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"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§ 26-53),

Greater Lawrence Sanitary District

is authorized to discharge from the facility located at

240 Charles Street
North Andover, MA 01845
And
Combined Sewer Overflow (CSO) discharges at 5 locations

to receiving waters named:

Merrimack River Segment MA 84A-04 (Waste Water Treatment Facility Outfall # 001 and CSO outfalls #002, 003, 004, and 005), Spicket River Segment MA84A-10 (CSO outfall #006)

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

The Cities of Lawrence and Methuen, Towns of Andover, North Andover in Massachusetts and Town of Salem, New Hampshire[1] are co-permittees for Part B, Unauthorized Discharges; Part C, Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems owned and operated by the Cities and Towns; Part D, Alternate Power Source; and Part II, General Conditions. The Permittee and co-permittees are severally liable under Part B, Part C and Part D for their own activities and required reporting with respect to the portions of the collection system that they own or operate. They are not liable for violations of Part B, Part C and Part D committed by others relative to the portions of the collection system owned and operated by others. Nor are they responsible for any reporting that is required of other permittees under Part B, Part C and Part D. The responsible municipal departments are:

City of Lawrence Department of Public Works 200 Common Street Lawrence, MA 01840	Town of Andover Department of Public Works 397 Lowell Street Andover, MA 01810	Town of North Andover Department of Public Works 384 Osgood Street North Andover, MA 01845
City of Methuen 41 Pleasant Street Room 205 Methuen, MA 01844	Town of Salem Public Works Department 21 Cross Street Salem, New Hampshire	

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

[1] This permit is issued jointly by EPA and MassDEP to GLSD and the co-permittees in Massachusetts. The permit is issued to the Town of Salem, New Hampshire solely by EPA.

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 August 11, 2005.

This permit consists of the cover pages, **Part I**, **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013), **Attachment C** (Reassessment of Technically Based Industrial Discharge Limits), **Attachment D** (Industrial Pretreatment Program Annual Report Requirements), and **Part II (**NPDES Part II Standard Conditions, April 2018).

Signed this 25th day of September, 2019

/S/SIGNATURE ON FILE
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

/S/SIGNATURE ON FILE
Lealdon Langley, Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

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 Merrimack 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	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Effluent Flow[5]	52 MGD Rolling Average	---	Report MGD	Continuous	Recorder
Effluent Flow[5]	Report MGD	---	---	Continuous	Recorder
BOD_5	30 mg/L 13,000 lb/day	45 mg/L 19,516 lb/day	50 mg/L Report lb/day	5/week	Composite
BOD_5 Removal[6]	≥ 85 %	---	---	---	---
TSS	30 mg/L 13,010 lb/day	45 mg/L 19,516 lb/day	50 mg/L Report lb/day	5/week	Composite
TSS Removal[6]	≥ 85 %	---	---	---	---
pH Range[7]	6.5 - 8.3 S.U.			1/day	Grab
Total Residual Chlorine[8,9]	130 µg/L	---	224 µg/L	1/day	Grab
Total Residual Chlorine[8]	Report µg/L	---	Report, µg/L	Continuous	Recorder
Escherichia coli[8,9]	126 cfu/100 mL	---	409 cfu/100 mL	5/week	Grab
Dissolved Oxygen (April 1 - October 31)	≥ 5.0 mg/L			1/day	Grab
Total Phosphorus[10,11] (April 1 – October 31) (April 1 – October 31) (November 1 – March 31)	240 lb/day Report mg/L Report mg/L	--- --- ---	Report lb/day Report mg/L ---	1/week 1/week 1/month	Composite Composite Composite

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Total Nitrogen[11,12]					
(April 1 – October 31)	Report lb/day	---	Report lb/day	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Total Kjeldahl Nitrogen[11,12]					
(April 1 – October 31)	Report mg/L	---	Report mg/L	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Total Nitrate+Nitrite[11,12]					
(April 1 – October 31)	Report mg/L	---	Report mg/L	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Whole Effluent Toxicity (WET) Testing[13,14]					
LC_{50}	---	---	≥ 100 %	1/quarter	Composite
C-NOEC	---	---	Report %	1/quarter	Composite
Hardness	---	---	Report mg/L	1/quarter	Composite
Total Organic Carbon	---	---	Report mg/L	1/quarter	Composite
Dissolved Organic Carbon	---	---	Report mg/L	1/quarter	Composite
Ammonia Nitrogen	---	---	Report mg/L	1/quarter	Composite
Total Aluminum	---	---	Report mg/L	1/quarter	Composite
Total Cadmium	---	---	Report mg/L	1/quarter	Composite
Total Copper	---	---	Report mg/L	1/quarter	Composite
Total Nickel	---	---	Report mg/L	1/quarter	Composite
Total Lead	---	---	Report mg/L	1/quarter	Composite
Total Zinc	---	---	Report mg/L	1/quarter	Composite

Ambient Characteristic[15]	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Hardness	---	---	Report mg/L	1/quarter	Grab
Total Organic Carbon	---	---	Report mg/L	1/quarter	Grab
Dissolved Organic Carbon	---	---	Report mg/L	1/quarter	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/quarter	Grab
Total Aluminum	---	---	Report mg/L	1/quarter	Grab
Total Cadmium	---	---	Report mg/L	1/quarter	Grab
Total Copper	---	---	Report mg/L	1/quarter	Grab
Total Nickel	---	---	Report mg/L	1/quarter	Grab
Total Lead	---	---	Report mg/L	1/quarter	Grab
Total Zinc	---	---	Report mg/L	1/quarter	Grab
pH[16]	---	---	Report S.U.	1/quarter	Grab
Temperature[16]	---	---	Report °C	1/quarter	Grab
Total Phosphorus[10] (April 1 – October 31)	---	---	Report mg/L	1/month	Grab

Influent Characteristic	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
BOD_5	Report mg/L	---	---	2/month	Composite
TSS	Report mg/L	---	---	2/month	Composite

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 report 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 monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter. 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), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on 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 laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" for all non-detects for that reporting period and report the average of all the results.

4. Each composite sample will consist of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

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.

   The following information shall be reported and submitted as an attachment to the monthly DMRs for each day there was a bypass of secondary treatment:

- date and time of initiation
- total influent flow at time of initiation
- date and time of termination
- total influent flow at time of termination
- total duration of flow
- total volume of flow

A bypass of secondary treatment also is subject to the requirements of Part II.B.4. and Part II.D.1.e. of this permit. Bypass flows shall be measured using a meter.

The Permittee shall not add septage to the waste stream at the treatment plant during activation of the secondary treatment bypass.

6. The percent removal requirement for BOD_5 and TSS apply only during dry weather, meaning any calendar day on which there is less than 0.1 inches of rain and no snowmelt.

7. 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.).

8. 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.

   The Permittee shall report the average monthly and maximum daily discharge of TRC using data collected by the continuous TRC analyzer. The Permittee shall collect and analyze a minimum of one grab sample per day for calibration purposes. The same grab sample can be used for both compliance and calibration. Four continuous recording charts (1/week), showing weekly data shall be submitted as an attachment to the monthly DMRs. The Permittee shall substitute the average of three TRC grab samples per day, for any day that they are unable to comply with the continuous reporting requirement.

   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.

9. The monthly average limit for *E. coli* is expressed as a geometric mean. *spe* monitoring shall be conducted concurrently with TRC monitoring if TRC monitoring is required. See Part I.H.1.

10. See Part I.H.4 for ambient phosphorus monitoring requirements.

11. Monitoring frequency shall be once per week from April 1 through October 31 and once per month from November 1 through March 31.

12. Total Nitrogen shall be calculated as the sum of Total Kjeldahl Nitrogen and Total Nitrate + Nitrite.

13. The Permittee shall conduct acute toxicity tests (LC_{50}) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. LC_{50} and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid (*Ceriodaphnia dubia*). Toxicity test samples shall be collected, and tests completed, during the same weeks in January, April, July and October. The complete report for each toxicity test shall be submitted as an attachment to the second monthly DMR submittal immediately following the completion of the test.

14. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

15. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for 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 and B**. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

16. 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.

Part I.A. 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 pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

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 and five combined sewer overflow outfalls (CSOs) listed in Part I.F.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).

2. Starting December 21, 2020, the Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website and shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated volume; 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.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the collection system owned and operated respectively by the Greater Lawrence Sanitary District, the Cities of Lawrence and Methuen, Massachusetts, the Towns of Andover and North Andover, Massachusetts and the Town of Salem, New Hampshire ("co-permittees") shall be in compliance with the activities and required reporting with respect to the portions of the collection system that each owns or operates. The Permittee and co-permittees shall only be responsible for violations relative to the portions of the collection system that they own and operate.

The Permittee and co-permittees are required to complete the following activities for the respective portions of the collection system which they operate:

1. Maintenance Staff

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

4. Collection System Mapping

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

   a. All sanitary sewer lines and related manholes;
   b. All combined sewer lines, related manholes, and catch basins;
   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. 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 to the extent feasible. If certain information is determined to be infeasible to obtain, a justification must be provided along with the map. If EPA disagrees with the assessment, it may require the map to be updated accordingly.

5. Collection System O&M Plan

   The Permittee and co-permittees shall develop and implement a Collection System O&M Plan.

a. Within six (6) months of the effective date of the permit, the Permittee shall submit to EPA and the State

(1) A description of the collection system management goals, staffing, information management, and legal authorities;
(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and
(3) A schedule for the development and implementation of the full Collection System O&M Plan including the elements in paragraphs b.1. through b.8. below.

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

(1) The required submittal from paragraph 5.a. above, updated to reflect current information;
(2) A preventive maintenance and monitoring program for the collection system;
(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;
(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;
(5) 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;
(6) 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. Sump pumps and roof down spouts shall be evaluated and removed where practicable. If removing certain sump pumps and roof downspouts is determined to be impracticable, a justification must be provided along with the submittal of the O&M Plan. If EPA disagrees with the assessment, it may require the O&M Plan to be updated accordingly;
(7) An educational public outreach program for all aspects of I/I control, particularly private inflow; and
(8) 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 and co-permittees 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 the first March 31st following submittal of the collection system O&M Plan required by Part I.C.5.b. of this permit. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. 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 facility's 52 MGD design flow (41.6 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 and Co-permittees 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 AND PRETREATMENT PROGRAM

1. The Permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of this permit, the Permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the Permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection

system concerns. In preparing this evaluation, the Permittee shall complete and submit the attached form (see **Attachment C –** Reassessment of Technically Based Industrial Discharge Limits) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the Permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

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

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

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

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

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

3. The Permittee shall provide the EPA and the State with an annual report describing the Permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in **Attachment D** (Industrial Pretreatment Program Annual Report Requirements) of this permit and shall be submitted no later than **September 1** of each year.

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

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

6. The Permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the

industrial pretreatment program. The Permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the Permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the Permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The Permittee will implement these proposed changes pending EPA Region I's approval under 40 C.F.R. § 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.E.1.

F. COMBINED SEWER OVERFLOWS (CSOs)

1. Effluent Limitations

   During wet weather (including snow melt), the Permittee is authorized to discharge storm water/wastewater from the CSO outfalls listed below:

Outfall #	Latitude	Longitude	Receiving Water
002	42˚ 42' 11"	71˚ 08' 59"	Merrimack River
003	42˚ 42' 02"	71˚ 09' 19"	Merrimack River
004	42˚ 42' 21"	71˚ 08' 31"	Merrimack River
005	42˚ 42' 15"	71˚ 09' 03"	Merrimack River
006	42˚ 42' 33"	71˚ 08' 42"	Spicket River

2. The effluent discharged from these CSOs is subject to the following limitations:

   a. The discharges shall receive treatment at a level providing Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants. The EPA has made a Best Professional Judgment (BPJ) determination that BPT, BCT, and BAT for combined sewer overflow (CSO) control includes the implementation of Nine Minimum Controls (NMC) specified below. These Nine Minimum Controls and the Nine Minimum Controls Minimum Implementation Levels which are detailed further in Part I.F.3. are requirements of this permit.

      (1) Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows;

      (2) Maximum use of the collection system for storage;

      (3) Review and modification of the pretreatment program to assure CSO impacts are minimized;

      (4) Maximization of flow to the POTW for treatment;

(5) Prohibition of dry weather overflows from CSOs;

(6) Control of solid and floatable materials in CSOs;

(7) Pollution prevention programs that focus on contaminant reduction activities;

(8) Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts;

(9) Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

b. The discharges shall not cause or contribute to violations of federal or state Water Quality Standards.

3. Nine Minimum Controls Minimum Implementation Levels

a. The Permittee must implement the nine minimum controls in accordance with the documentation provided to EPA and MassDEP or as subsequently modified to enhance the effectiveness of the controls. This implementation must include the controls identified in Part I.F.3.b-g plus other controls the Permittee can reasonably undertake as set forth in the documentation.

b. Each CSO structure/regulator, pumping station and/or tidegate shall be routinely inspected, at a minimum of once per month, to ensure that they are in good working condition and adjusted to minimize combined sewer discharges (NMC # 1, 2 and 4). The following inspection results shall be recorded: the date and time of inspection, the general condition of the facility, and whether the facility is operating satisfactorily. If maintenance is necessary, the Permittee shall record: the description of the necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. The Permittee shall maintain all records of inspections for at least three years.

c. **Annually, no later than March 31st,** the Permittee shall submit a certification to MassDEP and EPA which states that the previous calendar year's monthly inspections were conducted, results recorded, and records maintained. MassDEP and EPA have the right to inspect any CSO related structure or outfall at any time without prior notification to the Permittee. Discharges to the combined system of septage, holding tank wastes, or other material which may cause a visible oil sheen or containing floatable material are prohibited during wet weather when CSO discharges may be active (NMC # 3, 6, and 7).

d. Dry weather overflows (DWOs) are prohibited (NMC # 5). All dry weather sanitary and/or industrial discharges from CSOs must be reported to EPA and MassDEP orally within 24 hours of the time the Permittee becomes aware of the circumstances and a written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. See also Paragraph D.1.e of Part II of this permit.

e. The Permittee shall quantify and record all discharges from combined sewer outfalls (NMC # 9). Quantification shall be through direct measurement. The following information must be recorded for each combined sewer outfall for each discharge event, as set forth in Part I.F.5.:

- Duration (hours) of discharge;
- Volume (gallons) of discharge;
- National Weather Service precipitation data from the nearest gage where precipitation is available at daily (24-hour) intervals and the nearest gage where precipitation is available at one-hour intervals. Cumulative precipitation per discharge event shall be calculated.

The Permittee shall maintain all records of discharges for at least six years after the effective date of this permit.

f. The Permittee shall install and maintain identification signs for all combined sewer outfall structures (NMC # 8). The signs must be located at or near the combined sewer outfall structures and easily readable by the public from the land and water. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

GREATER LAWRENCE SANITARY DISTRICT
WET WEATHER
SEWAGE DISCHARGE
OUTFALL (discharge serial number)

Where easements over property not owned by the Permittee must be obtained to meet this requirement, the Permittee shall identify the appropriate landowners and obtain the necessary easements, to the extent practicable.

The Permittee shall place signs in English and Spanish or add a universal wet weather sewage discharge symbol to existing signs.

g. Public Notification Plan

(1) Within 180 days of the effective date of the permit, the Permittee shall submit to EPA and MassDEP a Public Notification Plan describing the measures that will be taken to meet NMC#8 in Part I.F.2 of this permit (NMC #8). The public notification plan shall include the means for disseminating information to the public, including communicating the initial and supplemental notifications required in Part I.F.3.g.(2) and (3) of this permit, as well as procedures for communicating with public health departments, including downstream communities, whose waters may be affected by discharges from the Permittee's CSOs.

(2) Initial notification of a probable CSO activation shall be provided to the public as soon as practicable, but no later than, four (4) hours after becoming aware by monitoring, modeling or other means that a CSO discharge has occurred. Notification may be made through electronic means, including posting to the Permittee's website. The initial notification shall include the following information:

- Date and time of probable CSO discharge
- CSO number and location

(3) Supplemental notification shall be provided to the public as soon as practicable, but no later than, twenty-four (24) hours after becoming aware of the termination of any CSO discharge(s). Notification may be made through electronic means, including posting to the Permittee's website. The supplemental notification shall include the following information:

- CSO number and location
- Confirmation of CSO discharge
- Date, start time and stop time of the CSO discharge

(4) Annual notification - **Annually, by March 31st,** the Permittee shall post information on the locations of CSOs, a summary of CSO activations and volumes, status and progress of CSO abatement work, and contacts for additional information on CSOs and water quality on a website. This information shall be disseminated through the means identified in the Public Notification Plan that is submitted in accordance with Part I.F.3.g.(1) of this permit.

The Public Notification Plan shall be implemented no later than 180 days following the effective date of the permit. The initial, supplemental, and annual public notification requirements shall become effective 180 days following the effective date of the permit.

4. Nine Minimum Controls Reporting Requirement

Annually, no later than March 31st, the Permittee shall submit a report summarizing activities during the previous calendar year relating to compliance with the nine minimum controls. The annual report shall include the CSO outfall monitoring data required by Part I.F.5. of this permit.

5. Combined Sewer Overflow Outfall Monitoring

For each combined sewer outfall listed in Part I.F.1 of this permit, the Permittee must monitor the following:

Parameters	Reporting Requirements	Monitoring Requirements	
	Total Monthly	**Measurement Frequency**	**Sample Type**
Total Flow	Report Gallons	Daily, when discharging	Continuous
Total Flow Duration (Duration of flow through CSO)	Report Hours	Daily, when discharging	Continuous
Number of CSO Discharge Events	Report Monthly Count	Daily, when discharging	Count

a. For Total Flow, measure the total flow discharged from each CSO outfall during the month. Quantification shall be through direct measurement. For Total Flow Duration, report the total duration (hours) of discharges for each CSO outfall during the month.

b. "Discharge Event" is any time there is flow discharged from any CSO outfall, including discontinuous flow, that occurs during a distinct precipitation-related event. "Precipitation-related" includes rainfall, snowfall, and snowmelt.

c. For those months in which a CSO discharge does not occur, the Permit**t**ee must indicate "no discharge" for the outfall for which data was not collected.

d. This information shall be submitted with the annual report required by Part I.F.4. of this permit.

G. 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:

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.

[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

8. The Permittee 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).

H. SPECIAL CONDITIONS

1. The effluent limit for *E. coli* shall be subject to a schedule of compliance whereby the limit takes effect one year after the effective date of the permit.

2. The Permittee shall notify all downstream community water systems listed below of any emergency condition, plant upset, bypass, CSO discharges, or other system failure which has the potential to violate permit limits or the quality of the water to be withdrawn for drinking water purposes. This notification should be made as soon as possible but within 4 hours, and in the anticipation of such an event, if feasible, without taking away from any response time necessary to alleviate the situation. The permittee shall follow up with written notification within 5 days to the contact below. This notification shall include the reason for the emergency, any sampling information, any visual data recorded, a description of how the situation was handled, and when it would be considered to no longer be an emergency.

Haverhill Water Treatment Plant
131 Amesbury Road
Haverhill, MA
Phone Number: (978) 374-2385

3. The Permittee shall notify the Massachusetts Division of Marine Fisheries within 4 hours of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure which has the potential to violate bacteria permit limits. Within 24 hours a notification of a permit excursion or plant failure shall be sent to the following address and telephone number:

Division of Marine Fisheries
Shellfish Management Program
30 Emerson Avenue
Gloucester, MA 01930
(978) 282-0308

4. The Permittee shall develop and implement an ambient total phosphorus sampling and analysis plan for the Merrimack River at a representative location upstream of the facility. Samples shall be collected once per month, from April through October, during dry weather. Dry weather is defined as any calendar day on which there is less than 0.1 inch of rainfall that is preceded by at least 72 hours without rainfall. The sampling plan shall be submitted to EPA and DEP as part of a Quality Assurance Project at least three months prior to the first planned sampling date.

I. 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 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 accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

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. *See* Part I.I.7. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Industrial User and Pretreatment Related Reports

   a. Prior to 21 December 2020, all reports and information required of the Permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Pretreatment Coordinator in Region 1 EPA Water Division (EPA WD). Starting on 21 December 2020, these submittals must be done electronically as NetDMR attachments and/or using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. These requests, reports and notices include:

      (1) Annual Pretreatment Reports,
      (2) Pretreatment Reports Reassessment of Technically Based Industrial Discharge Limits Form,
      (3) Revisions to Industrial Discharge Limits,
      (4) Report describing Pretreatment Program activities, and
      (5) Proposed changes to a Pretreatment Program

b. This information shall be submitted to EPA WD as a hard copy at the following address:

U.S. Environmental Protection Agency
Water Division
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. 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"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

5. Submittal of Requests and Reports to EPA WD

a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA WD:

(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.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

6. Submittal of Reports to EPA ECAD 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) Prior to 21 December 2020, written notifications required under Part II.B.4.c, for bypasses, and Part II.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2020, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.
(2) Collection System Operation and Maintenance Plan (from co-permittee)
(3) Report on annual activities related to O&M Plan (from co-permittee)

b. This information shall be submitted to EPA Enforcement and Compliance Assurance (ECAD) at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assistance Division (ECAD)Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

7. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

8. 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 ECAD at 617-918-1510
and
MassDEP's Emergency Response at 888-304-1133

J. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are 1) a Federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§ 1251 et seq.; and 2) an identical State surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 CMR 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this State surface water discharge permit.

2. This authorization also incorporates the State water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this State surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

3. Each agency shall have the independent right to enforce the terms and conditions of this permit. 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 this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the EPA. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

ATTACHMENT A
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.

ATTACHMENT B
FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL

USEPA Region 1

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

III. SAMPLE COLLECTION AND USE

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

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

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

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

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

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

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

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

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

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

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

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

and

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

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

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

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

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

V.1. Use of Reference Toxicity Testing

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

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

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

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

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

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

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

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

VI. CHEMICAL ANALYSIS

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

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

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

Notes:

1. Hardness may be determined by:

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

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

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

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

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

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

2. Test Variability (Test Sensitivity)

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

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

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

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

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

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

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

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

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

2. *Pimephales promelas*

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

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

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

3. *Ceriodaphnia dubia*

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

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

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

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

In addition to the summary sheets the report must include:

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

ATTACHMENT C

EPA - New England

Reassessment of Technically Based Industrial Discharge Limits

Under 40 CFR §122.21(j)(4), all Publicly Owned Treatment Works (POTWs) with approved Industrial Pretreatment Programs (IPPs) shall provide the following information to the Director: a written evaluation of the need to revise local industrial discharge limits under 40 CFR §403.5(c)(1).

Below is a form designed by the U.S. Environmental Protection Agency (EPA - New England) to assist POTWs with approved IPPs in evaluating whether their existing Technically Based Local Limits (TBLLs) need to be recalculated. The form allows the permittee and EPA to evaluate and compare pertinent information used in previous TBLLs calculations against present conditions at the POTW.

Please read direction below before filling out form.

ITEM I.

* In Column (1), list what your POTW's influent flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present influent flow rate. Your current flow rate should be calculated using the POTW's average daily flow rate from the previous 12 months.

* In Column (1) list what your POTW's SIU flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present SIU flow rate.

* In Column (1), list what dilution ratio and/or 7Q10 value was used in your old/expired NPDES permit. In Column (2), list what dilution ration and/or 7Q10 value is presently being used in your new/reissued NPDES permit.

  The 7Q10 value is the lowest seven day average flow rate, in the river, over a ten year period. The 7Q10 value and/or dilution ratio used by EPA in your new NPDES permit can be found in your NPDES permit "Fact Sheet."

* In Column (1), list the safety factor, if any, that was used when your existing TBLLs were calculated.

* In Column (1), note how your bio-solids were managed when your existing TBLLs were calculated. In Column (2), note how your POTW is presently disposing of its biosolids and how your POTW will be disposing of its biosolids in the future.

ITEM II.

* List what your existing TBLLs are - as they appear in your current Sewer Use Ordinance (SUO).

ITEM III.

* Identify how your existing TBLLs are allocated out to your industrial community. Some pollutants may be allocated differently than others, if so please explain.

ITEM IV.

* Since your existing TBLLs were calculated, identify the following in detail:

  (1) if your POTW has experienced any upsets, inhibition, interference or pass-through as a result of an industrial discharge.

  (2) if your POTW is presently violating any of its current NPDES permit limitations - include toxicity.

ITEM V.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in pounds per day) received in the POTW's influent. Current sampling data is defined as data obtained over the last 24 month period.

  All influent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* Based on your existing TBLLs, as presented in Item II., list in Column (2), for each pollutant the Maximum Allowable Headwork Loading (MAHL) values derived from an applicable environmental criteria or standard, e.g. water quality, sludge, NPDES, inhibition, etc. For more information, please see EPA's Local Limit Guidance Document (July 2004).

Item VI.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in micrograms per liter) present your POTW's effluent. Current sampling data is defined as data obtained during the last 24 month period.

(Item VI. continued)

All effluent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* List in Column (2A) what the Water Quality Standards (WQS) were (in micrograms per liter) when your TBLLs were calculated, please note what hardness value was used at that time. Hardness should be expressed in milligram per liter of Calcium Carbonate.

  List in Column (2B) the current WQSs or "Chronic Gold Book" values for each pollutant multiplied by the dilution ratio used in your new/reissued NPDES permit. For example, with a dilution ratio of 25:1 at a hardness of 25 mg/l - Calcium Carbonate (copper's chronic WQS equals 6.54 ug/l) the chronic NPDES permit limit for copper would equal 156.25 ug/l.

ITEM VII.

* In Column (1), list all pollutants (in micrograms per liter) limited in your new/reissued NPDES permit. In Column (2), list all pollutants limited in your old/expired NPDES permit.

ITEM VIII.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants in your POTW's biosolids. Current data is defined as data obtained during the last 24 month period. Results are to be expressed as total dry weight.

  All biosolids data collected and analyzed must be in accordance with 40 CFR §136.

  In Column (2A), list current State and/or Federal sludge standards that your facility's biosolids must comply with. Also note how your POTW currently manages the disposal of its biosolids. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria will be and method of disposal.

In general, please be sure the units reported are correct and all pertinent information is included in your evaluation. If you have any questions, please contact your pretreatment representative at EPA - New England.

REASSESSMENT OF TECHNICALLY BASED LOCAL LIMITS (TBLLs)

POTW Name & Address : _____

NPDES PERMIT # : _____

Date EPA approved current TBLLs : _____

Date EPA approved current Sewer Use Ordinance : _____

ITEM I.

In Column (1) list the conditions that existed when your current TBLLs were calculated. In Column (2), list current conditions or expected conditions at your POTW.		
	Column (1) EXISTING TBLLs	Column (2) PRESENT CONDITIONS
POTW Flow (MGD)		
Dilution Ratio or 7Q10 (from NPDES Permit)		
SIU Flow (MGD)		
Safety Factor		N/A
Biosolids Disposal Method(s)		

ITEM II.

