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")

Bethlehem Village District, New Hampshire

is authorized to discharge from the facility located at

Bethlehem Wastewater Treatment Plant
359 Maple Street
Bethlehem, NH 03574

to receiving water named

Ammonoosuc River

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.[1]

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

This permit supersedes the permit issued on July 6, 2011.

This permit consists of **Part I** (18 pages); **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011, 8 pages) and **Part II (**NPDES Part II Standard Conditions, April, 2018, 21 pages).

Signed this day of

_____
Director
Office of Ecosystem Protection
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (C.F.R.) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the permit will become effective upon the date of signature.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to the Ammonoosuc River. The discharge shall be limited and monitored as specified below; the receiving water and the influent shall be monitored as specified below.

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly[4]	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Effluent Flow[5]	0.34 MGD	---	Report MGD	Continuous	Recorder
Effluent Flow[5]	Report MGD	---	---	Continuous	Recorder
BOD_5	30 mg/L 85 lb/day	45 mg/L 128 lb/day	50 mg/L 142 lb/day	1/week	Grab
BOD_5 Removal	≥ 85 %	---	---	---	---
TSS	30 mg/L 85 lb/day	45 mg/L 128 lb/day	50 mg/L 142 lb/day	1/week	Grab
TSS Removal	≥ 85 %	---	---	---	---
pH Range[6]	6.5 - 8.0 S.U.			1/day	Grab
Total Residual Chlorine[7,8]	0.53 mg/L	---	0.91 mg/L	1/day	Grab
Escherichia coli[7,8]	126 cfu/100 mL	---	406 cfu/100 mL	2/week	Grab
Ammonia Nitrogen[9]	Report mg/L Report lb/day	---	Report mg/L Report lb/day	1/month	Grab
Total Nitrogen[9,10]	Report mg/l Report lb/day	---	Report mg/L Report lb/day	1/month	Grab
Total Kjeldahl Nitrogen[9,10]	Report mg/L Report lb/day	---	Report mg/L Report lb/day	1/month	Grab
Total Nitrate[9,10]	Report mg/L Report lb/day	---	Report mg/L Report lb/day	1/month	Grab
Total Nitrite[9,10]	Report mg/L Report lb/day	---	Report mg/L Report lb/day	1/month	Grab

Effluent Characteristic	**Effluent Limitation**			**Monitoring Requirements[1,2,3]**	
Whole Effluent Toxicity (WET) Testing[11,12,13]					
LC_{50}	---	---	≥ 100 %	1/year	Grab
Hardness	---	---	Report mg/L	1/year	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/year	Grab
Total Aluminum	---	---	Report mg/L	1/year	Grab
Total Cadmium	---	---	Report mg/L	1/year	Grab
Total Copper	---	---	Report mg/L	1/year	Grab
Total Nickel	---	---	Report mg/L	1/year	Grab
Total Lead	---	---	Report mg/L	1/year	Grab
Total Zinc	---	---	Report mg/L	1/year	Grab
Receiving Water Chemical Analysis[12,13]					
Hardness	---	---	Report mg/L	1/year	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/year	Grab
Total Aluminum	---	---	Report mg/L	1/year	Grab
Total Cadmium	---	---	Report mg/L	1/year	Grab
Total Copper	---	---	Report mg/L	1/year	Grab
Total Nickel	---	---	Report mg/L	1/year	Grab
Total Lead	---	---	Report mg/L	1/year	Grab
Total Zinc	---	---	Report mg/L	1/year	Grab
pH[14]	---	---	Report S.U.	1/year	Grab
Temperature[14]	---	---	Report °C	1/year	Grab
Influent Monitoring[15]					
BOD_5	Report mg/L Report lb/day	---	---	2/month	Grab
TSS	Report mg/L Report lb/day	---	---	2/month	Grab

Footnotes:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. The Permittee shall submit the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 C.F.R. § 136.

2. In accordance with 40 C.F.R. § 122.44(i)(1)(iv), the Permittee shall use sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. § 136 or required under 40 C.F.R. Chapter I, Subchapter N or O, for the analysis of pollutants or pollutant parameters limited or listed in this permit (except WET). A method is considered "sufficiently sensitive" when either 1) The method minimum level is at or below the level of the applicable water quality criterion or permit effluent limitation for the measured pollutant or pollutant parameter; or 2) The method has the lowest minimum level of the analytical methods approved under 40 C.F.R. § 136 or required under 40 C.F.R. Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter. The "minimum level" is the lowest level at which the test equipment produces a recognizable signal and acceptable calibration point for a pollutant or pollutant parameter, representative of the lowest concentration at which a pollutant or pollutant parameter can be measured with a known level of confidence.

3. When a parameter is not detected above the minimum level of detection, the Permittee must report the data qualifier signifying less than the minimum level of detection for that parameter (e.g., < 50 μg/L, if the minimum level of detection for a parameter is 50 μg/L). For the purposes of this permit, the "minimum level of detection" is the lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions (i.e., the level above which an actual value is reported for a pollutant or pollutant parameter, and the level below which a pollutant or pollutant parameter is reported as non-detect).

4. In calculating and reporting the average monthly concentration when the pollutant is not detected, assign zero to the non-detected sample result if the pollutant was not detected for all monitoring periods in the prior twelve months. If the pollutant was detected in at least one monitoring period in the prior twelve months, then assign each non-detected sample result a value that is equal to one half of the minimum level of detection for the purposes of calculating averages.

5. Report annual average, monthly average, and the maximum daily flow in million gallons per day (MGD). The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.

6. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). See Part I.G. below for a provision to modify the pH range.

7. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges which have been previously chlorinated or which contain residual chlorine. For the purposes of this permit, TRC analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level no greater than 20 μg/L.

   Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

8. The monthly average limit for *E. coli* is expressed as a geometric mean. *E. coli* monitoring shall be conducted concurrently with TRC monitoring if TRC monitoring is required.

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

   Nitrogen loading (lb/day) = nitrogen concentration (mg/L) * monthly average flow (MGD) * 8.34

10. See Part I.G: Special Conditions

11. The Permittee shall conduct the acute toxicity test (LC_{50}) in accordance with test procedures and protocols specified in **Attachment A** of this permit. LC_{50}

is defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*. Toxicity test samples shall be collected once per year during the third quarter (July, August, September). The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal immediately following the end of the quarter sampled (October 15th).

12. The receiving water chemical analysis represents analysis of the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A**. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall either follow procedures outlined in **Attachment A**, Section IV., DILUTION WATER, or the Permittee shall follow the Self-Implementing Alternative Dilution Water Guidance found in *NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs)*.

13. The Permittee shall conduct the analyses specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS, of this permit. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall report the results for the effluent sample. For Part I.A.1., Receiving Water Chemical Analysis, the Permittee shall report the results for the receiving water sample. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

14. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

15. The influent concentrations and loadings of both BOD_5 and TSS shall be monitored twice per month (2/Month) using a 24-Hour Composite sample and the results reported as average monthly values.

Part I.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 free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities.

4. Tainting substances shall not be present in the discharge in concentrations that individually or in combination are detectable by taste and odor tests performed on the edible portions of aquatic organisms.

5. The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water that injure or are inimical to plants, animals, humans or aquatic life; or persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife that might consume aquatic life.

6. The discharge shall not result in benthic deposits that have a detrimental impact on the benthic community. The discharge shall not result in oil and grease, color, slicks, odors, or surface floating solids that would impair any existing or designated uses in the receiving water.

7. The discharge shall not result in an exceedance of the naturally occurring turbidity in the receiving water by more than 10 NTUs.

8. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:

    a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to § 301 or § 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 C.F.R. §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 POTW; and

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

9. 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. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1 in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions 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. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

2. Preventive Maintenance Program

   The Permittee shall maintain an ongoing preventive 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. Plans and programs to meet 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

The permittee shall prepare and submit a map of the sewer collection system it owns by July 13, 2018. 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. combination manholes);

d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

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 O&M Plan

The Permittee shall develop and implement a Collection System O&M Plan by July 13, 2018. The plan shall be kept up-to-date and available for review by federal, state, and local agencies. The plan shall include the information listed below.

a. The full Collection System O&M Plan shall be completed, implemented and submitted to EPA and the State by July 13, 2018. The Plan shall include:

(1) A preventive maintenance and monitoring program for the collection system;
(2) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

(3) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;
(4) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;
(5) A description of the Permittee's programs 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;
(6) An educational public outreach program for all aspects of I/I control, particularly private inflow; and
(7) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

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 the State annually by March 31. The first annual report is due March 31, 2019. 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. 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; and

f. If the average annual flow in the previous calendar year exceeded 80 percent of the 0.34 MGD design flow (0.27 MGD) or there have been capacity related overflows, the report shall include:

(1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and
(2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part II.E.1 of this permit.

E. INDUSTRIAL USERS

1. The Permittee shall submit to EPA and the State the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 C.F.R. § 403.6 and 40 C.F.R. Chapter I, Subchapter N (§§ 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 C.F.R. § 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 C.F.R. § 403.8(f)(6)).

2. 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 C.F.R. § 403.6 and 40 C.F.R. Chapter I, Subchapter N (§§ 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 the State.

F. SLUDGE CONDITIONS

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

2. If both state and federal requirements apply to the Permittee's sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 C.F.R. § 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 C.F.R. § 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 C.F.R. § 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 C.F.R. § 503.6.

5. The 40 C.F.R. § 503 requirements include the following elements:

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

   Which of the 40 C.F.R. § 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.[2]

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, as follows:

[2] 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

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 C.F.R. § 503.8.

7. Under 40 C.F.R. § 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 C.F.R. § 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 § 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 C.F.R. § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in § 503 are met. 40 C.F.R. § 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 C.F.R. § 503 Subpart B.

8. Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gallons per day, and POTWs that serve a population of 10,000 people or greater shall submit an annual report containing the information specified in the 40 C.F.R. § 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 electronically using EPA's Electronic Reporting tool ("NeT") (see "Reporting Requirements" section below). 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 C.F.R. § 503 shall not eliminate or modify the need to comply with applicable requirements under RSA 485-A and Env-Wq 800, New Hampshire Sludge Management Rules.

G. SPECIAL CONDITIONS

1. The pH range may be modified if the Permittee satisfies conditions set forth in Part I.I.5 below. Upon notification of an approval by the State, EPA will review and, if acceptable, will submit written notice to the Permittee of the permit change. The modified pH range will not be in effect until the Permittee receives written notice from EPA.

2. Total Nitrogen

   a. Within one year of the effective date of the permit, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen in order to maintain the annual average mass discharge of total nitrogen at less than the baseline mass loading of 36 lb/day (nitrogen loading (lb/day) = nitrogen concentration (mg/L) * monthly average flow (MGD) * 8.34) , and submit a report to EPA and NHDES documenting this evaluation and presenting a description of recommended operational changes. The methods to be evaluated include, but are not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This report may be combined with the permittee's annual nitrogen report under Part I.G.2.b, if both reports are submitted to EPA and NHDES by February 1st.

   b. The permittee shall also submit an annual report to EPA and the NHDES, by February 1st each year, that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load form the facility, and tracks trends relative to the previous year. If, in any year, the treatment facility discharges in excess of 36 lb/day TN on an annual average basis, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any changes in influent flows/loads and any operational changes. The report shall also include all supporting data.

H. REPORTING REQUIREMENTS

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 the State no later than the 15th day of the following month electronically using NetDMR. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessed from the internet at https://netdmr.zendesk.com/hc/en-us.

2. Submittal of Reports as NetDMR Attachments

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

electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Biosolids/Sewage Sludge Reports

   By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT") found on the internet at https://www.epa.gov/compliance/npdes-ereporting.

4. Submittal of Requests and Reports to EPA/OEP

   a. 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):

      (1) Transfer of permit notice;
      (2) Request for changes in sampling location;
      (3) Request for reduction in testing frequency;
      (4) Request for change in WET testing requirement; and
      (5) Report on unacceptable dilution water / request for alternative dilution water for WET testing.
      (6) Report of new industrial user commencing discharge
      (7) Report received from existing industrial user

   b. 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

5. Submittal of Reports in Hard Copy Form

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

      (1) Written notifications required under Part II
      (2) Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reporting

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

U.S. Environmental Protection Agency

Office of Environmental Stewardship (OES)
Water Technical Unit
5 Post Office Square, Suite 100 (OES04-SMR)
Boston, MA 02109-3912

6. State Reporting

   a. Unless otherwise specified in this permit or by the State, 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.H.4 through I.H.6 shall also be submitted to the New Hampshire Department of Environmental Services (NHDES) at the following address:

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

7. Verbal Reports and Verbal Notifications

   a. 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 the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

   b. Verbal reports and verbal notifications shall be made to EPA's Office of Environmental Stewardship at:

617-918-1510

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

I. 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 to 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 C.F.R. § 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 WWTF operating in excess of 80 percent design flow capacity based on actual average flow for 3 consecutive months;
        (4) Any industrial wastewater connection or change in existing discharge of industrial wastewater, regardless of quality or quantity; and
        (5) Any sewage pumping station greater than 50 gpm or serving more than one building.

7. For each new or increased discharge of industrial waste to the POTW, the Permittee shall submit, in accordance with Env-Wq 305.10(b) an "Industrial Wastewater Discharge Request."

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. 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.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

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

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

III. SAMPLE COLLECTION

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

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

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

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

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

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

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

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

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

V. TEST CONDITIONS

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

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

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o}C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

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

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

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

Notes:

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

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

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

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

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

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

TABLE OF CONTENTS

[1] Updated July 17, 2018 to fix typographical errors.

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 or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage 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, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act 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. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* 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. The Act further 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 non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

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 a notification of planned changes or anticipated noncompliance does not stay any permit

condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director 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 Director, upon request, copies of records required to be kept by this permit.

4. 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).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. 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 C.F.R. 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.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 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.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, 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 Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

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. 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 which are installed by a Permittee 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 reasonably be 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 provisions of paragraphs (c) and (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. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) 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

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director 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; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(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.

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 of 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 5 years (or longer as required by 40 C.F.R. § 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. This period may be extended by request of the Director 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 must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act 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 Director, 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 Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. *Planned Changes*. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only 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 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 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 that are 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 Director 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 Director. The Director 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 Clean Water Act. *See* 40 C.F.R. § 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. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such 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 report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report 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. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(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 C.F.R. § 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 Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or 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. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under 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 Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §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 non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. 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 Director. 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.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

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 under the CWA, 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 or 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.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

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" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that 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.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* 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.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 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 its sewage sludge use or disposal practice to affect public health and the environment adversely.

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) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a 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.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform 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.

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 Director 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."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

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

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) 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, 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 that is not a land application unit, surface impoundment, injection well, or waste pile.

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

LC_{50} means 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.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *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 tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *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.

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 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 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 Director 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 Director shall consider the factors specified in 40 C.F.R. §§ 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 (see definition above) 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).

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

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means 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 measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

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 C.F.R. § 122.3).

