0.	11.	0.9	2.	78.	27.	40.	100.	100.	100.	100.
6/30/2011	48.	0.	7.	1.	2.	22.	17.	55.	100.	100.	100.	100.
9/30/2011	49.	0.	7.	0.8	2.	17.	0.1	44.	100.	100.	100.	100.
12/31/2011	27.	0.	7.	0.	0.	62.	0.29	43.	100.	100.	100.	100.
3/31/2012	28.	0.	10.	0.6	0.	54.	19.	43.	100.	100.	100.	100.
6/30/2012	61.	0.	10.	1.	2.	30.	8.7	46.	100.	100.	100.	100.
9/30/2012	0.	0.	5.	0.	0.	13.	0.1	43.	100.	100.	**6.25**	100.
12/31/2012	24.	0.	8.	0.	2.	33.	1.4	41.	100.	100.	100.	100.
3/31/2013	21.	0.	14.	0.8	0.	30.	19.	52.	100.	100.	100.	50.
6/30/2013	77.	0.	20.	2.	0.	35.	3.1	54.	100.	100.	100.	100.
9/30/2013	44.	0.	5.	0.5	0.	16.	0.28	46.	100.	100.	50.	100.
12/31/2013	33.	0.	6.	0.	0.	45.	6.	47.	100.	100.	100.	100.
3/31/2014	28.	0.	12.	0.6	0.	76.	0.25	48.	100.	100.	100.	100.
Average	36.	0.	9.4	0.6	0.8	39.3	7.9	46.3	100.	100.	88.9	96.2
Median	28.	0.	8.	0.6	0.	33.	3.1	46.	100.	100.	100.	100.
Maximum	61.	0.	20.	2.	2.	78.	27.	55.	100.	100.	100.	100.
95th Percentile	69.1	0.	16.98	1.52	2.	89.	--	--	--	--	--	--
# of Measurements	13	13	13	13	13	13	13	13	13	13	13	13

Upstream in the Suncook River (from WET tests)

Monitoring Period End Date	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc	Ammonia Nitrogen as N	Hardness (as CaCO3)
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l
3/31/2011	360.	0.	5.	2.	0.	9.	0.	11.
6/30/2011	93.	0.	0.	0.7	0.	13.	0.	10.
9/30/2011	77.	0.	4.	0.	0.	0.	0.	9.5
12/31/2011	90.	0.	0.	0.	0.	0.	0.	8.3
3/31/2012	84.	0.	0.	0.	0.	5.	0.	9.5
6/30/2012	170.	0.	5.	0.6	0.	4.	0.	7.1
9/30/2012	53.	0.	5.	0.	0.	3.	0.	11.
12/31/2012	68.	0.	0.	0.	0.	0.	0.	9.7
3/31/2013	79.	0.	0.	0.5	0.	3.	0.	8.2
6/30/2013	170.	0.	17.	0.9	0.	5.	0.	8.8
9/30/2013	120.	0.	0.	0.	0.	3.	0.	9.3
12/31/2013	59.	0.	0.	0.	0.	2.	0.	11.
3/31/2014	81.	0.	0.	0.	0.	4.	0.	10.
Average	115.7	0.	2.8	0.4	0.	3.9	0.	9.5
Median	84.	0.	0.	0.	0.	3.	0.	10
Maximum	360.	0.	17.	2.	0.	13.	0.	11.
# of Measurements	13	13	13	13	13	13	13	13

ATTACHMENT C – MASS-BASED EFFLUENT LIMIT CALCULATIONS

Equation used to calculate maximum allowable loads for BOD5 and TSS:

$L = C \times Q_d \times 8.345$

Where:
L = Maximum allowable load, in lbs/day
C = Maximum allowable effluent concentration, in mg/l.
Q_d = Treatment plant's design flow (0.4 mgd)
8.345 = Conversion Factor

Applicable Concentration Limits for $CBOD_5$ and TSS			
Parameter	Monthly Average	Weekly Average	Daily Maximum
$CBOD_5$	25 mg/l	40 mg/l	45 mg/l
TSS	30 mg/l	45 mg/l	50 mg/l