EXISTING TBLLs			
POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)	POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)

ITEM III.

Note how your existing TBLLs, listed in Item II., are allocated to your Significant Industrial Users (SIUs), i.e. uniform concentration, contributory flow, mass proportioning, other. Please specify by circling.

ITEM IV.

Has your POTW experienced any upsets, inhibition, interference or pass-through from industrial sources since your existing TBLLs were calculated?
If yes, explain.

_____

_____

Has your POTW violated any of its NPDES permit limits and/or toxicity test requirements?

If yes, explain.

_____

_____

ITEM V.

Using current POTW influent sampling data fill in Column (1). In Column (2), list your Maximum Allowable Headwork Loading (MAHL) values used to derive your TBLLs listed in Item II. In addition, please note the Environmental Criteria for which each MAHL value was established, i.e. water quality, sludge, NPDES etc.				
Pollutant	Column (1) Influent Data Analyses Maximum (lb/day)	Average (lb/day)	Column (2) MAHL Values (lb/day)	Criteria
Arsenic				
Cadmium				
Chromium				
Copper				
Cyanide				
Lead				
Mercury				
Nickel				
Silver				
Zinc				
Other (List)				

ITEM VI.

Using current POTW effluent sampling data, fill in Column (1). In Column (2A) list what the Water Quality Standards (Gold Book Criteria) were at the time your existing TBLLs were developed. List in Column (2B) current Gold Book values multiplied by the dilution ratio used in your new/reissued NPDES permit.

Pollutant	Column (1) Effluent Data Analyses		Columns (2A) (2B) Water Quality Criteria (Gold Book) From TBLLs Today	
	Maximum (ug/l)	Average (ug/l)	(ug/l)	(ug/l)
Arsenic				
*Cadmium				
*Chromium				
*Copper				
Cyanide				
*Lead				
Mercury				
*Nickel				
Silver				
*Zinc				
Other (List)				

*Hardness Dependent (mg/l - $CaCO_3$)

ITEM VII.

In Column (1), identify all pollutants limited in your new/reissued NPDES permit. In Column (2), identify all pollutants that were limited in your old/expired NPDES permit.			
Column (1) NEW PERMIT Pollutants Limitations (ug/l)		Column (2) OLD PERMIT Pollutants	Limitations (ug/l)

ITEM VIII.

Using current POTW biosolids data, fill in Column (1). In Column (2A), list the biosolids criteria that was used at the time your existing TBLLs were calculated. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria would be and method of disposal.

Pollutant	Column (1) Biosolids Data Analyses Average (mg/kg)	Columns (2A) (2B) Biosolids Criteria From TBLLs New (mg/kg)	(mg/kg)
Arsenic			
Cadmium			
Chromium			
Copper			
Cyanide			
Lead			
Mercury			
Nickel			
Silver			
Zinc			
Molybdenum			
Selenium			
Other (List)			

Attachment D
Industrial Pretreatment Program Annual Report Requirements

The Permittee shall provide to the Approval Authority with an annual report that briefly describes the POTW's program activities, including activities of all participating agencies, if more than one jurisdiction is involved in the local program. The report required by this section shall be submitted no later than one year after approval of the POTW's Pretreatment Program, and at least annually thereafter, and must include, at a minimum, the applicable required data in appendix A to 40 CFR Part 127. The report required by this section must also include a summary of changes to the POTW's pretreatment program that have not been previously reported to the Approval Authority and any other relevant information requested by the Approval Authority. As of December 21, 2020 all annual reports submitted in compliance with this section must be submitted electronically by the POTW Pretreatment Program to the Approval Authority or initial recipient, as defined in 40 CFR 127.2(b), in compliance with this section and 40 CFR Part 3 (including, in all cases, Subpart D to Part 3), 40 CFR 122.22, and 40 CFR Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, the Approval Authority may also require POTW Pretreatment Programs to electronically submit annual reports under this section if specified by a particular permit or if required to do so by state law.

The permitted shall submit to Approval Authority and the state permitting authority a report that contains the following information requested by EPA:

1. An updated list of the POTW's Industrial Users by category as set forth in 40 C.F.R. 403.8(f)(2)(i), to include:

    a. Names and addresses, or a list of deletions and additions keyed to a previously submitted list. The POTW shall provide a brief explanation of each deletion. This list shall identify which Industrial Users are subject to categorical Pretreatment Standards and specify which Standards are applicable to each Industrial User. The list shall indicate which Industrial Users are subject to local standards that are more stringent than the categorical Pretreatment Standards. The POTW shall also list the Industrial Users that are subject only to local Requirements. The list must also identify Industrial Users subject to categorical Pretreatment Standards that are subject to reduced reporting requirements under paragraph (e)(3), and identify which Industrial Users are Non-Significant Categorical Industrial Users.
    b. Permit status. Whether each SIU has an unexpired control mechanism and an explanation as to why any SIUs are operating without a current, unexpired control mechanism (e.g. permit);
    c. Baseline monitoring reporting requirements for newly promulgated industries
    d. In addition, a brief description of the industry and general activities;

2. A summary of compliance and enforcement activities during the preceding year, including the number of:

a. significant industrial users inspected by POTW (include inspection dates for each industrial user),
b. significant industrial users sampled by POTW (include sampling dates for each industrial user),
c. compliance schedules issued (include list of subject users),
d. written notices of violations issued (include list of subject users),
e. administrative orders issued (include list of subject users),
f. criminal or civil suits filed (include list of subject users) and,
g. penalties obtained (include list of subject users and penalty amounts);

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

4. The Permittee shall prepare annually a list of industrial users, which during the preceding twelve (12) months have significantly violated Pretreatment Standards or requirements 40 C.F.R. 403.8(f)(2)(vii). This list is to be published annually in a newspaper of general circulation in the Permittee's service area.

5. A summary of all monitoring activities performed within the previous twelve (12) months. The following information shall be reported:

   Total number of SIUs inspected; and
   Total number of SIUs sampled.

   a. For all industrial users that were in Significant Non-Compliance during the previous twelve (12) months, provide the name of the violating industrial user; indicate the nature of the violations, the type and number of actions taken (administrative order, criminal or civil suit, fines or penalties collected, etc.) and current compliance status. Indicate if the company returned to compliance and the date compliance was attained. Determination of Significant Non-Compliance shall be performed.

6. A summary of all enforcement actions not covered by the paragraph above conducted in accordance with the approved Enforcement Response Plan.

7. A description of actions being taken to reduce the incidence of significant violations by significant industrial users.

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

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

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

11. The Permittee shall analyze the treatment facility influent and effluent at least Annually for the presence of the toxic pollutants listed in 40 CFR Part 122 Appendix D (NPDES Application Testing Requirements) Table III as follows:

    - Antimony
    - Arsenic
    - Beryllium
    - Cadmium
    - Chromium
    - Copper
    - Lead
    - Mercury
    - Nickel
    - Selenium
    - Silver
    - Thallium
    - Zinc
    - Cyanide
    - Phenols

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

12. The Permittee shall analyze the treatment facility sludge (biosolids) prior to disposal, for the presence of toxic pollutants listed above in 40 CFR Part 122 Appendix D (NPDES Application Testing Requirements) Table III at least once per year. If the Permittee does not dispose of biosolids during the calendar year, the Permittee shall certify to that in the Pretreatment Annual Report and the monitoring requirements in this paragraph shall be suspended for that calendar year.

    a. The Permittee shall use sample collection and analysis procedures as approved for use under 40 CFR Part 503 or specified in the EPA Region 8 General Permit for biosolids.

13. The summary shall include an evaluation of influent sampling results versus threshold inhibitory concentrations for the Wastewater Treatment System and effluent sampling results versus water quality standards. Such a comparison shall be based on the sampling program described in the paragraphs above or any similar sampling program described in this Permit.

14. Identification of the specific locations, if any, designated by the Permittee for receipt (discharge) of trucked or hauled waste, if modified;

15. Information as required by the Approval Authority or state permitting authority on the discharge to the POTW from the following activities:

    (A) Ground water clean-up from underground storage tanks;
    (B) Trucked or hauled waste; and,
    (C) Groundwater clean-up from RCRA or Superfund sites.

16. A description of all changes made during the previous calendar year to the Permittee's pretreatment program that were not submitted as substantial or non-substantial modifications to EPA.

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

18. Any other information that may be deemed necessary by the Approval Authority.

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

RESPONSE TO COMMENTS
NPDES PERMIT NO. MA0100447
GREATER LAWRENCE SANITARY DISTRICT
NORTH ANDOVER, MASSACHUSETTS

The U.S. Environmental Protection Agency's Region 1 ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") are issuing a Final National Pollutant Discharge Elimination System ("NPDES") Permit for the Greater Lawrence Sanitary District ("GLSD") Wastewater Treatment Facility ("WWTF") located in North Andover, Massachusetts. This permit is being issued under the Federal Clean Water Act ("CWA" or "Act"), 33 U.S.C., §§ 1251 *et. seq.*, and the Massachusetts Clean Waters Act, M.G.L. Ch. 21, §§ 26-35.

This permit is being jointly issued by EPA and MassDEP. EPA will generally present responses to comments as EPA's and MassDEP's, even where the reference is only to EPA. MassDEP's certification and joint issuance of the permit establishes that MassDEP affirms EPA's response. Accordingly, this document represents the joint determinations of EPA and MassDEP, which are reflected in separately enforceable discharge permits issued under federal and state law.

In accordance with the provisions of 40 C.F.R. § 124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit No. MA0100447 ("Draft Permit"). The Response to Comments explains EPA's determinations that form the basis of the Final Permit. From June 7, 2019 through July 23, 2019, EPA and MassDEP (together, the "Agencies") solicited public comments on the Draft Permit.

EPA and MassDEP received comments from:

- Cheri Cousens, P.E., Executive Director, Greater Lawrence Sanitary District dated July 23, 2019
- Betsy Reilley, Ph.D., Director, Environmental Quality Department, Massachusetts Water Resources Authority dated July 23, 2019
- Julia Blatt, Executive Director, Massachusetts River Alliance and Caitlin Peale Sloan, Senior Attorney, Conservation Law Foundation dated July 23, 2019
- Christina Eckert, Co-Executive Director and John Macone, Co-Executive Director, Merrimack River Watershed Council dated July 22, 2019
- Heather McMann, Executive Director, Groundwork Lawrence dated July 23, 2019
- Jennifer A. Pederson, Executive Director, Massachusetts Water Works Association on July 10, 2019
- Philip Guerin, Massachusetts Coalition for Water Resources dated July 23, 2019
- Rick Cantu, Osprey Owl Environmental LLC dated July 23, 2019
- Gene Porter, Chair, Lower Merrimack River Local Advisory Committee dated July 20, 2019
- Peter Severance, River Merrimack dated July 22, 2019

After a review of the timely-submitted comments, EPA and MassDEP have made a final decision to issue this permit authorizing the discharge. The Final Permit takes the same fundamental approach as the Draft Permit made available for public comment. EPA's decision-making process has benefited from the various comments and additional information submitted and, as an outgrowth of those materials, EPA has made certain revisions to the permit in response. EPA also has supplemented certain analyses supporting the Final Permit, also in response to comments. These improvements and changes are detailed in this document and reflected in the Final Permit. A summary of the changes made in the Final Permit is listed below. The analyses underlying these changes are explained in the responses to individual comments that follow, which are identified after each change where applicable.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: http://www.epa.gov/region1/npdes/permits_listing_ma.html.

A copy of the Final Permit may be also obtained by contacting Betsy Davis, U.S. EPA, 5 Post Office Square, Suite 100 (Mail Code: 06-4), Boston, MA 02109-3912; Telephone: (617) 918-1576; Email davis.betsy@epa.gov.

Table of Contents

I. Summary of Changes to the Final Permit

1. A one-year compliance schedule for *E. coli* has been added to the Final Permit. *See* Response 5.

2. The effluent limits for aluminum, cadmium, copper and lead have been removed from the Final Permit. *See* Response 6.

3. The aluminum compliance schedule has been removed from the Final Permit. *See* Response 7.

4. The effluent limit for total phosphorus has been changed to 240 lb/day. *See* Responses 8 and 11.

5. Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1 of the Final Permit has been modified to read as follows: "The Permittee shall not add septage to the waste stream at the treatment plant during activation of the secondary treatment bypass." *See* Response 10.

6. Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1 of the Final Permit has been modified to clarify that a bypass of secondary treatment is subject to the requirements of Part II.B.4 (and not just Part II.B.4.c). *See* Response 10.

7. The compliance schedules for aluminum, cadmium, copper, lead and phosphorus have been removed from the Final Permit. *See* Response 11.

8. Part I.B.2 of the Final Permit has been modified to require public notification for SSOs, except SSOs that do not impact a surface water or the public. *See* Response 12.

9. Part I.B.2 of the Final Permit has been modified to require public notification within 24 hours of *becoming aware* of any unauthorized discharge impacting the surface water or the public. *See* Response 12.

10. Part I.C.4.k of the Final Permit has been updated to include "to the extent feasible." The Final Permit also requires the following: "If certain information is determined to be infeasible to obtain, a justification must be included along with the map. If EPA disagrees with the assessment, it may require the map to be updated accordingly." *See* Response 13.

11. Part I.C.5(b)(6) of the Final Permit has been updated to require sump pumps and roof down spouts to be evaluated and *removed where practicable*. The Final Permit also requires the following: "If removing certain sump pumps and roof downspouts is determined to be impracticable, a justification must be provided along with the submittal of the O&M Plan. If EPA disagrees with the assessment, it may require the O&M Plan to be updated accordingly." *See* Response 14.

12. Part I.F.1 of the Final Permit has been modified to include snow melt as a source of wet weather. *See* Response 15.

13. Part I.F.3.a of the Final Permit has been modified to read "must include the controls identified in Part I.F.3.b-g of this Permit." *See* Response 17.

14. Part I.F.5 of the Final Permit has been modified to define "discharge event" and "precipitation-related." *See* Response 19.

15. A footnote to Part I.A.1 of the Final Permit has been added to the 85% removal requirements for BOD_5 and TSS indicating that these limits apply only during dry weather, meaning any calendar day on which there is less than 0.1 inches of rain and no snow melt. *See* Response 20.

16. Footnote 4 to Part I.A.1 of the Final Permit has been deleted and footnote 3 has been modified for clarification to say: "For reporting an average based on a mix of values detected and not detected, assign a value of "0" for all non-detects for that reporting period and report the average of all the results." *See* Response 22.

17. Footnote 13 to Part I.A.1 of the Final Permit has been modified to allow WET results to be submitted on the "second monthly DMR submittal following completion of the test." *See* Response 31.

18. Part I.B.2 of the Final Permit has been modified to specify that notifications shall remain on the Permittee's website for a minimum of 12 months. *See* Response 32.

19. Part I.F.3.g of the Final Permit has been modified to remove references to "affected entities" and "affected parties." *See* Response 33.

20. Part I.F.3.f of the Final Permit has been modified to require signage in both English and Spanish, or the addition of a universal wet weather sewage discharge symbol to existing signs. *See* Response 44.

II. Responses to Comments

Comments are reproduced below as received and have not been edited.

A. Comments from Cheri Cousens, Executive Director, Greater Lawrence Sanitary District, North Andover, Massachusetts on July 23, 2019:

Comment 1

Revised Draft Permit: Due to the substantial revisions, new and more reliable data, and other additional information provided in this comment letter, GLSD requests that EPA prepare and make available for additional public comment a revised Draft Permit incorporating the revisions requested herein. In addition, GLSD requests that EPA and MassDEP meet with GLSD to discuss the information provided herein prior to issuance of a revised Draft Permit.

Response 1

EPA disagrees that another public notice period with a revised Draft Permit is necessary. The information and arguments in the comments directly related to the subject matter and issues presented in the Draft Permit. Information and data provided by the commenter and issues concerning the permit that were identified by the commenters neither raised "substantial" nor "new" questions warranting reopening the public comment period under 40 C.F.R. § 124.14(b). Clarifications made in the Final Permit are logical outgrowths of the Draft Permit.

In declining to reopen the public comment period, EPA also took into account that the permit is long expired, and that the new permit includes additional, new conditions that will among other things ameliorate the impacts of GLSD's ongoing CSO discharges on human health and the environment. Given the nature of these impacts, in EPA's view, time is of the essence, and forestalling issuance of the permit by taking additional, potentially cumulative and duplicative comment, would not further the objectives of the Act, which requires permits to be revisited at regular five-year terms.

The Agencies met with representatives of the GLSD on two separate occasions to discuss the NPDES Draft Permit and the permit renewal process. On March 19, 2019, EPA and MassDEP conducted a site visit to tour the facility and discuss the process of renewing the District's NPDES Permit. On May 15, 2019, EPA met with representatives of GLSD to further discuss the development of the Draft Permit and answer additional questions on the Draft Permit and the NPDES permit process.

At the May meeting, EPA Region 1 also shared EPA's goal of finalizing permits within a six months period. The goal is in the FY 2018-2022 U.S. EPA Strategic Plan, and represents one of EPA's highest policy priorities.[1]

Comment 2

Average Monthly BOD_5 Load: The average monthly effluent limitation for BOD_5 is presented as 30 mg/L and 13,000 lb/day on page 3 of 26 of the Draft Permit. While the concentration limitation is correct, it appears there is an error in the mass loading limit. The correct mass loading rate for BOD5 should be 13,010 lb/day which is the same as the mass loading limit for TSS. Request: EPA should correct the BOD5 mass loading limit to be 13,010 lb/day.

Request: EPA should correct the BOD_5 mass loading limit to be 13,010 lb/day. The average monthly effluent limitation for BOD5 is presented as 30 mg/L and 13,000 lb/day on page 3 of 26 of the Draft Permit. While the concentration limitation is correct, it appears there is an error in the mass loading limit. The correct mass loading rate for BOD5 should be 13,010 lb/day which is the same as the mass loading limit for TSS.

[1] FY 2018-2022 U.S EPA Strategic Plan, February 2018 (Updated September 2019), page 46. https://www.epa.gov/sites/production/files/2019-09/documents/fy-2018-2022-epa-strategic-plan.pdf

Response 2

In order to be consistent with the 1975 Merrimack River Water Quality Management Plan,[2] a basin plan completed pursuant to the applicable basin plan under CWA § 209, EPA has determined that it is appropriate for the BOD_5 mass-based limit to be 13,000 lb/day which is explicitly stated in the water quality management plan. Therefore, the mass-based BOD_5 monthly average limit of 13,000 lb/day will remain in the Final Permit.

Comment 3

Dilution Factor: The Draft Permit Fact Sheet calculated the dilution factor based on U.S. Geological Survey gage station (#01100000) in the Merrimack River in Lowell, MA. GLSD has identified several errors with the calculation as described below.

a) EPA used a smaller dataset to calculate the 7Q10 causing a Higher Uncertainty in Statistical Analysis: As stated at page 14 of 41 in the 2019 Fact Sheet, EPA extrapolated the 7Q10 flow from a portion of the USGS data set of daily river discharge data (January 1989 to October 2017). It is unclear why this 30-year period was selected even though the USGS data set included data from June 1923 to December 2018.

The statistical estimate of 7Q10 flow was based on the log Pearson Type III distribution to fit the return frequency curve with annual 7-day low flow data. For statistical analysis, the larger the dataset (higher statistical sample number) available, the less uncertainty there will be associated with the estimated value. The 95% confidence interval with 30 years of data is 637.5 - 988.06 CFS while it is much smaller with a range of 826.33 – 979.24 for the 95-percent confidence interval with 95 years of data for USGS gage station #01100000. The smaller range of the 95-percent confidence interval is an indication of less uncertainty in the statistical estimate. The Figure below shows the annual 7-day low flow values from 1923 to 2018. There is no observable trend over the entire 95-year dataset.

The Table below compares the 95 percent confidence intervals with the Log Pearson Type III distribution analysis using the entire 95 years of data versus only using most recent 30 years of data. The comparison shows that using a smaller sample number for 7Q10 results in much higher uncertainty (reflected in a much higher discrepancy over the 95 percent confidence interval (from 637.500 to 988.060 cfs). The Log Pearson Type III analysis results are included in Attachment 1.

[2] Massachusetts Department of Environmental Quality Engineering, *The Merrimack River Water Quality Management Plan*, 1975, page 59.

Table 1 Summary of Confidence Interval Estimates of 7Q10 Flow

	95 percent confidence intervals estimate of 7Q10 flow (CFS)	
	Lower	Upper
Entire USGS Data (95 Years)	826.330	979.240
Most Recent 30 Years' Data	637.500	988.060

Request: To provide a more accurate estimate of 7Q10 flow with less uncertainty, EPA should revise its methodology to use all river discharge data available (June 1923 to December 2018) for the USGS gage (#01100000). Doing so is also consistent with the example described in EPA's Handbook for NPDES Permit Writers for calculating 7Q10.[3]

b) The Calculated 7Q10 Provided in the Draft Permit at USGS Gage Station (#01100000) is Incorrect: EPA provided a 7Q10 flow of 832 cfs in the 2019 Fact Sheet (page 14 of 41). However, there is no description of how this value was estimated, and it is incorrect. Based on the methodology described in EPA's 2018, Low Flow Statistics Tools, A How-To Handbook for NPDES Permit Writers and USGS' SW Toolbox software, GLSD recalculated the 7Q10 value for the USGS gage station (#01100000) with all available data. The 7Q10 for this gage station is Estimated to be 907.33 cfs, as illustrated in the figure below as well as shown in Attachment 1.

[3] US EPA, Office of Water, *Low Flow Statistics Tools, A How-To Handbook for NPDES Permit Writers*, EPA-833-B-18-001, October 2018.

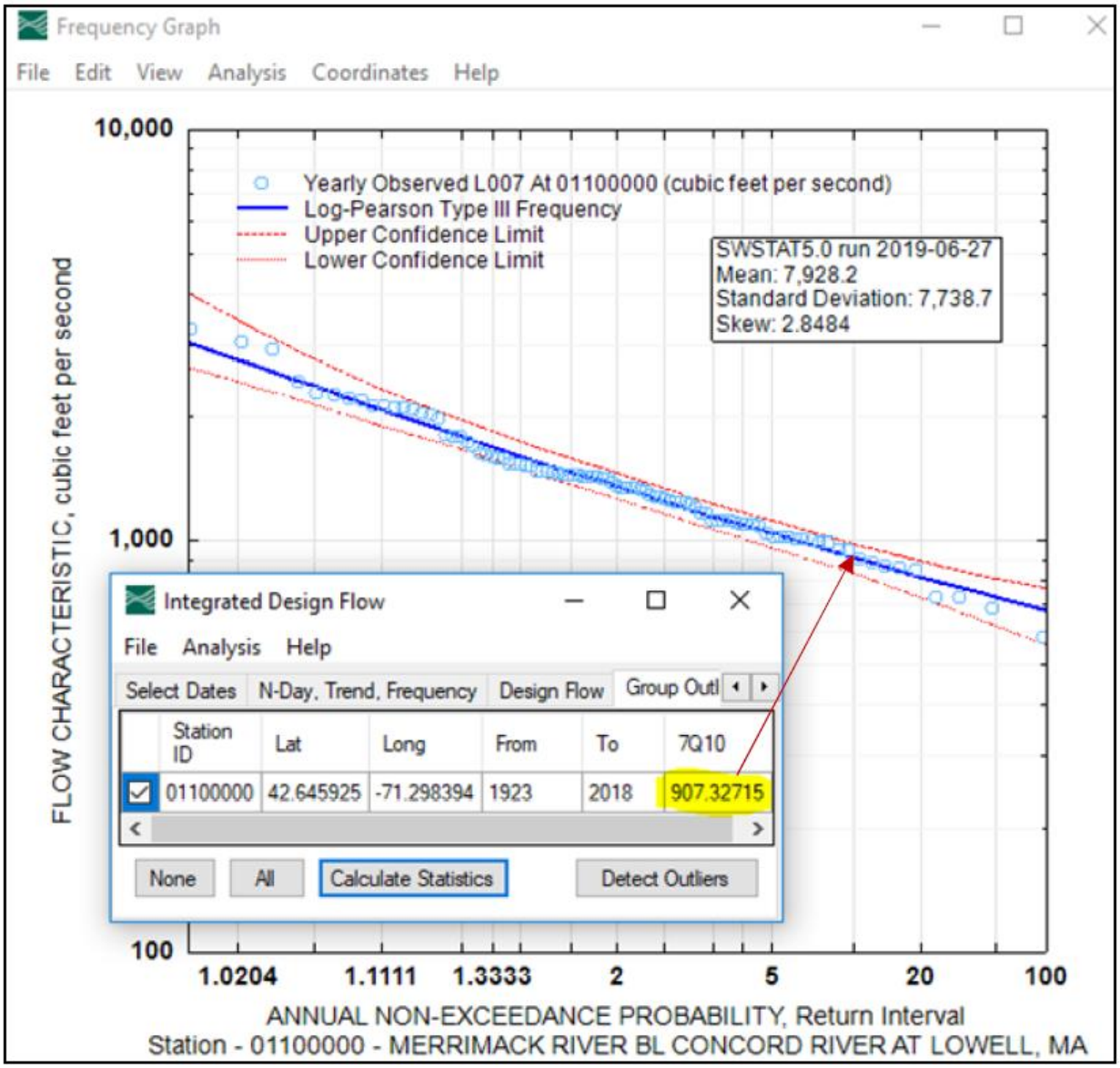


Figure 2 Low Flow Return Frequency Statistical Graph for USGS Gauge Station 01100000 Using USGS SW Toolbox Version 1.0.4[4]. The calculated 7Q10 flow is 907.33 cfs. The Analytical process is based on EPA's Handbook for NPDES Permit Writers.

Request: Based on EPA's Handbook for Permit Writers on estimating 7Q10 value, GLSD has calculated the 7Q10 value for USGS gage station (#01100000) to be 907.33 cfs. GLSD requests that EPA replace the 7Q10 value in the Draft Permit with this updated, correct estimation of 907.33 cfs.

c) <u>The Drainage Basin Area for USGS Gage Station (#01100000) is Incorrect.</u> The Draft Permit provided the drainage area at the gage to be 4,635 square miles. However, the correct drainage area is 4,412 square miles. GLSD contacted the USGS' Richard J. Verdi, Chief of Hydrologic

[4] https://www.usgs.gov/software/swtoolbox-software-information

Surveillance and Surface Water Investigations, who confirmed that "The National Water Information System webpage indicates the total drainage area above the *gage is 4,635 mi2, of which 214 mi2 are used for Boston and Worcester. This nets 4,412 mi2 that flows beyond the gage to Lawrence." The email communications with USGS are included in Attachment 2.*

Request: Based on USGS' estimation of the drainage area that impact Lawrence at USGS gage station (#01100000), the drainage area for calculation of low-flow factor should be 4,412 square miles. Therefore, the flow factor for USGS #0110000 should be 0.2057 cfs/sq. mi:

$$\textit{Flow factor for USGS } \#01100000 = \frac{907.33 \text{ cfs}}{4{,}412 \text{ square mile}} \approx 0.2057 \frac{cfs}{sq.mi}$$

Because the drainage area upstream of the WWTF effluent discharge outfall is about 4,839.83 square miles, the 7Q10 flow at the outfall should be 996 cfs or 643 million gallons per day (MGD).