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 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (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 a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

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

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

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, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. 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 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 C.F.R. § 122.2.

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; finished materials such as metallic products; 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 Section 313 of title III of SARA; 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 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 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 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

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.

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 that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

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

Toxic pollutant 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 waste water 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 waste water 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 Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. 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 C.F.R. Part 503.

Upset see B.5.a. above.

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

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

Waters of the United States or waters of the U.S. 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 the 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 CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient 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.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. 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 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
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)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 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 PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: NH0101392

PUBLIC NOTICE START AND END DATES: July 24, 2018 – August 22, 2018

NAME AND MAILING ADDRESS OF APPLICANT:

Bethlehem Village District Wastewater Department
P.O. Box 667
Bethlehem, NH 03574

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Bethlehem Village District Wastewater Treatment Facility
359 Maple Street
Bethlehem, NH 03574

RECEIVING WATER AND CLASSIFICATION:

Ammonoosuc River (NHRIV801030403)
Ammonoosuc Watershed - USGS Code: 1137500
Class B - Warm Water Fishery

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

APPENDICES

1 Proposed Action

The above-named applicant (the "Permittee") has applied to the U.S. Environmental Protection Agency ("EPA") for reissuance of a National Pollutant Discharge Elimination System ("NPDES") permit to discharge from the Treatment Plant (the "Facility") into the designated receiving water.

The permit currently in effect, the Publicly Owned Treatment Works General Permit ("POTWGP"), was issued on July 6, 2011 with an effective date of July 6, 2011 and expired on July 6, 2016 (the "2011 Permit"). The Permittee filed an application for permit reissuance with EPA dated March 5, 2016, as required by 40 Code of Federal Regulations ("C.F.R.") § 122.6. Since the permit application was deemed timely and complete by EPA on March 7, 2018, the Facility's 2011 Permit has been administratively continued pursuant to 40 C.F.R. § 122.6 and § 122.21(d). EPA and the State conducted a site visit on May 5, 2017.

2 Statutory and Regulatory Authority

Congress enacted the Clean Water Act ("CWA"), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." *See* CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 303(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. *See* CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. §§ 122, 124, 125, and 136.

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations ("TBELs") and "water quality-based" effluent limitations ("WQBELs"). *See* CWA §§ 301, 304(b); 40 C.F.R. §§ 122, 125, and 131.

2.1 Technology-Based Requirements

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, publicly owned treatment works ("POTWs") must meet performance-based requirements based on available wastewater treatment technology. *See* 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. *See* 40 C.F.R. § 133.

Under § 301(b)(1) of the CWA, POTWs must have achieved effluent limits based upon secondary treatment technology by July 1, 1997. Since then all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those

limitations is from the date the issued permit becomes effective. *See* 40 C.F.R. § 125.3(a)(1).

2.2 Water Quality Based Requirements

The CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent technology-based effluent limits ("TBELs") would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* § 301(b)(1)(C) of the CWA and 40 C.F.R. §§ 122.44(d)(1) and 122.44(d)(5).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards ("WQSs") for all water bodies within the State. *See* CWA § 303 and 40 C.F.R. § 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water-body or a segment of a water-body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) anti-degradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 C.F.R. § 131.12. The applicable State WQSs can be found in the New Hampshire Code of Administrative Rules, Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq. Also *See* generally, Title 50, Water Management and Protection, Chapters 485-A, Water Pollution and Waste Disposal.

Receiving water requirements are established according to numerical and narrative standards in WQSs adopted under State law for each water body classification. When using chemical-specific numeric criteria to develop permit limits, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and are therefore typically applicable to monthly average limits.

When permit effluent limits are necessary for a pollutant to meet narrative water quality criteria, 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. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

2.2.2 Anti-degradation

Federal regulations found at 40 C.F.R. § 131.12 require states to develop and adopt a statewide anti-degradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the anti-degradation policy ensures that high quality waters which exceed levels necessary to support propagation of fish,

shellfish, and wildlife and support recreation in and on the water, are maintained unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

The New Hampshire Anti-Degradation Policy, found at Env-Wq 1708, applies to any new or increased activity that would lower water quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The anti-degradation regulations focus on protecting high quality waters and maintaining water quality necessary to protect existing uses. Discharges that cause "significant degradation" are defined in NH WQS (Env-Wq 1708.09(a)) as those that use 20% or more of the remaining assimilative capacity for a water quality parameter in terms of either concentration or mass of pollutants or flow rate for water quantity. Where NHDES determined that a proposed increase would cause a significant increase, the applicant must provide documentation to demonstrate that the lowering of water quality is necessary, will provide net economic or social benefit in the area in which the water body is located, and that the benefits of the activity outweigh the environmental impact caused by the lower water quality. *See* Env-Wq 1708.10(b).

This permit is being reissued with effluent limitations sufficiently stringent to protect the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, the EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) Unimpaired and not threatened for all designated uses; 2) Unimpaired waters for some uses and not assessed for others; 3) Insufficient information to make assessments for any uses; 4) Impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load ("TMDL"); and 5) Impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL is essentially a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from direct and indirect discharges, determines the maximum load of the pollutant that can be discharged to a specific water body while maintaining WQSs for designated uses, and allocates that load to the various pollutant sources, including point source discharges, subject to NPDES permits. *See* 40 C.F.R. § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation for a NPDES permitted discharge, the effluent limit in the permit may not exceed the waste load allocation. *See* 40 C.F.R. § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to 40 C.F.R. § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs necessary to achieve water quality standards established under § 303 of the CWA. In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality."
See 40 C.F.R. § 122.44(d)(1)(i). There is reasonable potential to cause or contribute to an excursion if the projected or actual in-stream concentration exceeds the applicable criterion. If the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to such an excursion, the permit must contain WQBELs for the pollutant.
See 40 C.F.R. 122.44(d)(1)(iii).

In determining reasonable potential, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent in the receiving water. EPA typically considers the statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Control (TSD)*[1] to determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS. *See* 40 C.F.R. § 122.44(d). EPA's quantitative approach statistically projects effluent concentrations based on available effluent data, which are then compared to the applicable WQC.

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs or it is deemed that the state has waived its right to certify. Regulations governing state certification are set forth in 40 C.F.R. § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 C.F.R. § 124.53 and expects that the Draft Permit will be certified.

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 §§ 208(e), 301, 302, 303, 306 and 307 or the appropriate requirements of 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. The only exception to this is that the sludge conditions/requirements implementing § 405(d) of the CWA are not subject to the § 401 State Certification requirements. 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 of 40 C.F.R. § 124.

[1] March 1991, EPA/505/2-90-001

In addition, the State should provide a statement of the extent to which any 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.

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." *See* 40 C.F.R. § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4 (d) and 40 C.F.R. § 122.44(d).

2.3 Effluent Flow Requirements

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

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

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

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

authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its design flow when assessing reasonable potential.

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

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

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

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

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

EPA has the authority in accordance with several statutory and regulatory requirements established pursuant to the CWA, 33 USC § 1251 et seq., the NPDES program (*See* § 402 and the implementing regulations generally found at 40 C.F.R. §§ 122, 124, 125, and 136), CWA § 308(a), 33 USC § 1318(a), and applicable state regulations to include requirements such as monitoring and reporting in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the discharges under the authority of §§ 308(a) and 402(a)(2) of the CWA, and consistent with 40 C.F.R. §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The monitoring requirements included in this permit specify routine sampling and analysis, which will provide ongoing, representative information on the levels of regulated constituents in the wastewater discharge streams. The monitoring program is needed to assess effluent characteristics, evaluate permit compliance, and determine if additional permit conditions are necessary to ensure compliance with technology-based and water quality-based requirements, including WQSs. EPA and/or the state may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to § 304(a)(1) of the CWA, state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 C.F.R. § 122. Therefore, the monitoring requirements in this permit are included for specific regulatory use in carrying out the CWA.

NPDES permits require that the approved analytical procedures found in 40 C.F.R. § 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 C.F.R. § 122.21(e)(3) (completeness), 40 C.F.R. § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 C.F.R. § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] ("ML") is at or below the level of the applicable water quality criterion or permit limitation for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the EPA-approved analytical methods.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to electronically report monitoring results obtained

[2] Federal Register, Vol. 79, No. 160, Tuesday, August 19, 2014; FR Doc. 2014–19557.
[3] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit ("MDL"). Minimum levels may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Federal Register, Vol. 79, No. 160, Tuesday, August 19, 2014; FR Doc. 2014–19557.

during each calendar month as a Discharge Monitoring Report ("DMR") 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 EPA through the Environmental Information Exchange Network. NetDMR has allowed participants to discontinue mailing in hard copy forms to EPA under 40 C.F.R. §§ 122.41 and 403.12. NetDMR is accessed from the following website: https://netdmr.zendesk.com/hc/en-us. Further information about NetDMR can be found on the EPA Region 1 NetDMR website.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. 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 providing written notifications required under the Part II Standard Conditions.

2.5 Anti-backsliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in a previous permit unless in compliance with the anti-backsliding requirements of the CWA. *See* §§ 402(o) and 303(d)(4) of the CWA and 40 C.F.R. § 122.44(l)(1 and 2). Anti-backsliding provisions apply to effluent limits based on technology, water quality, BPJ and state certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2011 Permit unless specific conditions exist to justify one of the exceptions listed in 40 C.F.R. § 122.44(l)(2)(i) and/or in accordance with § 303(d)(4). Discussion of any applicable exceptions are discussed in sections that follow. Therefore, the Draft Permit complies with the anti-backsliding requirements of the CWA.

3 Description of Facility and Discharge

3.1 Location and Type of Facility

The location of the treatment plant and the Outfall 001 to the Ammonoosuc River are shown in Figure 1. The latitude and longitude of the outfall is 44.3°N, 71.67°W.

Bethlehem Wastewater Treatment Facility ("WWTF" or "Bethlehem WWTF") is a wastewater treatment facility that is engaged in the collection and treatment of municipal wastewater. Currently, the Facility serves approximately 2,037 residents in the Town of Bethlehem (about 81% of the town's population).

The Facility has a design flow of 0.34 MGD, the annual average daily flow reported in the 2016 application was 0.22 MGD, and the average for the last 5 years has been 0.2 MGD. The system

[4] https://netdmr.zendesk.com/hc/en-us/articles/209616266-EPA-Region-1-NetDMR-Information.

is primarily a separate system (90%) with 10% combined sewers. Wastewater is comprised of mostly domestic sewage with some commercial sewage and some septage. There are no significant industrial users.

The permittee does not have any major industries contributing industrial wastewater to the WWTP, and thus is not required to have a pretreatment program.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the permittee from January 2013 through December 2017 is provided in Appendix A of this Fact Sheet.

3.1.1 Treatment Process Description

Bethlehem WWTF is an aerated lagoon treatment plant. Influent enters the Facility and flows through a mechanical screen. The Facility then provides secondary treatment using a series of three lagoons. Disinfection is provided using sodium hypochlorite before flow exits via a cascade for enhancement. Effluent discharges into the Ammonoosuc River. A flow diagram of the Facility is shown in Figure 2.

Waste sludge is primarily consumed by catfish and daphnia living within the lagoons. The lagoons are dewatered and cleaned of any remaining sludge periodically. The sludge is land applied on the Facility's grounds. Monitoring wells near the site of land application monitor the pollutants arising from the land application.

3.1.2 Collection System Description

Bethlehem WWTF is served by a 10% combined sewer system and a 90% separate sewer system. A combined sewer system conveys domestic, industrial and commercial sewage as well as stormwater before leading to the wastewater treatment plant. A separate sanitary sewer conveys domestic, industrial and commercial sewage, but not stormwater. It is part of a "two-pipe system" consisting of separate sanitary sewers and storm sewers. The two systems have no interconnections; the sanitary sewer leads to the wastewater treatment plant and the storm sewers discharge to a local water body.

4 Description of Receiving Water and Dilution

Bethlehem WWTF discharges through Outfall 001 into the Ammonoosuc River, a tributary of the Connecticut River, within Segment NHRIV801030403. This segment is 2 miles in length and travels from Bethlehem WWTF to NH Highway 116, north of the Wing Rd. dam in Bethlehem. The Ammonoosuc River then flows into the Connecticut River approximately 43 miles downstream. The Ammonoosuc River is part of the Ammonoosuc River watershed, which flows to the Connecticut River and discharges to Long Island Sound.

The Ammonoosuc River has been classified as a Class B warm water fishery in the New Hampshire WQSs, RSA 485-A:8. The NH WQS at RSA 485-A:8 state that Class B waters should be

"of the second highest quality and shall have no objectionable physical characteristics and shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 126 Escherichia coli per 100 milliliters, or greater than 406 Escherichia coli per 100 milliliters in any one sample; and for designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 47 Escherichia coli per 100 milliliters, or 88 Escherichia coli per 100 milliliters in any one sample; unless naturally occurring. There shall be no disposal of sewage or waste into said waters except those which have received adequate treatment to prevent the lowering of the biological, physical, chemical or bacteriological characteristics below those given above, nor shall such disposal of sewage or waste be inimical to aquatic life or to the maintenance of aquatic life in said receiving waters. The pH range for said waters shall be 6.5 to 8.0 except when due to natural causes. The commissioner shall adopt rules, under RSA 541-A, relative to dissolved oxygen water quality standards in a manner consistent with Environmental Protection Agency guidance on dissolved oxygen water criteria published pursuant to section 304(a) of the Clean Water Act, and other relevant scientific information. Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies."

A summary of the ambient data collected in the receiving water upstream of the outfall can be found in Appendix B of this Fact Sheet.

The NH DES 2014, 305(b)/303(d) Watershed Report Card ("2014 Watershed Report Card"), the 303(d) list, includes the Ammonoosuc River as a New Hampshire Category 5 Water in need of a total maximum daily load ("TMDL") assessment due to pH. This assessment is based on the sampling results of the September 2013 request for data for the 305(b)/303(d) submission.[5] To date no TMDL has been developed for this segment for the listed impairment.

4.1 Available Dilution

7 Day, 10 Year Low Flow

To ensure that discharges do not cause or contribute to violations of WQS under all expected circumstances, WQBELs are derived assuming critical conditions for the receiving water (*See* EPA Permit Writer's Manual, Section 6.2.4). For most pollutants and criteria, the critical flow in rivers and streams is some measure of the low flow of that river or stream. New Hampshire water quality regulations require that the available effluent dilution be based on the 7-day, 10-year low flow ("7Q10 flow") of the receiving water (Env-Wq 1705.02(d)). The 7Q10 low flow is the mean low flow over 7 consecutive days, recurring every 10 years.

The 7Q10 flow used in the Draft Permit has been extrapolated from flow data from 1941 to 2015 at one U.S. Geological Survey gage station (#1137500) near Bethlehem WWTF (which does not have a permanent flow gage station). The discharge is located approximately 34 miles

[5] New Hampshire Department of Environmental Services. (2017). *State of New Hampshire 2014 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology* (R-WD-15-9). p. 17. Concord, NH

downstream from the headwaters of the Ammonoosuc River, which joins the Connecticut River approximately 43 miles downstream of the discharge. The total drainage area for the Ammonoosuc River watershed at the gage is 88.4 square miles; the drainage area upstream of the discharge is 10.5 square miles.