Average Monthly $CBOD_5$ Mass Limit: 25 mg/l x 0.4 mgd x 8.345 = **83 lbs/d**
Average Weekly $CBOD_5$ Mass Limit: 40 mg/l x 0.4 mgd x 8.345 = **134 lbs/d**
Maximum Daily $CBOD_5$ Mass Limit: 45 mg/l x 0.4 mgd x 8.345 = **150 lbs/d**

Average Monthly TSS Mass Limit: 30 mg/l x 0.4 mgd x 8.345 = **100 lbs/d**
Average Weekly TSS Mass Limit: 45 mg/l x 0.4 mgd x 8.345 = **150 lbs/d**
Maximum Daily TSS Mass Limit: 50 mg/l x 0.4 mgd x 8.345 = **167 lbs/d**

ATTACHMENT D – AMMONIA CRITERIA CALCULATIONS

Acute Criteria (Salmonids present):

$$CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

Receiving water pH = 7.0

$$CMC = \frac{0.275}{1 + 10^{7.204 - 7.0}} + \frac{39.0}{1 + 10^{7.0 - 7.204}} = 0.1 + 24.0 = \mathbf{24.1\ mg/l}$$

Summer Chronic Criteria (Early life stages present):

$$CCC = [0.0577/ (1 + 10^{7.688 - pH}) + 2.487/ (1 + 10^{pH - 7.688})] \times \text{Min } (2.85, 1.45 \times 10^{0.028 \times (25 - T)})$$

Receiving Water pH = 7.0; Receiving Water Temperature = 25°C

$$CCC = [0.0577/ (1 + 10^{7.688 - 7.0}) + 2.487/ (1 + 10^{7.0 - 7.688})] \times \text{Min } (2.85, 1.45 \times 10^{0.028 \times (25 - 25)})$$

$$CCC = [0.01 + 2.063] \times 1.45$$

CCC = **3.01 mg/l**

ATTACHMENT E – STATISTICAL APPROACH FOR METALS (FOR N ≥ 10)

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.[2] 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.

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,

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

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_y*= 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)	z_p*
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

RESPONSE TO COMMENTS
REISSUANCE OF NPDES PERMIT NO. NH0100986
TOWN OF PITTSFIELD
PITTSFIELD WASTEWATER TREATMENT FACILITY
PITTSFIELD, NEW HAMPSHIRE

From September 26, 2014 through October 25, 2014, Region 1 of the U.S. Environmental Protection Agency (EPA or Region 1) and the New Hampshire Department of Environmental Services, Water Division (NHDES) solicited public comments on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Town of Pittsfield, New Hampshire (the "Permittee").

Region 1 and NHDES received comments from the Permittee, the Town of Pittsfield, which were submitted October 24, 2014. Below are the comments received and EPA's responses to those comments.

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

COMMENTS FROM THE TOWN OF PITTSFIELD

Comment 1:

> **General:** Fact Sheet, Page 6 of 35, Item C. Flow: Second paragraph states that average monthly discharge flow during the review period was 0.19 mgd. The reference table in Attachment B shows the value to be 0.18 mgd. Please correct the discrepancy.

EPA's Response 1:

The correct average monthly flow during the review period is 0.18 mgd. EPA agrees that Page 6 of the Fact Sheet incorrectly stated 0.19 mgd. This is noted here for the record, as the Fact Sheet cannot be modified.

Comment 2:

> **Dilution Factor**: The dilution factor in this draft permit has been reduced from 6.7 in the 2002 permit to 5.0 in this draft permit. The dilution factor reduction is a result of using a lower 7Q10 flow value for the USGS gaging station (Suncook River at North Chichester, No. 01089500) and use of the "Dingman ratio" in place of the comparative drainage areas approach used in the 2002 permit. The lower dilution factor results in more stringent and/or new limits for Total Phosphorus (TP). Total Residual Chlorine (TRC), Total Recoverable Copper and Ammonia Nitrogen as N. The lower dilution factor also results in higher Chronic C-NOEC percent effluent. Our comments on the recalculated dilution factor are as follows:

a. **7Q10 stream flow values**: The 2002 permit carried forward the same dilution factor and basis used in the 1997 permit. The 1997 permit stated the gage 7Q10 value to be 4.53 cfs based on the historical gage data. The draft NPDES permit states that the gage 7Q10 value is 4.09 cfs. The draft permit included consideration of 2009 gage data for the computation of the 7Q10 value. A graph of the 2009 daily flow data for the gage is attached (Attachment 1). This graph shows that in 2009 gage flow was never lower than 20 cfs. We do not understand how the addition of the 2009 data could cause the 7Q10 value to be reduced when the flows throughout that year were a minimum of five times greater than the 7Q10 value. Please provide further explanation on how the gage data has been used to justify the lower 7Q10 value. It does not appear that USGS publishes a 7Q10 value for this particular gaging station. Please provide the backup data and calculations to support the NHDES' determination of the 7Q10 value at the gage