The dilution factor (DF) at the 7Q10 flow of 643 MGD in the receiving water upstream of the discharge, Qs, and the Facility's design flow of 52 MGD, Qd, should be 13.37:

$$DF = (Qs + Qd)/Qd = (643 \text{ MGD} + 52 \text{ MGD})/52 \text{ MGD} = 13.37$$

Response 3

a) The comment notes that a smaller dataset used to calculate the 7Q10 causes higher uncertainty in statistical analysis. A 30-year period was selected for analyzing the 7Q10, as opposed to the entire record, in order to account for changing climatic conditions, in addition to recent hydrological changes in the watershed; a model incorporating data from over 30 years ago is likely to be less representative of current conditions. EPA's 2018, Low Flow Statistics Tools, A How-To Handbook for NPDES Permit Writers considers flow datasets exceeding 15 years in length to be representative for 7Q10 analyses.[5]

The smaller range of confidence intervals derived by GLSD is a statistical consequence of analyzing a larger dataset, but it does not necessarily imply a more representative depiction of the river's flow regime. In fact, analyzing data from the entire record will bias the 7Q10 in favor of historical conditions since the volume of data older than 30 years old dwarfs the volume of data from the past 30 years. The river's flow regime is variable over time, and analysis of the entire record would likely undermine analysis of the river's current conditions.

b) The comment notes that the calculated 7Q10 provided in the Draft Permit at USGS gage station (#01100000) is incorrect. EPA disagrees with the commenter. The calculated 7Q10 provided in the Draft Permit at USGS Gage Station (#01100000) is based on the

[5] US EPA, Office of Water, *Low Flow Statistics Tools, A How-To Handbook for NPDES Permit Writers*, EPA-833-B-18-001, October 2018.

DFlow User's Manual, the instruction manual underlying statistical analyses done in USGS SW Toolbox[6]:

$$7Q10 = \exp(U + K*S)$$

Where:

U = average of natural logs of low flow values
S = standard deviation of natural logs of low flow values
$K = (2/G)([1 + G*Z/6 – G^2/36]^3 – 1)$
G = skew of natural logs of low flow values
Z = Z-score value for a ten-year recurrence interval (-1.2816)

Table 1: 1989 through 2017 Lowell Gage (#01100000) Consecutive Low Flow Values (cfs)

Year	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Average	Ln of Average
1989	1300	1400	1500	1500	1600	1700	1700	1528.571429	7.332088871
1990	2349	2857	3260	3354	3273	3787	3607	3212.428571	8.074782494
1991	836	931	997	1007	1077	1305	1248	1057.285714	6.963460256
1992	1945	1987	2147	2320	2414	2647	2823	2326.142857	7.751966749
1993	914	725	821	821	759	1077	1077	884.8571429	6.785426211
1994	1758	2072	2098	1899	1561	1348	1348	1726.285714	7.453727393
1995	427	455	485	493	493	618	618	512.7142857	6.239718742
1996	1453	1436	1351	1300	1333	1283	1283	1348.428571	7.206695172
1997	768	791	813	812	851	1890	1890	1116.428571	7.017890094
1998	1106	1100	1100	1116	1115	1123	1123	1111.857143	7.013786998
1999	875	1066	784	766	683	1004	1004	883.1428571	6.783486974
2000	1194	1635	1803	2291	1914	1656	1656	1735.571429	7.459091992
2001	1095	1023	981	1048	911	932	932	988.8571429	6.896549875
2002	932	922	959	960	921	944	944	940.2857143	6.84618378
2003	1790	1790	1810	1810	1810	2020	2020	1864.285714	7.530633264
2004	1480	2000	2140	2140	2210	2270	2270	2072.857143	7.636683197
2005	1888	1842	1691	1564	1592	1505	1505	1655.285714	7.41172891
2006	2345	2350	2313	2219	2025	2028	2028	2186.857143	7.690220697
2007	1078	1204	1105	1086	1078	1052	1052	1093.571429	6.997204159
2008	2276	2336	2285	2218	2063	2180	2180	2219.714286	7.705133766
2009	1950	1950	2050	2120	2250	2250	2250	2117.142857	7.65782275
2010	968	1006	1006	1038	1085	1161	1161	1060.714286	6.966697815
2011	1380	1435	1451	1529	1619	1625	1625	1523.428571	7.328718713
2012	1280	1293	1338	1356	1399	1529	1529	1389.142857	7.236442186
2013	1400	1550	1550	1670	1710	1910	1910	1671.428571	7.421433972
2014	1397	1430	1492	1511	1554	1578	1578	1505.714286	7.317022673
2015	1031	1040	1041	1115	1249	1279	1279	1147.714286	7.045527666
2016	839	849	855	855	863	899	899	865.5714286	6.7633899
2017	1150	1188	1206	1229	1299	1327	1353	1250.285714	7.131127376

Given the data above, U ≈ 7.23, S ≈ 0.389, G ≈ -0.166, and the 7Q10 is 832 cfs.

[6] Rossman, L A. *DFlow User's Manual*. U.S. Environmental Protection Agency, Washington, DC, EPA-600-8-90-051 (NTIS 90-225616), 1990.

c) The comment notes that the drainage basin area for USGS gage station (#01100000) is incorrect. EPA agrees with USGS's assessment that 214 square miles should be subtracted from the Lowell gage's upstream drainage area, equaling a total of 4,421 square miles. However, the 214 square miles would also need to be subtracted from GLSD's upstream drainage area (going from 4,839.83 square miles to 4,625.83 square miles) for analysis. After subtracting 214 square miles from both the Lowell gage's upstream drainage area and GLSD's upstream drainage area, the 7Q10 is 871 cfs, as opposed to 869 cfs when not subtracting 214 square miles: a difference of 0.2%. This does not result in any change to the dilution factor of 18.2. The updated 7Q10 flow has been used in Responses 6 and 8 below regarding the metals and total phosphorus, respectively.

Comment 4

Total Residual Chlorine: The Draft Permit calculated the total residual chlorine limit with the incorrect dilution factor. Based on the analysis described in item #2 above, the correct dilution factor should be 13.37. Therefore, the total residual chlorine should also be calculated with this dilution factor, resulting in a chronic limit of 147 µg/L and an acute limit of 254 µg/L.
Request: The water quality-based chlorine limits should be calculated as follows:

Chronic limit = Chronic criteria ×dilution factor
=11 µg/L × 13.37 = 147 µg/L

Acute Limit = Acute criteria ×dilution factor
=19 µg/L × 13.37 = 254 µg/L

Response 4

See Response 3. As there has been no change to the dilution factor, there are no changes to the total residual chlorine limits in the Final Permit.

Comment 5

E. Coli Monitoring Requirement: The Draft Permit Part I requires compliance with E. Coli limits for the first time. Although under current operating conditions GLSD has no objection to the change in pathogen criteria from fecal coliforms to E. Coli, GLSD requests 18 months to review plant performance relative to E. Coli, allowing time to adjust disinfection levels if needed, and better understand plant performance under all weather conditions, prior to this new limit becoming effective. However, should GLSD's future operations require a secondary bypass, a further modification of this requirement may be necessary.

Request: GLSD requests that a compliance period of 18 months be provided prior to the new E. Coli limits becoming effective. GLSD also requests that EPA include a reopener provision allowing GLSD to modify the permit in the future should GLSD use the secondary bypass.

Response 5

Recreational use of waters contaminated with microbial contamination can result in human health problems such as sore throat, gastroenteritis, or even meningitis or encephalitis (Cabelli, 1983; USPEA, 1986; Cabelli, 1989; Haile, 1996; Pruss, 1998).

EPA assesses the length of a compliance schedule for E. Coli with these adverse impacts in mind.

EPA agrees that a compliance schedule is warranted, given that this is a new limit. The permittee has not provided any justification for why, specifically, 18 months is required to comply with the limit. Under NPDES regulations, schedules must lead to compliance "as soon as possible." 40 C.F.R. § 122.47(a)(1). The commenter acknowledges that the inclusion of the *E. Coli* requirement will not require any upgrade to the treatment plant, which might have warranted an extended compliance schedule, but instead will only entail operational adjustments. A one-year compliance schedule will allow the permittee to observe and analyze plant performance under a full range of weather conditions—a primary concern of the commenter—and during this time, to adjust and optimize treatment. Therefore, a one-year compliance schedule for *E. coli* has been added to the Final Permit.

The commenter's rationale supporting the request for the inclusion of a reopener provision in the permit which would allow for permit modification in the event of future bypasses of secondary treatment is unclear. Permit conditions related to bypasses of secondary treatment are clearly set forth in Part II.B.4. of the Final Permit. Specifically, Part II.B.4.d. establishes that bypasses are prohibited unless the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; there was no feasible alternative; and the proper notification was submitted. Therefore, should secondary bypasses occur during GLSD's operations, the Permit already includes provisions that address that occurrence. Additionally, to the extent that GLSD requires a modification to the permit, NPDES regulations already provide mechanisms to achieve that end, making an express reopener unnecessary, as well as premature. GLSD is free in the future to request a permit modification should cause exist. There is no need for a reopener provision in the permit or modifications to address bypasses, and there has been no change made to the Final Permit.

Comment 6

Metal Limits: GLSD notes that EPA acknowledged in the Draft Permit Fact Sheet (page 28 and 29) that the ambient metals concentration data relied upon by EPA is not representative of the metals concentrations in the river. EPA states in the Fact Sheet at page 28 of 41 that "During the site visit on March 19, 2019, EPA and MassDEP visited the sampling location where GLSD collects river samples. It was determined the location may not provide data that is representative of the metals concentrations in the river. The river samples were collected with a metal bucket and accumulated debris was visible on the riverbank at the sampling location." As discussed below, GLSD has undertaken a clean sampling program and requests that EPA use this new, more reliable data when determining effluent limitations for metals.

As an initial note, it seems unlikely that two facilities (GLSD and Haverhill) were issued Draft Permits that both include a chronic (monthly average) aluminum limit of 87 µg/L. As different conditions and data underpin each Draft Permit, EPA should explain how the limits were calculated to be identical.

As EPA is aware, EPA cannot rely on outdated and unsuitable data to calculate reasonable potential, and the proposed Aluminum limit is not based in sound science or law. As stated in *Sierra Club v. U.S. E.P.A.*, "EPA stands on shaky legal ground relying on significantly outdated data." 671 F.3d 955, 966 (2012) (holding that it was arbitrary and capricious for EPA to approve an air quality standard based on old data without considering new data and providing an explanation for its choice); *see also Dow AgroSciences LLC v. National Marine Fisheries Service*, 707 F.3d 462, 473 (4th Cir. 2013) (finding that the Fisheries Service acted arbitrarily and capriciously in relying on outdated data, despite receiving newer data, without explaining why it used the older data) (quoting *Sierra Club*); *Zen Magnets, LLC v. Consumer Product Safety Commission*, 841 F.3d 1141, 1149-50 (10th Cir. 2016) ("In general, where there is a known and significant change or trend in the data underlying an agency decision, the agency must either take that change into account, or explain why it relied solely on data pre-dating that change or trend.") (listing cases); *District Hosp. Partners, L.P. v. Burwell*, 786 F.3d 46, 57 (D.C. Cir. 2015) ("[A]n agency cannot *ignore* new and better data.").

Here, as reviewed by Kleinfelder and OOE, the samples relied upon by EPA were historically collected by GLSD staff with the understanding that the samples were to be used for toxicity testing to determine suitability of the receiving water (Merrimack River) as dilution water for the WET test, or alternately to provide analytical evidence that laboratory dilution water is more appropriate to be used. WET testing involves determining the viability of the daphnia and fat head minnows in a range of effluent concentrations.

A detailed review of GLSD's WET test sample collection method shows that the collection methods were never meant to be used to develop metals limits for NPDES Permits. Sample collection consisted of a GLSD staff member using a half-gallon sized steel pail, attaching a rope to the metal handle, and preparing for travel by coiling the rope and allowing it to drop into the bucket. At this point, the bucket is placed into the back of a vehicle and driven to the sampling site. Once at the site, the employee throws the bucket and rope into the river (see Figure 1) and pulls the bucket back so that the pail does not drag along the bottom of the river. During extremely low summer flows, it is not always possible to guarantee the bucket does not have contact with the river bed. The water sample is then transferred to a plastic container that has been provided by the WET testing lab and brought back to the lab.

This method of ambient river water collection would, at best, be considered marginally adequate to meet the Educational/Stewardship-level (lowest level and quality samples) as outlined in the MassDEP's Quality Management Plan[7] (MQMP). The five years of metals data based on these samples that the EPA used in calculating reasonable potential for metals effluent limits do not come close to meeting the rigor (i.e., accuracy, precision, frequency, comparability, overall confidence, etc.) required for use in waterbody assessments or TMDL development.

After becoming aware of the ambient river water collection method used by GLSD staff, EPA determined that the quarterly WET toxicity data used for a reasonable potential calculation (from January of 2014 through October of 2018) is not representative of the metals concentrations in the river as stated in the draft permit 2019 Fact Sheet, page 28 and 29 of 41 (quoted above).

[7] https://www.mass.gov/guides/water-quality-monitoring-quality-management-program

Figure 3. GLSD Staff Taking WET Samples.

Clean Sampling Program

To provide more reliable metals data, GLSD has contracted with Rick Cantu of OOE to develop and execute a clean sampling program to analyze ambient water quality in the Merrimack River, as well as effluent water quality from the WWTF. OOE reviewed the current sampling practices described above and developed clean sampling protocols and a quality assurance project plan (QAPP) based on a previous program successfully implemented for "Merrimack River Aluminum Study" for Manchester, NH. Key aspects of the clean sampling program are:

- Based on EPA Method 1669 guidance, OOE and GLSD reviewed three sampling locations and believed the most appropriate location was the current one used for WET test ambient Merrimack River sample collection. This site has an open area with no tree canopy cover, is well over 1,000 feet from the upstream bridge and has a small sloping shelf for easy access to the middle of the river during flows approaching 7Q10. This location complies with EPA Method 1669 guidance and generally avoids impacts from the nearby highway and commuter train while considering the impact of river hydraulics at varying flows;
- OOE and GLSD developed clean sampling protocols for both river and final effluent composite sampling and testing with location specific considerations (QAPP is attached

as Attachment 3). 'Clean Techniques' assure metals-free sample containers, provide a higher level of assessment for ambient contaminants, require a specific outline of sampler dress code to assure no stray introduction of contaminants along with detailed sample collection protocol and quality assurance steps;

- The clean sampling program uses Enthalpy Laboratory to provide the sample bottles, preparation of samples, and analytical services. Enthalpy complies with EPA Method 1669 for sampling preparation;
- GLSD initiated ambient water and effluent discharge sampling in May 2019. The average daily flow in the Merrimac River upstream of the WWTF outfall discharge location varied from 6,680 to 12,600 cubic feet per second (CFS). This value is nearly 7-13 times the 7Q10 flow of 996 cfs (643 million gallons per day (MGD)). None of the samples were collected during a low flow period.

  River samples using clean sampling techniques have been collected since May 21, 2019. The water quality data is summarized in Attachment 4 and the detailed laboratory reports are included in Attachment 5. GLSD will continue to collect samples during the summer of 2019 and submit the data to EPA as stated in the Fact Sheet and as stated by Dan Arsenault of EPA in his June 25, 2019 email to GLSD ("[EPA] will accept and consider additional sampling data submitted by GLSD after the close of the comment period and before issuance of the final permit. However, note that we will not accept additional comments after the close of the comment period").

Data Summary

Figure 4 plots copper concentrations from the 2014 to 2018 WET ambient river samples and the recent samples using clean sampling techniques.

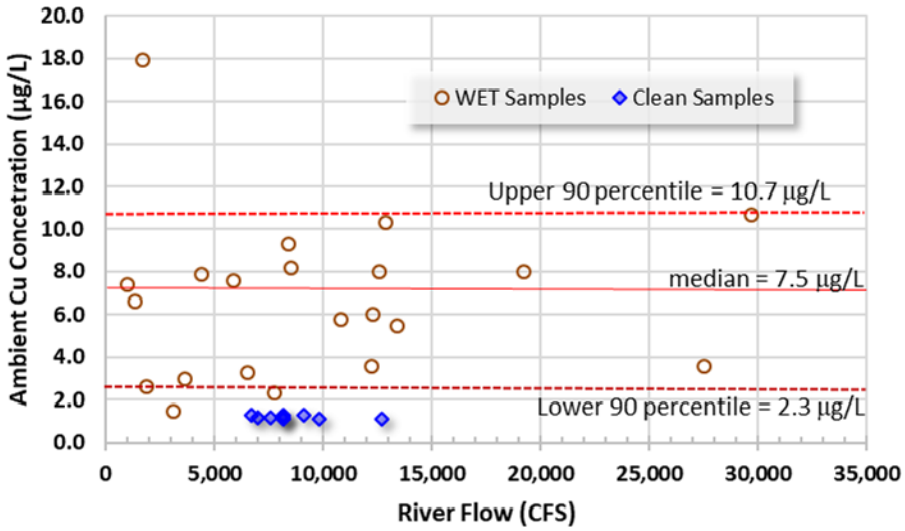


Figure 4. Comparison of Ambient Copper Concentration Between WET Samples and Clean Samples.

The WET sample results vary greatly with a median concentration of 7.5 µg/L while upper and lower 90th percentiles are 10.7 µg/L and 2.3 µg/L.

In comparison, the clean sample results are consistently below the lower 90th percentile of the WET sampling results. This shows that the WET sample results are unreliable and became contaminated during sampling and/or analysis processes while the clean sample results are more representative of the metal concentrations in the river.

In addition to mispurposed sampling techniques previously used by GLSD (appropriate for WET Testing, not metals testing), another source of elevated metal concentration could be from resuspension of particulate matters in the sediment, due to agitation or scouring of the stream bed because of high stream flow. Under high flow conditions, disturbing the streambed could cause sediment to enter the sample bottle, resulting in erroneous data. In accordance with the USGS's Field Manual for the Collection of Water-Quality Data,[8] these data should be discarded.

Figure 5 shows that WET samples had erroneously high aluminum concentrations during high flow periods when the river flow was 20 times or more above the 7Q10 flow. Based on the data analysis described above, the WET test data is unreliable and not representative of river metal concentrations. As shown in Figure 5, the WET sample results are scattering in a range of an order of magnitude between 0.058 mg/L and 1.12 mg/L while the clean sample results have been consistent in a relatively smaller range between 0.072 and 0.11 mg/L even though the river flow has fluctuated between 6,680 and 12,600 cfs.

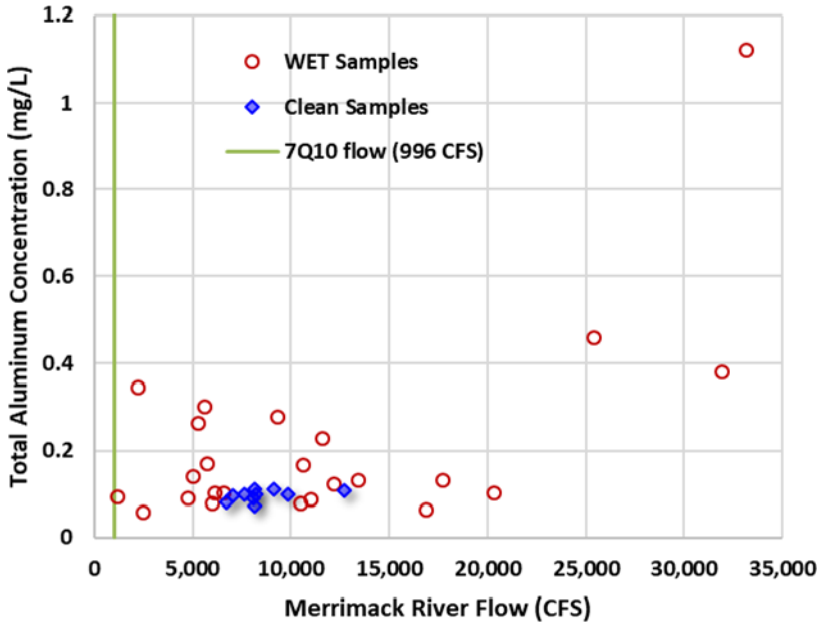


Figure 5 Comparison of Ambient Aluminum Concentration Between WET Samples and Clean Samples.

[8] USGS, National Field Manual for the Collection of Water-Quality Data, Techniques of Water-Resources Investigations, Book 9, Handbook for Water-Resources Investigations.

Similar to the aluminum data, other metal testing results also show a similar pattern with clean sampling results within more consistent, narrow ranges.

Therefore, the clean techniques sample testing results should be used to calculate the acute and chronic exposure conditions for determination of reasonable potential.

Reasonable Potential Determination for Tested Metals

To account for variation in effluent monitoring data, Kleinfelder used EPA's statistical approach (lognormal distribution model) to calculate 95th percentile concentration level for the metals of concern. The upper limit for metals in the effluent and the median metal concentrations in the Merrimack River upstream of WWTF outfall are summarized in Table 1.

Calculation of ambient river metal concentrations at the WWTF outfall location under acute and chronic conditions is based on the following formula.

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

Where:
C_d = upper bound effluent concentration data (95th percentile)
Q_d = Average Design flow of facility for chronic exposure calculation; Peak design flow for acute exposure calculation.
C_s = Median concentration in Merrimack River upstream of discharge
Q_s = 7Q10 streamflow in Merrimack River upstream of discharge

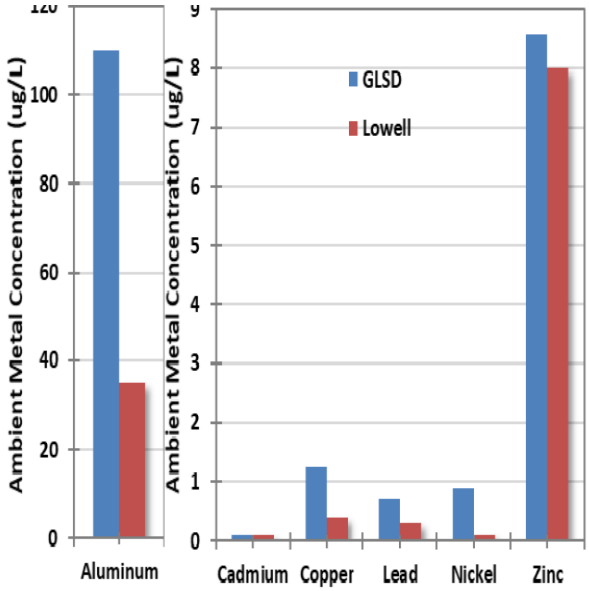
Using the clean sample data collected to-date, the calculated river in-stream ambient concentrations for cadmium, copper, lead, and zinc are lower than the ambient water quality criteria as shown in Table 1. Therefore, there is no need for a water quality based effluent criteria for these metals in GLSD's NPDES permit.

Metal	Q_s	^1C_s	^2Q_d	^3C_d		Q_r	C_r		Criteria		Acute Reasonable Potential	Chronic Reasonable Potential	Limits	
	cfs	µg/l	cfs	Acute (µg/l)	Chronic (µg/l)	cfs	Acute (µg/l)	Chronic (µg/l)	Acute (µg/l)	Chronic (µg/l)	Cd & Cr > Criteria	Cd & Cr > Criteria	Acute (µg/l)	Chronic (µg/l)
Aluminum	996	99.5	80.5 / 201	71	71	1,076.5	105.32	97.37	750	87	N	Y	N/A	87
Cadmium		0		0	0		--	--	0.86	0.14	N	N	N/A	N/A
Copper		1.2		7.5	7.5		2.51	1.67	6	4.3	N	N	N/A	N/A
Lead		0.8		0.6	0.6		0.85	0.79	26.1	1	N	N	N/A	N/A
Zinc		6.6		55.6	55.6		16.49	10.26	56.1	56.1	N	N	N/A	N/A

1 Median concentration for the receiving water just upstream of the facility's discharge taken from the clean sample testing data (see Attachment 4).
2 Design flow of 80.5 CFS (52 MGD) was used to calculate Chronic exposure concentration and peak flow of 201 CFS (130 MGD) was used to calculated acute exposure concentration.
3 Values represent the 95th percentile (for $n \geq 10$) or maximum (for $n < 10$) concentrations from the DMR data and/or WET testing data during the review period (see Appendices A & C). If the metal already has a limit (for either acute or chronic conditions), the value represents the existing limit.

The reasonable potential determination using clean techniques sample data is consistent with EPA's analysis for The Lowell Regional Wastewater Utility (Lowell RWWU), which discharges its effluent to the Merrimack River approximately 10 miles upstream of the GLSD WWTF. EPA's reasonable potential determination calculation for the Lowell RWWU[9] included supplemental metal data collected with clean sampling techniques and concluded that there is no reasonable potential for the effluent to exceed the water quality criteria (including aluminum).

As shown in Figure 6, the ambient metal concentrations calculated from GLSD's clean sample data are higher than EPA calculated median ambient metal concentration for the Lowell RWWU, which is likely a result of Lowell sampling during low flow periods versus current higher flow periods during GLSD's sampling. Given the facilities' proximity to each other, it is reasonable to consider the ambient metals concentrations to be similar. It should be noted that the supplemental clean sample data for the Lowell RWWU were collected during low flow periods (1,010 – 6,210 CFS) that are close to 7Q10 flow at its outfall location. It is anticipated that GLSD's clean sample testing results will be close to those of the Lowell RWWU when samples are taken under flow conditions close to 7Q10 conditions.



Based on a detailed evaluation of GLSD's sampling practice for collecting ambient water samples versus an analysis of clean sample testing data, GLSD, Kleinfelder and OOE concluded the following:

- The WET test data (GLSD bucket sample method) is unreliable for use in calculating effluent limits and not representative of ambient river metal concentrations. Therefore, the clean sample testing results should be used to calculate the acute and chronic exposure conditions for conducting a reasonable potential determination.