7Q10 at USGS #1137500 – the Ammonoosuc River near Bethlehem Junction, NH 1941-2015

= 27.4 cubic feet per second (cfs)

Drainage Area = 88.4 square miles

Using the Dingman equation, the 7Q10 for the ungaged area from the Bethlehem Junction Gage to Outfall 001 is 0.6 cfs. The total upstream 7Q10 flow is 28 cfs (27.4 cfs + 0.6 cfs). The dilution factor ("DF") at the 7Q10 flow of 18 MGD in the receiving water upstream of the discharge, Q_s, and the Facility's design flow of 0.34 MGD, Q_d, was calculated as shown below:

$$DF = [\frac{Q_s+Q_d}{Q_d}] \times 0.9 = [(18 \text{ MGD} + 0.34 \text{ MGD})/0.34 \text{ MGD}] \text{ x } 0.9 = 48$$

5 Proposed Effluent Limitations and Conditions

The proposed limitations and conditions, the bases of which are discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit. EPA determined the pollutants of concern based on EPA's technology based effluent requirements, pollutants believed present in the permit application, and other information.

5.1 Effluent Limitations and Monitoring Requirements

In addition to the State and Federal regulations described in Section 2, data submitted by the permittee in their permit application as well as in monthly discharge monitoring reports ("DMRs") and in WET test reports from 2013 to 2017 were used to identify the pollutants of concern and to evaluate the discharge during the effluent limitations development process (*See* Appendices A and B).

5.1.1 Wastewater Effluent Flow

The 2011 Permit requires that the monthly average effluent flow be monitored. A review of DMR data in Appendix A, from January 2013 through December 2017 shows that the average flow was 0.2 MGD (range 0.1 to 0.7 MGD).

The Draft Permit changes the monitoring requirement in the 2011 permit to a 0.34 MGD flow limit, the design flow of the Facility. The Draft Permit requires that flow be measured continuously and that the rolling annual average flow, as well as the average monthly and maximum daily flow for each month be reported. The rolling annual average flow limit is calculated as the average of the flow for the reporting month and 11 previous months.

5.1.2 Biochemical Oxygen Demand (BOD_5)

5.1.2.1 BOD_5 Concentration Limits

The BOD_5 limits in the 2011 Permit were based on the secondary treatment standards in 40 C.F.R. § 133.102; the average monthly limit is 30 mg/L; the average weekly limit is 45 mg/L, and the daily maximum limit is 50 mg/L.

A review of DMR data submitted from 2013 through 2017 shows that there has been one permit violation of the BOD_5 concentration limit in October 2017 (31 mg/L). Based on the DMR data (*See* Appendix A), the monthly average BOD_5 values averaged 14 mg/L (range 1 to 31 mg/L) and the reported monthly high weekly average[6] BOD_5 values averaged 19 mg/L (range 2 to 43 mg/L).

The Draft Permit proposes the same BOD_5 concentration limits as in the 2011 Permit as no new wasteload allocations have been established and there have been no changes to the secondary treatment standards. The monitoring frequency remains once per week.

5.1.2.2 BOD_5 Mass Limits

The mass based BOD_5 limits in the 2011 Permit of 85 lb/day (monthly average) and 142 lb/day (daily maximum) were based on the secondary treatment standards in 40 C.F.R. § 133.102 and the design flow of the Facility.

A review of DMR data submitted from 2013 through 2017 shows that there has been one permit violation of BOD_5 daily maximum mass limits, in September 2013 (150 mg/L). Based on the DMR data (*See* Appendix A), the monthly average BOD_5 values averaged 24 lb/day (range 1 to 54 lb/day) and the daily maximum BOD_5 values averaged 39 lb/day (range 2 to 150 lb/day).

In the derivation of limits for the Draft Permit, the BOD_5 mass limits must be based on the Facility's design flow, as shown below:

BOD Mass Loading Calculations:

> Calculations of maximum allowable loads for average monthly and average weekly BOD_5 are based on the following equation:
>
> $$L = C_d * Q_d * 8.34$$
>
> Where:
>
> L = Maximum allowable load in lb/day.
> C_d = Maximum allowable effluent concentration for reporting period in mg/L (reporting periods are average monthly and average weekly)
> Q_d = Annual average design flow of Facility (0.34 MGD)
> 8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to

[6] The "weekly average" reported on the monthly DMRs is the highest of the weekly averages for that month.

lb/day.

Limits:

Monthly Average:	30 mg/L * 0.34 MGD * 8.34 = 85 lb/day
Weekly Average:	45 mg/L * 0.34 MGD * 8.34 = 128 lb/day
Daily Maximum:	50 mg/L * 0.34 MGD * 8.34 = 142 lb/day

The limits are still well above the level of BOD_5 currently being discharged, and therefore EPA expects that the Facility will continue to meet their BOD_5 limits without any further adjustments to their treatment process.

5.1.3 Total Suspended Solids (TSS)

5.1.3.1 TSS Concentration Limits

The TSS limits in the 2011 Permit were based on the secondary treatment standards in 40 C.F.R. § 133.102; the average monthly limit is 30 mg/L; the average weekly limit is 45 mg/L, and the daily maximum limit is 50 mg/L.

A review of DMR data submitted from 2013 through 2017 shows that there have been two violations of monthly average TSS limits in August 2017 (32 mg/L) and September 2017 (33 mg/L). Based on the DMR data (*See* Appendix A), the monthly average TSS values averaged 15 mg/L (range 2 to 33 mg/L) and the monthly high weekly average[7] TSS values averaged 19 mg/L (range 3 to 41 mg/L).

The Draft Permit proposes the same TSS concentration limits as in the 2011 Permit as no new WLAs have been established and there have been no changes to the secondary treatment standards. The monitoring frequency remains once per week.

5.1.3.2 TSS Mass Limits

The mass based TSS limits in the 2011 Permit of 85 lb/day (monthly average) and 142 lb/day (daily maximum) were based on EPA's secondary treatment standards and the design flow of the Facility.

A review of DMR data submitted from 2013 through 2017 shows that there has been one permit violation of TSS mass limit in July 2014 (147 lb/day). Based on the DMR data (*See* Appendix A), the monthly average TSS values averaged 25 lb/day (range 2 to 71 lb/day) and the daily maximum average TSS values averaged 39 lb/day (range 3 to 147 lb/day).

In the derivation of limits for the Draft Permit, the TSS mass limits must be based on the Facility's design flow of 0.34 MGD, as shown below.

TSS Mass Loading Calculations:

[7] The "weekly average" reported on the monthly DMRs is the highest of the weekly averages for that month.

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

$$L = C_d * Q_d * 8.34$$

Where:

L = Maximum allowable load in lb/day.
C_d = Maximum allowable effluent concentration for reporting period in mg/L (reporting periods are average monthly and average weekly)
Q_d = Annual average design flow of Facility (0.34 MGD).
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day.

Limits:

Monthly Average:	30 mg/L * 0.34 MGD * 8.34 = 85 lb/day
Weekly Average:	45 mg/L * 0.34 MGD * 8.34 = 128 lb/day
Daily Maximum:	50 mg/L * 0.34 MGD * 8.34 = 142 lb/day

The new limits are still well above the level of TSS currently being discharged and therefore EPA expects that the Facility will continue to meet their TSS limits without any further adjustments to their treatment process.

5.1.4 Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement

In accordance with the provisions of 40 C.F.R. § 133.102(a)(3), (4) and (b)(3), the 2011 Permit requires that the 30-day average percent removal for BOD_5 and TSS be not less than 85%. A review of DMR data from 2013 through 2017 shows that BOD_5 and TSS removal percentages averaged 94% and 96%, respectively. There were no violations of the 85% removal requirement for BOD_5 or TSS during that period.

The requirement to achieve 85% BOD_5 and TSS removal has been carried forward into the Draft Permit.

5.1.5 pH

Consistent with the requirements of NH WQS at Env-Wq 1703.18(b), the 2011 Permit requires that the pH of the effluent is not less than 6.5 or greater than 8.0 standard units at any time. The monitoring frequency is daily. A review of DMR data submitted from 2013 through 2017 shows that there have been 11 violations of the pH limits. *See* Appendix A. According to Terrence Welch, operator of Bethlehem WWTF, the violations were because of short-circuiting issues in the lagoon system.[8] The Facility's retention time during the violations was typically around 7 days as opposed to the 30-day design retention time, particularly during rain events. To address the short-circuiting issue, the Facility began using a baffling system in early 2017 to encourage

[8] Correspondence with Terrence Welch took place on March 8, 2018

serpentine flow and, thus, increase retention time. From 2013 to 2017, pH values ranged from 5.7 – 8.5 standard units.

The pH requirements in the 2011 Permit are proposed to be carried forward into the Draft Permit as there has been no change in the WQS with regards to pH.

5.1.6 Total Residual Chlorine (TRC)

The acute and chronic aquatic life criteria specified in the New Hampshire water quality standards are 19 µg/L and 11 µg/L, respectively (See Env-Wq 1703.21, Table 1703.1). The 2011 Permit includes a monthly average chlorine limit of 0.59 mg/L and a maximum daily limit of 1 mg/L.

A review of the DMR submitted from January 2013 through December 2017 shows that there was one violation of the TRC effluent limitation (0.6 mg/L in October 2013 and November 2016). The average of the average monthly values for total residual chlorine was 0.46 mg/L, ranging from 0.28 mg/L to 0.60 mg/L. The average daily maximum was 0.80 mg/L, ranging from 0.48 mg/L to 0.97 mg/L.

To determine whether the average monthly limit of 0.59 mg/L continues to be protective of water quality for total residual chlorine, the following mass balance is used to project in-stream metal concentrations downstream from the discharge.

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the receiving water TRC concentration downstream of the discharge, C_r yields:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = design discharge flow from plant = (0.34 MGD * 1.547) = 0.53 cfs
C_d = effluent TRC concentration, in mg/L = (2011 Permit limit) = 0.59 mg/L
Qs = stream flow upstream of the plant = 28 cfs
Cs = upstream chlorine concentration, in mg/L (assumed to be 0 mg/L)
Q_r = combined stream flow (7Q10 + plant flow) = (28 +0.53) = 28.53 cfs

C_r equals 0.011 mg/L (11 µg/L) which equals, but does not exceed, the chronic life criteria for chlorine. Therefore, 0.9 multiplied by the average monthly limit (0.59 mg/L) is 0.53 mg/L and 0.9 multiplied by the maximum daily limit (1 mg/L) is 0.9 mg/L. These limits continue to be protective of water quality and are proposed to be carried over to the Draft Permit. The monitoring frequency remains once per day.

5.1.7 Bacteria

The 2011 Permit, issued in July 2011, includes effluent limitations for bacteria using *Escherichia coli* (*E.Coli*) bacteria as the indicator bacteria to protect seasonal recreational uses in the

receiving water. A review of DMR data shows that the permittee has been in compliance with the maximum daily *E.Coli* limits of the 2011 Permit (406 cfu/100 mL). The permittee was in violation of the monthly geometric mean *E.Coli* limit of 126 cfu/100 mL 4 times (148.6 cfu/100 mL in February 2017, 239.2 cfu/100 mL in September 2017, 151.5 cfu/100 mL in October 2017, and 227 cfu/100mL in December 2017). The monthly geometric mean *E.Coli* count ranged from 0 to 239.2 cfu/100 mL. The maximum *E.Coli* count reported over the last 59 months was 396.8 cfu/100 mL.

The bacteria limits proposed in the Draft Permit for Outfall 001 are 126 colony forming units (cfu) of *E.coli* per 100 milliliters (mL) as a geometric mean and 406 cfu of *E.coli* per 100 mL maximum daily value. The proposed monitoring frequency is twice per week, which is the same as in the 2011 Permit.

5.1.8 Ammonia

In addition to being a nutrient as a component of total nitrogen, nitrogen in the form of ammonia can reduce the receiving stream's dissolved oxygen concentration through nitrification and can be toxic to aquatic life, particularly at elevated temperatures. The toxicity level of ammonia depends on the temperature and pH of the receiving water (USEPA 1999).

The 2011 Permit does not include any effluent limits for ammonia because, in previous permitting analyses, the Facility was covered under a general permit. The general POTW permit for NH only includes an ammonia-nitrogen monitoring requirement. The following paragraphs evaluate whether there is reasonable potential for the discharge to cause or contribute to a violation of New Hampshire's ammonia criteria.

Summer Ammonia Limits

Review of the weekly monitoring data in the DMRs from 2013 to 2017, provided in Appendix A, shows that the monthly average ammonia in the effluent averaged 4.4 mg/L (range 0.06 to 18 mg/L) and the highest reported daily maximum was 18 mg/L (range 0.06 to 18 mg/L).

The applicable ammonia water quality criteria are pH and, for the chronic criteria, temperature dependent and can be derived using the equations in Env-Wq 1703.25. At a pH of 6.8, average summer temperature of 25^{o}C, and assuming salmonids present, the acute criteria is 13 mg/L and the chronic criteria is 1.5 mg/L. The aforementioned criteria are summarized in Table 1.

Table 1: Ammonia Criteria

	Freshwater Acute Criteria	Freshwater Chronic Criteria
Season		
Summer (pH 6.8, T 25^{o}C)	13	1.5
Winter (pH 6.8, T 5^{o}C)	28	4.6

Chronic Ammonia-Nitrogen, Warm Weather

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for ammonia nitrogen, the following mass-balance is used to project the in-stream concentration downstream from the discharge.

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the downstream pollutant concentration, C_r,

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = effluent flow (design flow = 0.34 MGD = 0.53 cfs)
C_d = effluent ammonia nitrogen in mg/L (29 mg/L; 95th percentile of summer monthly averages, *See* Appendix E)
Q_s = upstream 7Q10 low flow (28 cfs)
C_s = median upstream warm weather ammonia nitrogen concentration (0 mg/L)
Q_r = streamflow downstream, after discharge ($Q_d + Q_s$ = 28.53 cfs)
C_r = downstream pollutant concentration in mg/L

C_r equals 0.53 mg/L, which is less than the chronic ammonia criteria of 1.3 mg/L (1.5 mg/L * 0.9), so there is no reasonable potential for ammonia to cause or contribute to a violation of the chronic ammonia criteria in the summertime.

The Draft Permit continues the monthly ammonia monitoring requirements from the 2011 Permit.

Acute Ammonia-Nitrogen, Warm Weather

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for ammonia nitrogen, the following mass-balance is used to project the in-stream concentration downstream from the discharge.