   The Draft permit Fact Sheet also mentions the Towns drinking water source at Berry Pond being located within the "outfall's" basin (presumably the intended wording was "receiving water's" basin). Therefore the 7Q10 flow is assumed to be downstream of the WWTF outfall. We assume the basis for this assumption is the June 24, 2002 NHDES Interim Final Policy on 7Q10 and Withdrawals for Fresh Water Surface Waters memorandum, specifically Scenario I. Please confirm this assumption.

b. **Dingman Ratio:** The Draft permit Fact Sheet states that the "Dingman Ratio" has been used to adjust the gage 7Q10 value to just downstream of the WWTF outfall, resulting in a ratio of 0.845. The comparative drainage areas approach was used in previous permits and resulted in a ratio of 0.883. Please provide the backup data and calculations to support the NHDES' determination of the "Dingman" values for the drainage areas.

c. **Summary:** The determination of the 7Q10 values and the resulting dilution factor is the most crucial element that dictates the most stringent and new discharge limits in the Draft permit. The Town of Pittsfield's WWTF is an aerated lagoon system that will be difficult to upgrade to meet the new and more stringent permit limits. Therefore, we want to make sure that the information and calculations that are the basis of the more stringent dilution factor are correct. Please provide the requested additional backup information for our review. We would also be interested in meeting with EPA and NHDES to discuss this issue in further detail and the ramifications it will have to the Town of Pittsfield. If after review of the information it is determined that the dilution factor should be changed, then the effected discharge permit limits should also be revised as appropriate.

EPA's Response 2:

In the development of the 2014 draft permit, EPA and NHDES recalculated and updated the 7Q10 and dilution factor which were previously established in 1997. There were three factors which contributed to the decrease of the dilution factor from 6.7 in the 1997 and 2002 permits to 5.0 in the 2014 draft permit. These factors are:

1) Removing water years 1920-1949 from the 7Q10 calculation;
2) Applying the Dingman Equation ratio (0.8450) rather than the basin area ratio (0.883); and
3) Changing the 7Q10 from an *upstream* 7Q10 to a *downstream* 7Q10.

Firstly, the period of record used to determine the 7Q10 in the 1997 and 2002 permits was water years 1920-1970. In 2010, NHDES recalculated the 7Q10 using the water years 1950-1970 and 2009. The data set was truncated (i.e., water years 1920 - 1949 were not used) because the remarks in the 2008 USGS Water Data Report states that flow was "regulated at times by mills and reservoirs above station, regulation greater prior to 1949". Hence, water years 1920 to 1949 do not accurately represent the natural fluctuation of river flow suitable for deriving the 7Q10 value. The 2009 data was also added to the calculation, as described by the commenter, but truncating the data prior to 1949 had a more significant impact on the resulting 7Q10 value.

Secondly, it wasn't until after the Pittsfield's 2002 permit was drafted that NHDES had a policy on calculating the 7Q10 (*Interim Final Policy on 7Q10 and Withdrawals for Fresh Water Surface Waters, June 24, 2002*). This policy translates a downstream gaged 7Q10 to an upstream POTW's 7Q10 using a Dingman Equation ratio rather than a basin area ratio. The Dingman equation is a function of mean basin elevation, basin area, and percent stratified drift. These data were GIS derived numbers using a digital elevation map, watershed boudaries delineated from the USGS StreamStats Program, and a stratified drift layer (Cotton Map). The Dingman equation 7Q10 values for the USGS gaged basin and the POTW's basin are as follows:

$Q_{Dignman7Q10\ at\ gage}$ = 7.373 cfs (mean basin elevation = 785.4 feet; basin area = 154.4 mi^2; and percent stratified drift = 0.02528)
$Q_{Dignman7Q10\ at\ POTW}$ = 6.232 cfs (mean basin elevation = 811.9 feet; basin area = 132.6 mi^2; and percent stratified drift = 0.02469)

Therefore, $Q_{POTW\ 7Q10}$ = (6.232 cfs/7.373 cfs)*4.09 cfs = <u>3.46 cfs</u>.