- River velocity impacts ambient metal concentrations due to resuspension of sediments

- Except for aluminum, the calculated ambient river metal concentrations (cadmium, copper, lead, and zinc) are lower than the ambient water quality criteria. With the addition of the GLSD effluent, a reasonable potential analysis demonstrates that there is no basis to require water quality based effluent limitations.

Request: GLSD requests that EPA rerun the calculations to determine the effluent limitations for Cadmium, Copper and Lead and determine that no effluent limitation is necessary as discussed

[9] Draft NPDES Permit for Lowell RWWU, Permit No. MA0100633. https://www.epa.gov/ma/public-notice-draft-permit-lowell-regional-wastewater-utility-and-csos-co-permittees-town

above for these metals. GLSD also requests that EPA rerun its analysis of the aluminum effluent limitation and adjust the limitation accordingly based on the above.

Attachment 4

Table 1. Summary of Clean Sampling Program Results – Ambient River Water Quality

Sampling Date	River Flow (CFS)	Al (µg/L)	Cd (µg/L)	Cu (µg/L)	Pb (µ/L)	Ni (µ/L)	Zn (µ/L)	TP (µ/L)	Oth-P (µ/L)	DOC (mg/L)	Total Hardness (mg/L as $CaCO_3$)	pH	Trip Blank	Field Blank
5/21/2019	12,700	109	0	1.1	0.7	0.8	59	41	7	4.2	35	7.12	ND all	ND all
6/4/2019	9,120	110	0	1.3	0.8	1	8.2	54	21	6.3	34	7.09	ND all	ND all
6/5/2019	8,190	99	0.8	1.1	0.7	0	5.6	37	16	6.4	35	7.1	ND all	ND all
6/12/2019	8,170	72	0	1.2	0.6	0.9	11	32	16	5	35	7.09	ND all	ND all
6/13/2019	9,820	100	0	1.1	0.7	0.9	5.6	38	21	5.2	33	7.09	ND all	ND all
6/14/2019	8,140	110	0	1.3	0.8	1.3	7.3	46	22	5.4	33	6.99	ND all	ND all
6/18/2019	8,100	91	0	1.2	0.9	1	6.6	50	23	5.8	36	7.03	ND all	ND all
6/19/2019	7,590	100	0	1.2	0.9	1	6	50	10	5.9	37	7.07	ND all	ND all
6/26/2019	6,680	80	0	1.3	1.1	1.1	6.6	64	18	5.7	35	7.07	ND all	ND all
6/27/2019	7,020	95	0	1.2	0.9	1.2	5.7	64	18	10	35	7.11	ND all	ND all
Median		**99.5**	**0.0**	**1.2**	**0.8**	**1.0**	**6.6**	**48.0**	**18.0**	**5.8**	**35.0**	**7.1**		
Average		**96.6**	**0.1**	**1.2**	**0.8**	**0.9**	**12.2**	**55.1**	**17.2**	**6.0**	**34.8**	**7.1**		

Table 2. Summary of Clean Sampling Program Results – WWTF Effluent Water Quality

Sampling Date	Al (µg/L)	Cd (µg/L)	Cu (µg/L)	Pb (µ/L)	TP (µ/L)
5/21/2019	51	0	7.5	0.6	448
6/4/2019	40	0	5.5	0.5	217
6/5/2019	54	0	5.9	0.6	239
6/12/2019	41	0	4.8	0.4	235
6/13/2019	71	0	5.5	0.5	314
6/14/2019	50	0	5.9	0.4	147
6/18/2019	41	0	5.8	0.5	220
6/19/2019	58	0	5.8	0.4	238
6/26/2019	40	0	3.9	0.4	139
6/27/2019	42	0	4.2	0.4	157
Maximum	**71.0**	**0.0**	**7.5**	**0.6**	**448**
Minimum	**40.0**	**0.0**	**3.9**	**0.4**	**139**
Average	**48.8**	**0.0**	**5.5**	**0.5**	**235**

Response 6

As stated in the Fact Sheet (at 28), EPA agrees that the ambient whole effluent toxicity ("WET") testing data, in this case, may not have yielded representative data and appreciates GLSD taking the initiative to perform clean sampling techniques to provide

more representative data. EPA has conducted a new reasonable potential analysis for aluminum, cadmium, copper and lead using the data provided in Attachment 4 of the comment letter (from Tables 1 and 2 shown above)[10]. The results of this reasonable potential analysis are presented below. The results of this reasonable potential analysis are presented below. Note that the equation used in this analysis and the definition of each term are the same as the Fact Sheet at 28.

Metal	Q_s	C_s [1]	Q_d	C_d [2]		Q_r	C_r		Criteria		Acute Reasonable Potential	Chronic Reasonable Potential
	cfs	µg/l	cfs	Acute (µg/l)	Chronic (µg/l)	cfs	Acute (µg/l)	Chronic (µg/l)	Acute (µg/l)	Chronic (µg/l)	C_d & C_r > Criteria	C_d & C_r > Criteria
Aluminum	871	80.0	80.5	155.2	155.2	951.5	86.4	86.4	750	87	N	N
Cadmium		0.0		1.0	1.0		0.09	0.09	0.84	0.14	N	N
Copper		1.3		18.3	18.3		2.7	2.7	5.9	4.3	N	N
Lead		0.7		2.5	2.5		0.9	0.86	25.3	0.99	N	N

[1]Median concentration for the receiving water just upstream of the facility's discharge.
[2]Values represent the 95th percentile concentrations of the effluent.

Only when both the discharge effluent concentration (C_d) and the resultant downstream concentration (C_r) exceed the applicable criterion is there reasonable potential for the discharge to cause, or contribute to, an excursion above the water quality standard. For all four metals, the resultant downstream concentrations do not exceed the applicable criteria. Therefore, none of the metals have reasonable potential and no metals limits are necessary in the Final Permit.

Monitoring for these metals shall continue to be required as part of the quarterly WET tests. EPA notes that any monitoring requirements in the permit is intended to be representative and may be used in the next permit reissuance process for the purpose of conducting a reasonable potential analysis and, if necessary, establishing effluent limits.

Comment 7

Aluminum Implementation: As discussed above, the Draft Permit includes a chronic (monthly average) aluminum limit of 87 µg/L. In addition to the comment above, GLSD objects to the imposition of a limit for the following reasons:

a) EPA has recently adopted new aluminum criteria, which preliminary indications would result in a substantially higher criteria, and quite possibly the WWTF will no longer show cause or reasonable potential for the imposition of a water quality based effluent limitation for this metal.

b) As stated in the Fact Sheet: "Because MassDEP has indicated to EPA that its planned revisions to its aluminum criteria will be based on EPA's recommended criteria, EPA reasonably expects its new criteria may also be higher." The Fact Sheet further says: "If new aluminum

[10] GLSD submitted supplemental data taken throughout July and August 2019 (via email on August 26, 2019 and September 6, 2019) which have also been included in this reanalysis and are included in the administrative record.

criteria are adopted by Massachusetts and approved by EPA, and before the final aluminum effluent limit goes into effect, the permittee may apply for a permit modification to amend the permit based on the new criteria." Although EPA acknowledges that the aluminum criteria specified in the Draft Permit is not necessary and will be significantly higher, it places the onus on GLSD to (1) take steps to comply with the criteria should MassDEP delay or not complete the planned revisions; or (2) apply for a permit modification.

c) GLSD understands the need to invest in upgrades that will make a difference to the environment and support water quality being met in the receiving water body; however, there is simply no rational reason to impose a limit for aluminum at this time. Aluminum is not causing water quality to be compromised since both EPA and MassDEP agree that the current criteria in Massachusetts is not appropriate. To require a limit, as a "paper exercise" while waiting for MassDEP to change their regulation is wasteful not only of the time and expense for GLSD, but for time and unnecessary effort of MassDEP and EPA, whose efforts are spent imposing (and then, hopefully rescinding) an effluent limitation that has absolutely no scientific support as appropriate criteria.

d) Although GLSD is appreciative of the 36-month compliance schedule that, according to the Fact Sheet, was given to allow Massachusetts time to adopt new criteria and the final permit to then be modified, once the limit is effective, rescinding this limit would be subject to stringent anti-backsliding and anti-degradation regulations, which may prevent any hope of this "paper" limit ever being removed or modified.

e) Finally, while the 36-month compliance schedule provided in Part I.H gives the appearance of a "wait and see" approach, once this limit is in the final permit, GLSD must immediately begin planning to meet it, because the Draft Permit allows no other option. To meet the new aluminum limit, GLSD will need to engage an engineering firm to evaluate the current treatment process at the facility, determine the type and extent of upgrade needed to meet the limit, design the upgrade necessary, prepare bid documents and issue and award bids for construction, and complete the construction necessary.

This process, in and of itself, requires 36 months. Therefore, GLSD is now forced to spend money to begin the evaluation and upgrade process for a limit that state and federal agencies agree is not necessary.

Request: Remove the environmentally unnecessary and costly aluminum effluent requirement from this Draft Permit. If EPA insists on keeping the effluent limitation, modify the compliance schedule in Part I.H.1 to allow for a 96-month compliance schedule that will:

> a) Provide more time for Massachusetts to adopt the new criteria or, if necessary, provide more time for the co-permittees to modify their water treatment systems at significant cost, which will be necessary to meet the limit at the WWTF if MassDEP does not modify the aluminum criteria as expected at this time;
> b) Prevent the need of GLSD to immediately begin planning and implementing the upgrades necessary to meet this unnecessary limit; and

c) Remove the requirement that GLSD must apply for a permit modification and instead allow for a substitution of the criteria following MassDEP's completion of its planned revisions.

Response 7

See Response 6. The aluminum limit and compliance schedule have been removed from the Final Permit.

Comment 8

Total Phosphorus: The Draft Permit contains an unnecessary effluent discharge concentration limit of 0.53 mg/L Total Phosphorus (TP). As discussed below, GLSD requests that EPA remove the TP limit and require only a reporting requirement.

Inappropriate Application of Massachusetts Narrative Standards for Nutrients: The Massachusetts Surface Water Quality Standards (MA SWQS) at 314 CMR 4.05(5)c, do not contain a numeric limitation applicable to this waterbody segment, but do contain a narrative criteria for nutrients as follows:

"Nutrients. Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site-specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00. Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses. Human activities that result in the nonpoint source discharge of nutrients to any surface water may be required to be provided with cost effective and reasonable best management practices for nonpoint source control."

The narrative criteria raise several issues that have not been appropriately addressed in the Draft Permit. These issues include:

- The Draft Permit fails to establish what specific existing and designated uses are impaired; and

- The Draft Permit fails to establish whether potential eutrophication is naturally occurring or man-made, or due to point source discharge, non-point sources, or other factors.

No Documented Impairment of Aquatic Life, Recreational, or Aesthetic Uses: At this time, there is no documented impairment attributable to phosphorus in the Merrimack River downstream of the GLSD wastewater discharge. Between 2004 and 2016, the United States

Army Corps of Engineers (USACE)[11] sponsored a study conducted by CDM Smith that included extensive monitoring of water quality conditions in the Merrimack River (the USACE Study,[12]) all of which was conducted with an EPA-Approved Quality Assurance Project Plan (QAPP) for field work, laboratory procedures, and quality assurance provisions.

Aquatic Life: During the first and third phases of the 3-phase USACE Study, dissolved oxygen was monitored in the river, including numerous sites in Lawrence and downstream through the estuary in Newburyport. The dissolved oxygen consistently measured well above the required Massachusetts standard of 5.0 mg/L, according to the predominant method of in-situ field measurements and supplemental lab testing (Winkler Titrations) to validate the field measurements. These consistent observations, over more than ten recent years, refute any claim that aquatic life in the Merrimack River is impaired, or in danger of becoming impaired.

CDM Smith's Final Phase I Summary Report entitled "Merrimack River Watershed Assessment Study – Final Phase I Report" (September 2006) states in Sections 4.2.4.1 and 4.2.4.2 that for both dry weather and wet weather, "the river and its tributaries generally satisfy water quality standards for dissolved oxygen in both states." The supporting data is included in CDM Smith's Report to the USACE entitled "Merrimack River Monitoring Report, May 2006." Both referenced reports are publicly available.

CDM Smith's Final Phase III Summary Report entitled "Merrimack River Assessment Study, Phase III Final Report" (February 2019) confirms the conclusion from Phase I with data obtained within the last 5 years. Figure 3-22 of this report illustrates that dissolved oxygen measurements (in-situ) remain well above the threshold of 5.0 mg/L in the entire reach from the GLSD discharge to the estuary in Newburyport, and in fact is almost always above 6.0 mg/L. This includes samples during which the mainstem river was at a low flow of 1840 cfs, or approximately twice the 7Q10 value on June 25, 2014**.** The supporting data for these graphs are included in CDM Smith's report entitled "Merrimack River Watershed Assessment Report, Phase III Final Monitoring Data Report (2017)." Both of the cited reports have been published by CDM Smith as Final and are available to EPA as a recognized study partner. The USACE plans to publish its own summary assessment and publish CDM Smith's final reports later this summer or fall (2019).

Recreational Uses and Aesthetics: The same studies cited above document that chlorophyll-a levels can, at times, exceed generalized guidance levels for US rivers. However, these guidance

[11] The findings throughout these comments are based on data and interpretations published by the USACE's consultant, CDM Smith. USACE has not yet published its own interpretation.

[12] GLSD understands that the USACE, at the request of the City of Haverhill and GLSD, has provided EPA with electronic copies of all available reports, including the summary reports prepared by CDM Smith, and all underlying sample data and laboratory reports. GLSD also understands that EPA, as a study partner, has access to the entire Merrimack River Study, including the summary reports and all supporting data through a data room prepared by the study consultant, CDM Smith. As these reports are integral to issuance of any permit for the Merrimack River, GLSD requests that to the extent that these reports are not in the administrative record already as part of the underlying information that EPA relied upon prior to issuance of the Draft Permit, that the reports be incorporated in the record. In addition, due to the voluminous nature of the reports and underlying sampling results, GLSD incorporates by reference these reports into these comments and is providing EPA with electronic copies of the reports (Attachment 6).

levels are generalized and intended for application only in the absence of site-specific documentation of the health or impairment of a water body and its uses. They do not apply to all rivers uniformly, and in fact are not intended for use when sufficient site-specific data are available to characterize the health or impairment of a water body, as is the case with the Merrimack River. During the approximately 13-year period of active field work supporting the USACE Study, field crews did not report algae blooms in the river or estuary. Unless there is documented evidence of algae blooms or a combined set of factors showing such blooms are likely, it cannot be stated that the river is impaired by nutrients for other uses beyond aquatic habitat, such as recreation or aesthetic value. There are no applicable state or federal regulations for nutrient levels or chlorophyll-a levels, both of which are indicators of potential impairment but which, on their own, do not constitute actual impairment. Documented evidence of harmful algae blooms in the Merrimack (or dissolved oxygen levels below 5.0 mg/L) would be needed to apply discharge limits predicated on the causal relationship between chlorophyll-a or phosphorus levels and actual use impairment.

Reasonable Potential for Impairment: On page 23 of the Fact Sheet, EPA states that "EPA is not aware of evidence of factors that are reducing eutrophic response in this segment of the Merrimack River downstream of the discharge." **We request clarification on the extent of investigation that EPA used in coming to this conclusion.** The data from the USACE Study referenced above, as described in CDM Smith reports to the USACE, shows that for this reach of the river, 0.1 mg/L of TP is far less likely to cause eutrophication than it may be in other water bodies. This may be because the river flows swiftly and does not allow sufficient time for nutrients to impair the water (see further discussion on travel times below), and/or because the river passes through rapids frequently enough to remain well oxygenated. This evidence, and the unique flow dynamics of the Merrimack, must be acknowledged in determining reasonable potential for impairment.

Fundamentally, Gold Book[13] standards that represent thresholds of reasonable impairment potential are not universally applicable. Many were developed for water bodies in warmer climates, with longer residence times than the Merrimack, and with different organic growth dynamics. That said, application may be appropriate in situations for which no other data or evidential facts are available to characterize the health of a water body. In this instance, ample site-specific data and evidence is available to establish a more accurate threshold for reasonable impairment.

This intended use of Gold Book standards for TP does not apply in the Merrimack River, where an abundance of site-specific data over wide ranges of water flow rates and seasonal temperatures in recent years are a more precise and more defensible indicator of the water's health and eutrophication potential.

As stated in the Gold Book, "Evidence indicates that: (1) high phosphorous concentrations are associated with accelerated eutrophication of waters, when other growth-promoting factors are

[13] By way of background, under section 304(a) of the CWA, EPA is required to publish and periodically update ambient water quality criteria that reflect the "latest scientific knowledge" and that can be used by states to develop water quality criteria for application within their borders. 33 U.S.C. § 1314(a). In accordance with section 304(a), EPA published nationwide water quality criteria, known as the "Gold Book Standards," in 1986.

present; (2) aquatic plant problems develop in reservoirs and other standing waters at phosphorous values lower than those critical in flowing streams; . . . (4) phosphorous concentrations critical to noxious plant growth vary and nuisance growths may result from a particular concentration of phosphate in one geographical area but not in another." (p. 243 of PDF) (emphasis added).[14]

Further, the "majority of the Nation's eutrophication problems are associated with lakes or reservoirs and currently there are more data to support the establishment of a limiting phosphorous level in those waters than in streams or rivers that do not directly impact such waters. There are natural conditions, also, that would dictate the consideration of either a more or less stringent phosphorous level. Eutrophication problems may occur in waters where the phosphorous concentration is less than that indicated above and, obviously, such waters would need more stringent nutrient limits. Likewise, there are those waters within the Nation where phosphorous is not now a limiting nutrient and where the need for phosphorous limits is substantially diminished." (p. 247).

"There are two basic needs in establishing a phosphorous criterion for flowing waters: one is to control the development of plant nuisances within the flowing water and, in turn, to control and prevent animal pests that may become associated with such plants; the other is to protect the downstream receiving waterway, regardless of its proximity in linear distance." (p. 247). EPA hasn't established the reasonable potential for either.

Finally, the Gold Book states that "No national criterion is presented for phosphate phosphorous for the control of eutrophication." (p. 249)

Figures 3-19 (TP), 3-20 (chlorophyll-a), and 3-22 (dissolved oxygen) of the above-referenced report by CDM Smith to the USACE, "Merrimack River Assessment Study, Phase III Final Report" (February 2019) should be used in the determination of reasonable potential for impairment. The figures show that while TP downstream of GLSD sometimes (but not always) exceed the Gold Book standard of 0.1 mg/L TP, and while chlorophyll-a levels in the same reach sometimes (but not always) exceed guidance levels used by the State of New Hampshire (but not necessarily by Massachusetts), neither situation results in dissolved oxygen impairment or documented detrimental algae blooms, which are the ultimate measure of use attainment or impairment. The supporting data for these graphs are included in CDM Smith's report entitled "Merrimack River Watershed Assessment Report, Phase III Final Monitoring Data Report (2017)." Both cited reports have been published by CDM Smith as Final and are available to EPA as a recognized study partner. **Given the site-specific data, which are recent and clear in their depiction of river health, EPA cannot attempt to use the Gold Book's 0.10 mg/L criterion. This is especially true given that such an approach contradicts the very principles discussed in the Gold Book.**

Application of the Gold Book Standard for Phosphorus: Scientific studies during the past 15 years confirm that the EPA Gold Book standard of 0.1 mg/L of TP in the river is over-protective, for reasons noted above (principally, that higher levels are frequently observed but without any corresponding evidence of impairment). The evidence is in the monitoring data contained within

[14] https://www.epa.gov/sites/production/files/2018-10/documents/quality-criteria-water-1986.pdf.

CDM Smith's report to the USACE, "Merrimack River Assessment Study, Phase III Final Report" (February 2019). The instream sampling data presented in the report (figures 3-19 and 3-22) clearly show that the instream TP concentration in this reach of the river can be well above the Gold Book standard of 0.1 mg/L (up to approximately 0.17-0.18 mg/L) while still keeping dissolved oxygen well above the threshold of 5.0 mg/L. Simulation modeling, per figures 5-8 and 5-11 of this report suggest that an instream TP concentration of 0.25 mg/L is sufficient to keep dissolved oxygen well above 5.0 mg/L in this reach of the river. Courts have acknowledged that although EPA may use the Gold Book Standards when developing a limit, EPA should not blindly follow the Gold Book where site-specific data exists. *See, e.g., Upper Blackstone Water Pollution Abatement Dist. V. U.S. E.P.A.*, 690 F.3d 9, 31 (2012) (affirming use of Gold Book-recommended in-stream concentration because EPA's review included an examination of "additional site-specific data, including local water quality studies . . . ."). **Prior to issuance of a final permit, EPA must review the report and explain why the results from this federally-funded study, where EPA was a study partner, were not accounted for in the issuance of this Draft Permit because this site-specific data provides a more appropriate view of the conditions of the river**. In accordance with the measured river data, GLSD proposes an instream target for this reach of the Merrimack River of 0.17 mg/L. Anything less than this is unjustifiable given the availability of this site-specific data.

Further, the Draft Permit says that "EPA uses nationally recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus." EPA must explain:

- Was there any other "nationally recommended criteria and other technical guidance" that EPA used in addition to the "Gold Book"? If not, why not, since all waterways are unique?

- What is the specific cause of any determined risk of eutrophication in the waterway? Is it naturally occurring? Due to non-point source? Due to excessive nitrogen? Other factors?

Ambient Conditions: The proposed phosphorus discharge limit is conditioned on ambient conditions as measured recently – that is, before the issuance of this and other permits. Allowable discharge thresholds are computed by EPA as a function of current upstream ambient conditions, target phosphorus concentrations downstream, and the dilution factor representing the relationship between the discharge flow and the 7Q10 flow in the river. Upon implementation of upstream controls on TP, which are currently discussed and/or promulgated in draft form for Lowell and upstream Massachusetts tributaries, and for upstream discharges in New Hampshire through New Hampshire DES, the calculation for GLSD will become immediately invalid and over-prescriptive.

EPA has long advocated for a "watershed approach" to water quality management, and while permitting in Region 1 is still accomplished along political jurisdictions and not by watershed divides, surely each permit must necessarily consider the impacts of other permits upstream that would affect the anticipated near-term ambient conditions. In this way, the watershed ethic that EPA has endorsed can be applied in principle for comprehensive management of the Merrimack Watershed. Even if the issuance of permits remains individualized to each discharger, the

relationships between each discharger and all others can and must be a foundational driver of future discharge thresholds. **EPA therefore must estimate future near-term ambient conditions upstream of the GLSD discharge as a function of other upstream permit requirements issued by the same agency (and New Hampshire DES) before issuing a permit for GLSD that will be immediately invalidated by the expected change in the input to EPA's calculation due to its issuance of other similar permits.**

CDM Smith's report to the USACE, "Merrimack River Assessment Study, Phase III Final Report" (February 2019) provides additional insights into likely effects of reducing upstream discharge loads throughout the watershed. Figure 5-8 of CDM Smith's report shows the anticipated (simulated) response of the river to the hypothetical scenario in which all wastewater discharge facilities in NH and MA (including GLSD) discharge with a TP concentration of 1.0 mg/L (or current average discharges, whichever is lower). **These results were simulated for extreme low flow conditions (94% of 7Q10 at Lowell) and suggest that ambient concentrations just upstream of GLSD could decrease by up to 65% if upstream discharges are controlled to 1.0 mg/L TP or maintained at their current levels if already lower.** The figure is based, in part, on the accumulated changes in ambient conditions resulting from the simulated reductions in load throughout the watershed. **The EPA should review the models and results, as presented in the report referenced above and in each of the referenced reports below, and account for the expected decrease in ambient phosphorus conditions due to other permit requirements upstream of this Draft Permit**.

EPA should also consider the following reports about simulation modeling:

- "Final Lower Merrimack Model Update Validation Technical Memorandum," prepared by CDM Smith for the USACE. 2017.

- "Upper Merrimack and Pemigewasset River Study Model Development Report," prepared by CDM Smith for the USACE. 2018.

- "Merrimack river Watershed Assessment Study Simulation Model Development Report," prepared by CDM Smith for the USACE. 2006.

- "Merrimack River Watershed Assessment Study Phase III – HSPF Model Updates," Technical Memorandum prepared by CDM Smith for the USACE, August 20, 2013.

Travel Time at 7Q10: The US Department of Interior (USDOI) issued a report on the Merrimack River entitled "Report on Pollution of the Merrimack River and Certain Tributaries – Part II – Stream Studies – Physical, Chemical, and Bacteriological (August 1966)." The section beginning on Page 31 entitled "Time of Stream Travel" reports on measured travel time in the river over a range of flow conditions. While this report is old, its findings were re-examined with the purpose of validation with physical measurements as part of the recent USACE study. The report to the USACE, issued by CDM Smith, is entitled "Merrimack River Watershed Assessment Study, Hydrology and Hydraulics Assessment (March 2004)," and is available with permission from USACE and designated study participants if EPA wishes to validate. Figure 14 of the USDOI study shows the time of travel in the river downstream of the Essex Dam in

Lawrence (which is upstream of the GLSD wastewater treatment facility discharge) to Haverhill and all the way to Newburyport.

We first examined the time of travel to Haverhill, where, by issuance of its draft permit to Haverhill in June 2019, EPA suggests that the river is not impaired for nutrients, as no nutrient limitation is being proposed for the Haverhill POTW. Even under low flow conditions of 1,000 cfs, which approximates the 7Q10 flow in the river at this location, the time of travel between the Essex Dam and Haverhill is only 2 days. **Current nutrient discharge rates at GLSD cannot be reasonably linked to eutrophication within 2 days while flowing into a reach that is NOT impaired in Haverhill.**

We next examined the time of travel to the Newburyport Estuary from the Essex Dam, which under the same low-flow condition of 1,000 cfs is reported by the USDOI as 9 days. By 22 definition, the 7Q10 flow lasts for only 7 days. Given that water effectively flows out of the system within this 7-day event that occurs once every ten years, and that dissolved oxygen in this reach was measured well above the threshold of 5.0 mg/L under similar low flow conditions in 2014, **an explanation is needed for why current nutrient discharge rates at GLSD could legitimately be considered as reasonable potential for impairment, in a water body (from Haverhill to Newburyport) which is not considered impaired by EPA.**

Dilution Factor: As documented in accompanying comments, GLSD believes that the 7Q10 flow, drainage area, and corresponding dilution factor used by EPA in determining the allowable TP level are incorrect. **At a minimum, the TP threshold should be recomputed with the correct input information,** though GLSD also seeks explanations for all the other factors listed above in the determination of the TP threshold as it stands in the draft permit. See proposed recalculation in the following sections, as it is a function of several factors, and not just the 7Q10 flow.