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the downstream pollutant concentration, C_r,

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = effluent flow (design flow = 0.34 MGD = 0.53 cfs)
C_d = effluent ammonia nitrogen in mg/L (29 mg/L; 95th percentile of summer

monthly averages, *See* Appendix E)
Q_s = upstream 7Q10 low flow (28 cfs)
C_s = median upstream warm weather ammonia nitrogen concentration (0 mg/L)
Q_r = streamflow downstream, after discharge ($Q_d + Q_s$ = 28.53 cfs)
C_r = downstream pollutant concentration in mg/L

C_r equals 0.53 mg/L, which is less than the acute ammonia criteria of 11.7 mg/L (13 mg/L * 0.9), so there is no reasonable potential for ammonia to cause or contribute to a violation of the acute ammonia criteria in the summertime.

The Draft Permit continues the ammonia monitoring requirements from the 2011 Permit as they will not cause or contribute to a violation of the applicable ammonia criteria.

Winter Ammonia Limits

The 2011 Permit includes year-round ammonia monitoring requirements that were established to address the need to reduce the oxygen demanding component of the nitrogen cycle and reflect a need to reduce ammonia toxicity. As such, the Draft Permit includes a monthly monitoring requirement and a daily maximum monitoring requirement for ammonia.

Review of the monitoring data in the DMRs from 2013 to 2017, provided in Appendix A, shows that in the winter the monthly average ammonia concentration in the effluent averaged 16 mg/L (range 4.2 to 25 mg/L) and the highest reported daily maximum ammonia concentration was 25 mg/L (range 4.2 to 25 mg/L).

At pH of 6.8, average winter temperature of 5°C, and assuming salmonids present, the acute and chronic ammonia criteria are 28 mg/L and 4.6 mg/L, respectively (see Table 1).

Chronic Ammonia-Nitrogen, Cold Weather:

The 2011 Permit does not include an effluent limit based on the chronic criteria because, in previous permitting analyses, the Facility was covered under a general permit. The general POTW permit for NH only includes an ammonia-nitrogen monitoring requirement.

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for ammonia nitrogen, the following mass-balance is used to project the in-stream concentration downstream from the discharge.

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the downstream pollutant concentration, C_r,

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = effluent flow (design flow = 0.34 MGD = 0.53 cfs)
C_d = effluent ammonia nitrogen in mg/L (28 mg/L; 95th percentile of summer

monthly averages, *See* Appendix E)
Q_s = upstream 7Q10 low flow (28 cfs)
C_s = median upstream warm weather ammonia nitrogen concentration (0 mg/L)
Q_r = streamflow downstream, after discharge ($Q_d + Q_s$ = 28.53 cfs)
C_r = downstream pollutant concentration in mg/L

C_r equals 0.53 mg/L, which is less than the chronic ammonia criteria of 4.14 mg/L (4.6 mg/L * 0.9), so there is no reasonable potential for ammonia to cause or contribute to a violation of the chronic ammonia criteria in the wintertime.

The Draft Permit continues the ammonia monitoring requirements from the 2011 Permit.

Acute Ammonia-Nitrogen, Cold Weather:

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for ammonia nitrogen, the following mass-balance is used to project the in-stream concentration downstream from the discharge.

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the downstream pollutant concentration, C_r,

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = effluent flow (design flow = 0.34 MGD = 0.53 cfs)
C_d = effluent ammonia nitrogen in mg/L (28 mg/L; 95th percentile of winter monthly averages, *See* Appendix E)
Q_s = upstream 7Q10 low flow (28 cfs)
C_s = median upstream warm weather ammonia nitrogen concentration (0 mg/L)
Q_r = streamflow downstream, after discharge ($Q_d + Q_s$ = 28.53 cfs)
C_r = downstream pollutant concentration in mg/L

C_r equals 0.53 mg/L, which is less than the chronic ammonia criteria of 25.2 mg/L (28 mg/L * 0.9), so there is no reasonable potential for ammonia to cause or contribute to a violation of the acute ammonia criteria in the wintertime.

The Draft Permit continues the ammonia monitoring requirements from the 2011 Permit.

5.1.9 Nutrients

Nutrients are compounds containing nitrogen and phosphorus. Although nitrogen and phosphorus are essential for plant growth, high concentrations of these nutrients can cause eutrophication, a condition in which aquatic plant and algal growth is excessive. Plant and algae respiration and decomposition reduces dissolved oxygen in the water, creating poor habitat for

fish and other aquatic animals. Recent studies provide evidence that both phosphorus and nitrogen can play a role in the eutrophication of certain ecosystems. However, typically phosphorus is the limiting nutrient triggering eutrophication in fresh water ecosystems and nitrogen in marine or estuarine ecosystems. Thus, for this receiving water, this permit, phosphorus is the nutrient of concern evaluated for effluent limitations in the discussion below.

5.1.9.1 Total Nitrogen

The Bethlehem WWTF discharges to the Ammonoosuc River, which drains to Long Island Sound. In December 2000, the Connecticut Department of Energy and Environmental Protection ("CT DEEP") and New York State Department of Environmental Conservation ("NYSDEC") completed a Total Maximum Daily Load ("TMDL") for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation ("WLA") for point sources and a Load Allocation ("LA") for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire, and Vermont point sources discharging to the Connecticut, Housatonic, and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL. *See* Appendix D – New Hampshire, Vermont, and Massachusetts Total Nitrogen Discharges to Long Island Sound.

The 1998 baseline out-of-basin total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lb/day, 3,286 lb/day, and 1,253 lb/day, respectively (*see* Table 2: Estimated Point Source Nitrogen Loadings to the Connecticut, Housatonic, and Thames Rivers Watersheds below). The estimated point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers, respectively, are 13,836 lb/day, 2,151 lb/day, and 1,015 lb/day, based on 2004 – 2005 information and including all POTWs in the watershed.

Table 2: Estimated Out-of-Basin Point Source Nitrogen Loadings to the Connecticut, Housatonic, and Thames Rivers Watersheds

Basin	Baseline Loading[9] lb/day	TMDL Target[10] lb/day	Current Loading[11] lb/day
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

As can be seen in Table 2, the TMDL target of a 25% aggregate reduction from the 1998 baseline loadings is currently being met, and the overall loading from MA, NH, and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36%.

[9] Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
[10] Reduction of 25% from baseline loading
[11] Estimated current loading from 2004 – 2005 DMR data – detailed summary attached as Exhibit A.

To ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over 2004 – 2005 baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic, and Thames River watersheds. The permit condition requires the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase above a benchmark from the 2004 – 2005 baseline, and that aggregate 25 % reduction is maintained or increased. Such a requirement has been included in this permit with a benchmark of 36 lb/day to inform Bethlehem's optimization efforts. EPA intends to work with the State of Vermont to ensure that similar requirements at a minimum are included in its discharge permits.

Specifically, the Draft Permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and NH DES within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods, which will be evaluated based on the benchmark of 36 lb/day to ensure that there is no increase in total nitrogen compared to the baseline average daily load and that the Facility is operated in such a way that discharges of total nitrogen are minimized. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the Facility, and track trends relative to previous years. The draft permit also includes average monthly and maximum daily reporting requirements for total nitrogen (TN), total Kjeldahl nitrogen (TKN), total nitrite/nitrate nitrogen (NO_2/NO_3).

Future Nitrogen Limits

EPA and state agencies continue to assess nitrogen loads to the Connecticut River and Long Island Sound and may incorporate nitrogen limits in future permit modifications, permit reissuances, or a general permit as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant incorporation of nitrogen control requirements.

In December 2015, EPA signed a letter detailing an EPA nitrogen reduction strategy for waters in the Long Island Sound watershed. The strategy recognizes that more work must be done to reduce nitrogen levels, further improve DO conditions, and attain other related water quality standards in Long Island Sound. EPA is working to establish thresholds for Western Long Island Sound and several coastal embayments, including the mouth of the Connecticut River. Documents regarding the EPA Nitrogen Reduction Strategy are available for public review on EPA's Long Island Sound website (http://longislandsoundstudy.net/issues-actions/water-quality/nitrogen-strategy/). EPA has identified the Connecticut Riverine System as the priority system in the Performance Work Statement (more information can be found at http://longislandsoundstudy.net/issues-actions/water-quality/nitrogen-strategy/). Upon

completion of establishing thresholds, allocations of total nitrogen loadings will be made where further reductions are necessary. If reductions are needed for the Bethlehem WWTF, a water quality-based limit will be added in a future permit action. If so, EPA anticipates exploring possible trading approaches for nitrogen loading in the New Hampshire portion of the Connecticut River watershed.

Although not a permit requirement, it is recommended that any facilities planning that might be conducted for this Facility should consider alternatives for further enhancing nitrogen reduction.

5.1.9.2 Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system because of human activities. Discharges from municipal and industrial wastewater treatment plants, agriculture runoff, and stormwater are examples of human-derived (i.e. anthropogenic) sources of nutrients in surface waters.

The 2011 Permit did not contain an effluent limit or monitoring requirement for total phosphorus. However, in its application the Town of Bethlehem indicated that the Facility's effluent phosphorus concentration averaged 3.7 mg/L with a range of 3.4 to 3.9 mg/L.

The New Hampshire Surface Water Quality Regulations contain a narrative criterion, which limits phosphorus to the level that will not impair a water body's designated use. Specifically, Env-Wq 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-Wq 1703.14(c), further states that, "Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Wq 1702.15 as, "… the human-induced addition of wastes containing nutrients which results in excessive plant growth and/or decrease in dissolved oxygen." Although numeric nutrient criteria have not yet been developed in New Hampshire, a total phosphorus concentration of 0.05 mg/L is considered by NHDES as a level of concern (NH Volunteer River Assessment Program).

In the absence of numeric criteria for phosphorus, EPA uses nationally recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents that contain recommended total phosphorus criteria and other indicators of eutrophication. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends that in-stream phosphorus concentrations not exceed 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. For this segment of the Ammonoosuc River, the 0.1 mg/L would apply downstream of the discharge.

More recently, EPA has released recommended Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters within ecoregions that are minimally impacted by human activities, and thus free from the effects of cultural eutrophication. Bethlehem WWTF is located within Ecoregion VIII, Nutrient Poor Largely Glaciated Upper Midwest and Northeast. The recommended total phosphorus criteria for this ecoregion, found in Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII (EPA December 2001) is 10 µg/L (0.01 mg/L).

EPA uses the effects-based Gold Book threshold as a general target applicable in free-flowing streams. As the Gold Book notes, there are natural conditions of a water body that can result in either increased or reduced eutrophication response to phosphorus inputs; in some waters more stringent phosphorus reductions may be needed, while in some others a higher total phosphorus threshold could be assimilated without inducing a eutrophic response. In this case, EPA is not aware of any evidence that the Ammonoosuc River is unusually susceptible to eutrophication impacts, so that the 100 µg/L threshold appears sufficient in this receiving water. EPA is not aware of evidence of factors that are reducing eutrophic response in the Ammonoosuc River downstream of the discharge.

Elevated concentration of chlorophyll α, excessive algal and macrophyte growth, and low levels of dissolved oxygen are all effects of nutrient enrichment. The relationship between these factors and high in-stream total phosphorus concentrations is well documented in scientific literature, including guidance developed by EPA to address nutrient over-enrichment (Nutrient Criteria Technical Guidance Manual – Rivers and Streams, EPA July 2000 [EPA-822-B-00-002]).

Sampling data from 2013 to 2017, summarized in Table 3, reported 7 summer in-stream phosphorus concentrations collected at Station 22-AMM, located approximately 3 miles upstream of the Bethlehem WWTF.

Table 3: In-stream total phosphorus concentrations (mg/L)

Date	22-AMM 3 miles upstream of WWTF
3/12/2013	0.0136
6/4/2013	0.00634
7/9/2013	0.0095
7/15/2013	0.00502
8/6/2013	0.00566
8/8/2013	0.00614
10/10/2013	0.00531

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for phosphorus, the following mass-balance is used to project the in-stream concentration downstream from the discharge.

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the downstream pollutant concentration, C_r,

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = effluent flow (design flow = 0.34 MGD = 0.53 cfs)
C_d = effluent phosphorus in mg/L (3.9 mg/L; highest reported effluent phosphorus concentration on NPDES reissuance application)
Q_s = upstream 7Q10 low flow (28 cfs)
C_s = median upstream phosphorus concentration (0.00614 mg/L; using ambient data from 22-AMM. *See* Table 3)
Q_r = streamflow downstream, after discharge ($Q_d + Q_s$ = 28.53 cfs)
C_r = downstream pollutant concentration in mg/L

C_r equals 0.080 mg/L, which is less than the New Hampshire's interpretation of the Gold Book criteria of 0.1 mg/L (90% x 0.1 mg/L = 0.09 mg/L), so there is no reasonable potential for phosphorus to cause or contribute to a violation of the Gold Book criteria.

5.1.10 Metals

Dissolved fractions of certain metals in water can be toxic to aquatic life. Therefore, there is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. For the development of the Draft Permit, analyses were completed to evaluate whether there is reasonable potential for effluent discharges to cause or contribute to exceedances of the water quality criteria for aluminum, cadmium, copper, lead, nickel, and zinc.

5.1.10.1 Applicable Metals Criteria

Metals may be present in both dissolved and particulate forms in the water column. However, extensive studies suggest that it is the dissolved fraction that is biologically available, and therefore, presents the greatest risk of toxicity to aquatic life inhabiting the water column. This conclusion is widely accepted by the scientific community both within and outside of EPA (Water Quality Standards Handbook, Chapter 3, Section 3.6 and Appendix J, EPA 2012 [EPA 823-B-12-002]. Also see https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter3.pdf). As a result, state water quality criteria for cadmium, copper, lead, nickel and zinc are established in terms of dissolved metals. New Hampshire aluminum criteria are expressed as acid-soluble aluminum.

However, many inorganic components of domestic wastewater, including metals, are in particulate form, and differences in the chemical composition between the effluent and the receiving water affects the partitioning of metals between the particulate and dissolved fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit*

Limit from a Dissolved Criterion (USEPA 1996 [EPA-823-B96-007]). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water. Regulations at 40 C.F.R. § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals.

For hardness dependent metals criteria, the estimated hardness of the Ammonoosuc River downstream of the treatment plant during critical low flow periods and design discharge flow was calculated based on median ambient and effluent hardness data as reported in the Facility's whole effluent toxicity tests conducted in the summer months of 2013 through 2017 (see Table 4).

Table 4: Ammonoosuc River and Bethlehem WWTF Hardness

WET Date	Effluent Hardness, mg/L (as $CaCO_3$)	Ambient Hardness, mg/L (data collected upstream of discharge)
9/2013	27.06	6.01
9/2014	29.58	7.59
9/2015	36.44	7.6
9/2016	26.01	10.23
9/2017	30.82	12.23
Median	29.58	7.6

The following mass balance equation was used to estimate the hardness of the receiving water, C_r, downstream of the discharge location.