Finally, the 1997 and 2002 permits considered the 7Q10 to be an *upstream* value. However, the June 24, 2002 Interim Final Policy identifies that when the discharger's drinking water source is inside the POTW's basin, the 7Q10 is considered a *downstream* 7Q10 and when the discharger's drinking water source is outside the POTW's watershed the 7Q10 is considered an *upstream* 7Q10. Since the discharger's drinking water source (Berry Pond) is within the POTW's watershed, the 7Q10 is assumed to be a *downstream* 7Q10. This is consistent with Scenario I of the policy, as mentioned by the commenter.

Hence, the 2014 draft permit used the following numbers for the dilution factor:

Q_{7Q10} at downstream USGS gage (Suncook River at North Chichester, No. 01089500) = 4.09 cfs
$Q_{Dignman7Q10\ at\ gage}$ = 7.373 cfs
$Q_{Dignman7Q10\ at\ POTW}$ = 6.232 cfs
Q_d = design flow = 0.4 mgd
$Q_{POTW\ 7Q10}$ = Q_r = *downstream* 7Q10 = 3.46 cfs (2.24 mgd)

Thus, the dilution factor was: (Q_r/Q_d) * 0.9 = (2.24)/(0.4)*0.9 = 5.0

EPA and NHDES have confirmed that the 7Q10 and dilution factor calculations in the draft permit were correct. However, in response to this comment NHDES and EPA have reevaluated the 7Q10 using the most up-to-date USGS records. As described above, the 7Q10 used in the draft permit was calculated in 2010 using data from 1950-1970 and 2009. The period of record currently available for this calculation is 1950-1970 and 2009-2013, which results in the following 7Q10:

Q_{7Q10} at downstream USGS gage (Suncook River at North Chichester, No. 01089500) = 4.27 cfs

Following the 2002 Interim Policy, the downstream gaged 7Q10 was multiplied by the Dingman 7Q10 ratio instead of basin area ratio. The Dingman equation 7Q10 values for the USGS gaged basin and the POTW's basin are as follows:

$Q_{Dignman7Q10\ at\ gage}$ = 7.373 cfs (mean basin elevation = 785.4 feet; basin area = 154.4 mi^2; and percent stratified drift = 0.02528)
$Q_{Dignman7Q10\ at\ POTW}$ = 6.232 cfs (mean basin elevation = 811.9 feet; basin area = 132.6 mi^2; and percent stratified drift = 0.02469)

Therefore, $Q_{POTW\ 7Q10}$ = (6.232 cfs/7.373 cfs)*4.27 cfs = 3.61 cfs. Since the discharger's drinking water source (Berry Pond) is within the POTW's watershed, the 7Q10 is assumed to be a *downstream* 7Q10 (Q_r), in accordance with the June 24, 2002 Interim Final Policy. Hence, the dilution factor is recalculated as follows:

$Q_{Dignman7Q10\ at\ gage}$ = 7.373 cfs
$Q_{Dignman7Q10\ at\ POTW}$ = 6.232 cfs
Q_d = design flow = 0.4 mgd
$Q_{POTW\ 7Q10}$ = Q_r = *downstream* 7Q10 = 3.61 cfs (2.33 mgd)

Thus, the dilution factor (Q_r/Q_d) * 0.9 = (2.33)/(0.4)*0.9 = **5.2**

The limits in the final permit that are dependent on the 7Q10 and/or dilution factor (i.e., total phosphorus, total residual chlorine, total recoverable copper, ammonia nitrogen as N, and chronic C-NOEC) have been adjusted in the final permit accordingly. Limits for each of these parameters are discussed in the relevant sections below, except C-NOEC. Since the C-NOEC limit is not discussed in a separate comment, the revised limit is presented here. Based on the new dilution factor for the Pittsfield WWTF, the C-NOEC limit has been recalculated according to the equation below.

$$\frac{1}{DilutionFactor} * 100\% = \frac{1}{5.2} * 100\% = 19.2\%$$

EPA acknowledges that the permittee may have trouble meeting some of these updated permit limits. In situations where a Town's wastewater treatment plant is not capable of achieving compliance with a water-quality based limit, it is EPA's practice to issue an administrative order after the final permit is issued that includes a reasonable schedule of compliance. These orders also typically contain interim limits based on the capabilities of the existing wastewater treatment plant. To initiate a discussion of such an administrative order, please contact Joy Hilton of the Water Technical Unit in EPA's Office of Environmental Stewardship at (617) 918-1877.