Application of Current Clean Samples for Ambient Condition: GLSD has been applying proper clean sampling techniques and collecting ambient TP data upstream of its discharge beginning in May 2019, and will continue through the summer of 2019. Already, as they have become available, these data have been supplied to EPA, and will continue to be supplied (even beyond closure of the public comment period) as they become available. These new values have not been included by EPA in the calculations issued in the Draft Permit (the agency has used a median value of 0.060 mg/L based on older data). These new data suggest lower ambient levels, and should be applied in the calculation, in addition to the further expected reduction of ambient conditions as detailed above due to the expected reductions in upstream discharges as outlined in other draft permits. Between May 21, 2019 and June 26, 2019, 10 clean ambient samples of TP were collected upstream of the GLSD discharge (although GLSD has provided the data for the initial rounds of sampling, all of the data collected to date is provided as an attachment to these comments to be included in the administrative record), with a median concentration of 0.048 mg/L, which is lower than the value of 0.060 used in the EPA calculation using 2017 EPA data (Page 24 of the Fact Sheet). Furthermore, these measurements do not account for additional expected reductions due to enforcement of lower TP effluent limits proposed by EPA and NHDES upstream. At a minimum, the ambient conditions used in calculating the effluent

phosphorus limit should use both data sets, as outlined in the table below, resulting in a median ambient TP concentration of 0.052 mg/L:

Ambient Total Phosphorus Upstream of GLSD

Date	TP (mg/L)	**Data Source**
7/31/2017	0.050	EPA
8/14/2017	0.054	EPA
8/29/2017	0.062	EPA
9/14/2017	0.057	EPA
9/26/2017	0.090	EPA
10/11/2017	0.087	EPA
5/21/2019	0.041	GLSD
6/4/2019	0.054	GLSD
6/5/2019	0.037	GLSD
6/12/2019	0.032	GLSD
6/13/2019	0.038	GLSD
6/14/2019	0.046	GLSD
6/18/2019	0.050	GLSD
6/19/2019	0.050	GLSD
6/25/2019	0.064	GLSD
6/26/2019	0.064	GLSD
MEDIAN	**0.052**	

GLSD expects any future permit condition to be based on data inclusive of current ambient measurements AND expected near-term reductions in ambient conditions due to permits being issued by EPA and NHDES to upstream discharges, and requests that EPA explain why or why not the expected impacts of regulatory action upstream are included in GLSD's threshold. See proposed alternative calculation in the following sections, as it is a function of additional factors beyond the ambient concentration.

In addition to the changes to the ambient sampling program discussed herein, EPA must also consider how the clean sampling program impacts GLSD's effluent sampling results. As part of the clean sampling program, GLSD has new protocols as outlined in the attached QAPP (Attachment 3). The new available data (Attachments 4 and 5) indicates that levels of phosphorous in the effluent from the WWTF are lower than the samples relied upon by EPA in calculating the limit in the Draft Permit. The clean sampling program is a significant operational change at the WWTF and shows that the previously submitted data does not reflect the amount of phosphorous in the facility's current effluent. For these reasons, EPA should use the new data, which GLSD continues to collect and will provide to EPA as requested and allowed by EPA in the Fact Sheet, and disregard the data relied upon by EPA prior to GLSD's implementation of the clean sampling program.

Alternatives to TP Thresholds: The comments above, individually and in aggregate, suggest that a TP threshold for GLSD of 0.53 mg/L is unwarranted and over-prescriptive for the following reasons:

a. There is no documented evidence of nutrient-induced impairment downstream of GLSD.
b. To determine "reasonable potential" for impairment, EPA has applied Gold-Book standards, which are intended for use in the absence of current, site-specific data. Current, site-specific data are available for the Merrimack River downstream of GLSD over broad flow ranges and temperature conditions, and these data should be used for a more scientific determination of reasonable potential for impairment instead of the Gold-Book standard.
c. Expected changes in ambient conditions due to similar permits being proposed by EPA and NHDES upstream of GLSD would immediately render the current calculation of GLSD's allowable threshold of 0.53 mg/L as over-prescriptive. Results from simulation modeling (provided by CDM Smith to the USACE as described above), and EPA's own due diligence in estimating expected near-term reductions in ambient phosphorus levels due to new upstream permit requirements must be accounted for in the prescription of a discharge limit for GLSD.
d. Travel time downstream of GLSD to the unimpaired reaches of the Merrimack in Haverhill is on the order of only 2 days during flow conditions that approximate 7Q10 flow. It is not reasonable to associate this with a reasonable potential for nutrient impairment, when no documented impairment exists currently and when the reach flows directly into an unimpaired reach beginning in Haverhill.
e. The dilution factor, watershed area, and 7Q10 flow values used by EPA to determine an allowable discharge threshold for GLSD are incorrect and should be corrected in any calculation of a future phosphorus threshold.
f. Any calculation of allowable discharge thresholds must account for current field data for ambient conditions (in addition to expected reductions in ambient conditions due to issuance of other upstream permits), which have been and will continue to be provided by GLSD to EPA before, during, and after this public comment period.

While GLSD does not see a rational need for a TP discharge limit for the reasons outlined above, we offer the following alternatives:

Alternative 1 – Monitoring Only: Because the river does not exhibit current signs or risks of nutrient impairment, we propose a program that would monitor and report TP in the effluent, as well as TP and dissolved oxygen upstream and downstream of the discharge. This will provide even more focused data that can be used to evaluate trends in the river's health in future years.

Alternative 2 – Correct the Calculation and Re-issue as a Revised Draft Permit with any potential phosphorus discharge threshold imposed as an "Action Level," for further comment and evaluation: At a minimum, if an effluent discharge threshold is to be applied for TP despite the indications to the contrary presented herein, the calculation should be corrected. The value of 0.53 mg/ was computed with flawed and incomplete data:

- The 7Q10 flow and associated dilution factor used by EPA are not correct (see relevant comments elsewhere). The 7Q10 flow for GLSD should be corrected from 869 cfs to 996 cfs, as noted in earlier comments.

- The ambient conditions used in the calculations should account for recent samples of ambient TP upstream of the discharge, which are being continually provided to EPA, but

which were not used in the initial determination of the 0.53 mg/L threshold. When the ten recent clean samples obtained upstream of the GLSD between May 21, 2019 and June 26, 2019 (supplied to EPA but not included in the draft permit conditions) are included in the calculation of a median value along with the six values used by EPA on page 24 of the Fact Sheet, the appropriate median TP concentration is 0.052 mg/L, which should be used instead of 0.060 mg/L based on the availability of new and applicable data. See the table below:

Ambient Total Phosphorus Upstream of GLSD

Date	TP (mg/L)	**Data Source**
7/31/2017	0.050	EPA
8/14/2017	0.054	EPA
8/29/2017	0.062	EPA
9/14/2017	0.057	EPA
9/26/2017	0.090	EPA
10/11/2017	0.087	EPA
5/21/2019	0.041	GLSD
6/4/2019	0.054	GLSD
6/5/2019	0.037	GLSD
6/12/2019	0.032	GLSD
6/13/2019	0.038	GLSD
6/14/2019	0.046	GLSD
6/18/2019	0.050	GLSD
6/19/2019	0.050	GLSD
6/25/2019	0.064	GLSD
6/26/2019	0.064	GLSD
MEDIAN	**0.052**	

- As cited above, recent river monitoring and simulation modeling conclusively demonstrate that instream concentrations of TP in this reach of the Merrimack River can be between 0.17 mg/L (via monitoring) and 0.25 mg/L (via modeling) while still maintaining dissolved oxygen levels well above the threshold of 0.5 mg/L, and without a history of documented detrimental algae blooms. We conservatively suggest that 0.17 mg/L be used as the instream target in lieu of the Gold Book standard of 0.1, because site-specific data clearly supersede the Gold Book standard in this situation.

- When the above modifications are made to the effluent discharge calculation per page 25 of the Fact Sheet, the resultant effluent discharge concentration (C_d) increases from EPA's proposed 0.53 mg/L to 1.63 mg/L. It must be noted, however, that this alternative does NOT account for reasonable expectations of further reductions in ambient conditions due to EPA's and NHDES' imposition of phosphorus discharge controls in other upstream locations, which it is incumbent

upon EPA to estimate and include in any permit threshold for GLSD, and would be reasonably expected to result in a further increase in allowable discharge.

Request: GLSD requests that EPA eliminate the TP effluent limit and require only monitoring. As an alternative, as described above, GLSD requests that EPA rerun the TP calculation and set the limit at a minimum of 1.63 mg/L or 658 pounds per day, with further upward adjustment based on EPA's expected impacts of additional reductions in ambient concentration due to other new permit requirements upstream

Response 8

Prior to offering specific responses to GLSD's comments, EPA observes that its overall approaches to establishing both phosphorus and nitrogen effluent limitations in NPDES permits have been extensively adjudicated over the past fifteen years, and they have been found to be reasonable and upheld by both the Environmental Appeals Board and the United States Court of Appeals for the First Circuit. Petitions for *certiorari* have twice been denied by the United States Supreme Court for Region 1 nutrient permitting (total phosphorus and total nitrogen) decisions under 40 C.F.R. §122.44(d)(1)(vi) in recent years. Arguments similar if not substantively identical to the ones relating to the evidentiary threshold required for reasonable potential; the use of the Gold Book as relevant information in setting phosphorus effluent limitations; 7Q10 and use of dilution; seasonal averaging periods; permit delay based on development of new models or TMDLs; representativeness of data; and others, have been addressed and have been decided in EPA's favor. *See e.g., Upper Blackstone Water Pollution Abatement Dist. v. U.S. Envtl. Prot. Agency*, 690 F.3d 9 (1st Cir. 2012), cert. denied, 133 S. Ct. 2382 (2013); *City of Taunton v. U.S. Envtl. Prot. Agency*, 895 F.3d 120 (1st Cir. 2018), cert. denied, 139 U.S. 1240 (2019). Should GLSD wish to review these decisions, they are available here:

City of Taunton v. EPA (EAB and First Circuit)

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/0A045314B61E682785257FA80054E600/$File/Denying%20Review%20Vol-17.pdf

- https://yosemite.epa.gov/oa/eab_web_docket.nsf/A568248B44D1C63785258053005AEDD0/$File/Opinion%207.9.2018%20(46%20pages).pdf

Upper Blackstone Water Pollution Abatement Dist. v. EPA (EAB and First Circuit)

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/A44361EC4C211B0685257865006EA1EC/$File/Upper%20Blackstone.pdf

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/2D0D249E441A18F185257B6600725F04/$File/October%2018%202017.pdf

In re Town of Newmarket Wastewater Treatment Plant

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/97CCD304C9B7E58585257C3500799108/$File/Newmarket%20Decision%20Vol%2016.pdf

In re City of Attleboro MA Wastewater Treatment Plant

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/D506EBEE22A1035E8525763300499A78/$File/Attleboro.pdf

EPA is both confident in and committed to the overarching decision-making framework for nutrient permitting established by these precedents: administrative and judicial bodies have expressly found EPA's approach to be reasonable under the Act and, for its part, EPA has found the approach in its experience to be workable, expeditious, as well as demonstrably effective in addressing nutrient pollution, in a manner that is neither overly stringent, nor overly lax. For these reasons, as it has done in the past, EPA will vigorously defend its nutrient permitting practices. While drawing on information from the scientific literature and national and regional EPA guidance, EPA also accounts for site-specific facts and circumstances surrounding the discharge and receiving waters in arriving at the permit result. EPA acknowledges that there are a range of alternative technical approaches and opinions when permitting for nutrients to ensure that uses for the waters designated by the Commonwealth for its citizens are achieved; while some of these may have merit, EPA's existing approach has been proven to have merit. EPA, accordingly, has discerned no persuasive reason to abandon the protective approach that has been adopted in the Draft Permit, and that has proven effective in other permitting initiatives, for the *far* less stringent and unproven one proffered by GLSD.

It is prudent to adopt a reasonably conservative, or protective, approach in aquatic systems at risk of cultural eutrophication. In order for a river to be restored to health, the eutrophic cycle must be broken by limiting the amount of excessive phosphorus available for uptake by aquatic plants and to allow whatever existing phosphorus has accumulated in the sediments in the past to gradually flush out of the system over time. Once the cycle is underway, it is much more difficult and costly to restore designated uses in the receiving waters. Thus, from a pollution management standpoint, a preventative approach makes sense in the context of nutrient permitting.

This comment presents several arguments regarding the total phosphorus analysis in the Draft Permit. EPA has responded to each argument below according to the general sequence they were presented in the comment and then EPA presents a revised reasonable potential analysis and a revised total phosphorus limit at the end of this response, which incorporates all relevant new information. The revised limit has been included in the Final Permit.

As a threshold matter, EPA has an obligation under the Act to establish effluent limits in a NPDES permit necessary to achieve water quality standards. As discussed in the Fact

Sheet, the implementing regulation at 40 C.F.R. § 122.44(d)(1)(i) states that, "Limitations must control all pollutants or pollutant parameters which may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." Effluent limits and conditions in individual permits are unique to each permit. EPA uses the design flow of a treatment plant as well as the 7Q10 low flow of the receiving water to calculate effluent limits. In determining water quality-based effluent limits for an individual permit, EPA reviews water quality standards, characterizes the effluent and the receiving water, then determines the need for a water quality-based limit using a reasonable potential analysis. Much of the comment above addresses various steps of this process.

First, the comment claims that EPA failed to establish the impairment status of the receiving water. The GLSD discharges to Segment 84A-04 of the Merrimack River. Massachusetts Year 2014 Integrative List of Waters[15] identifies segments 84A-02, 84A-03, and 84A-04 in the Merrimack River as impaired for total phosphorus. Page 14 of the Fact Sheet states "The Merrimack River, Segment MA84A-04, impairments causes are: Escherichia coli, PCB in Fish Tissue and Phosphorus (Total)." Contrary to the comment, EPA clearly identified the impairment status of the receiving water.

Second, the comment indicates EPA did not establish whether the source of potential eutrophication was naturally occurring or man-made, or due to point sources, non-point sources or other factors. EPA notes that, while many factors may contribute to eutrophication, the reasonable potential analysis in the Fact Sheet specifically addresses the reasonable potential for *GLSD's discharge* to cause or contribute to a violation of water quality standards. Therefore, contrary to the comment, EPA clearly identified the GLSD discharge as a contributing source of potential eutrophication.

Third, the comment claims that "extensive monitoring" of the U.S. Army Corps of Engineers study from 2003 through 2016 refutes the impairment status of the receiving water. EPA reviewed the phosphorus data collected as part of this "extensive monitoring" over a "13-year period of active field work." EPA notes that these data are not nearly as substantial as the comment suggests. Rather, total phosphorus data in the Lower Merrimack River was collected during dry weather on only four occasions over these 13 years (April 20, 2003; September 12, 2003; June 25, 2014; and August 10, 2016). Nevertheless, EPA reviewed this limited data as part of the reasonable potential analysis. The data from 2003 was deemed to be too old to be useful for this 2019 permit reissuance. The total phosphorus concentrations upstream of GLSD's outfall on June 25, 2014 and August 10, 2016 were 67 µg/L and 107 µg/L, respectively. However, the data from 2016 were taken partially during wet weather and may not be applicable for establishing reasonable potential during dry weather under 7Q10 conditions. In sum, the "13-year period of active field work" resulted in a single recent total phosphorus sample (June 25, 2014) taken during dry weather just upstream of GLSD's discharge that was applicable to EPA's analysis. In EPA's technical judgment, this sparse dataset is not

[15] https://www.mass.gov/files/documents/2016/08/sa/14list2_0.pdf

sufficiently representative to confirm or refute the nutrient-related impairment status in the receiving water.

Fourth, the comment requests that the Merrimack River Assessment reports prepared by CDM Smith and the underlying data and laboratory reports be included in the administrative record. EPA confirms that this information is included in the administrative record.

Fifth, the comment claims that "harmful algae blooms" must be documented in the Merrimack River with a "causal relationship" between phosphorus and use impairment in order for EPA to apply effluent limits. As has been established in the Environmental Appeals Board and the First Circuit, EPA's NPDES regulations do not require cause-and-effect proof between a pollutant discharge and an existing water quality impairment before establishing a numeric in-stream target to interpret a narrative water quality criterion, or before imposing a water quality-based effluent limitation to implement that criterion. EPA's determination of whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard does not require a conclusive demonstration of cause and effect. Under 40 C.F.R. § 122.44(d)(1)(i), EPA is required to determine whether a given point source discharge "cause[s], ha[s] the reasonable potential to cause, or contribute[s] to an excursion above" the narrative or numeric criteria set forth in state water quality standards. Thus, the regulations require nothing more than a reasonable potential to cause, or contribute to an excursion of a numeric or narrative state water quality criterion; whenever such a potential exists, a permit must contain effluent limits to meet state water quality standards.

Additionally, the comment points out that chlorophyll-a levels in the receiving water "exceed the guidance levels for US rivers." EPA notes that this is further evidence to support EPA's determination to impose a phosphorus limit.

Sixth, the comment questions the extent EPA investigated factors that may influence the eutrophic response of the receiving water. In determining the expected eutrophic response of the receiving water, EPA reviewed the data that were available during the permit development process. This included the CDM Smith studies, available ambient data, the State's 303(d) list and the Discharge Monitoring Report ("DMR") data submitted by GLSD. Based on this information, EPA concluded there was not sufficient evidence to justify a deviation from the Gold Book recommended threshold of 0.1 mg/L within the receiving water. As stated above, the phosphorus data included in the U.S. Army Corps of Engineers study were not very extensive and any reports based on that limited data are not persuasive to justify a less stringent target concentration.

On this same topic, the comment proceeds to quote from page 247 of the Gold Book, stating:

> "There are natural conditions, also, that would dictate the consideration of either a more or less stringent phosphorous level. Eutrophication problems may occur in waters where the phosphorous concentration is less than that indicated above and,

> obviously, such waters would need more stringent nutrient limits. Likewise, there are those waters within the Nation where phosphorous is not now a limiting nutrient and where the need for phosphorous limits is substantially diminished."

EPA notes that the receiving water for GLSD is freshwater and there is no evidence to suggest that phosphorus is "not now a limiting nutrient." Therefore, this justification for imposing a less stringent limit for phosphorus is without merit.

Seventh, the comment suggests EPA has not established reasonable potential for either "the development of plant nuisances within the flowing water" or "to protect the downstream receiving waterway." EPA disagrees and notes that eutrophication is one form of "the development of plant nuisances within the flowing water" and EPA has determined that this has the reasonable potential to occur in "downstream receiving waterways" unless a phosphorus limit is imposed. Therefore, EPA addressed both concerns in its reasonable potential analysis.

Eighth, the comment references the CDM Smith Phase III Final Report which indicates that total phosphorus can "sometimes (but not always) exceed the Gold Book standard of 0.1 mg/L" and "chlorophyll-a levels in the same reach sometimes (but not always) exceed guidance levels" but that these excursions have not resulted in "dissolved oxygen impairment or documented detrimental algae blooms…". EPA notes that establishing a permit limit for phosphorus does not depend on whether the receiving water is impaired for dissolved oxygen; rather, a permit limit is based on the reasonable potential analysis described in the Fact Sheet. Furthermore, excursions of both total phosphorus and chlorophyll-a recommended concentrations, as noted in the comment, support EPA's determination that there is reasonable potential to violate water quality standards and an effluent limit is necessary.

Ninth, the commenter questions the use of the Gold Book in setting phosphorus limits. As stated in the Fact Sheet (at 23), the Massachusetts Water Quality Standards ("MA WQS") contain a narrative criterion for phosphorus. *See* 314 CMR 4.05(5)(c). Until the State adopts numeric criteria, EPA must derive phosphorus limits that are protective of the State's narrative water quality standards.

In the course of deriving protective phosphorus effluent limits that meet the narrative phosphorus criterion, the Region looked to a variety of sources, including the Gold Book, Ecoregional Nutrient Criteria (*Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (*EPA December 2000) and Nutrient Criteria Guidance (*Nutrient Criteria Technical Guidance Manual: Rivers and Streams, July 2000).* These constitute information published under CWA §304(a) and were used as *guidance* to interpret the State's narrative criterion for nutrients and not as substitutes for state water quality criteria. The Region's use of the Gold Book and other relevant materials published under Section 304(a) to develop a numeric phosphorus limit sufficiently stringent to achieve the narrative nutrient criterion is consistent with applicable NPDES regulations. The Gold Book does not contain a phosphorus criterion, but instead, as the

commenter is aware, presents a "rationale to support such a criterion." Gold Book at 240. EPA's guidance document recommends in-stream phosphorus concentrations of 0.05 mg/L in any stream entering a lake or reservoir, 0.1 mg/L for any stream not discharging directly to lakes or impoundments, and 0.025 mg/L within the lake or reservoir. When deriving a numeric limit to implement a narrative water quality criterion, EPA is authorized under 40 C.F.R. §122.44(d)(1)(vi)(B) to: "Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under Section 304(a) of the CWA, supplemented where necessary by other relevant information." EPA also relied on 40 C.F.R. § 122.44(d)(1)(vi)(A) in arriving at its determination. This provisions similarly entails derivation of an instream target based on relevant information that will protect designated uses.

NPDES permit proceedings are informal adjudications, and may result in the imposition of limitations, conditions and other requirements on a discharge prior to authorizing that discharge. The imposition of conditions in a permit pursuant to the Act and implementing regulations, of course, does not amount to a rulemaking. While it is certainly true that EPA has over a period of years endeavored to utilize its experience and technical expertise to fashion a consistent technical approach to implement the Commonwealth's narrative water quality standard for nutrients, under the authority of *existing* regulations governing the translation of narrative water quality criteria, it is also a fact that this approach has been applied, as here, on a permit-specific basis: EPA's determination here does not bind the public generally and does not bind EPA in future permitting actions. Those actions will be based on the best information reasonably available in the administrative record at the time. EPA's permit-specific decisions, conducted under the rubric of 40 C.F.R. § 122.44(d), take into account, *indeed turn on*, site-specific information relating to the discharge and receiving water, and other relevant facts and circumstances. Thus, the phosphorus limitation was derived from the Act and existing regulations using relevant information in the course of translating the Commonwealth's narrative nutrient water quality criterion.

Tenth, the comment suggests that instream phosphorus levels of 0.17 mg/L or higher are supportive of dissolved oxygen water quality standards (based on Figures 3-19 and 3-22 of the CDM Smith report) and suggests that this phosphorus concentration be implemented as the target, rather than the Gold Book standard of 0.1 mg/L. EPA notes that the Figures 3-19 and 3-22 of the CDM Smith report indicate that these high phosphorus levels corresponding with dissolved oxygen above water quality standards occurred during wet weather sampling. EPA contends that inferences made about the impact of elevated phosphorus concentrations on dissolved oxygen during wet weather are not applicable to the reasonable potential analysis which assumes dry weather under 7Q10 conditions. Therefore, EPA disagrees that a less stringent target would be justified based on this information.

Eleventh, the comment suggests that EPA should estimate future ambient conditions when setting the permit limit. EPA establishes permit limits based on data that is available at the time of permit development, not on possible future ambient conditions, including modeling scenarios based on hypothetical permit limits (*e.g.*, 1.0 mg/L from all

dischargers). EPA does not agree that dry weather ambient conditions upstream of GLSD's discharge are expected to be significantly reduced in the near future. Even if upstream total phosphorus reductions do occur at some point in the future, EPA is required to protect water quality standards at the time a permit is issued.

Twelfth, the comment suggests that a limited travel time of approximately two days precludes the discharge from being linked to eutrophication in the river segment downstream of the discharge. EPA disagrees that excessive total phosphorus loads from GLSD could not contribute to eutrophication based on a travel time of two days between the Essex Dam and Haverhill. The commenter fails to recognize that GLSD's discharge is a continuous source of phosphorus to the river. While a slug of phosphorus may travel this stretch of the receiving water in two days, the effluent is continuously discharging more phosphorus hour after hour and day after day. This continuous discharge has the potential to result in a continuous excursion of the target total phosphorus concentration and a eutrophic response which would violate water quality standards in that stretch of the river for much longer than two days. Moreover, given the diurnal pattern of algae growth and die-off, eutrophication can occur in a matter of hours; a period of time much less than the documented travel time of two days.

Thirteenth, the comment recommends recomputing the TP threshold with a revised dilution factor. EPA notes the dilution factor has not been revised. See Response 3.

Finally, clean sampling data is presented in both Comment 8[16] and Comment 69 with a suggestion that EPA disregard all other previously collected effluent data. While EPA appreciates any efforts to improve sampling techniques and methodologies to obtain the most representative data, the submission of these data does not clearly invalidate the effluent data used in the Fact Sheet. For example, part of the clean sampling technique established a protocol to determine total phosphorus contamination, if any, contributed by the hosing. The comment does not provide any indication whether such contamination was present. Furthermore, the comment expressed that the clean sampling program was a "significant operational change at the WWTF." However, EPA notes that this is not a treatment process improvement that would affect the amount of phosphorus being discharged from the facility. Finally, EPA maintains that the effluent dataset used in the development of the Fact Sheet appears to be representative of the discharge over a much larger timeframe (5 years) compared to the clean sampling data submitted over the past 3 months. Additionally, given the variability of effluent phosphorus concentrations over the course of the growing season, it is important for EPA to use a dataset that is accurate and representative of the receiving waters. Therefore, EPA has combined both the new and original datasets and has reevaluated its reasonable potential analysis using all available data, as shown below.

EPA has determined that it is most appropriate to apply the upstream data, in this case, as monthly average data because the permit limit is established as a monthly average limit. The table below represents the new data submitted by the commenter combined with the

[16] GLSD also submitted supplemental data taken throughout July 2019 (via email on August 26, 2019) which has also been included in this reanalysis and is included in the administrative record.

original data used in the Fact Sheet analysis, with all data being summarized in terms of monthly average concentrations.

Date	Monthly Average TP (mg/L)
Jul-17	0.050
Aug-17	0.058
Sep-17	0.074
Oct-17	0.087
May-19	0.041
Jun-19	0.048
Jul-19	0.054
Aug-19	0.050
Median	0.052

As shown, the median upstream concentration is 0.052 mg/L. EPA has used this revised upstream concentration in its updated reasonable potential analysis and in the calculation of the phosphorus limit in the Final Permit.

In addition to this ambient data, Comment 69 (submitted by Osprey Owl Environmental, LLC) presents effluent data taken using clean techniques for May and June of 2019 and GLSD submitted supplemental data[17] for July and August of 2019. The results indicate monthly averages of 0.448 mg/, 0.212 mg/L, 0.206 mg/L and 0.331 mg/L, respectively. These data, combined with the original effluent data used in the Fact Sheet result in an updated 95th percentile effluent concentration of 0.814 mg/L.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality standards for phosphorus, the following mass balance equation is used to project the instream phosphorus concentration downstream of the discharge under 7Q10 conditions.