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r} = \frac{\left[(0.53\ \text{cfs})\left(29.58\frac{\text{mg}}{\text{L}}\right) + (28\ \text{cfs})\left(7.6\frac{\text{mg}}{\text{L}}\right)\right]}{28.53\ \text{cfs}}$$

$$= 8\ \text{mg/L}$$

Where:

Q_s = 7Q10 river stream flow upstream of Facility = 28 cfs
Q_d = Design discharge flow from Facility = (0.34 MGD * 1.547) = 0.53 cfs
Q_r = Combined stream flow (7Q10 + plant flow) = 28 cfs + 0.53 cfs = 28.53 cfs
C_s = Median upstream hardness concentration = 7.6 mg/L
C_d = Median Facility effluent hardness concentration = 29.58 mg/L

Table 5 summarizes the calculation of the acute and chronic total recoverable criteria for each metal using the estimated receiving water hardness of 20 mg/L (the minimum hardness applicable for metals analysis in NH). For metals with hardness-based water quality criteria, the criteria were calculated using the equations in NH Env-Wq 1703.

Table 5: Summary of Acute and Chronic Total Recoverable Fresh Water Criteria Calculation for Metals

	Parameters				Total Recoverable Criteria	
Metal	**m_a**	**b_a**	**m_c**	**b_c**	**Acute Criteria* (CMC) (µg/L)**	**Chronic Criteria** (CCC) (µg/L)**
Aluminum	-----	-----	-----	-----	750	87
Cadmium	0.9789	-3.866	0.7977	-3.909	0.39	0.22
Copper	0.9422	-1.7000	0.8545	-1.702	3.07	2.36
Lead	1.273	-1.46	1.273	-4.705	10.52	0.41
Nickel	0.8460	2.255	0.846	0.0584	120.23	13.37
Zinc	0.8473	0.884	0.8473	0.884	30.64	30.64

*Acute Criteria (CMC) = $\exp\{m_a * \ln(\text{hardness}) + b_a\}$, where hardness = 20 mg/L
**Chronic Criteria (CCC) = $\exp\{m_c * \ln(\text{hardness}) + b_c\}$ where hardness = 20 mg/L

5.1.10.2 Reasonable Potential Analysis

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

$$Q_d C_d + Q_s C_s = Q_r C_r$$

Solving for the receiving water metals concentration downstream of the discharge, C_r yields:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

Q_d = design discharge flow from plant = (0.34 MGD * 1.547) = 0.53 cfs
C_d = effluent metals concentration, in µg/L (maximum[12])
Qs = stream flow upstream of the plant = 28 cfs
Cs = upstream metals concentration, in µg/L (median)
Q_r = combined stream flow (7Q10 + plant flow) = (28 + 0.53) = 28.53 cfs

Reasonable potential is then determined by comparing this resultant in-stream concentration (for both acute and chronic conditions) with the criteria for each metal and multiplying that criteria by 0.9 (to include a 10% reserve, as required by NH WQS). In EPA's Technical Support Document for Water Quality Based Toxics Control, EPA/505/2-90-001, March 1991, commonly known as the "TSD", box 3-2 describes the statistical approach in determining if there is reasonable potential for an excursion above the maximum allowable concentration. If there is reasonable potential (for either acute or chronic conditions), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the criterion (multiplied by 0.9) as the resultant in-stream concentration (C_r). *See* Table 6

[12] The Facility's effluent concentrations (from Appendix A) were characterized using the maximum value of each parameter due to the small (n<10) sample size of the data.

for the results of this analysis with respect to aluminum, cadmium, copper, lead, nickel and zinc.

Since the concentration of aluminum, cadmium, copper, lead, nickel, and zinc do not indicate a reasonable potential to cause or contribute to an exceedance of the applicable water quality criteria, limits for these metals are not proposed for the Draft Permit. Monitoring for all listed metals will continue to be required as part of the annual WET tests.

Table 6: Reasonable Potential Table

Metal	Q_d	C_d[1] (Max.)	Q_s	C_s[2] (Median)	$Q_r = Q_s+Q_d$	$C_r = (Q_dC_d+Q_sC_s)/Q_r$	Criteria * 0.9		Reasonable Potential?	Limit $= (Q_r*Criteria*0.9 - Q_s*C_s)/ Q_d$	
	cfs	µg/L	cfs	µg/L	cfs	µg/L	Acute (µg/L)	Chronic (µg/L)	Cr>Criteria * 0.9	Acute (µg/L)	Chronic (µg/L)
Aluminum	0.53	90	28	50	28.53	50.7	675	78.3	N	N/A	N/A
Cadmium		0		0		0	0.35	0.2	N	N/A	N/A
Copper		20		0		0.37	2.77	2.12	N	N/A	N/A
Lead		1		0		0.02	9.47	0.37	N	N/A	N/A
Nickel		0		0		0	108.21	12.03	N	N/A	N/A
Zinc		90		0		1.7	27.58	27.58	N	N/A	N/A

[1]Data from the 2013-2017 Whole Effluent Toxicity ("WET") testing were used to calculate values for aluminum, cadmium, copper, lead, nickel, and zinc.
[2]Median upstream data taken from WET testing on the Ammonoosuc River just upstream from the Bethlehem WWTF (*see* Appendix E).

5.1.11 Whole Effluent Toxicity

Sections 402(a)(2) and 308(a) of the CWA provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity ("WET") testing is conducted to ensure that the additivity, antagonism, synergism and persistence of the pollutants in the discharge do not cause toxicity, even when the pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would affect aquatic life or human health.

In addition, under § 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on WQSs. Under certain narrative State WQSs, and §§ 301, 303 and 402 of the CWA, EPA and the States may establish toxicity-based limitations to implement the narrative "no toxics in toxic amounts." New Hampshire statute and regulations state 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 1730.21(a)(1)).

National studies conducted by the EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Some of these constituents may cause synergistic effects, even if they are present in low concentrations. Because of the source variability and contribution of toxic constituents in domestic and industrial sources, EPA assumes that there is a reasonable potential for this discharge to cause or contribute to an exceedance of the "no toxics in toxic amounts" narrative water quality standard.

There is no chronic WET limit in the 2011 Permit. The acute WET limit in the 2011 Permit is LC_{50} greater than or equal to 100%, using the daphnid, *Ceriodaphnia dubia (C. dubia)*, as the test species. The Facility has consistently met these limits, as can be seen from the DMR summary in Appendix A. It is noted that as part of the 2018 permit issuance, EPA eliminated the required testing for the fathead minnow (*Pimephales promelas*) based on WET Testing results as *Ceriodaphnia dubia* was found to be the more sensitive species.

Based on the potential for toxicity from domestic and industrial contributions, the state narrative water quality criterion, the dilution factor of 48, and in accordance with EPA national and regional policy and 40 C.F.R. § 122.44(d), the Draft Permit continues the effluent limits from the 2011 Permit including the test organism and the testing frequency. Toxicity testing must be performed in accordance with the updated EPA Region 1 test WET test procedures and protocols specified in Attachments A of the Draft Permit (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011).

5.2 Sludge Conditions

Section 405(d) of the Clean Water Act requires that EPA develop technical standards regarding

the use and disposal of sewage sludge. On February 19, 1993, EPA promulgated technical standards. These standards are required to be implemented through permits. The conditions in the permit satisfy this requirement.

5.3 Infiltration/Inflow (I/I)

Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows ("SSOs") in separate systems, and combined sewer overflows ("CSOs") in combined systems.

The Draft Permit includes a requirement for the permittee to control infiltration and inflow ("I/I") within the sewer collections system it owns and operates. The permittee shall develop an I/I removal program commensurate with the severity of I/I in the collection system. This program may be scaled down in sections of the collection system that have minimal I/I.

5.4 Operation and Maintenance of the Sewer System

The standard permit conditions for 'Proper Operation and Maintenance,' found at 40 C.F.R. § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. The requirements at 40 C.F.R. § 122.41(d) impose a 'duty to mitigate' upon the permittee, which requires that "all reasonable steps be taken to minimize or prevent any discharge violation of the permit that has a reasonable likelihood of adversity affecting human health or the environment. EPA maintains that an I/I removal program is an integral component of ensuring permit compliance with the requirements of the permit under the provisions at 40 C.F.R. § 122.41(d) and (e).

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.C. and I.D. of the Draft Permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to separate sewer collection systems (combined systems are not subject to I/I requirements) to the extent necessary to prevent SSOs and I/I related effluent violations at the Wastewater Treatment Facility and maintaining alternate power where necessary. These requirements are included to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment. Under the current permit, the permittee failed to prepare and submit to DES and EPA maps of its wastewater collection system, a copy of its Operation and Maintenance Plan, and subsequent O&M Plan implementation summary reports. Consequently, a DES administrative order stipulated completion of current permit requirements under Part II.D.4, Part II.D.5, and Part II.D.6.

5.5 Standard Conditions

The standard conditions of the permit are based on 40 C.F.R. §122, Subparts A, C, and D and 40 C.F.R. § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

6 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended ("ESA"), grants authority and imposes requirements on 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").

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assurance of the Secretary of Interior, to ensure 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 ("NMFS") administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Facility. The Draft Permit is intended to replace the 2011 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species, and initiates consultation, when required under Section 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish and wildlife to determine if any listed species might potentially be impacted by the re-issuance of the NPDES permit. The review revealed that there are no known federally listed threatened or endangered species or their critical habitat within the vicinity of Bethlehem's discharge and, therefore, a formal EPA consultation will not be required for this discharge.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 et seq., 1998), EPA is required to consult with the National Marine Fisheries Service ("NMFS") if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." *See* 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" ("EFH") as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." *See* 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH, 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical

disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

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

The Ammonoosuc River is not covered by EFH designation for riverine systems and thus EPA has determined that a formal consultation with NMFS is not required.

7 Public Comments, Hearing Requests and Permit Appeals

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 Evan Lewis, U.S. EPA, Office of Ecosystem Protection**,** Municipal Permits Branch, 5 Post Office Square, Suite 100 (OEP06-4), Boston, Massachusetts 02109-3912 or via email to lewis.evan@epa.gov.

Any person, prior to the close of the public comment period, 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 meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA 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 any public hearings, if such hearings are held, the EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

8 EPA Contacts

The administrative record on which this Draft Permit is based may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Evan Lewis
EPA New England, Region 1
5 Post Office Square, Suite-100 (OEP06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1543, FAX: (617) 918-0543
Email: lewis.evan@epa.gov