Comment 3:

> **Total Phosphorus:** As noted on Page 3 of 35 of the Fact Sheet, the Suncook River in the vicinity of the discharge is not listed for any water quality impairments. As such, we question the need for 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, 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 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 Town of Pittsfield 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.
>
> Attached to this letter is additional WWTF effluent data for a number of parameters (See Attachment 2). The Pittsfield WWTF was not designed for phosphorus removal and the attached data shows that the current effluent quality will violate the new permit limit. We understand that the NHDES is presently considering revisions to its Water Quality Standards that will 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.

Note that "Attachment 2" referred to in the comment above is included as Attachment A of this Response to Comments document.

EPA's Response 3:

As implied by the commenter, it is well established under Environmental Appeals Board (EAB) precedent and guidance that EPA does *not* need to wait for the 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. 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 causal 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 to show adverse effects on human health before invoking [§ 122.44(d)(1)(vi)] as a 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, reasonable potential was clearly identified based on projected instream phosphorus concentrations greater than 10 times the Gold Book target concentration under critical conditions (see Page 12 of Fact Sheet).

However, EPA agrees that in the event suggested by the comment 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.

As stated on Page 12 of the Fact Sheet, the Pittsfield facility reported an average effluent phosphorus concentration of 4.3 mg/l and a maximum of 5.9 mg/l (based on 3 samples) in its permit application (submitted January 25, 2006). EPA reviewed the effluent phosphorus data submitted with this comment and reproduced as Attachment A herein. The average of the submitted data is 4.24 mg/l (only using seasonal data from April 1st through October 31st) and 4.23 mg/l (using all of the submitted data). The maximum value is 5.5 mg/l (from 09/06/2012). Hence, this data confirms the validity of the reasonable potential analysis performed in the Fact Sheet and the necessity to include a permit limit for phosphorus.

As described in Response 2 above, the 7Q10 of the receiving water has been updated after the draft permit was issued. This update has a small effect on the phosphorus limit. The mass-based total phosphorus limit on page 13 of the Fact Sheet was calculated using the following mass-balance equation:

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

rewritten as:

$$M_d = Q_d C_d * 8.345 = (Q_r C_r (0.90) - Q_S C_S) * 8.345$$

Applying the updated 7Q10, these terms are:

M_d = mass-based phosphorus limit
Q_d = lowest effluent monthly average flow (0.077 mgd)
C_d = effluent phosphorus concentration
Q_S = upstream receiving water flow (2.33 – 0.077 = 2.253 mgd)
C_S = upstream receiving water phosphorus concentration (0.011 mg/l)
Q_r = downstream 7Q10 flow (2.33 mgd)
C_r = resultant in-stream 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 **1.5 lb/d**, which is equivalent to 0.45 mg/l at design flow. This mass-based limit is applied seasonally (from April 1st through October 31st) as a monthly average limit to be monitored once per week, as indicated in the final permit.

EPA acknowledges that the Pittsfield WWTF's recent discharges of phosphorus (see Attachment A) have been well above the limit established in the final permit. With respect to the request for a phosphorus compliance schedule, New Hampshire water quality standards currently do not allow for compliance schedules to be included in NPDES permits. In situations where a Town's wastewater treatment plant is not capable of achieving compliance with a new water-quality based limit, it is EPA's practice to issue an administrative order after the final permit is issued that includes a reasonable schedule of compliance. These orders also typically contain interim limits based on the capabilities of the existing wastewater treatment plant. If the permittee wishes to initiate discussion of such an administrative order, they should contact Joy Hilton of the Water Technical Unit, in EPA's Office of Environmental Stewardship at (617) 918-1877.

Comment 4:

> **Total Residual Chlorine:** The draft permit contains Total Residual Chlorine (TRC) discharge limits that are more stringent than the existing permit due to the reduced dilution factor. If the draft permit dilution factor is revised (See Comment 2 above), then the TRC limits should also be changed as appropriate.