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

Solving for the downstream phosphorus concentration

$$C_r = \frac{[(Q_d C_d) + (Q_s C_s)]}{Q_r}$$

[17] GLSD submitted supplemental data taken throughout July and August 2019 (via email on August 26, 2019 and September 6, 2019) which have also been included in this reanalysis and are included in the administrative record.

C_r = downstream phosphorus concentration in the Merrimack River (mg/L)
Q_d = design flow of treatment plant (52 MGD = 80.5 cfs)
C_d = 95th percentile of effluent phosphorus concentrations discharged from the facility during the growing season (0.814 mg/L)
Q_s = 7Q10 flow of Merrimack River upstream of the discharge (871 cfs = 562.7 MGD)
C_s = median phosphorus concentration in the Merrimack River at sampling station MO18 (0.052 mg/L)
Q_r = flow in the river downstream of the discharge (80.5 + 871 = 951.5 cfs)

$$C_r = \frac{[(871\ cfs)(0.052\ mg/L) + (80.5\ cfs)(0.814\ mg/L)]}{951.5\ cfs}$$

C_r = 0.116 mg/L

The concentration of phosphorus downstream of the discharge equals 0.116 mg/L and is greater than the Gold Book recommended water quality threshold of 0.100 mg/L. This revised analysis confirms that there still is reasonable potential that phosphorus discharged from the Facility may cause or contribute to a violation of water quality standards, and EPA is required to include a phosphorus limit in the Final Permit.

Based on Response 11 below, EPA is also modifying the effluent limit in the Final Permit to be mass-based. The numeric mass-based limit is determined based upon the following mass balance equation:

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

Rewritten as:

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

Converting to mass-based:

$$M_d = Q_d C_d * 8.34 = (Q_r C_r - Q_S C_S) * 8.34$$

Where:

M_d = mass-based phosphorus limit
Q_d = effluent flow in MGD (lowest effluent monthly average flow = 17.4 MGD)
C_d = effluent phosphorus concentration in mg/L
Q_s = 7Q10 flow of Merrimack River upstream of the discharge (871 cfs = 562.7 MGD)
C_s = median phosphorus concentration in the Merrimack River (0.052 mg/L)
Q_r = downstream 7Q10 flow (Q_s + Q_d = 580.1 MGD)
C_r = downstream river phosphorus concentration (Gold Book target = 0.100 mg/L)

8.34 = factor to convert from *MGD * mg/L* to *lb/day*

M_d = [(580.1 MGD)(0.100 mg/L) - (562.7 MGD)(0.052 mg/L)] * 8.34

M_d = 240 lb/day

Solving for M_d gives the maximum allowable mass the facility may discharge without violating water quality standards. This allowable discharge is 240 lb/day, which is equivalent to a concentration of 0.55 mg/L at the design flow of 52 MGD and equivalent to 1.65 mg/L at the lowest monthly average flow of 17.4 MGD. Therefore, the Final Permit includes a monthly average phosphorus limit of 240 lb/day (instead of 0.53 mg/L in the Draft Permit) from April 1 through October 31. The monitoring frequency is once per week from April through October and once per month from November through March.

Comment 9

Monitoring Requirement for Nitrogen: The existing NPDES permit for GLSD includes monitoring and reporting requirements for the sum of nitrate and nitrite and total Kjeldahl nitrogen (TKN). The average nitrate plus nitrite is 1.45 mg/L and average TKN was 20.7 mg/L during the review period. The Draft Permit is now proposing to increase this monitoring to include total nitrate plus total nitrite, TKN and total nitrogen weekly from April through October, and monthly monitoring and reporting from November through March.

As provided in the Fact Sheet page 22 of 41, EPA believes this additional monitoring is necessary as more data is needed to determine if nitrogen causes or contributes to a violation of the Massachusetts narrative criteria; provide information on the fate of nitrogen through the treatment process; understand the impact of nitrogen on the Merrimack River; and prepare for a future nitrogen limits that may be included in subsequent NPDES permits.

GLSD takes great exception to the increased monitoring for the following reasons:
Existing levels of nitrogen from the GLSD facility do not show cause or reasonable potential to exceed the water quality criteria of the Merrimack River.

First, we would like to note that in accordance with the Fact Sheet page 13 of 41, the MassDEP's 2014 Integrated List of Waters does not name nitrogen as a cause of impairment. Therefore, any reasonable conclusion would be that further evaluation and possible limitations for nitrogen are not indicated in accordance with EPA permitting procedures.

MassDEP provides narrative criteria for nutrients at 314 CMR 4.05 (5)(c) which states in part: *"Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site-specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00.*

Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae,

in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses."

As EPA has failed to identify nitrogen as a nutrient that would cause or contribute to an impairment, GLSD does not understand how further expenditures and additional study of the nitrogen is warranted.

Fate of nitrogen through the treatment process: GLSD operates an activated sludge treatment facility that provides secondary treatment. These types of treatment process have been in common existence for nearly 50 years, are approved by EPA and delegated states in the numbers that reach into the many thousands and have excessive studies and literature available regarding the fate of nitrogen trough the treatment process. GLSD fails to understand under any reasonable scenario, why EPA needs to study the fate of nitrogen through yet, again, another typical activated sludge secondary treatment system.

Understanding the impact on nitrogen on the receiving water: Since nitrogen has not been shown to cause or contribute to nutrient impairments on the Merrimack River, to what extent does EPA believe that further studies of the impact of nitrogen on the Merrimack River are warranted? This seems to be additional cost and effort for which the outcome is not relative to any way of impacting water quality.

Further, if EPA is still determined to understand the impact of nitrogen on the receiving water, this is done through an ambient water quality study and effluent data from all the treatment facilities that discharge to the river, as well as non-point sampling. Finally, existing effluent data from the GLSD facility is far and above more than is necessary for EPA to understand the impacts of nitrogen on a receiving water – particularly one in which nitrogen is not impacting the designated uses.

Prepare for a future nitrogen limits that may be included in subsequent NPDES permits: GLSD finds this last reason for EPA needing to increase monitoring for the facility particularly concerning for the following reasons:

There is already adequate effluent data to determine if nitrogen from the GLSD facility is causing or contributing to a water quality impairment – and there is no evidence that is doing so; MassDEP does not have numeric criteria for nitrogen, and MassDEP has already concluded that a TMDL is not required for nitrogen on the Merrimack River and does not cause or contribute to an impairment of the River;
The MassDEP narrative criteria, if indeed was being violated by the discharge from the WWTF (which it is not) requires that: "Any existing point *source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs… "*

Therefore, prior to the imposition of any numeric limitations, EPA would first need to prove that the WWTF nitrogen effluent causes or contributes to cultural eutrophication, then EPA would need to determine HBPT for this facility. Finally, if HBPT is not sufficient, EPA can adopt a TMDL for nitrogen, which would assign numeric effluent limitation necessary to meet water quality – although again, since nitrogen has not been shown to be a cause of cultural eutrophication, is unclear what, if any, numeric limitations would be indicated.

Request: GLSD requests that nitrogen sampling be conducted quarterly as required in the current permit. In addition, GLSD requests that if the permit is administratively continued after the five-year term expires, that the nitrogen reporting requirement be discontinued as EPA will have collected sufficient data for any future permitting requirements.

Response 9

Total nitrogen monitoring has been included in the Final Permit in order to continue gathering information on point source loadings of this pollutant to the Merrimack River watershed, in order to evaluate effluent and receiving water quality and to determine the need for total nitrogen effluent limitations in future permitting cycles. There are over 40 POTW discharges to the Merrimack River watershed and EPA is now including total nitrogen monitoring as the NPDES permits are reissued for these facilities in order to quantify loadings to the estuarine portion of the Merrimack River.

In its varied objections to the monitoring requirements in the permit, the commenter seeks to place artificial limits on EPA's monitoring authority that have no basis in the Act, or relevant case law. These limitations are not well founded and misapprehend the breadth of authority afforded EPA to impose monitoring conditions. Section 308(a) of the Act "confers broad authority on the Agency to impose monitoring requirements on any point source." *In re City of Port St. Joe*, 7 E.A.D. 275, 306 (EAB 1997). This is true regardless of a pollutant's potential to cause or contribute to a water quality violation, and regardless of whether pollutant discharges are restricted by an effluent limit. *See In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 671-72 (EAB 2001) (denying review of color monitoring requirement); *Port St. Joe*, 7 E.A.D. at 306-11(denying review of dioxin/furan monitoring requirements). The statute provides:

> Whenever required to carry out the objective of this chapter, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard…(A) the Administrator shall require the owner or operator of any point source to…(iii) install, use, and maintain such monitoring equipment or methods…(iv) sample such effluents…and (v) provide such other information as [the Administrator] may reasonably require[.]

CWA § 308(a), 33 U.S.C. § 1318(a). It is well established that permit writers enjoy broad authority under the CWA and regulations to prescribe municipal data collection and reporting requirements, including to determine the need for an effluent limitation. See CWA § 308(a)(A), 33 U.S.C. § 1318(a)(A) (specifying that permittees must provide records, reports, and other information EPA reasonably requires); CWA § 402(a)(2), 33 U.S.C. § 1342(a)(2) (requiring permittees to provide data and other information EPA

deems appropriate); 40 C.F.R. § 122.41(h) (permittees shall furnish "any information" needed to determine permit compliance); 40 C.F.R. § 122.44(i) (permittees must supply monitoring data and other measurements as appropriate); *see also, e.g., In re City of Moscow*, 10 E.A.D. 135, 170-71 (EAB 2001) (holding that EPA has "broad authority" to impose information-gathering requirements on permittees); *In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 671-72 (EAB 2001) (holding that CWA confers "broad authority" on permit issuers to require monitoring and information from permittees).

EPA disagrees with the commenter's theory that the lack of an impairment listing or reasonable potential finding for nitrogen precludes the inclusion of an NPDES requirement for that pollutant. CWA § 303(d) listing process and the NPDES permitting process are two different components of the CWA. Impairment designations under CWA section 303(d) are not made using the same process or standard as NPDES permitting decisions. Rather, each represents a distinct aspect of the CWA statutory scheme that is implemented under a separate set of regulatory authorities. *Compare* 40 C.F.R. § 122.44 (containing NPDES permitting regulations) *with* 40 C.F.R. § 130.7 (containing CWA § 303(d) and TMDL regulations). Specifically, states use 303(d) lists to prioritize the development of TMDLs for identified pollutants in specified water bodies. CWA § 303(d)(1)(A), 33 U.S.C. § 1313(d)(1)(A). The 303(d) listing process represents a statutory *response* to water pollution—*i.e.*, it is aimed at identifying water bodies that fail to meet state water quality standards for the purpose of prioritizing and addressing that existing impairment or threatened impairment, as determined by chronic or recurring monitored violations of the applicable numeric or narrative water quality criteria.

In contrast, NPDES permitting under CWA section 301 applies to individual discharges and represents a more *preventative* component of the regulatory scheme in that, under section 301, no discharge is allowed except in accordance with a permit. Moreover, the CWA's implementing regulations require the Region to include effluent limits in discharge permits based on the *reasonable potential* of a discharge facility to cause or contribute to exceedances of water quality standards, even if the receiving water body is not yet on a state's 303(d) list. *See* 40 C.F.R. § 122.44(d)(1)(i). *See In re Upper Blackstone Water Pollution Abatement Dist*, 14 E.A.D. 577, 599 (EAB 2010) (explaining that the NPDES regulations require a "precautionary" approach to determining whether the permit must contain a water quality-based effluent limit for a particular pollutant), *aff'd*. 690 F.3d 9 (1st Cir. 2012), *cert. denied*, 133 S. Ct. 2382 (2013). Under the commenter's tautology, the lack of data to support a reasonable potential finding itself precludes the collection of further data to inform such an analysis, a misguided reading of the Act that would effectively hamstring its implementation.

With respect to sampling frequency EPA disagrees that quarterly monitoring is adequate to characterize nitrogen loadings from GLSD. As evidenced from quarterly monitoring data summarized in the Fact Sheet, effluent concentrations of nitrogen can vary greatly. Total Kjeldahl nitrogen ranged from 14.2 to 34.9 mg/L and total nitrate/nitrite ranged from 1 to 3.33 mg/L. Weekly nitrogen monitoring during the growing season (when the impacts of nitrogen are of greatest concern) and monthly monitoring during winter

months is warranted in order to characterize total nitrogen loadings from GLSD. This monitoring will not be discontinued after the expiration of the permit so that EPA can rely on the most recent data and trends for any future permitting action. (Because of resource constraints and competing priorities, EPA cannot always reissue NPDES permits at five-year intervals, although it endeavors to do so).

The commenter's various assertions regarding supposed regulatory predicates for imposing nitrogen effluent limitations in NPDES permits are not only irrelevant—EPA is not imposing such a limit in this proceeding—but also incorrect. The provision cited by the commenter, 314 CMR 4.05(5)(c), does not supplant federal regulations governing the imposition of effluent limitations under Section 301 of the Act and implementing regulations; it neither substitutes a new causal standard nor dictates a maximum level of treatment for federal permitting purposes. Rather, in determining the need for an effluent limitation, EPA will assess whether there is a reasonable potential under 40 C.F.R. § 122.44(d)(1) for the discharge to cause or contribute to an in-stream excursion above 314 CMR 4.05(5)(c) and other nutrient-related criteria, and if so, will impose any conditions necessary to ensure compliance with water quality standards, including water quality-based conditions more stringent than the technology-based standard of highest and best practical treatment ("HBPT").

Therefore, the monitoring requirements will remain in the Final Permit.

Comment 10

Secondary By-Pass: GLSD has identified several concerns related to the discussion of a secondary bypass (blending) as described below:

a) Bypass Is Considered Non-Compliance: The Draft Permit page 6 & 7 of 26, footnote 6, states: "A bypass of secondary treatment also is subject to the requirements of Part II.B.4.c and Part II.D.1.e of this permit."

Part II.B.4.c refers to an unanticipated bypass, for which notification in accordance with II.D.1.e must be submitted. Notification requirements are necessary for *"any non-compliance which may endanger health or the environment. This section requires not only 24-hour reporting, but a written submission which details the cause of the non-compliance, and steps taken to reduce, eliminate and prevent reoccurrence of the non-compliance."*

As EPA is aware, it has permitted GLSD to operate the WWTF during high flow conditions to bypass a portion of the effluent from secondary treatment and blend it after it has received disinfection and dechlorination. This practice maximizes the volume of wastewater which receives primary treatment and disinfection, rather than to divert through the CSOs. It is of particular concern that each time GLSD initiates blending of primary and secondary treated flows, it is considered "non-compliance." Not only does this expose the Facility to fines and penalties from the EPA, it also exposes the WWTF to third party lawsuits. Additionally, it is perplexing why EPA is choosing to identify blending at this facility as a non-compliant event, when in the Fact Sheet page 8 of 34, EPA states: *"At this time, there(sic) no feasible alternatives*

to this bypass have been identified without the discharge of additional untreated sewage in the system's CSOs."

Note that in accordance with the EPA 1994 Combined Sewer Overflow Control Policy 59 Fed. Reg. 18,688 (Apr. 19, 1994) (National CSO Policy), Section II.C.7 "Maximizing Treatment at the Existing POTW Treatment Plant," a facility may be authorized to allow a CSO-related bypass of secondary treatment without the need to provide approval on a case-by-case basis, where it can be shown that the facility has completed a No Feasible Alternatives Analysis in accordance with this section.

Specifically, EPA's National CSO Policy states that a permit may "define the specific parameters under which a bypass can legally occur," and further states:

> Under this approach, EPA would allow a permit to authorize a CSO-related bypass of the secondary treatment portion of the POTW treatment plant for combined sewer flows in certain identified circumstances.

59 Fed. Reg. at 18,693 (emphasis added). The Clean Water Act (CWA) requirement that "each permit…for a discharge from a municipal combined storm and sanitary sewer shall conform to" the CSO Policy provides statutory authority for issuance of permits authorizing peak wet weather discharges consistent with the National CSO Policy. CWA 402(q)(1), 33 USC 1342(q)(1). Further, EPA's own guidance documents support the authorization of a CSO-related bypass. Combined Sewer Overflows Guidance for Permit Writers (EPA 832-B-95-008, Sept. 1995) (CSO Permit Writers Guidance). That document has never been withdrawn by EPA, and provides the following example permit language for authorized CSO related bypasses:

> A CSO-related bypass of the secondary treatment portion of the POTW treatment plant is authorized when the flow rate to the POTW treatment plant is as a result of precipitation event exceeds [insert flow rate in MGD]. Bypasses that occur when the flow at the time of the bypass is under the specified flow rate are not authorized under this condition and are subject to the bypass provision at 40 C.F.R. § 122.41(m).

Finally, new requirements proposed by EPA for the secondary bypass reflects a substantial change in the regulatory requirements that are imposed on NPDES dischargers, which are proposed to be imposed without following any of the procedures required before such a change can be made.

Since the Fact Sheet identifies that there are "no feasible alternatives" to the secondary bypass, GLSD is authorized under this permit to operate a secondary bypass. Therefore, the event should not be identified as a "non-compliant" event (since it is clearly authorized) and reporting requirements under II.D.1.e should also not be required.

Request: EPA must expressly identify the bypass of secondary treatment under the circumstances described in the permit as an authorized bypass as it has done in other recent permits and in accordance with the National CSO Policy Section II.C.7, and remove those sections of the Draft Permit that identify this treatment process as non-compliant with the permit. Further, the Draft

Permit should acknowledge that Bypass does not occur until the WWTF exceeds its 130 MGD design flow. 30

b) Reference of Anticipated By-Pass: The Draft Permit page 6 & 7 of 26, footnote 6, states: "The Permittee shall not accept septage during any calendar day in which a bypass of secondary treatment is anticipated." It is not clear how EPA defines anticipated bypass. However, Part II.B.4.c requires advance notice of anticipated bypass.

Request: As GLSD has the ability to accept and hold septage for a period of time, GLSD requests that this language be modified to read: "*The Permittee shall not add septage to the waste stream at the treatment plant during activation of the secondary bypass treatment".*

Response 10

In accordance with 40 C.F.R. § 122.41, Part II.B.4 incorporates verbatim the *Bypass* rule at 40 C.F.R. § 122.41(m). Bypass "means the intentional diversion of waste streams from any portion of a treatment facility." 40 C.F.R. § 122.41(m)(1). Under EPA regulations, "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 preventive maintenance; and
> (C) The permittee submitted notices as required under paragraph (m)(3) of this section."[18]

However, EPA "may approve an anticipated bypass, after considering adverse effects, if [EPA] determines that it will meet the [above] three conditions."[19]

The permittee's comments regarding the "authorization of a CSO-related bypass" reference Section 7 of the 1994 CSO Policy, entitled "Maximizing Treatment at the Existing POTW Treatment Plant." 18688 Fed. Reg. at 18693. Following the approach set forth therein, EPA could include a CSO-related bypass provision in the permit if there are no feasible alternatives to bypassing under specific conditions. Section 7 of the CSO Policy further provides that:

> "[T]he feasible alternatives requirement of the {bypass} regulation can be met if the record shows that the secondary treatment system is properly

[18] 40 C.F.R. § 122.21(m)(4).
[19] *Id.*

> operated and maintained, that the system has been designed to meet secondary limits for flows greater than the peak dry weather flow, plus an appropriate quantity of wet weather flow, and that it is either technically or financially infeasible to provide secondary treatment at the existing facilities for greater amounts of wet weather flow. The feasible alternative analysis should include, for example, consideration of enhanced primary treatment (e.g., chemical addition) and non-biological secondary treatment. Other bases supporting a finding of no feasible alternative may also be available on a case-by-case basis."

Id. at 18694.

The permittee has not submitted sufficient information or analysis to satisfy these requirements for inclusion of CSO-related bypass conditions in the Permit for specific flows. Consequently, the permit does not contain such conditions. The Permittee is welcome to submit such documentation for EPA consideration. The Permittee's assertion that EPA determined in the fact sheet "that there are 'no feasible alternatives' to the secondary bypass" is not accurate. EPA did not make any such determination. Again, pursuant to the CSO Policy, EPA would need additional information from the Permittee in order to make such a determination.

The notification requirements that apply in the event of a bypass are set forth in Part II.B.4. of the Final Permit. Specifically, if the permittee knows in advance of the need to bypass secondary treatment (i.e., an anticipated bypass), prior notice shall be submitted at least ten days before the date of the anticipated bypass (see Part II.B.4.c. of the Final Permit.). In the event of a bypass which was not anticipated, (i.e., unanticipated bypass) notification shall be submitted within twenty-four hours of the bypass in accordance with Part II.D.1.e. of the Final Permit. Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1. of the Final Permit has been modified to clarify that a bypass of secondary treatment is subject to the requirements of Part II.B.4. (and not just Part II.B.4.c.) of the permit (which incorporates the regulations in their entirety which pertain to bypasses of secondary treatment that are established at 40 C.F.R. 122.41(m)).

EPA disagrees that "new requirements" related to secondary bypass "reflect a substantial change in the regulatory requirements." Permit provisions incorporating the *Bypass* rule at 40 C.F.R. § 122.41(m) were contained in the previous permit and are therefore not new. The Final Permit contains only three new permit provisions with regard to secondary bypass: (1) the requirement to report bypass information on monthly DMRs; and (2) the requirement to measure the flows that bypass secondary treatment using a meter; and (3) the prohibition on receiving septage during activation of the secondary treatment bypass (see below). EPA does not assess these requirements to be "substantial."

The intent of the septage receiving prohibition in Footnote 6 to Part I.A.1. of the Draft Permit is to minimize any negative impacts from septage received during periods when

flows may not be receiving secondary treatment. EPA recognizes that the septage receiving practices employed at the GLSD are such that potential negative impacts from septage being received when flows bypass secondary treatment are minimized. In recognition of these practices, and to clarify the intent of Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1. of the Final Permit has been modified to read as follows:

"*The Permittee shall not add septage to the waste stream at the treatment plant during activation of the secondary treatment bypass".*

Comment 11

Compliance Schedule: The Draft Permit requires new limitations for TP, aluminum, cadmium, copper, and lead. Notwithstanding comments elsewhere in this document where GLSD provides the basis for removal of the limitations for each of these parameters, in the event that EPA continues to include new limitations, we have the following comments on the compliance schedule:

a) Compliance schedule comments relative to aluminum are included in comment number 7, of this document.

b) EPA has provided a one (1) year compliance schedule for TP, cadmium, copper and lead. It is simply not possible for the GLSD WWTF to meet these limitations within one year. The plant has not been designed for metals removals or TP removal, to the extent required by this Draft Permit as presented.

GLSD will need to evaluate the current treatment process and determine the type and extent of upgrade necessary to meet the new limitations. Further, the Commonwealth of Massachusetts procedures for bidding and procurement are extensive and require adequate time for each phase of the design, construction bidding, award, and implementation process. These procedures include but are not limited to budgeting and obtaining funding, procurement of engineering services to determine current plant treatability levels and the extent of upgrade required, design of the necessary upgrade, development and bidding plans and specifications, advertising and bidding process, and contract award – all of which must occur prior to beginning work on the contract.

There is no possibility this can all occur in a one-year period.
Request: GLSD requests the following compliance schedule:

- 12 months from the effective date of the permit: engage engineering services to evaluate current plant treatability levels, and determine type and extent of upgrade necessary;
- 36 months from the effective date of the permit: design plant upgrade, prepare bidding documents and specifications, obtain funding;
- 48 months from the effective date of the permit: advertise contract for plant upgrade;
- 54 months from the effective date of the permit: award contract;
  96 months from the effective date of the permit: construct upgrade and provide necessary testing to ensure compliance with new limitations.

Response 11

With regard to the metals limits, see Response 6 above. As none of the metals limits will be in the Final Permit, no compliance schedule is necessary.

With regard to the phosphorus limit, EPA proposed implementation of the limit either as a concentration-based limit of 0.53 mg/L or as a mass-based limit of 202 lb/day (both applied as monthly average limits from April through October). EPA notes that based on the revised analysis in Response 8 above, the revised mass-based limit is 240 lb/day. As explained in the Fact Sheet, both the concentration-based and mass-based options would be fully protective of water quality standards but may provide varying degrees of flexibility under different effluent flows. EPA did not receive any comments on which option would be preferable and chose to establish a mass-bass limit.

Over the review period (2014 through 2018) GLSD would have met the 240 lb/day mass-based limit each month, with a maximum load of 195 lb/day.[20]

Based on this analysis, EPA does not agree that an extended compliance schedule (for budgeting, construction, etc.) is warranted. In fact, under NPDES regulations, schedules must lead to compliance "as soon as possible." 40 C.F.R. § 122.47(a)(1). Given that the Permittee is in consistent compliance with the effluent limit, no compliance schedule is necessary or allowable. Therefore, the one-year compliance schedule has been removed from the Final Permit.

Comment 12

Part I.B.2 – Unauthorized discharges: GLSD has two concerns regarding this section, as detailed below:

a) GLSD understands that unauthorized discharges, including sanitary sewer overflows (SSOs) as defined by EPA, are not authorized by this Draft Permit. However, by definition SSOs also include discharges that may occur in basements of private dwellings due to sewer system backups, or in other areas where the SSO does not result in a discharge to surface water. While GLSD is agreeable to providing public notification for SSO events that impact surface waters, as these could potentially result in a public health hazard, GLSD objects to providing public notification of basements backups in private dwellings, and other sanitary sewer releases that do not impact surface water, the municipal separate storm sewer (MS4) or would not otherwise pose a widespread public health threat. Further, reporting of discharges that do not impact surface waters exceeds EPA's authority under the CWA.

GLSD is agreeable, however, to providing reporting of such events to MassDEP in accordance with paragraph 3 of this section.

[20] Monthly average effluent loads were calculated based on GLSD's monthly average effluent flow and phosphorus concentration data for each month during the growing season only, based on the following equation:
Monthly Average Flow (MGD) x Phosphorus Concentration (mg/L) x 8.34 = Monthly Average Load (lb/day)

Request: Modify Part B.2 to state that public notification, with the exception of SSOs that do not impact surface water (Waters of the United States), the MS4 or otherwise provide a widespread public health threat, shall be provided within 24 hours.

b) With respect to "notification to the public within 24 hours of any unauthorized discharge on a publicly available website..." At times, an unauthorized discharge may occur and GLSD may not become aware of it, or be notified, for a significant time. It is unreasonable to require public notification within 24 hours of the commencement of an unauthorized discharge for which there may have been a delay of GLSD becoming aware of the discharge.