7/6/2018
Date

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

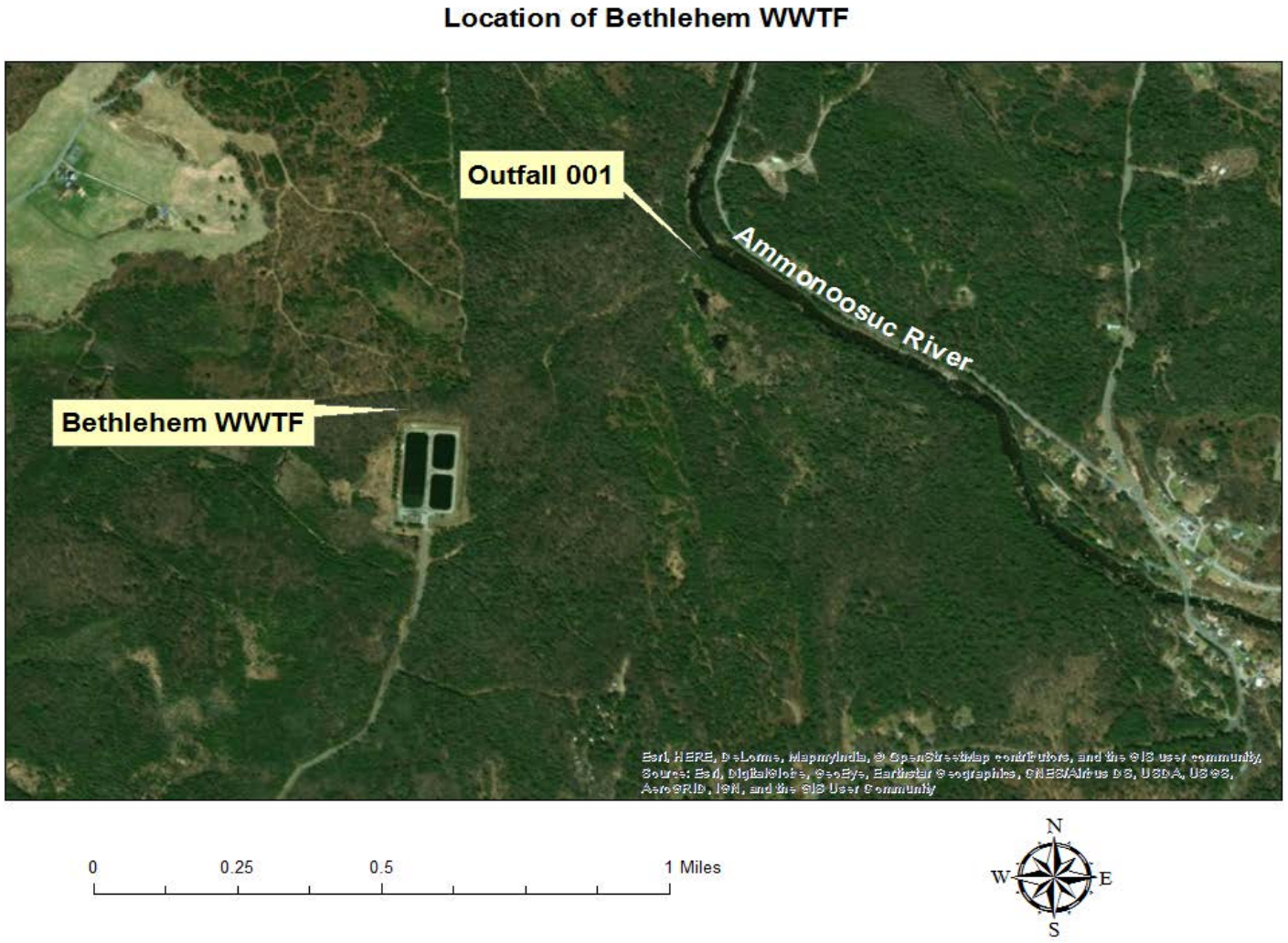

Figure 1: Location of the Bethlehem WWTF

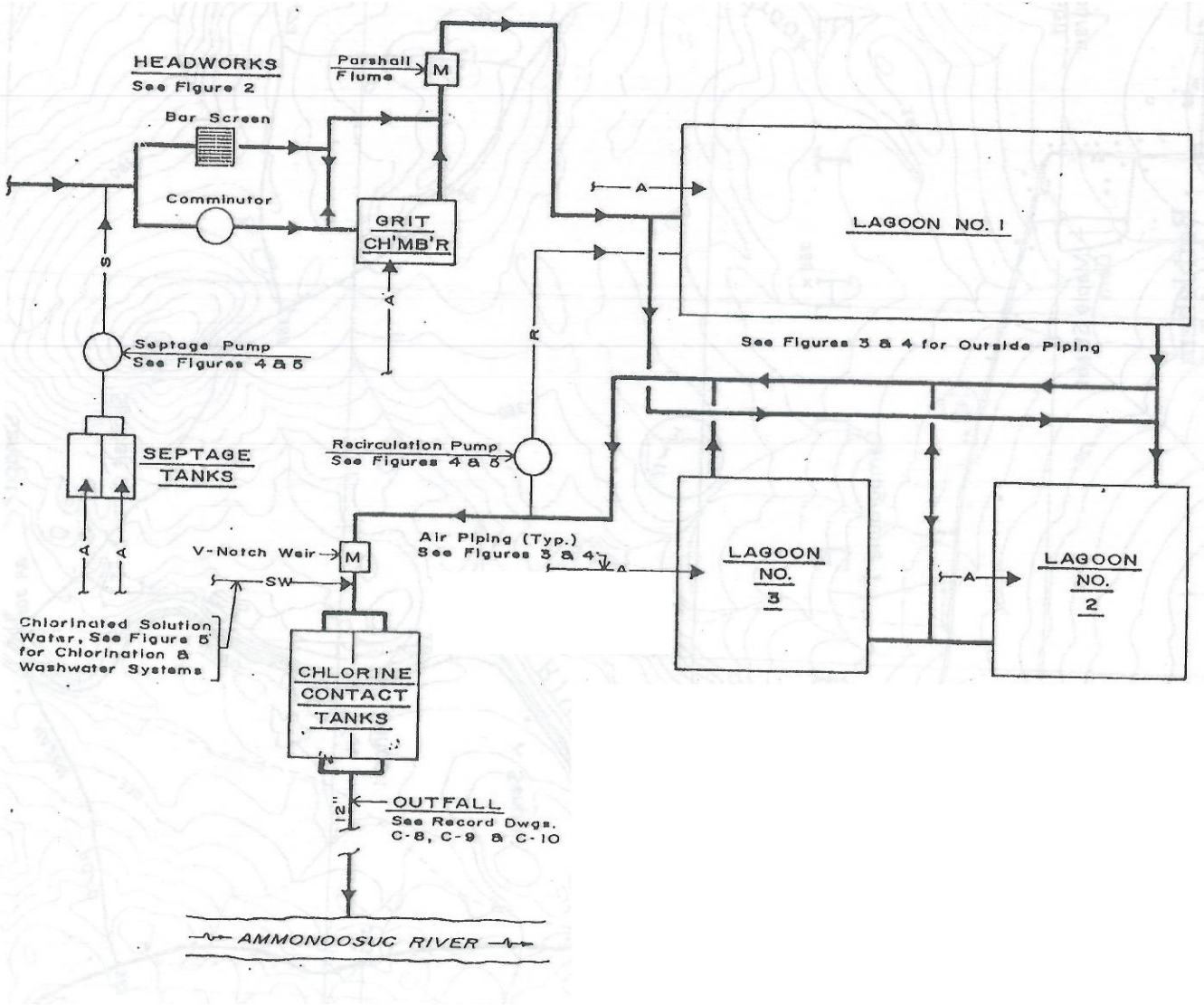

Figure 2: Flow diagram

Appendix A - Effluent Data

	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C
	142 lb/d	30 mg/L	45 mg/L	50 mg/L	85 lb/d
Mon Pd End Date:	DAILY MX	MO AVG	WKLY AVG	DAILY MX	MO AVG
01/31/2013	16	13	16	16	13
02/28/2013	64	14	19	19	27
03/31/2013	31	14	16	16	18
04/30/2013	28	11	13	13	23
05/31/2013	58	17	27	27	32
06/30/2013	30	9	12	12	18
07/31/2013	57	18	20	20	48
08/31/2013	19	8	13	13	11
09/30/2013	*150*	18	43	43	54
10/31/2013	9	6	8	8	7
11/30/2013	10	4	5	5	6
12/31/2013	13	6	7	7	10
01/31/2014	31	8	10	10	17
02/28/2014	14	9	9	10	12
03/31/2014	19	10	10	10	16
04/30/2014	25	7	9	9	19
05/31/2014	30	8	9	9	22
06/30/2014	83	17	26	26	33
07/31/2014	57	19	29	29	42
08/31/2014	19	7	8	8	13
09/30/2014	12	6	6	6	7
10/31/2014	20	8	13	13	9
11/30/2014	2	1	2	2	1
12/31/2014	19	3	3	6	8
01/31/2015	22	8	8	8	15
02/28/2015	20	10	11	11	16
03/31/2015	56	13	19	19	30
04/30/2015	61	14	18	18	40
05/31/2015	25	18	21	21	21
06/30/2015	69	23	34	34	54
07/31/2015	48	11	14	14	25
08/31/2015	28	9	10	10	15
09/30/2015	15	8	8	8	10
10/31/2015	27	8	10	10	13
11/30/2015	13	7	7	7	10
12/31/2015	21	9	8	14	14
01/31/2016	28	13	14	13	22
02/29/2016	48	14	18	18	27
03/31/2016	40	12	14	14	29
04/30/2016	53	18	26	26	40

Appendix A - Effluent Data

	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C
	142 lb/d	30 mg/L	45 mg/L	50 mg/L	85 lb/d
Mon Pd End Date:	DAILY MX	MO AVG	WKLY AVG	DAILY MX	MO AVG
05/31/2016	33	14	24	24	20
06/30/2016	33	16	27	27	17
07/31/2016	31	12	24	24	17
08/31/2016	20	16	22	22	16
09/30/2016	21	18	27	27	14
10/31/2016	17	21	31	31	15
11/30/2016	40	22	28	28	26
12/31/2016	39	23	28	28	32
01/31/2017	71	21	31	31	39
02/28/2017	47	18	36	36	22
03/31/2017	79	13	32	32	25
04/30/2017	78	14	19	19	50
05/31/2017	57	16	19	19	46
06/30/2017	58	21	27	27	41
07/31/2017	65	29	31	31	52
08/31/2017	44	26	33	33	35
09/30/2017	56	30	33	33	49
10/31/2017	45	*31*	41	41	33
11/30/2017	58	26	35	35	38
12/31/2017	38	28	29	29	32
Average	39	14	19	19	24
Median	31	13.5	18.5	18.5	21.5
Min	2	1	2	2	1
Max	150	31	43	43	54
Limit	142	30	45	50	85

Appendix A - Effluent Data

	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	E. coli, colony forming units (CFU)	E. coli, colony forming units (CFU)
	142 lb/d	30 mg/L	45 mg/L	50 mg/L	85 lb/d	126 CFU/100mL	406 CFU/100mL
Mon Pd End Date:	DAILY MX	MO AVG	WKLY AVG	DAILY MX	MO AVG	MO GEO	DAILY MX
01/31/2013	19	15	19	19	15	34.5	125.7
02/28/2013	34	8	10	10	15	99.9	343.6
03/31/2013	21	7	11	11	10	36.9	260.3
04/30/2013	37	14	23	23	27	74.2	240
05/31/2013	49	22	38	38	36	7.6	70.5
06/30/2013	54	15	22	22	30	18.3	118.2
07/31/2013	42	11	15	15	28	4.6	66.3
08/31/2013	64	19	26	26	29	1.8	7.5
09/30/2013	45	9	16	16	25	7.1	52.1
10/31/2013	18	9	11	11	12	4.1	24.1
11/30/2013	17	4	9	9	7	10.9	71.9
12/31/2013	14	7	13	13	9	24.1	47.3
01/31/2014	21	6	8	8	13	60.6	331.4
02/28/2014	11	6	6	6	8	12.3	26.6
03/31/2014	13	7	8	8	11	9.4	30.9
04/30/2014	23	6	7	7	17	2.5	13.4
05/31/2014	46	14	21	21	37	9.6	22.8
06/30/2014	44	15	17	17	24	0	0
07/31/2014	*147*	26	27	38	66	3.4	78.4
08/31/2014	112	24	36	36	49	2.6	34.5
09/30/2014	67	28	34	34	37	2.4	11
10/31/2014	32	18	25	25	20	2.3	27
11/30/2014	3	2	8	3	2	1.4	2
12/31/2014	13	3	4	4	7	15.5	52
01/31/2015	25	7	8	8	15	51.1	154.1
02/28/2015	18	10	10	10	15	85.1	209.8
03/31/2015	18	7	7	7	15	21.4	121.1
04/30/2015	30	8	10	10	24	13.2	196.8
05/31/2015	37	21	23	23	25	1.3	2
06/30/2015	88	29	36	36	71	2	8.5
07/31/2015	93	28	32	32	60	2.4	42.6
08/31/2015	99	29	35	35	49	5.5	21.1
09/30/2015	48	21	24	24	28	1.4	4.1
10/31/2015	66	21	25	25	32	2.1	6.3
11/30/2015	38	21	22	22	32	10	52
12/31/2015	36	20	22	22	31	34.7	328.2
01/31/2016	47	20	22	22	35	100	268.2
02/29/2016	44	13	15	15	26	80.5	378.4
03/31/2016	27	10	12	12	24	6.6	59.1
04/30/2016	60	22	26	26	48	15.1	46.4

Appendix A - Effluent Data

	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	E. coli, colony forming units (CFU)	E. coli, colony forming units (CFU)
	142 lb/d	30 mg/L	45 mg/L	50 mg/L	85 lb/d	126 CFU/100mL	406 CFU/100mL
Mon Pd End Date:	DAILY MX	MO AVG	WKLY AVG	DAILY MX	MO AVG	MO GEO	DAILY MX
05/31/2016	78	26	36	36	43	5.2	39.9
06/30/2016	33	26	27	31	27	3.1	41
07/31/2016	39	23	31	26	34	8.6	25
08/31/2016	31	27	28	30	28	3.1	13.7
09/30/2016	26	29	32	32	22	1.1	3
10/31/2016	19	24	34	34	18	15.1	125
11/30/2016	13	5	8	8	7	1.8	9.7
12/31/2016	4	2	3	3	3	62.3	88.4
01/31/2017	9	3	4	4	6	37	140.8
02/28/2017	5	3	4	4	3	***148.6***	360.9
03/31/2017	12	4	5	5	7	22.9	249.5
04/30/2017	44	8	13	13	26	7.2	24.3
05/31/2017	29	7	11	11	19	10.3	63.8
06/30/2017	57	14	15	26	28	1.5	6.3
07/31/2017	57	23	34	34	39	78.8	313
08/31/2017	53	***32***	37	37	42	76.1	205.1
09/30/2017	65	***33***	41	41	54	***239.2***	378.4
10/31/2017	25	20	23	23	19	***151.5***	360.9
11/30/2017	10	3	4	4	5	37.7	184.2
12/31/2017	18	11	12	12	13	***227***	396.8
Average	39	15	19	19	25	33.6	116.4
Median	33.5	14	18	20	24.5	10.15	55.6
Min	3	2	3	3	2	0	0
Max	147	33	41	41	71	239.2	396.8
Limit	142	30	45	50	85	126	406

Appendix A - Effluent Data

	pH	pH	Chlorine, total residual	Chlorine, total residual	Flow, in conduit or thru treatment plant	Flow, in conduit or thru treatment plant
	6.5 SU	8 SU	.59 mg/L	1 mg/L	Mon MGD	Mon MGD
Mon Pd End Date:	MINIMUM	DAILY MX	MO AVG	DAILY MX	DAILY MX	MO AVG
01/31/2013	7	7.4	0.46	0.85	0.426	0.129
02/28/2013	6.6	7.8	0.46	0.93	0.405	0.165
03/31/2013	7	7.5	0.54	0.86	0.295	0.151
04/30/2013	7.1	7.7	0.39	0.59	0.392	0.249
05/31/2013	*6.2*	7.5	0.51	0.9	0.486	0.259
06/30/2013	*6.2*	7.4	0.37	0.97	0.342	0.228
07/31/2013	*6*	6.7	0.36	0.83	0.656	0.312
08/31/2013	*6*	6.2	0.46	0.75	0.296	0.14
09/30/2013	*6*	7	0.48	0.93	0.504	0.268
10/31/2013	6.6	7.1	*0.6*	0.81	0.315	0.151
11/30/2013	6.8	7.6	0.48	0.84	0.254	0.144
12/31/2013	7.1	7.4	0.48	0.81	0.399	0.216
01/31/2014	6.8	7.3	0.45	0.7	0.418	0.251
02/28/2014	6.7	7.2	0.44	0.61	0.219	0.161
03/31/2014	7	7.2	0.4	0.6	0.366	0.228
04/30/2014	6.9	7.6	0.42	0.82	0.698	0.357
05/31/2014	7	*8.5*	0.42	0.92	0.492	0.372
06/30/2014	6.8	7.7	0.56	0.89	0.451	0.181
07/31/2014	*6*	7.2	0.34	0.92	0.528	0.248
08/31/2014	6.6	7.2	0.51	0.81	0.373	0.207
09/30/2014	6.7	7.3	0.44	0.8	0.316	0.141
10/31/2014	6.8	7.2	0.42	0.56	0.267	0.15
11/30/2014	6.9	7.5	0.45	0.7	0.235	0.122
12/31/2014	7.1	7.5	0.44	0.89	0.485	0.238
01/31/2015	7	7.4	0.28	0.48	0.444	0.269
02/28/2015	7.1	7.4	0.31	0.55	0.317	0.197
03/31/2015	7	7.3	0.38	0.85	0.426	0.25
04/30/2015	6.7	7.3	0.46	0.76	0.537	0.389
05/31/2015	6.6	7.9	0.51	0.92	0.338	0.183
06/30/2015	*5.7*	6.8	0.48	0.83	0.477	0.379
07/31/2015	6.5	7	0.45	0.71	0.449	0.204
08/31/2015	6.6	7.2	0.46	0.93	0.374	0.171
09/30/2015	7.1	7.8	0.45	0.68	0.381	0.167
10/31/2015	7.1	7.5	0.48	0.86	0.318	0.129
11/30/2015	7.1	7.2	0.42	0.79	0.276	0.162
12/31/2015	7.2	7.8	0.53	0.79	0.476	0.226
01/31/2016	7	7.7	0.45	0.89	0.27	0.192
02/29/2016	6.8	7.3	0.49	0.83	0.479	0.243
03/31/2016	6.9	7.4	0.49	0.87	0.441	0.263
04/30/2016	7.2	7.8	0.49	0.92	0.464	0.284