EPA's Response 4:

Based upon Response 2 above, the TRC limits have been recalculated using the revised 7Q10 and dilution factor. The TRC limits in the final permit are **57 ug/l** (average monthly) and **99 ug/l** (maximum daily). The limits were calculated by multiplying the chronic criterion (0.011 mg/L)

and acute criterion (0.019 mg/L) by the dilution factor (5.2) for the receiving water (Suncook River). The dilution factor is used in this analysis because the background concentration for TRC is assumed to be zero. The compliance monitoring frequency for TRC in the final permit is 1/day.

Comment 5:

Total Recoverable Copper: The draft permit contains a new discharge permit for Total Recoverable Copper ("copper"). If the draft permit dilution factor is revised (See Comment 2 above), then the copper limit should also be changed as appropriate.

The draft permit copper limit is a monthly average concentration limit of 14 ug/l (0.014 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 the NHDES or the 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 may be 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 replace with a mass limit, if necessary, based on reasonable potential analysis. Using the same calculations used for phosphorus, we calculate that the compliance value for copper should be 0.041 lbs/day. We request that the additional data we have attached to this letter be added to the DMR Data Summary (Attachment B of Fact Sheet) and the copper mass loading be calculated for all the copper data samples. We also request that the reasonable potential analysis be redone based on mass load compliance value and including the additional data. With consideration of the additional data, we calculated the 95th percentile value for WWTF effluent copper mass loading to be 0.0345 lbs/day, which indicates no reasonable potential. We request that the permit limit for copper be removed entirely.

EPA's Response 5:

In regard to the 7Q10 and dilution factor, please refer to Response 2 above. Based on the small change to these values from the draft permit to the final permit, the copper limit has been recalculated using the following equation:

$$C_d = (Q_r C_r (0.90) - Q_S C_S) / Q_d$$

where:

Q_d = design flow (0.4 mgd)
C_d = effluent copper limit (ug/l)
Q_S = upstream receiving water flow (2.33 – 0.4 = 1.93 mgd)

C_S = upstream receiving water median copper concentration (0 ug/l)
Q_r = downstream 7Q10 flow (2.33 mgd)
C_r = chronic copper criterion (2.85 ug/l)
0.90 = factor to reserve 10 % assimilative capacity

Solving for C_d gives the maximum allowable concentration the facility may discharge without violating water quality standards. This allowable discharge of **15 ug/l** in the final permit is slightly higher than the 14.4 ug/l limit in the draft permit.

In regard to the supplemental copper data, there is only one additional sample (WET test on 6/16/2014) that was not already included in the reasonable potential analysis in the Fact Sheet. EPA confirmed that including this value in the 95th percentile calculation did not significantly impact the reasonable potential calculations, using concentration values. Hence, there is still reasonable potential for copper and a permit limit is required.

EPA has reviewed the request to perform a reasonable potential analysis using mass loadings and then apply the limit as a mass-based limit. Firstly, EPA does not agree that it is appropriate to perform a reasonable potential analysis using mass loadings instead of concentrations. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *In re Washington Aqueduct Water Supply Sys*., 11 E.A.D. 565, 584 (EAB 2004). EPA has chosen to use the facility's effluent design flow as part of this worst-case scenario. This is consistently done for all parameters in the Fact Sheet (including phosphorus, metals, and ammonia). Hence, given the additional data point above (from 6/16/2014), the facility still has reasonable potential to exceed the chronic copper criterion downstream and a permit limit is required.

Additionally, 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) 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 and limitations are expressed in terms of other units of measurement*

In the case of copper, the relevant standard is 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). Hence, the monthly average copper limit in the final permit is 15 ug/l.

Comment 6:

Ammonia Nitrogen as N: The draft permit contains a new discharge permit for Ammonia Nitrogen as N ("ammonia"). If the draft permit dilution factor is revised (See Comment 2 above), then the ammonia limit should also be changed as appropriate.