Request: Modify Part B.2 as follows (underlined text additional) "…the permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge

Response 12

a) The commenter's view of EPA's conditioning authority under the Act is overly narrow. EPA has authority to impose conditions related to the proper operation and maintenance of the treatment plant, and an SSO may be the result of an operation and maintenance malfunction within the collection system. However, EPA agrees it is not necessary to post every SSO on a public website since there are instances when an SSO does not impact a receiving water or the public. An example may be a low volume SSO at a manhole cover. EPA has modified the language in the Final Permit to clarify that public notification of SSOs is required, except for SSO's that do not impact a surface water or the public.

b) EPA has modified the language in Part I.B.2 to require public notification within 24 hours of *becoming aware* of any unauthorized discharge impacting a surface water or the public.

Comment 13

Part I.C.4 – collection system mapping: The Draft Permit provides that within 30 months of the effective date of this permit, the permittee and co-permittees shall prepare detailed and extensive collection system mapping. Please provide the regulatory authority for this request, as this request exceeds the requirements under the federal nine minimum controls (NMC).

Request: The above notwithstanding, GLSD requests the following modifications:

Mapping is required of all sanitary sewers and manholes. Please revise this language to state, "All sanitary sewer extensions in the public-right-of way owned by GLSD or the co-permittees." Where the requirements mention information such as pipe diameter, date of installation, type of material, distance between manholes, interconnections, etc., please revise this language to include "to the extent feasible."

Please allow 36 months to comply with this requirement to allow sufficient time to do procurement and provide a meaningful work product.

Response 13

It is well established that permit writers enjoy broad authority under the CWA and regulations to prescribe municipal data collection and reporting requirements. *See* CWA § 308(a)(A), 33 U.S.C. § 1318(a)(A) (specifying that permittees must provide records, reports, and other information EPA reasonably requires); CWA § 402(a)(2), 33 U.S.C. § 1342(a)(2) (requiring permittees to provide data and other information EPA deems appropriate); 40 C.F.R. § 122.41(h) (permittees shall furnish "any information" needed to determine permit compliance); 40 C.F.R. § 122.44(i) (permittees must supply monitoring data and other measurements as appropriate); *see also, e.g., In re City of Moscow*, 10 E.A.D. 135, 170-71 (EAB 2001) (holding that EPA has "broad authority" to impose information-gathering requirements on permittees); *In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 671-72 (EAB 2001) (holding that CWA confers "broad authority" on permit issuers to require monitoring and information from permittees). The mapping, O&M planning, and annual reporting requirements readily fall within the bounds of these broad provisions. The commenter should be aware that the Board has upheld collection system and mapping provisions in *In re Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 543-45 (EAB 2014).

The comment to restrict sewer system mapping to "All sanitary sewer extensions in the public-right-of way owned by GLSD or the co-permittees" has not been included in the Final Permit. This would not provide an accurate representation of the complete collection system, as it would exclude sewers that are not located beneath public rights of way.

Regarding the pipe diameter, date of installation, type of material, etc., EPA agrees that some information may be infeasible to obtain. Therefore, Part I.C.4.k of the Final Permit has been revised to include "to the extent feasible." However, if certain information is determined to be infeasible to obtain, a justification must be included along with the map. If EPA disagrees with the assessment, it may require the map to be updated accordingly. EPA reserves the right to default to the original formulation in the next permit cycle if it determines that GLSD's justifications were inappropriate and/or inadequate.

Regarding the request for 36 months to comply with this mapping requirement, the comment does not provide any justification for the need for an extended schedule for compliance, and EPA does not agree that additional time is needed to fulfill these requirements. Notably, given EPA's determination above regarding information that is infeasible to obtain, the need for additional time to comply is even more diminished.

Comment 14

Part I.C.5 – Operation and Maintenance of the System: GLSD has four comments on the Operation and Maintenance requirements in Part I.C:

a. Parts 1.C.2-3, the Draft Permit requires that GLSD "shall" implement preventive maintenance and infiltration/inflow programs. Although GLSD agrees that these programs are necessary, GLSD notes that such programs are already implemented by GLSD.

Request: GLSD requests that EPA acknowledge that it already implements such programs and that compliance with these programs satisfies compliance with the Draft Permit.

b. In Part 1.C.5(a) of the Draft Permit EPA is requiring the submission of a report that provides a description of the collection system management goal, staffing information, and legal authorities. In addition, it requires a list of pump stations, recent studies and construction activities, and a plan for the development of a comprehensive operation and maintenance plan.

Six months is an insufficient amount of time to research, analyze, describe and report on these numerous items, particularly for any co-permittee who may not have done this in the past. In addition, the permittee and co-permittee each have its own procurement process that require board, City/Town council or meeting, and/or public work committee for approval of funding, preparation of request for proposal to select consulting firm, negotiation of contract with selected firm to start the work. This process typically takes 9-12 months. Therefore, GLSD requests that 18 months be allowed for compliance with this condition.

Part (b) requires that a complete and comprehensive Operation and Maintenance (O&M) Plan be completed, implemented, and submitted to EPA and MassDEP within 24 months. As above, this is a tremendous undertaking requiring an extensive amount of time and resources, particularly for any co-permittee who does not already have the prescribed O&M plan. In addition, as discussed above, the permittee and co-permittee each have its own procurement process that typically takes 9-12 months. Therefore, GLSD requests that 36 months be provided for the completion and implementation of this plan.

Request: GLSD requests that 18 months be provided for the completion of section (a) and 36 months be provided for the completion of the O&M Plan under section (b).

c. Part 1.C.5(b)(6) requires an infiltration and inflow (I/I) reduction program, including focusing on disconnection and redirection of illegal sump pumps and roof down spouts. Although GLSD does not own the collection system in the municipalities served by the WWTF, these municipalities are already required to implement an I/I program. In addition, GLSD notes that not all such sources can be practicably remediated.

Request: GLSD requests that this provision requiring an I/I program or a specific program aimed at removing connected sump pumps and roof down spouts be removed from the permit or in the alternative that such connections will be evaluated and removed where feasible solely by the co-permittees.

d. Part 1.C.5(b)(8) requires GLSD to prepare an Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the Draft Permit. However, it is unclear what such a plan would entail or if the GLSD's current Emergency Plan already is adequate to meet this requirement.

Request: GLSD requests that EPA clarify the scope of the Overflow Emergency Response Plan.

Response 14

EPA acknowledges and supports that the Permittee is already engaged in preventative maintenance of the sewer system and activities to reduce I/I. EPA agrees that current and on-going work related to the requirements in the Part I.C may be included in the O&M Plan. GLSD's activities may satisfy the Permit requirements if they address each of the elements listed in Part I.C.2-3. EPA evaluates compliance based on the conditions set forth in the Final Permit.

Regarding the request for additional time to comply with Parts I.C.5(a) and (b), EPA believes 6 and 24 months, respectively, is sufficient time. EPA has been including these Capacity, Management, Operation and Maintenance ("CMOM") requirements in municipal permits in both New Hampshire and Massachusetts for more than 10 years and permittees and co-permittees have been able to fulfill these requirements within this timeframe. Therefore, the provision establishing that the Permittee should provide the best available information within the timeframes designated in the Permit and Part I.C.5 is unchanged in the Final Permit.

Regarding sump pumps and roof down spouts in Part I.C.5(b)(6), EPA agrees, for the reasons described in the comment, that the Final Permit should require such connections to be evaluated and removed where practicable. However, if the Permittee determines it is impracticable to remove certain sump pumps and roof downspouts, it must provide a justification along with the submittal of its O&M Plan. If EPA disagrees with GLSD's assessment of such activities being impracticable, it may require the Plan to be updated accordingly. EPA reserves the right to default to the original formulation in the next permit cycle if it determines that GLSD's justifications were inappropriate and/or inadequate. Part I.C.5(b)(6) of the Final Permit has been revised accordingly.

Regarding the Overflow Emergency Response Plan required in Part I.C.5(b)(8), EPA confirms that the Permittee has already worked with EPA and MassDEP to develop this Plan in response to the Consent Decree which meets the requirement set forth in Part I.C.5(b)(8).

Comment 15

Combined Sewer Overflows: Part I.F.1 authorizes GLSD to discharge storm water/wastewater from the CSOs listed in the Draft Permit during wet weather. However, in addition to wet weather events, GLSD can experience high flows during periods of warm weather that cause snow melt.

Request: GLSD requests that EPA add the underlined language below to Part I.F.1: "During wet weather or when snow melt occurs, the Permittee is authorized to discharge storm water/wastewater from the CSO outfalls … ."

Response 15

Consistent with the CSO Policy, 18688 Fed. Reg. at 18689, and 40 C.F.R. § 122.26(b)(13), EPA agrees to the suggested change to include snow melt as a source of wet weather. The Final Permit has been updated accordingly.

Comment 16

Combined Sewer Overflow Bypass: GLSD notes that Footnote 6 of the Draft Permit prohibits secondary bypasses that do not qualify as allowable bypasses and that Part 1.F.2.b prohibits violations of federal or state water quality violations. However, GLSD may treat certain peak wet weather flows using a secondary bypass, which should be authorized as a means to maximize treatment during wet weather events.

Request: As with other recent NPDES permits issued by EPA, GLSD requests that the secondary bypass be an authorized discharge in the Draft Permit and that CSO or secondary bypasses do not violate federal or state water quality standards. Further, GLSD requests that the Draft Permit identify high flow management facilities.

Response 16

See Response 10.

As for the commenter's opposition to Part I.F.2.b, which states that "discharges shall not cause or contribute to violations of federal or state Water Quality Standards," EPA disagrees, and this provision will remain in the permit. This provision is both lawful and consistent with EPA Region 1's past practice. Specifically, EPA includes this provision to ensure full implementation of Sections 301(b)(1)(C) and 402 of the Clean Water Act and sections 122.4 and .44 of EPA's regulations. 33 U.S.C. §§ 1311(b)(1)(C), 1342; 40 C.F.R. §§ 122.4 and .44 (identifying the mandate to ensure compliance with "water quality standards established under section 303 of the CWA, including State narrative criteria for water quality"). Moreover, this provision is also consistent with EPA's CSO Policy, which is incorporated by reference into CWA Section 402(q). *National CSO Control Policy*, 59 Fed. Reg. 18688, 18696 (1994) (requiring NPDES permits to include narrative limitation mandating compliance with applicable WQS no later than the date allowed under the State's WQS). *See also NPDES Permit Writer's Manual*, EPA at 9-16 to 9-17 (Sept. 2010); *Combined Sewer Overflows: Guidance for Permit Writers*, EPA Office of Water, at 3-36 to 3-37, 4-27 (Sept. 1995).

Comment 17

Part I.F.3.a. Combined Sewer Overflows Implementation Levels:

In section I.F.3.a, the Draft Permit states: *"The permittee must implement the nine minimum controls in accordance with the documentation provided to EPA and MassDEP or as subsequently modified to enhance the effectiveness of the controls. This implementation must include the following controls plus other controls the Permittee can reasonably undertake as set forth in the documentation."*

GLSD understands that as a CSO permittee, it must comply with the NMC requirements of the National CSO Policy. However, the Draft Permit states that requirement in a way that improperly adds to what is required under the policy.

The parts that are underlined above have no legal authority. The NMCs are clearly laid out in the CSO policy, but here EPA appears to be adding to them, and to be doing so in a vague way,

leaving GLSD to guess at what additional steps are required to comply. The first underlined term, "or as subsequently modified to enhance the effectiveness of the controls," seems to imply that GLSD has some obligation to "enhance the effectiveness" of the steps that it is taking to meet the NMCs. Beyond the fact that "enhance the effectiveness" is a vague term that is defined nowhere in the Draft Permit or in EPA regulations or guidance, EPA has no authority to require this. Similarly, the concept of "other controls the permittee can reasonably undertake" is completely undefined and vague, and EPA has no legal authority to require GLSD to take any such steps. Both underlined clauses should be deleted from the Draft Permit language.
GLSD requests that EPA provide a description of "the documentation provided to the EPA and MassDEP." Once this documentaiton is identified, GLSD requires an opportunity to review the contents and determine whether implementation of the NMCs is appropriate and feasible with respect to its contents.

The second sentence of paragraph 3.a. states: *"must include the following controls…"* Please note that there are no additional items following this statement, or as a subset of Part 3.a. Finally, GLSD cannot agree to implement the NMCs in accordance with documentation that may be "subsequetly modified" (in documentation which is yet to be identified). GLSD is not in a position to confirm, prior to having the opportunity to review any future modifications, that the modifications are feasible, attainable or technically appropriate.

Request: GLSD requests that EPA delete the underlined clauses in this language ("or as subsequently modified to enhance the effectiveness of the controls" and "plus other controls the permittee can reasonably undertake"). Please specifically identify the "documentation provided to EPA and MassDEP," and identify "the following controls" or remove the sentence; allow GLSD an opportunity to examine and comment on "the documentation provided to EPA and MassDEP" prior to its inclusion in a final permit; remove references to compliance with future (unseen) modifications.

Response 17

The National CSO Control Policy, which was adopted into the Clean Water Act, clearly establishes the nine minimum controls as the required technology-based limitations for CSOs, and establishes that documentation produced by the permittee shall be the basis for determining the appropriate implementation level of the controls. 59 Fed. Reg. at 18691 ("Permittees with CSOs should submit appropriate documentation demonstrating implementation of the nine minimum controls….").

The "documentation" referenced in Part I.F.3.a. of the Draft Permit refers to the Permittee's *NMC Program* (1998))[21], which describes how the Nine Minimum Controls are to be implemented. For clarification, EPA notes that the permittee has submitted documentation of the implementation of the NMCs, in accordance with their NPDES permit, and not the NMC program itself (submittal of the NMC program was not a permit requirement). Therefore, EPA acknowledges that documentation of the implementation of the NMCs has been submitted and is under review by EPA and MassDEP.

[21] Should the permittee wish to review their NMC program, EPA directs them to the following document: Greater Lawrence Sanitary District Report on Nine Minimum Control Measures (November, 1998).

Given the intent of the CSO Control Policy, which includes bringing permittees with CSOs into compliance with CWA goals by applying a flexible approach to CSO control through NPDES permitting, EPA anticipated that modification of the permittee's NMC program may be necessary to reflect current conditions and to determine whether it remains appropriate. This is reflected in the language in Part I.F.3.a. of the Draft and Final Permits, which is structured in such a way so as to allow for an adaptive approach to be taken towards implementation of the NMCs as continued progress is made towards implementing the CSO controls identified in the LTCP, particularly in the event that such controls are deemed infeasible or if alternative controls are identified which would result in greater reductions in CSO discharges than those which were originally selected. Subsequent modifications of the Permittee's program to implement the NMCs would be made by the Permittee and submitted to EPA and MassDEP. This approach recognizes the Permittee's understanding of its own processes and how to best implement the NMCs, including adjustments that may be necessary during the permit term. Likewise, the language regarding "other controls" references measures the Permittee identifies as appropriate for implementing the NMCs. Thus, the language underlined and objected to by the commenter above will remain in the permit as it is consistent with and derived from the CSO Policy itself, it does not add any additional "minimum controls," and provides the Permittee with appropriate flexibility to implement the NMCs in accordance with its expertise and knowledge of its facility.

The second sentence in paragraph three of Part I.F.3.a. of the Draft Permit, which states "must include the following controls" has been clarified in the Final Permit to read as "must include the controls identified in Part I.F.3.b-g of this Permit."

The nine minimum controls are outlined in 40 C.F.R. Part 122. Section I.F.3.a merely states that if the nine minimum controls in 40 C.F.R. Part 122 are modified (through proper rulemaking procedures), then GLSD will be subject to the modified provisions in 40 C.F.R. Part 122. Any other controls that GLSD may implement are discretionary.

Comment 18

Part 1.F.3.e Combined Sewer Overflows NMC metering: In Part 1.F.3.e of the Draft Permit, EPA is requiring that all flows through all CSOs be quantified through direct measurement. Such measurement is to include hours of discharge and volume.

GLSD does not object to the need to measure flow, however, the Draft Permit should allow GLSD to propose alternative means to comply in the future. GLSD does object to the extensive and over-reaching nature of EPA's determination of NMC number 9: "Monitoring to effectively characterize CSO impact and the efficacy of CSO controls."

While recording CSO events is necessary to comply with the NMC policy, additional data collection such as hours of discharge, volume of discharge, and the National Weather Service precipitation data will result in excessive costs to GLSD, and are requirements that go far beyond those necessary to comply with the NMC, which EPA has repeatedly qualified as "low cost measures." GLSD complies with the NMC policy. Presently, GLSD has instrumentation at two

of its CSO outfalls that allow for direct measurement. Flow is measured in the remaining three CSO outfalls based on interceptor elevations and industry standard hydraulic calculations. Due to the remote locations of the other three CSO outfalls, the smaller flows associated with these outfalls and the vandalism observed over the years, GLSD recommends continuing its practice of calculating flows at these three CSO outfalls. GLSD also notes that the instrumentation is prone to malfunctions and repairs, and again emphasizes that it is not feasible to provide direct measurement at all the CSO outfalls. With this said, GLSD typically reports flows from its CSO outfalls within one business day of a CSO event.

Section 1-7 of the NMC guidance document specifically states that, "The NMC are controls that…do not require significant engineering studies or major construction, and can be implemented in a relatively short period…"

EPA recognizes that flow metering is a component of the characterization required under Long Term Control Plan implementation and is used to develop appropriate models. Flow metering is not a requirement of the NMC (see NMC guidance document page 10-1: "This minimum control is the precursor to the more extensive characterization and monitoring efforts conducted as part of the LTCP…"). Specifically, EPA guidance as detailed in the NMC guidance document prescribes the following levels of monitoring as being in compliance with the National CSO Policy:

- Page 10-1: "The ninth minimum control involves visual inspection and other simple methods to determine the occurrence and apparent impacts of CSOs."
- Page 10-2: "The municipality should record the number of CSO overflows at as many outfalls as feasible…Large systems should work with the NPDES permitting authority to select a percentage of outfalls that represent the entire drainage area and sensitive locations."
- Page 10-2: "Monitoring of flow and quality at the level necessary to calibrate models and/or estimate pollutant loadings is addressed in EPA's… 'Combined Sewer Overflows-Guidance for Long Term Control Plan' and may be beyond the intended scope of minimum control monitoring." (emphasis added).
- Page 10-2: "In cases where a calibrated model of the CSS exists (or when one becomes available) model projections may be used to determine the frequency and location of overflow events."
- Page 10-3 "The following measures can be applied to detect overflows; …visual inspection…a chalk mark…wood blocks...mechanical counting device…"

Request: In accordance with the above EPA guidance, GLSD requests that CSO events be recorded on DMR submittals in accordance with the above noted EPA guidance, including the option to estimate flows based on elevations in the interceptors or to use a variety of CSO activation recordings such as the EPA-approved methods of wood blocks, chalk lines, and mechanical counting devices, as well as any flow meters that may be available. Further, GLSD requests that EPA acknowledge that the GLSD's current measuring procedures are acceptable.

Response 18

Chapter 10 of the Nine Minimum Control Guidance, Monitoring to Characterize CSO Impacts and the efficacy of CSO Controls, discusses the implementation of NMC #9 (Monitoring to effectively characterize CSO impact and the efficacy of CSO controls) (*Combined Sewer Overflows Guidance for Nine Minimum Controls*, EPA May 1995 [EPA 832-B-95-003]). This discussion states that this minimum control is a starting point and that extensive monitoring be conducted as part of the LTCP. The minimum control should develop information on the frequency of overflows at individual points in the system. The Guidance recommends the gathering of basic data, such as date and time of overflow events, total daily rainfall, as well as information regarding the duration and magnitude of overflow events, as this information can enhance the implementation of CSO controls and can enable measurement of the effectiveness of particular control measures.

It is unclear from the above comment how the requirement in Part I.F.3.e. of the draft permit to report hours of discharge, volume of discharge, and National Weather Service precipitation data will result in excessive costs to GLSD, as this is already being implemented in accordance with the NPDES permit that was issued to the Permittee in 2005.

See also Response 33 below for discussion of comments regarding direct monitoring.

Regarding reporting the CSO events on DMR submittals, EPA notes that CSO annual reports shall be submitted as NetDMR attachments. The Final Permit has not been changed.

Comment 19

Part 1.F.5 Combined Sewer Overflows NMC Outfall Monitoring

The Draft Permit requires GLSD to report the number of discharge "events" on a monthly basis. GLSD requests that EPA define the term "event." GLSD suggests that the following language, previously approved by EPA, be used:
In a hydraulically connected system that contains more than one CSO outfall, multiple periods of overflow from one or more outfalls are considered one overflow event if the time between periods of overflow is no more than 24 hours without a discharge from any outfall.

Request: Define "event" using the above-noted EPA definition.

Response 19

In order to provide further clarification, the following terms have been defined in the Final Permit:

A "discharge event" has been defined in Part I.F.5 of the Final Permit as "any time there is flow discharged from any CSO outfall, including discontinuous flow, that occurs during a distinct precipitation-related event." "Precipitation-related" includes rainfall, snowfall, and snow melt. This is consistent with the CSO Policy, which states that it

applies "to all CSSs that overflow as a result of storm water flow, including snow melt runoff (40 C.F.R. Section 122.26(b)(13))."

Comment 20

Percent Removal for BOD and TSS: The Draft Permit has the greater than or equal to 85% removal requirement for both BOD and TSS. While GLSD has no objection to this limitation, we request that it be calculated using a six-month rolling average of influent and effluent data, rather than the individual monthly average.

The Draft permit requires influent sampling to be conducted twice/month for both TSS and BOD. Since the plant serves a combined sewer community, the influent flow can vary greatly depending on the weather conditions. During wet weather, influent TSS could be as low as 100 mg/L, which is substantially below the industry design standard of 250 mg/L.

Having the ability to use a six-month rolling average of influent flow values when calculating percent removal will allow GLSD to have better representative data when calculating the limit. Another alternative would be exclusion of wet flow days in the calculation.

Request: GLSD request that EPA allow a six-month rolling average value of influent BOD and TSS to be used when calculating percent removal. In the alternative, GLSD requests that EPA limit the required removal percentage to only dry weather (meaning any calendar day on which there is less than 0.1 inches of rain and no snow melt).

Response 20

Regarding the percent removal requirement, EPA notes that the 85 percent removal requirements for BOD_5 and TSS are included in the Draft Permit as technology-based limits for secondary treatment pursuant to 40 C.F.R. § 133.102. However, a special consideration may be made for treatment works with combined sewer systems based on 40 C.F.R. § 133.103(a), which allows for flexibility with respect to percentage removal levels on a case-by-case basis. EPA has determined upon review of the record before it that an attainable percentage removal level cannot be defined under wet weather conditions. To avoid creating any disincentive to minimize CSO discharges, EPA agrees with the commenter and has added footnote 6 in Part I.A.1 of the Final Permit to clarify that the 85 percent removal requirement applies only during dry weather (meaning any calendar day on which there is less than 0.1 inches of rainfall and no snow melt).

Comment 21

Flow: The flow limitation in the permit should be removed or designated as a "report only" requirement. EPA should recognize that flow is not a regulated parameter because it is not a "pollutant" and should not be included in the permit. It is not permissible to regulate flow, regardless of the pollutant levels present. GLSD disagrees with EPA's assertion that the flow of water is considered a pollutant in 33 U.S.C. §1362(6), which defines "pollutant" as: dredged spoil [sic], solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

Although GLSD agrees that municipal waste such as that discharged by GLSD qualifies of a pollutant, flow is not a pollutant. However, EPA's identification of "non-conventional pollutants" as defined at 40 C.F.R. § 439.1(n) does not identify flow as a parameter. EPA is seeking to re-write the applicable NPDES rules as well as the Clean Water Act to regulate flow regardless of the pollutant levels present, a premise that the federal courts have found impermissible. See e.g. Iowa League of Cites v. EPA (8th Cir. 2013).

EPA contends at page 8 of 39 in the Fact Sheet that its "practice is to use design flow as a reasonable and important worst-case condition" to calculate reasonable potential and water quality based effluent limitations. As stated by a US District Court decision in the case Virginia *Department of Transportation et al. vs. EPA,* where the Court decided in favor of Virginia DOT that stormwater cannot be considered a pollutant as a surrogate for sediment load. The Court affirms that there is "no ambiguity in the wording" of 33 U.S.C. §1362(6), stating on Page 9 that "Stormwater runoff is not a pollutant, so EPA is not authorized to regulate it via TMDL." The Court goes on to state that

> Claiming that the maximum stormwater load is a surrogate for sediment, which is a pollutant and therefore regulable, does not bring stormwater within the ambit of EPA's TMDL authority. Whatever reason EPA has for thinking that a stormwater flow rate TMDL is a better way of limiting sediment load than a sediment load TMDL, EPA cannot be allowed to exceed its clearly limited statutory authority.

Virginia DOT et al. vs. EPA, 2013

This decision is applicable to GLSD as EPA intends to use "design flow as a reasonable and important worst-case condition," or, in other words, as a surrogate for the load of pollutants discharged by GLSD.

Request: GLSD requests that the flow limit be deleted, recognizing that EPA does not have the authority to regulate such flow.

Response 21

EPA Region 1 has included limits on the wastewater effluent flow from POTWs, based on the design capacity of the facility, throughout Massachusetts (96 facilities since 1984, 13 of which include CSOs, including the 2005 NPDES Permit issued to GLSD) and increasingly in New Hampshire (13 facilities since 2005). Moreover, States and other EPA Regions have issued over 3750 NPDES permits (92 facilities with CSOs) to POTWs with similar limits in other parts of the country.

The inclusion of a wastewater effluent flow limit in the GLSD permit is authorized by the CWA § 402(a)(2), which provides that "[t]he Administrator shall prescribe conditions for such permits to assure compliance with the requirements of" CWA § 402(a)(1) – including, by reference, CWA § 301 – "and such other requirements as [she] deems appropriate." As discussed below, the GLSD wastewater effluent flow limit is an appropriate "operation and maintenance" requirement that assures compliance with the technology and water quality-based effluent limitations required by CWA § 301 and is "appropriate" pursuant to CWA § 402(a)(2).

40 C.F.R. §§ 122.41(d) and (e) require the permittee to (1) "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," and (2) "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 the permit." The design capacity-based wastewater effluent flow limit is authorized by section 402(a)(2) and appropriate in order to assure that GLSD operates its facility to comply with its permit's technology- and water quality-based effluent limitations.

As stated in the Fact Sheet, using a facility's design flow in the derivation of pollutant effluent limitations, including conditions to limit wastewater effluent flow, is fully consistent with, and anticipated by NPDES permit regulations. 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).