Appendix A - Effluent Data

	pH	pH	Chlorine, total residual	Chlorine, total residual	Flow, in conduit or thru treatment plant	Flow, in conduit or thru treatment plant
	6.5 SU	8 SU	.59 mg/L	1 mg/L	Mon MGD	Mon MGD
Mon Pd End Date:	MINIMUM	DAILY MX	MO AVG	DAILY MX	DAILY MX	MO AVG
05/31/2016	7	7.8	0.47	0.73	0.316	0.215
06/30/2016	*6.1*	6.8	0.41	0.71	0.398	0.147
07/31/2016	*6.2*	7.2	0.45	0.84	0.289	0.184
08/31/2016	6.9	7.8	0.47	0.68	0.155	0.116
09/30/2016	6.5	7.6	0.54	0.8	0.182	0.098
10/31/2016	6.5	7.5	0.46	0.69	0.329	0.176
11/30/2016	7.4	7.6	*0.6*	0.87	0.228	0.142
12/31/2016	7.3	7.7	0.44	0.58	0.387	0.176
01/31/2017	7.1	7.6	0.44	0.68	0.349	0.227
02/28/2017	7	7.3	0.46	0.86	0.473	0.173
03/31/2017	7.1	7.4	0.5	0.71	0.456	0.199
04/30/2017	7.1	7.5	0.47	0.89	0.49	0.331
05/31/2017	7	7.3	0.37	0.81	0.458	0.324
06/30/2017	6.8	7.5	0.45	0.71	0.374	0.256
07/31/2017	6.5	7.2	0.38	0.9	0.499	0.203
08/31/2017	6.6	7	0.58	0.91	0.286	0.187
09/30/2017	6.8	7.2	0.5	0.91	0.272	0.197
10/31/2017	6.8	7.3	0.49	0.94	0.322	0.165
11/30/2017	7.2	7.5	0.51	0.71	0.429	0.203
12/31/2017	6.8	7.4	0.53	0.84	0.415	0.198
Average	6.8	7.4	0.46	0.8	0.387	0.212
Median	6.8	7.4	0.46	0.825	0.3895	0.1985
Min	5.7	6.2	0.28	0.48	0.155	0.098
Max	7.4	8.5	0.6	0.97	0.698	0.389
Limit	6.5	8	0.59	1		

Appendix A - Effluent Data

	Nitrogen, Kjeldahl, total (as N)	Nitrogen, Kjeldahl, total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)
	Mon mg/L	Mon mg/L	Mon lb/d	Mon lb/d	Mon mg/L	Mon mg/L	Mon mg/L
Mon Pd End Date:	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	WKLY AVG
01/31/2013	20	20	13.7	13.7	16	16	16
02/28/2013	19	19	18.5	18.5	16	16	16
03/31/2013	18	18	13.9	13.9	16	16	16
04/30/2013	20	20	24.3	24.3	15	15	15
05/31/2013	5.2	5.2	3.6	3.6	1.7	1.7	1.7
06/30/2013	19	19	20.6	20.6	18	18	18
07/31/2013	6.9	6.9	7.2	7.2	3.3	3.3	3.3
08/31/2013	5.4	5.4	2.2	1.5	1.7	1.1	1.7
09/30/2013	4.6	4.6	4	4	2.3	2.3	2.3
10/31/2013	6.5	6.5	12.3	12.3	4.7	4.7	4.7
11/30/2013	19	19	14.8	14.8	16	16	16
12/31/2013	21	21	35	35	19	19	19
01/31/2014	18	18	59.3	59.3	17	17	17
02/28/2014	16	16	18.7	18.7	14	14	14
03/31/2014	19	19	21.6	21.6	15	15	15
04/30/2014	13	13	59.3	59.3	11	11	11
05/31/2014	11	11	22.7	22.7	6.6	6.6	6.6
06/30/2014	8.7	8.7	5	5	5.6	5.6	5.6
07/31/2014	4.6	4.6	0.35	0.35	0.1	0.1	0.1
08/31/2014	4.2	4.2	0.69	0.56	0.41	0.4	0.4
09/30/2014	4	4	0.12	0.12	0.1	0.1	0.1
10/31/2014	7.5	7.5	8.13	8.13	4.9	4.9	4.9
11/30/2014	13	13	10.4	10.4	11	11	11
12/31/2014	22	22	31.7	31.7	20	20	20
01/31/2015	22	22	26.6	26.6	21	21	21
02/28/2015	19	19	21.6	21.6	17	17	17
03/31/2015	19	19	27.2	27.2	16	16	16
04/30/2015	13	13	46.7	46.7	11	11	11
05/31/2015	6.7	6.7	5.4	5.4	3.7	3.7	3.7
06/30/2015	6.7	6.7	3.3	3.3	1.4	1.4	1.4
07/31/2015	3.9	3.9	0.38	0.38	0.14	0.14	0.14
08/31/2015	5	5	0.21	0.17	0.11	0.1	0.1
09/30/2015	3.5	3.5	0.07	0.07	0.5	0.5	0.5
10/31/2015	3.4	3.4	0.05	0.05	0.06	0.06	0.06
11/30/2015	8	8	2.3	2.3	4.2	4.2	4.2
12/31/2015	14	14	15.2	15.2	9.6	9.6	9.6
01/31/2016	19	19	26.3	26.3	15	15	15
02/29/2016	21	21	29.3	29.3	18	18	18
03/31/2016	14	14	17.4	17.4	11	11	11
04/30/2016	9.3	9.3	5.5	5.5	3.8	3.8	3.8

Appendix A - Effluent Data

	Nitrogen, Kjeldahl, total (as N)	Nitrogen, Kjeldahl, total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)
	Mon mg/L	Mon mg/L	Mon lb/d	Mon lb/d	Mon mg/L	Mon mg/L	Mon mg/L
Mon Pd End Date:	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	WKLY AVG
05/31/2016	7.4	7.4	4.5	4.5	3.8	3.8	3.8
06/30/2016	6.1	6.1	1.9	1.9	1.9	1.9	1.9
07/31/2016	3.9	3.9	0.17	0.17	0.12	0.12	0.12
08/31/2016	5	5	0.1	0.05	0.14	0.07	0.14
09/30/2016	7.2	7.2	2.1	2.1	2.2	2.2	2.2
10/31/2016	10	10	13.7	13.7	6.8	6.8	6.8
11/30/2016	25	25	36.9	36.9	22	22	22
12/31/2016	30	30	30.4	30.4	25	25	25
01/31/2017	27	27	67.8	67.8	25	25	25
02/28/2017	24	24	27.7	27.7	22	22	22
03/31/2017	17	17	25	25	14	14	14
04/30/2017	12	12	17.6	17.6	11	11	11
05/31/2017	11	11	25.2	25.2	8.7	8.7	8.7
06/30/2017	13	13	2	2	1.1	1.1	1.1
07/31/2017	6.3	6.3	5.1	5.1	1.9	1.9	1.9
08/31/2017	7.9	7.9	5.8	5.8	4	4	4
09/30/2017	5.9	5.9	2.1	2.1	0.94	0.94	0.94
10/31/2017	20	20	19.9	19.9	15	15	15
11/30/2017	17	17	14.8	14.8	14	14	14
12/31/2017	18	18	39.6	39.6	14	14	14
Average	13	13	16.3	16.3	9.4	9.3	9.4
Median	12.5	12.5	13.8	13.8	9.15	9.15	9.15
Min	3.4	3.4	0.05	0.05	0.06	0.06	0.06
Max	30	30	67.8	67.8	25	25	25
Limit							

Appendix A - Effluent Data

	Nitrogen, nitrate total (as N)	Nitrogen, nitrate total (as N)	Nitrogen, nitrite total (as N)	Nitrogen, nitrite total (as N)
	Mon mg/L	Mon mg/L	Mon mg/L	Mon mg/L
Mon Pd End Date:	DAILY MX	MO AVG	DAILY MX	MO AVG
01/31/2013	0.6	0.6	0	0
02/28/2013	0	0	0	0
03/31/2013	0	0	0	0
04/30/2013	0	0	0	0
05/31/2013	7.5	7.5	0.9	0.9
06/30/2013	0.5	0.5	0.5	0.5
07/31/2013	1.5	1.5	9.4	9.4
08/31/2013	4.4	4.4	3.1	3.1
09/30/2013	12	12	0	0
10/31/2013	3.9	3.9	1	1
11/30/2013	2.7	2.7	0	0
12/31/2013	1.6	1.6	0	0
01/31/2014	0.8	0.8	0	0
02/28/2014	0	0	0	0
03/31/2014	0	0	0	0
04/30/2014	0	0	0	0
05/31/2014	0.6	0.6	0	0
06/30/2014	0.9	0.9	0.5	0
07/31/2014	3.3	3.3	0	0
08/31/2014	2.7	2.7	0	0
09/30/2014	2.7	2.7	0	0
10/31/2014	4.2	4.2	0	0
11/30/2014	3.8	3.8	0	0
12/31/2014	1.6	1.6	0.5	0.5
01/31/2015	1.1	1.1	0	0
02/28/2015	0	0	0	0
03/31/2015	0	0	0	0
04/30/2015	0	0	0	0
05/31/2015	1.3	1.3	0	0
06/30/2015	7.6	7.6	0	0
07/31/2015	3.4	3.4	0	0
08/31/2015	4.6	4.6	0	0
09/30/2015	1.8	1.8	0	0
10/31/2015	1.9	1.9	0	0
11/30/2015	3.4	3.4	0	0
12/31/2015	3	3	0	0
01/31/2016	0.9	0.9	0	0
02/29/2016	0.6	0.6	0	0
03/31/2016	0.8	0.8	0	0
04/30/2016	2.1	2.1	0	0

Appendix A - Effluent Data

	Nitrogen, nitrate total (as N)	Nitrogen, nitrate total (as N)	Nitrogen, nitrite total (as N)	Nitrogen, nitrite total (as N)
	Mon mg/L	Mon mg/L	Mon mg/L	Mon mg/L
Mon Pd End Date:	DAILY MX	MO AVG	DAILY MX	MO AVG
05/31/2016	2.5	2.5	0	0
06/30/2016	8.2	8.2	0	0
07/31/2016	3.5	3.5	0	0
08/31/2016	1.1	1.1	0	0
09/30/2016	9.3	9.3	0.6	0.6
10/31/2016	8.7	8.7	0	0
11/30/2016	1.5	1.5	0	0
12/31/2016	0.8	0.8	0	0
01/31/2017	0.8	0.8	0	0
02/28/2017	0	0	0	0
03/31/2017	0	0	0	0
04/30/2017	0.5	0.5	0	0
05/31/2017	0.7	0.7	0	0
06/30/2017	0	0	0	0
07/31/2017	3.3	3.3	1.5	1.5
08/31/2017	3.3	3.3	0	0
09/30/2017	5.7	5.7	0.6	0.6
10/31/2017	0	0	0	0
11/30/2017	0	0	0	0
12/31/2017	0	0	0	0
Average	2.3	2.3	0.31	0.3
Median	1.4	1.4	0	0
Min	0	0	0	0
Max	12	12	9.4	9.4
Limit				

Appendix A - Effluent Data

	Nitrogen, total (as N)	Nitrogen, total (as N)	Nitrogen, total (as N)	Nitrogen, total (as N)	Nitrogen, total (as N)
	Mon lb/d	Mon lb/d	Mon mg/L	Mon mg/L	Mon mg/L
Mon Pd End Date:	DAILY MX	MO AVG	DAILY MX	MO AVG	WKLY AVG
01/31/2013	17.7	22.2	20.6	20.6	20.6
02/28/2013	22	26.1	19	19	19
03/31/2013	15.6	22.7	18	18	18
04/30/2013	32.4	41.5	20	20	20
05/31/2013	28.8	29.4	13.6	13.6	13.6
06/30/2013	22.9	38	20	20	20
07/31/2013	38.9	46.4	17.8	17.8	17.8
08/31/2013	16.8	15.1	12.9	12.9	12.9
09/30/2013	28.5	37.1	16.6	16.6	16.6
10/31/2013	29.9	14.4	11.4	11.4	11.4
11/30/2013	20.1	26.1	21.7	21.7	21.7
12/31/2013	41.7	40.7	22.6	22.6	22.6
01/31/2014	65.5	39.4	18.8	18.8	18.8
02/28/2014	21.4	21.5	16	16	16
03/31/2014	27.4	36.1	19	19	19
04/30/2014	70	38.7	13	13	13
05/31/2014	39.9	36	11.6	11.6	11.6
06/30/2014	8.9	15.2	10.1	10.1	10.1
07/31/2014	27.6	16.4	7.9	7.9	7.9
08/31/2014	11.6	11.9	6.9	6.9	6.9
09/30/2014	7.8	7.9	6.7	6.7	6.7
10/31/2014	19.4	14.7	11.7	11.7	11.7
11/30/2014	15.8	17.2	16.8	16.8	16.8
12/31/2014	37.4	46.7	23.6	23.6	23.6
01/31/2015	29.3	51.8	23.1	23.1	23.1
02/28/2015	24.1	31.1	19	19	19
03/31/2015	32.3	39.6	19	19	19
04/30/2015	55.2	42.2	13	13	13
05/31/2015	11.7	12.2	8	8	8
06/30/2015	34	45.2	14.3	14.3	14.3
07/31/2015	19.9	12.4	7.3	7.3	7.3
08/31/2015	12.5	13.7	9.6	9.6	9.6
09/30/2015	7.8	7.4	5.3	5.3	5.3
10/31/2015	4.4	5.7	5.3	5.3	5.3
11/30/2015	6.4	15.4	11.4	11.4	11.4
12/31/2015	26.9	32.1	17	17	17
01/31/2016	34.9	31.8	19.9	19.9	19.9
02/29/2016	35.1	43.8	21.6	21.6	21.6
03/31/2016	23.5	32.5	14.8	14.8	14.8
04/30/2016	16.4	27	11.4	11.4	11.4

Appendix A - Effluent Data

	Nitrogen, total (as N)	Nitrogen, total (as N)	Nitrogen, total (as N)	Nitrogen, total (as N)	Nitrogen, total (as N)
	Mon lb/d	Mon lb/d	Mon mg/L	Mon mg/L	Mon mg/L
Mon Pd End Date:	DAILY MX	MO AVG	DAILY MX	MO AVG	WKLY AVG
05/31/2016	12	18	9.9	9.9	9.9
06/30/2016	14.1	17.5	14.3	14.3	14.3
07/31/2016	10.7	11.4	7.4	7.4	7.4
08/31/2016	4.4	5.9	6.1	6.1	6.1
09/30/2016	16.7	14	17.1	17.1	17.1
10/31/2016	37.6	27.5	8.7	18.7	18.7
11/30/2016	44.4	31.4	26.5	26.5	26.5
12/31/2016	37.5	45.3	30.8	30.8	30.8
01/31/2017	75.4	52.6	27.8	27.8	27.8
02/28/2017	30.2	34.6	24	24	24
03/31/2017	30.3	28.2	17	17	17
04/30/2017	20	34.5	12.5	12.5	12.5
05/31/2017	33.9	31.7	11.7	11.7	11.7
06/30/2017	23.5	27.8	13	13	13
07/31/2017	30	18.8	11.1	11.1	11.1
08/31/2017	16.3	17.5	11.2	11.2	11.2
09/30/2017	27.7	20	12.2	12.2	12.2
10/31/2017	26.5	27.5	20	20	20
11/30/2017	18	28.8	17	17	17
12/31/2017	50.9	29.7	18	18	18
Average	26.7	27.1	15.2	15.4	15.4
Median	25.3	27.65	14.55	15.4	15.4
Min	4.4	5.7	5.3	5.3	5.3
Max	75.4	52.6	30.8	30.8	30.8
Limit					