The draft permit ammonia limit is a monthly average concentration of 15 mg/l. 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 replace with a mass limit, if necessary, based on reasonable potential analysis. Using the same calculations used for phosphorus, we calculate that the compliance value for ammonia should be 43.34 lbs/day. We request that the additional data we have attached to this letter be added to the DMR Data Summary (Attachment B of Fact Sheet) and the ammonia mass loading be calculated for all the ammonia data samples. We also request that the reasonable potential analysis be redone based on mass load compliance value and including the additional data. In the Draft permit the reasonable potential analysis was done differently for ammonia than for the other toxic parameters (metals). The 95th percentile effluent value was not considered for ammonia reasonable potential analysis. We believe EPA should use the same approach for ammonia as used for the metals. Please make this change to the calculations, or provide basis for using a different approach for ammonia. The highest effluent ammonia mass loading value is 22.4 lbs/day (June 5, 2014) during the compliance period (June – October). This value is less than the calculated compliance value and shows there is no reasonable potential for the discharge to cause an ammonia impairment to the Suncook River. It should be noted that the 95th percentile value of the WWTF effluent ammonia data would be even lower. We request that the permit limit for ammonia be removed entirely.

EPA's Response 6:

Based upon Response 2 above, the ammonia nitrogen limit has been recalculated using the revised 7Q10 and dilution factor. The average monthly ammonia nitrogen limit in the final permit is **15.7 mg/l** (compared to 15.0 mg/l in the draft permit). The limit was calculated by multiplying the chronic criterion (3.01 mg/l) by the dilution factor (5.2) for the receiving water (Suncook River). The dilution factor is used in this analysis because the background concentration for ammonia nitrogen is assumed to be zero. The compliance monitoring frequency for ammonia nitrogen in the final permit is 1/week.

EPA has evaluated the supplemental ammonia concentration data submitted that was not included in the Fact Sheet calculations. Incorporating this data (and applying the same reasonable potential analysis as done on pages 9-11 of the Fact Sheet) did not significantly impact the reasonable potential calculations, when using concentration values. The maximum warm weather concentration was 18 mg/l (compared to 17 mg/l used in the Fact Sheet) and the maximum cold weather concentration was 28 mg/l (compared to 27 mg/l used in the Fact Sheet). Both analyses resulted in the need for a permit limit only during warm weather (June 1 through October 31) as in the draft permit.

EPA also reviewed the request to perform a reasonable potential analysis using mass loadings and then apply the limit as a mass-based limit. As described in the Response 5 above, EPA does not agree that it is appropriate to perform a reasonable potential analysis using mass loadings instead of concentrations. EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *In re Washington Aqueduct Water Supply Sys*., 11 E.A.D. 565, 584 (EAB 2004). EPA has chosen to use the facility's effluent design flow as part of this worst-case scenario. This is consistently done for all parameters in the Fact Sheet (including phosphorus, metals, and ammonia).

Additionally, EPA considered the request to use the 95th percentile effluent value for ammonia in this analysis in order to be consistent with the analysis for metals (see Appendix E of the *Technical Support Document for Water Quality Based Toxics Control* [EPA 1991] for details). The approach EPA uses for metals depends on the number of samples being analyzed. When at least 10 effluent samples are used, EPA determines reasonable potential using the 95th percentile of the data. For less than 10 samples, EPA does not consider that there is sufficient data to accurately predict the variability in the effluent and thus determines reasonable potential using the maximum effluent value. In this case, the ammonia data used in the Fact Sheet was less than 10 samples for each season (6 for warm weather months and 7 for cold weather months). Hence, EPA determined reasonable potential using the maximum of each of these data sets, in accordance with this procedure.

It should also be noted that if EPA were to calculate a projected 95th percentile of the limited data, it would be much higher than what would be reasonably expected in the discharge. For example, the 95th percentile of the cold weather data was 114 mg/l when the maximum value is only 28 mg/l. Hence, EPA has decided to use the maximum value of the effluent data in this analysis.

Additionally, 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 and 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. Hence, the monthly average ammonia limit in the final permit is 15.7 mg/l, applicable June 1st through October 31st.