Appendix A - Effluent Data

WET Effluent Data

Mon Pd End Date:	Aluminum, total recoverable	Cadmium, total recoverable	Chromium, total recoverable	Copper, total recoverable	Hardness, total (as CaCO3)	LC50 Static 48Hr Acute Ceriodaphnia	LC50 Static 48Hr Acute Pimephales	Lead, total recoverable	Nickel, total recoverable	Nitrogen, ammonia total (as N)	Zinc, total recoverable
	Mon mg/L	Mon mg/L	Mon mg/L	Mon mg/L	Mon mg/L	100 %	100 %	Mon mg/L	Mon mg/L	Mon mg/L	Mon mg/L
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MN	DAILY MN	DAILY MX	DAILY MX	DAILY MX	DAILY MX
09/30/2013	0.04	<0.01	<0.02	0.01	27.06	100	100	<0.001	<0.02	0.4	0.04
09/30/2014	0.02	<0.01	<0.02	0.01	29.58	100	100	0.001	<0.02	0.39	0.03
09/30/2015	0.09	<0.01	<0.02	0.02	36.44	100	100	0.001	<0.02	0.11	0.04
09/30/2016	0.02	<0.01	<0.02	0.01	26.01	100	100	<0.001	<0.02	0	0
09/30/2017	0.07	<0.01	<0.02	0.02	30.82	100	100	<0.001	<0.02	4.3	0.09
Average	0.05	0	0	0.01	29.98	100	100	0.0004	0	1.04	0.04
Median	0.04	0	0	0.01	29.58	100	100	0	0	0.39	0.04
Min	0.02	0	0	0.01	26.01	100	100	0.001	0	0	0
Max	0.09	0	0	0.02	36.44	100	100	0.001	0	4.3	0.09

Phosphorus Effluent Data

Date	Concentration (mg/L)
1/18/2017	3.7
1/24/2017	3.9
2/2/2017	3.4
Max	3.9

Appendix B - Ambient Data

WET Ambient Data

Mon Pd End Date:	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc	Ammonia	Hardness
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX
8/14/2013	0.05	<0.01	<0.01	<0.001	<0.02	<0.02	0.21	6.01
8/19/2014	0.02	<0.01	<0.01	0.002	<0.02	<0.02	0.17	7.59
8/20/2015	0.36	<0.01	<0.01	<0.001	<0.02	0.02	<0.01	7.6
8/16/2016	0.03	<0.01	<0.01	<0.001	<0.02	<0.02	<0.01	10.23
8/23/2017	0.06	Not Performed	<0.01	<0.001	<0.02	<0.02	<0.01	12.23
Average	0.10	0.00	0.00	0.00	0.00	0.00	0.19	8.73
Median	0.05	0	0	0	0	0	0.19	7.6
Min	0.02	0	0	0	0	0	0.17	6.01
Max	0.36	0	0	0.002	0	0.02	0.21	12.23

Phosphorus Ambient Data

Date	Activity ID	Parameter	Results	Method	Status	Results Valid	Results (mg/L)
3/12/2013 13:00	2013-236	PHOSPHORUS AS P	.0136 MG/L	10-115-01-1-F	FINAL	YES	0.0136
6/4/2013 8:05	A303515004	PHOSPHORUS AS P	.00634 MG/L	10-115-01-1-F	FINAL	YES	0.00634
7/9/2013 7:57	A304956006	PHOSPHORUS AS P	.0095 MG/L	10-115-01-1-F	FINAL	YES	0.0095
7/15/2013 9:55	A305384002	PHOSPHORUS AS P	.00502 MG/L	10-115-01-1-F	FINAL	YES	0.00502
8/6/2013 12:00	2013-3913	PHOSPHORUS AS P	.00566 MG/L	10-115-01-1-F	FINAL	YES	0.00566
8/8/2013 10:30	A306657002	PHOSPHORUS AS P	.00614 MG/L	10-115-01-1-F	FINAL	YES	0.00614
10/10/2013 11:00	A308779003	PHOSPHORUS AS P	.00531 MG/L	10-115-01-1-F	FINAL	YES	0.00531
						Median	0.00614

Appendix C – 7Q10 and Dilution Factor Calculations

7Q10 Flow:

USGS Gage No. 01137500 on the Ammonoosuc River at Bethlehem Junction, NH
Drainage Area = 88.4 mi^2
7Q10 Flow (Based upon data from 1943 – 2014) = 27.4 cfs

7Q10 Flow of ungaged area from USGS Gage to the plant outfall (Based upon Dingman Equation) = 0.6 cfs

7Q10 Flow Just Upstream of the plant outfall = 27.4 + 0.6 = 28 cfs

7Q10 Dilution Factor:

$$\frac{Q_{upstream} + (Q_{Plant})}{(Q_{Plant})} \times 0.9$$

where:

$Q_{upstream}$ = 7Q10 flow of the Ammonoosuc River just upstream of Outfall 001 = 28 cfs
Q_{Plant} = Design flow of the treatment plant = 0.34 mgd = 0.53 cfs
0.9 = Factor to reserve 10% of the receiving water assimilative capacity

$$\frac{(28) + (0.53)}{(0.53)} \times 0.9 = \mathbf{48.4}$$

Appendix D – New Hampshire, Vermont, and Massachusetts Total Nitrogen Discharges to Long Island Sound

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
NEW HAMPSHIRE					
Bethlehem Village District	NH0100501	0.340	0.220	19.600	35.962
Charlestown WWTF	NH0100765	1.100	0.360	19.600	58.847
Claremont WWTF	NH0101257	3.890	1.610	14.060	188.789
Colebrook WWTF	NH0100315	0.450	0.230	19.600	37.597
Groveton WWTF	NH0100226	0.370	0.290	19.600	47.405
Hanover WWTF	NH0100099	2.300	1.440	30.000	360.288
Hinsdale WWTF	NH0100382	0.300	0.300	19.600	49.039
Keene WWTF	NH0100790	6.000	3.910	12.700	414.139
Lancaster POTW	NH0100145	1.200	1.080	8.860	79.804
Lebanon WWTF	NH0100366	3.180	1.980	19.060	314.742
Lisbon WWTF	NH0100421	0.320	0.146	19.600	23.866
Littleton WWTF	NH0100153	1.500	0.880	10.060	73.832
Newport WWTF	NH0100200	1.300	0.700	19.600	114.425
Northumberland Village WPCF	NH0101206	0.060	0.060	19.600	9.808
Sunapee WPCF	NH0100544	0.640	0.380	15.500	49.123
Swanzey WWTP	NH0101150	0.167	0.090	19.600	14.712
Troy WWTF	NH0101052	0.265	0.060	19.600	9.808
Wasau Paper (industrial facility)	NH0001562		5.300	4.400	194.489
Whitefield WWTF	NH0100510	0.185	0.140	19.600	22.885
Winchester WWTP	NH0100404	0.280	0.240	19.600	39.231
Woodsville Fire District	NH0100978	0.330	0.230	16.060	30.806
New Hampshire Total		**24.177**	**19.646**		**2169.596**

NH, VT, MA Discharges to Connecticut River Watershed

VERMONT					
Bellows Falls	VT0100013	1.405	0.610	21.060	107.141
Bethel	VT0100048	0.125	0.120	19.600	19.616
Bradford	VT0100803	0.145	0.140	19.600	22.885
Brattleboro	VT0100064	3.005	1.640	20.060	274.373
Bridgewater	VT0100846	0.045	0.040	19.600	6.539
Canaan	VT0100625	0.185	0.180	19.600	29.424
Cavendish	VT0100862	0.155	0.150	19.600	24.520
Chelsea	VT0100943	0.065	0.060	19.600	9.808
Chester	VT0100081	0.185	0.180	19.600	29.424
Danville	VT0100633	0.065	0.060	19.600	9.808
Lunenberg	VT0101061	0.085	0.080	19.600	13.077
Hartford	VT0100978	0.305	0.300	19.600	49.039
Ludlow	VT0100145	0.705	0.360	15.500	46.537
Lyndon	VT0100595	0.755	0.750	19.600	122.598
Putney	VT0100277	0.085	0.080	19.600	13.077
Randolph	VT0100285	0.405	0.400	19.600	65.386
Readsboro	VT0100731	0.755	0.750	19.600	122.598
Royalton	VT0100854	0.075	0.070	19.600	11.442
St. Johnsbury	VT0100579	1.600	1.140	12.060	114.662
Saxtons River	VT0100609	0.105	0.100	19.600	16.346
Sherburne Fire Dist.	VT0101141	0.305	0.300	19.600	49.039
Woodstock WWTP	VT0100749	0.055	0.050	19.600	8.173
Springfield	VT0100374	2.200	1.250	12.060	125.726
Hartford	VT0101010	1.225	0.970	30.060	243.179
Whitingham	VT0101109	0.015	0.010	19.600	1.635
Whitingham Jacksonville	VT0101044	0.055	0.050	19.600	8.173
Cold Brook Fire Dist.	VT0101214	0.055	0.050	19.600	8.173
Wilmington	VT0100706	0.145	0.140	19.600	22.885
Windsor	VT0100919	1.135	0.450	19.600	73.559
Windsor-Weston	VT0100447	0.025	0.020	19.600	3.269
Woodstock WTP	VT0100757	0.455	0.450	19.600	73.559
Woodstock-Taftsville	VT0100765	0.015	0.010	19.600	1.635
Vermont Totals		**15.940**	**10.960**		**1727.302**

NH, VT, MA Discharges to Connecticut River Watershed

MASSACHUSETTS					
Amherst	MA0100218	7.100	4.280	14.100	503.302
Athol	MA0100005	1.750	1.390	17.200	199.393
Barre	MA0103152	0.300	0.290	26.400	63.851
Belchertown	MA0102148	1.000	0.410	12.700	43.426
Charlemont	MA0103101	0.050	0.030	19.600	4.904
Chicopee	MA0101508	15.500	10.000	19.400	1617.960
Easthampton	MA0101478	3.800	3.020	19.600	493.661
Erving #1	MA0101516	1.020	0.320	29.300	78.196
Erving #2	MA0101052	2.700	1.800	3.200	48.038
Erving #3	MA0102776	0.010	0.010	19.600	1.635
Gardner	MA0100994	5.000	3.700	14.600	450.527
Greenfield	MA0101214	3.200	3.770	13.600	427.608
Hadley	MA0100099	0.540	0.320	25.900	69.122
Hardwick G	MA0100102	0.230	0.140	14.600	17.047
Hardwick W	MA0102431	0.040	0.010	12.300	1.026
Hatfield	MA0101290	0.500	0.220	15.600	28.623
Holyoke	MA0101630	17.500	9.700	8.600	695.723
Huntington	MA0101265	0.200	0.120	19.600	19.616
Monroe	MA0100188	0.020	0.010	19.600	1.635
Montague	MA0100137	1.830	1.600	12.900	172.138
N Brookfield	MA0101061	0.760	0.620	23.100	119.445
Northampton	MA0101818	8.600	4.400	22.100	810.982
Northfield	MA0100200	0.280	0.240	16.800	33.627
Northfield School	MA0032573	0.450	0.100	19.600	16.346
Old Deerfield	MA0101940	0.250	0.180	9.200	13.811
Orange	MA0101257	1.100	1.200	8.600	86.069
Palmer	MA0101168	5.600	2.400	18.800	376.301
Royalston	MA0100161	0.040	0.070	19.600	11.442
Russell	MA0100960	0.240	0.160	19.600	26.154
Shelburne Falls	MA0101044	0.250	0.220	16.900	31.008
South Deerfield	MA0101648	0.850	0.700	7.900	46.120
South Hadley	MA0100455	4.200	3.300	28.800	792.634
Spencer	MA0100919	1.080	0.560	13.600	63.517
Springfield	MA0103331	67.000	45.400	4.300	1628.135
Sunderland	MA0101079	0.500	0.190	8.700	13.786
Templeton	MA0100340	2.800	0.400	26.400	88.070
Ware	MA0100889	1.000	0.740	9.400	58.013
Warren	MA0101567	1.500	0.530	14.100	62.325
Westfield	MA0101800	6.100	3.780	20.400	643.114
Winchendon	MA0100862	1.100	0.610	15.500	78.855
Woronoco Village	MA0103233	0.020	0.010	19.600	1.635
Massachusetts Totals		**166.010**	**106.950**		**9938.820**

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

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

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

MA Discharges to Housatonic River Watershed

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

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

4. Current total nitrogen load.

Total Nitrogen Load = 2151.386 lbs/day

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

MA Discharges to Thames River Watershed

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

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

Total Nitrogen Load = 1014.528 lbs/day

TMDL Baseline Load = 1,253 lbs/day

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

Appendix E – Statistical Approach to Characterizing the Effluent

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.[13] 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.

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

Datasets including non-detect values

The *TSD* also includes a procedure for determine such percentiles when the dataset includes non-detect results, based on a delta-lognormal distribution. In the delta-lognormal procedures, non-detect 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 delta-lognormal, 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 non-detects in the monitoring dataset.

k = total number of dataset
r = number of non-detect 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.

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER DIVISION
P.O. BOX 95
CONCORD, NEW HAMPSHIRE 03302-0095

U.S. ENVIRONMENTAL PROTECTION AGENCY-REGION 1
OFFICE OF ECOSYSTEM PROTECTION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT, AND ISSUANCE OF A STATE SURFACE WATER PERMIT UNDER NH RSA 485-A:13, I(a).

PUBLIC NOTICE PERIOD: **July 24, 2018 – August 22, 2018**

PERMIT NUMBER: **NH0101392**

PUBLIC NOTICE NUMBER: NH-09-18

NAME AND MAILING ADDRESS OF APPLICANT:

Bethlehem Village District Wastewater Department
c/o Russel Mardin, Chairman of Commissioners
359 Maple Street
Bethlehem, New Hampshire 03574

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

Bethlehem Village District Wastewater Treatment Plant
P.O. Box 667
Bethlehem, New Hampshire 03574

RECEIVING WATER: Ammonoosuc River Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) have cooperated in the development of a draft permit for the Bethlehem Village District Wastewater Treatment Plant, which discharges treated domestic wastewater. Sludge from this facility is disposed on the facility's premises. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act, 33 U.S.C. sections 1251 et seq., Chapter 485-A of the New Hampshire Statutes: Water Pollution and Waste Disposal, and the New Hampshire Surface Water Quality Regulations, Env-Wq 1700 et seq. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

The draft permit and explanatory fact sheet may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by contacting:

Evan Lewis
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1543
Lewis.Evan@epa.gov

The administrative record containing all documents relating to this draft permit including all data submitted by the applicant may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

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 August 22, 2018, to the address or email address listed above. Any person, prior to such date, may submit a request in writing to EPA and NHDES for a public hearing to consider this draft permit. 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.

FINAL PERMIT DECISION:

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.

RENE PELLETIER, ASSISTANT DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

KEN MORAFF, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I