ATTACHMENT A – Supplemental Data

		Avg Month Flow	Total Phosphorus		Ammonia-N		Total Rec Copper	
Date	Lab	mgd	MG/L	LBS/DY	MG/L	LBS/DY	MG/L	LBS/DY
8/7/14	Eastern Analytical	0.202	**3.1**	**5.2**	**0.15**	**0.3**		
7/10/14	Eastern Analytical	0.210	**3.0**	**5.3**	**2.40**	**4.2**		
6/16/14	WET	0.149			**17.00**	**21.1**	**0.004**	**0.0050**
6/5/14	Eastern Analytical	0.149	**3.7**	**4.6**	**18.00**	**22.4**		
5/1/14	Eastern Analytical	0.199	**2.7**	**4.5**	18.00	29.9		
4/3/14	Eastern Analytical	0.389	**3.9**	**12.7**	23.00	74.6		
3/17/14	WET	0.206			0.25	0.4	**0.012**	**0.0206**
3/6/14	Eastern Analytical	0.206	4.9	8.4	28.00	48.1		
2/6/14	Eastern Analytical	0.160	5.0	6.7	23.00	30.7		
1/2/14	Eastern Analytical	0.200	4.4	7.3	14.00	23.4		
12/11/13	WET	0.118			6.00	5.9	**0.006**	**0.0059**
12/5/13	Eastern Analytical	0.118	4.0	3.9	3.10	3.1		
11/7/13	Eastern Analytical	0.135	3.9	4.4	0.19	0.2		
10/3/13	Eastern Analytical	0.117	**4.7**	**4.6**	**0.22**	**0.2**		
9/16/13	WET	0.147			**0.28**	**0.3**	**0.005**	**0.0061**
9/5/13	Eastern Analytical	0.147	**5.1**	**6.3**	**0.35**	**0.4**		
8/1/13	Eastern Analytical	0.145	**4.3**	**5.2**	**0.17**	**0.2**		
7/11/13	Eastern Analytical	0.233	**3.9**	**7.6**	**0.19**	**0.4**		
6/17/13	WET	0.252			**3.10**	**6.5**	**0.02**	**0.0420**
6/6/13	Eastern Analytical	0.252	**3.8**	**8.0**	**8.80**	**18.5**		
5/2/13	Eastern Analytical	0.213	**4.1**	**7.3**	21.00	37.3		
4/4/13	Eastern Analytical	0.255	**4.3**	**9.1**	21.00	44.7		
3/18/13	WET	0.235			19.00	37.2	**0.014**	**0.0274**
3/7/13	Eastern Analytical	0.235	5.3	10.4	26.00	51.0		
2/7/13	Eastern Analytical	0.161	5.1	6.8	24.00	32.2		
1/3/13	Eastern Analytical	0.155	4.2	5.4	12.00	15.5		
12/3/12	WET	0.172			1.40	2.0	**0.008**	**0.0115**
12/6/12	Eastern Analytical	0.172	3.7	5.3	1.90	2.7		
11/1/12	Eastern Analytical	0.155	4.3	5.6	0.11	0.1		
10/4/12	Eastern Analytical	0.158	**5.3**	**7.0**	**0.28**	**0.4**		
9/6/12	Eastern Analytical	0.105	**5.5**	**4.8**	**0.11**	**0.1**		
9/10/12	WET	0.105			**0.10**	**0.1**	**0.005**	**0.0044**
8/2/12	Eastern Analytical	0.124	**5.4**	**5.6**	**0.14**	**0.1**		

7/5/12	Eastern Analytical	0.077	**4.1**	**2.6**	**0.34**	**0.2**		
6/7/12	Eastern Analytical	0.151	**4.7**	**5.9**	**6.90**	**8.7**		
6/4/12	WET	0.151			**8.70**	**11.0**	**0.01**	**0.0126**
5/3/12	Eastern Analytical	0.202	**4.4**	**7.4**	12.00	20.2		
4/5/12	Eastern Analytical	0.139	**4.6**	**5.3**	20.00	23.2		
3/5/12	WET	0.167			19.00	26.5	**0.01**	**0.0139**
3/2/12	Eastern Analytical	0.167	3.9	5.4	17.00	23.7		
2/2/12	Eastern Analytical	0.135	3.5	3.9	13.00	14.6		
1/5/12	Eastern Analytical	0.159	2.7	3.6	3.80	5.0		
12/31/11	WET	0.277			0.29	0.7	**0.007**	**0.0162**
9/30/11	WET	0.152			**0.10**	**0.1**	**0.007**	**0.0089**
6/30/11	WET	0.149			**17.00**	**21.1**	**0.007**	**0.0087**
3/31/11	WET	0.332			27.00	74.8	**0.011**	**0.0305**