GLSD unfairly contends that EPA sought to limit wastewater effluent flow from the facility on the basis that flow, or quantity of water, was a "pollutant" whose discharge could be regulated under the Act. This is not the case. Establishing water quality-based effluent limitations that are sufficiently protective to meet in-stream water quality criteria requires EPA to account for both *wastewater effluent* and receiving water flows, as EPA explained in the Fact Sheet. Conditions imposed by EPA to limit wastewater effluent flows from the facility for the permit term are designed to assure that the facility's pollutant discharges do not result in excursions above in-stream water quality criteria, in accordance with section 301(b)(1)(C) of the Act and implementing regulations. 40 C.F.R. §§ 122.4(d), 122.44(d)(1), 122.44(d)(1)(vii)(A), 122.44(d)(5). Most trenchantly, 40 C.F.R. § 122.4(d) prohibits issuance of an NPDES permit "[w]hen the imposition of conditions cannot ensure [emphasis added] compliance with the applicable water quality requirements of all affected States." Section 122.44(d)(1) is similarly broad in scope and obligates the Region to include in NPDES permits "any requirements…necessary to: (1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality."

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992). Under CWA section 402, EPA may issue NPDES permits "for the discharge of any pollutant, or combination of pollutants" if the permit conditions assure that the discharge complies with certain requirements, including those of section 301 of the CWA. The Act defines "pollutant" to mean, inter alia, "municipal . . . waste[]" and "sewage…discharged into water." CWA § 502(6). EPA has implemented Sections 301(b)(1)(C) and 402 of the Act through numerous regulations, which specify when the Region must include specific permit conditions, water quality-based effluent limitations or other requirements in NPDES permits. The wastewater effluent flow limit is a condition designed to ensure that WQS

will be met. More specifically, EPA based both its reasonable potential calculations and its permit effluent limitations for individual pollutants on a presumed maximum wastewater effluent discharge from the facility. 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 critical conditions. EPA, accordingly, is authorized to carry out its reasonable potential analysis by presuming that a plant is operating at its design flow during critical instream conditions (*i.e.*, 7Q10) when assessing reasonable potential.[22]

The commenter's reliance on *Virginia Department of Transportation* is badly misplaced and not relevant to this proceeding. That case concerned EPA's approval of TMDLs under Section 303 of the Act, not the development of reasonable effluent limitations under separate and distinct authority governing the NPDES permitting process—Sections 301, 402 and implementing regulations.

EPA notes, for the record, the commenter's concession that "municipal waste such as that discharged by GLSD qualifies of a pollutant," and would thus be subject to limitation under Section 402, rendering its arguments regarding surrogates at best incongruous, if not irrelevant.

Finally, EPA notes that the previous permit also contained a flow limit. To the extent the Permittee anticipates compliance issues with this limit, EPA notes that it has been able to work with municipalities on this issue through enforcement mechanisms. The Permittee is encouraged to contact EPA's Enforcement and Compliance Assurance Division (ECAD) if it has such concerns. Please see https://r1-gis-web.r1.epa.gov/ecad/enforcement_comp.html for relevant contacts.

Comment 22

Average Monthly Concentration Reporting: Footnote 4 in Part I.A indicates that "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 12 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." Based on this, using cadmium as an example, if one sample comes back at 0.5 µg/l, then there is a monthly average violation. All other samples that are measured as non-detect would then need to be given the designation of 0.25 µg/l for cadmium, resulting in 12 violations rather than one. This methodology, which has no basis in the law, would also skew the annual average for lead and copper.

Request: GLSD requests that Footnote 4 be deleted from the Draft Permit.

[22] USEPA, 2010, National Pollutant Discharge Elimination System (NPDES) Permit Writers' Manual, EPA-833-K-10-001, p. 6-17

Response 22

EPA agrees that footnote 4 should be removed from the Final Permit to avoid any compliance issues raised based on non-detected sampling results. Additionally, EPA has added the following language to footnote 3 for clarification in calculating averages:

For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

Comment 23

Industrial User and Pretreatment Program: Part I.E.1 of the Draft Permit requires that "The Permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices." Although GLSD has and will continue to develop and enforce local limits, it objects to the use of the term that it will "ensure" compliance.

Request: GLSD requests that any requirement to "ensure" compliance other than developing and enforcing local limits be deleted from the Draft Permit.

Response 23

GLSD does not specify its precise objection to the use of the term "ensure compliance" in connection with the NPDES permit. EPA agrees that GLSD is not affirmatively required by the terms of Part I.E to do anything beyond developing and enforcing local limits. This represents EPA's binding interpretation of the permit. In fact, GLSD explicitly acknowledges that it develops and enforces local limits, as required by the terms of the permit, and will continue to do so.

Comment 24

Industrial User and Pretreatment Program: Part I.E.1 of the Draft Permit requires that: (1) "Within 90 days of the effective date of this permit, the Permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits"; and (2) "Should the evaluation reveal the need to revise local limits, the Permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval." Although GLSD understands the need to develop and enforce local limits, due to the technical nature of evaluating its current limits and the potential need to retain outside technical consultants, additional time is necessary to effectively evaluate the current local limits and industrial user and pretreatment program and provide a report to EPA.

Request: GLSD requests that (1) the time to prepare and submit the written technical evaluation to the EPA analyzing the need to revise local limits be extended from within 90 days of the effective date of the final permit to within 120 days of the effective date of the final permit; and (2) if the local limits need to be revised, any revision must be submitted to EPA within 180 days of notification by EPA.

Response 24

The commenter does not establish how the need for outside technical consultants takes longer and otherwise necessitates additional time to prepare and submit the report. EPA does not agree that additional time is needed to fulfill these requirements. The Final Permit has not been modified.

B. Comments from Betsy Reilly, Ph.D., Executive Director, Environmental Quality Department, Massachusetts Water Resources Authority on July 23, 2019.

Comment 25

Comments on Co-Permittees

MWRA appreciates that the United States Environmental Protection Agency (EPA) has included language that provides clarity about responsibilities among the co-Permittees. However, MWRA continues to have reservations about the inclusion of municipal entities that have not applied for a permit and are not directly discharging to a water of the Commonwealth or the United States. MWRA remains concerned that the co-Permittee model is inconsistent with the intent of the Clean Water Act.

Response 25

EPA acknowledges the comment. For a discussion of the three aspects of EPA's co-permitting approach identified in the comment, please see *In re Charles River Pollution Control Dist*., 16 EAD 623 (EAB 2015). Those specific rationales, as well as the bases identified by the Board in upholding EPA co-permittee approach, are incorporated here.

Comment 26

Comments on BOD and TSS Percent Removal

The draft permit includes a requirement to achieve 85 percent removal of BOD_5 and TSS. Pursuant to 40 C.F.R. 133.103(a), this requirement should be applied only "during dry weather" because the treatment plant serves a combined sewer system and thus may not be able to meet the percentage removal requirements established under §§133.102(a)(3) and 133.102(b)(3), or §§133.105(a)(3) and 133.105(b). During wet weather the Nine Minimum Controls requirement to maximize flow to the treatment facility, conflicts with a percent removal requirement. MWRA recommends adding a footnote such as the following:

> The permittee's treatment facility will maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand during dry weather. Dry weather is defined as any calendar day on which there is less than 0.1 inch of rain and no snow melt. The percent removal shall be calculated as a monthly average using the influent and effluent BOD_5 and TSS values collected during dry weather days.

Response 26

See Response 20.

Comment 27

Comments on Phosphorus

The draft permit includes a seasonal limit for phosphorus, subject to a compliance schedule whereby the limit takes effect one year from the effective date of the permit. However, MWRA disagrees with EPA's "reasonable potential" analysis in the Fact Sheet, relating to phosphorus.

Massachusetts Water Quality Standards include a narrative standard for nutrients. There is no Gold Book criterion for phosphorus in freshwater. In fact, the Gold Book outlines, "No national criterion is presented for phosphate phosphorus for the control of eutrophication." Nor has Massachusetts established either a loading allocation such as an approved TMDL, or site-specific criteria, for the Merrimack River for phosphorus.

The Gold Book, as noted above, explicitly does not recommend a criterion for phosphorus in fresh water. However, the following statement in the Fact Sheet is used to support the phosphorus values used for the reasonable potential analysis:

> 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.

The Fact Sheet erroneously uses values mentioned in one (1973) literature citation in the Gold Book, ignoring the remainder of the text, and uses that those numbers as though they were approved water quality criteria or standards. Such use is inappropriate.

The Clean Water Act requires states to develop TMDLs where numeric criteria are not available or where required to restore impaired waters. EPA's web site on TMDLs notes:

> The TMDL process is important for improving water quality because it serves as a link in the chain between water quality standards and implementation of control actions designed to attain those standards.

Furthermore, once a TMDL is approved the state must allocate pollutant loads equitably to contributing point and nonpoint sources, before permit limits can be set based on the TMDL. Although the TMDL process is time-consuming, it requires public input and allows for scientific review. Therefore, EPA cannot apply arbitrary criteria that have not gone through a review and public participation process. The statement in the Fact Sheet "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" has no legal basis.

The draft permit further cites the *Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV* (EPA December 2000). MWRA notes that the Foreword to this document states:

> This document presents EPA's nutrient criteria for Rivers and Streams in Nutrient Ecoregion XIV. These criteria provide EPA's recommendations to States and authorized Tribes for use in establishing their water quality standards consistent with section 303(c) of CWA. Under section 303(c) of the CWA, States and authorized Tribes have the primary responsibility for adopting water quality standards as State or Tribal law or regulation. The standards must contain scientifically defensible water quality criteria that are protective of designated uses. **EPA's recommended section 304(a) criteria are not laws or regulations** – they are guidance that States and Tribes may use as a starting point for the criteria for their water quality standards. *(emphasis added)*

The receiving water for the Greater Lawrence Sanitary District municipal wastewater discharge has been classified as impaired due to phosphorus in the 2014 Integrated List of Waters. The next step must be development of a TMDL for phosphorus loading. The phosphorus limit should be removed from the draft permit.

Response 27

See Response 8.

Consistent with the guidance documents cited by the commenter, EPA relied on these values as information relevant to the translation of the Commonwealth's narrative nutrient and nutrient-related criteria. EPA evaluated these values and methodological approaches and included them in the total mix of information, from which it ultimately derived a protective instream target, which fell within a range of available targets, set against a backdrop of scientific uncertainty. EPA did not apply them as binding criteria and may refine the target in future permitting cycles based on all the information in the record before it at the time of permitting. EPA did not select the most stringent available instream target available to it from the peer-reviewed literature in the administrative record, which it was fully authorized to do, and instead opted as a policy matter to measure receiving water response during the permit term and fine-tune the limit, if necessary, in future permitting cycles after assessing receiving water response. EPA reserves the right to revisit this judgment.

Neither the CWA nor EPA regulations require that a TMDL, or its equivalent, be completed before a water quality-based limit may be included in an NPDES permit.[23] Rather, water quality-based effluent limitations in NPDES permits must be "consistent with the assumptions and requirements of any *available* [emphasis added] wasteload allocation." 40 C.F.R. § 122.44(d)(1)(vii)(B). *Id*. Thus, an approved TMDL is not a precondition to the issuance of an NPDES permit for discharges to an impaired waterway. *Id*. This interpretation is consistent with the preamble to 40 C.F.R. § 122.44(d)(1), which expressly outlines the relationship between subsections 122.44(d)(1)(vi) (i.e., procedures for implementing narrative criteria), and (d)(1)(vii):

[23] *See*, e.g., 43 FR 60662, 60664 (December 28, 1978) ("EPA does not consider the establishment of TMDL's as essential to setting of water quality based effluent limits. Development of TMDL's pursuant to section 303(d) is not a necessary prerequisite to adoption or enforcement of water quality standards, and therefore, will not determine the validity of existing, revised or new water quality standards.")

> The final point about paragraph (vi) is that in the majority of cases where paragraph (vi) applies waste load allocations and total maximum daily loads will not be available for the pollutant of concern. Nonetheless, any effluent limit derived under paragraph (vi) must satisfy the requirements of paragraph (vii). Paragraph (vii) requires that all water quality-based effluent limitations comply with "appropriate water quality standards," and be consistent with "available" waste load allocations. Thus for the purposes of complying with paragraph (vii), where a wasteload allocation is unavailable, effluent limits derived under paragraph (vi) must comply with narrative water quality criteria and other applicable water quality standards.

See 54 Fed. Reg. 23,868, 23,876 (June 2, 1989). If a TMDL is completed and approved by EPA, the effluent limitation in any subsequently issued NPDES permit must be consistent with the wasteload allocation assigned to the facility. In the meantime, relevant regulations require that EPA develop water quality-based effluent limitations based on the existing applicable water quality standard in order to ensure that the permit complies with the EPA regulations requiring permits to include requirements "necessary to achieve water quality standards" (40 C.F.R. § 122.44(d)(1)) and limits "derived from, and [that comply] with" water quality standards (§ 122.44(d)(1)(vii)). These requirements implement Clean Water Act section 301(b)(1)(C), which mandates inclusion of "any more stringent limitation, including those necessary to meet water quality standards" in NPDES permits. *See In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 604-05 (EAB 2010) (expressly rejecting the idea that the permitting authority cannot proceed to determine permit effluent limits where a TMDL has yet to be established), *aff'd*. 690 F.3d 9 (1st Cir. 2012), *cert. denied*, 133 S. Ct. 2382 (2013).

Comment 28

Comments on Nitrogen

The draft permit requires monitoring of total nitrogen in the effluent. The Fact Sheet (section 5.1.10.1) asserts that estuarine portions of the Merrimack River have "elevated" nitrogen and chlorophyll 'a' levels, which can be related. The Fact Sheet goes on to describe observed levels of nitrogen and chlorophyll 'a' in the estuarine portion of the river, and then states "most of these results are outside the range typically found in healthy estuaries in Massachusetts". However, the citation given as a basis for that assertion is a study of *southeastern* Massachusetts estuaries, which are very different in their sensitivity to nitrogen loading from the colder, deeper, macrotidal, better-flushed estuaries north of Cape Cod. For example, Boston Harbor total nitrogen ranges from 0.15 to 0.99 mg/L while chlorophyll 'a' ranges from 0.13 to 68 µg/L (surface samples, collected biweekly year-round, throughout the estuary, 2014-2018)3. These ranges, from the now-healthy Boston Harbor, are similar to those cited for the brackish portions of the Merrimack River.

Although monitoring of effluent nitrogen is likely not onerous, MWRA cautions that the Fact Sheet does not adequately justify a concern about nitrogen loading to the Merrimack River. Establishing whether the receiving water, or the downstream estuary, is impaired because of nitrogen loading, is not the responsibility of NPDES permittees. In addition, as for phosphorus,

the appropriate next step for addressing any such impairment would be development of an approved TMDL

Response 28

EPA concurs that more information is necessary to comprehensively assess the impact of nitrogen loadings in the Merrimack River watershed, because it will result in a more effective permitting regime, should limits prove to be necessary. EPA explains its approach to permitting for TN more fully in Response 39 below. Over the course of the next permit term, EPA expects to gather a variety of effluent and ambient data from various permittees and other entities. Although EPA agrees that the decision to impose an effluent limitation for a pollutant of concern upon finding reasonable potential is the obligation of EPA, the commenter's suggestion that wastewater dischargers may not be subject to monitoring or sampling requirements imposed for the purpose of determining the quality of the waters that receive their pollutant discharges, and the need to control those pollutant discharges, is without foundation in the Act. To the contrary, it is expressly contemplated by NPDES regulations and is supported by case law.

EPA frequently includes monitoring requirements in a permit with the objective of using the data to determine the need for a limit in a subsequent permit, and is authorized to do so under the Act and implementing regulations. The data collected during this permit cycle in conjunction with other water quality data will be used by EPA in the development of a subsequent permit.

See Response 27 regarding TMDL development.

Comment 29

Comments on Footnote 4

It is concerning that in Footnote 4 results are reported differently based on other results. Results should always stand on their own; their values should not depend on other results collected later. What is the rationale for the time period of 12 months? Why is the Permittee to use half the detection limit? It is also not clear that if a result in month 12 is a detect, then do all the nondetects in the previous 11 months get retroactive values of half the detection limit, or is it just any other nondetected result in month 12? There is no logical or scientific rationale for arbitrarily changing values of results.

As a practical matter, conditioning data values on whether all measurements in some past time period were nondetects, makes calculating the results and management of the data extremely complex. It would be difficult for the permittee to document how the monthly average is calculated in a straightforward way, if it changes from month to month. Automating the calculation procedure may become impossible. It also makes the reported results unusable for examining trends. MWRA also does not understand why Footnote 4 only applies to the average monthly effluent limits and not the average weekly or maximum daily limits. EPA should be consistent in how nondetects are treated, both within this footnote and between Footnotes 3 and 4.

MWRA recommends that non-detect results continue to be assigned a value of '0' as is the current practice according to the most recent available instructions for completing a discharge monitoring report (DMR) in EPA Region 1, the NPDES Permit Program Instructions For the Discharge Monitoring Report Forms (DMRs) Report Year 2010, (EPA January 2010). In this document, Permittees are instructed to substitute '0' for any non-detect results prior to averaging or reporting results on the DMR.

Response 29

See Response 22.

Comment 30

Comments on Footnote 6

MWRA recommends that EPA include the following bypass language in the Greater Lawrence Sanitary District's draft NPDES permit as they did in Springfield's draft NPDES permit (MA0101613): "A bypass of secondary treatment is allowed when wet weather influent flow exceeds the wet weather capacity of the secondary treatment." Wastewater treatment plants are designed and constructed with the understanding that, at times, primary-treated-only wastewater will be blended with secondary treated flows and disinfected, provided that the final blended effluent meets secondary permit limits. This practice allows the POTW to maximize flow to the treatment plant from its combined collection system, which may be subject to large fluctuations in flow during wet weather, to minimize combined sewer overflows (CSOs), consistent with EPA policy and regulation.

Additionally, it is unclear why the permit states that a bypass of secondary treatment is subject to the requirements of Part II.B.4.c (prior notice/24-hour reporting). The permit should clarify that Part II.B.4.c applies only when flow bypasses secondary treatment at flows less than the secondary process limit. Thus, the permit should clarify that, for plant flows greater than the secondary process limit that do not cause violations of numerical permit limits or endanger health or the environment, 24-hour reporting of blending is not required.

EPA should also clarify that discharges from CSO outfalls during wet weather are not bypasses of secondary treatment.

Response 30

EPA's response to comments concerning footnote 5 (footnote 6 in the Draft Permit) and the conditions in the permit which relate to bypasses of secondary treatment are found in Responses 16 and 10.

EPA acknowledges language contained in the *draft* NPDES permit for the Springfield Regional Waste Water Treatment Facility. EPA continues to review comments and draft language on that permit, which has not yet been finalized.

The distinction between CSOs and bypasses of secondary treatment are clearly established in Part I.A. of the National CSO Control Policy, 59 Fed. Reg. 18688, which defines a CSO as "a discharge from a combined sewer system at a point prior to the

POTW Treatment Plant." and at 40 C.F.R. § 122.41(m) which defines a bypass as "the intentional diversion of waste streams from any portion of a treatment facility". *See also* 40 C.F.R. § 403.3(r) (defining "POTW Treatment Plant" as "that portion of the POTW which is designed to provide treatment (including recycling and reclamation) of municipal sewage and industrial waste.").

Notice requirements in Part II.B.4.c incorporate required regulatory language at 40 C.F.R. § 122.41(m)(3). Regarding bypasses which do not require notice, Part II.B.4.c., pursuant to 40 C.F.R. § 122.41(m)(2), clearly states that bypasses which do not "cause effluent limitations to be exceeded" and are "essential for maintenance to assure efficient operation" are not subject to the sub-section (c) notice provisions.

Comment 31

Comments on Footnote 13

It is unclear whether EPA is eliminating the submittal of separate, quarterly DMRs for Whole Effluent Toxicity testing. Due to the time necessary to complete the toxicity test report, particularly for chronic tests, it will not usually be the case that results are available by the 15th of the following month. If EPA intends for the Permittee to submit quarterly toxicity DMRs, MWRA suggests that the language below be modified:

The complete report for each toxicity test shall be submitted as an attachment to the monthly DMR submittal immediately following the completion of the test.
should be changed to:

The complete report for each toxicity test shall be submitted by the last day of the month following the completion of the test. The results are due by February 28, May 31, August 31, and November 30.

If EPA intends for the quarterly toxicity results to be submitted on the same monthly DMR form as the other results for the reporting month, the permit should clarify what NODI code should be used for data not yet available, and that the permittee should resubmit the DMR with the toxicity data and report once they become available. It should also clarify that the updated DMR will not be considered late, provided that the non-toxicity results were submitted by the 15th of the month.

Response 31

First, EPA clarifies that the Draft Permit does not require the submittal of separate, quarterly DMRs for WET tests.

Second, EPA agrees that the requirement to submit results with the "monthly DMR submittal immediately following completion of the test" could result in a report being due before it is available. However, EPA does not agree with the proposed alternative because of the technical challenges involving EPA's NetDMR and ICIS systems that may be associated with consistent submittal of late WET test data. Rather, to account for the processing time of each WET test, EPA has revised the language to allow for the WET

results to be reported on the "second monthly DMR submittal following the completion of the test."

Comment 32

Comments on Unauthorized Discharges

Part I.B.2 is not consistent with Part II.D.1.e.(1) (Standard Conditions, 24-hour reporting) of the draft permit, nor with 314 CMR 3.19 (20)(e). Part II.D.1.e.(1) requires verbal reporting of any noncompliance which may endanger health or the environment within 24 hours from the time the Permittee becomes aware of the circumstances. A written report containing discharge volumes is then required within five days of the time the Permittee becomes aware of the circumstances.

It is generally infeasible to provide accurate information on the timing and volume of unauthorized discharges such as sanitary sewer overflows within 24 hours. The Permittee should be given adequate time to analyze, process, and validate data to report accurate information. Specifically, the permit should allow five days to report the "description of the discharge; estimated volume; 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." If the 24-hour notification requirement is retained as written, the unauthorized discharge information is very likely to undergo some corrections between the 24-hour notification and the five-day report. It is not clear in the permit how the Permittee is to handle any discrepancies.

EPA should also clarify how long it intends for this information to be available on the Permittee's website.

Response 32

The two provisions cited by the commenter are distinct requirements in the Draft Permit, which were included to achieve different objectives.

Part I.B.2. requires public notification of an unauthorized discharge (*i.e.*, plant upset, sanitary sewer overflow ("SSO"), *etc.*), so that appropriate precautions can be taken to minimize exposure risks by the public associated with recreating on or near receiving waters where untreated wastewater may be present. Part I.B.2 is properly included, as stated in the Fact Sheet, to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment pursuant to authority established in 40 C.F.R. § 122.41(d) ("*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."). It is, in EPA's judgment, reasonable to expeditiously disclose these occurances, even subject to correction, given the potential risks to the public, so that it may be put on notice and assess the risks prior to utilizing the resource. Although EPA must strike a balance between notifying the public in a timely manner and ensuring the accuracy of the notification, a five-day delay would likely lead to members of the public recreating or otherwise utilizing the resource while unaware of potential risks. It is unclear to EPA why any discrepancies between an initial public notification may not be addressed by simply by providing updated information on the website. As for

the commenter's concern about reporting "volumes," Part I.B.2. requires only reporting of the *estimated volume* of any unauthorized discharge, not an exact volume. The commenter does not specify why Part I.B.2 is inconsistent with 314 CMR 3.19(20)(e).

Part II.D.1.(e.), on the other hand, requires that notification be provided to the permitting authority(ies) of *any noncompliance* which may endanger health or the environment. Moreover, reporting of discharge volumes is generally not required by Part II.D.1.(e) except for noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events.

Additionally, EPA has modified the language in Part I.B.2 to require public notification within 24 hours of *becoming aware* of any unauthorized discharge impacting a surface water or the public, which is consistent with the language set forth in Part II.D.1.(e). See Response 12.

Finally, EPA agrees that clarification regarding the length of time notifications of unauthorized discharges are to remain on the permittee's website is needed, and therefore, Part I.B.2. of the Final Permit specifies that such notifications shall remain posted for a minimum of 12 months. This will provide a reasonable record and history that the public may consult when assessing the frequency of unauthorized discharges in particular water bodies in assessing whether to utilize them.

Comment 33

Comments on Combined Sewer Overflows

The permit should allow flexibility in choosing the most effective way to "characterize CSO impacts and the efficacy of CSO controls" (Nine Minimum Controls [NMC] #9), as EPA did in the Public Notification Requirements for Combined Sewer Overflows to the Great Lakes Basin final rule promulgated in the Federal Register on January 8, 2018. MWRA's experience is that due to the complexity of CSO regulator structures, and the difficulty in maintaining sensors in the harsh environment of a combined sewer, it is usually impossible to accurately measure CSO discharges (i.e., "Duration (hours) of discharge; Volume (gallons) of discharge" for "each combined sewer outfall" [pg. 18; Part I.F.3.e]) over a short period of time. These measurements in the field -- as opposed to those at CSO treatment facilities -- require extensive, expensive metering at each outfall and regulator. Once the collected meter data are determined (through careful technical assessment) to be valid, the data must then undergo post-processing and expert interpretation, as well as validation against other information such as system performance records and model output, to determine reasonably accurate activation start and stop times and discharge volumes. MWRA has seen that, even with good meter "data," the discharge durations and volumes determined from the data are often suspect or unreliable.

CSO discharge estimates can change between an immediate or short-term notification, and annual reporting. To avoid concern about "discrepancies," the permit should state that discharge estimates in initial notifications are "preliminary and subject to change with new information or additional evaluation."

As an alternative to direct measurement, MWRA encourages EPA to also allow modeling, precipitation-based estimates and other analytical tools to estimate CSO discharge duration and volume as EPA does in the Public Notification Plan section of the draft permit (Part I.F.3.g.(2)). Under the right conditions, modeling can be an effective method for determining the occurrence and characteristics of CSOs.

MWRA is providing rapid public notification of CSO discharges at CSO treatment facilities. These facilities are typically the most active CSOs in their respective receiving waters, and can be accurately measured and verified compared to stand-alone CSO regulator structures.

Public notification plan

The draft permit provides 180 days to develop a public notification plan (CSO Nine Minimum Controls #8). Because the infrastructure to provide notification needs to be put in place, MWRA recommends that additional time, at least 36 months from the effective date of the permit, be allowed for implementation of the plan.

MWRA also recommends that EPA include a schedule for implementation and a listing of potentially affected entities in the plan. EPA should also provide guidance to the Permittee on how to determine which downstream communities might be potentially affected entities.

Initial notification

MWRA supports the draft permit language that allows the use of "monitoring, modeling, or other means" to determine that a CSO discharge has occurred.

It is important to keep in mind that notifying the public of CSO discharges into a receiving water body that is affected by many wet weather (and possibly dry weather) sources of pathogens is likely to give the false impression that the water is safe for contact recreation when CSOs are not discharging; or, that the water is safe if there has not been a CSO activation in a storm or a series of wet weather events. The risk to public health is influenced by a number of factors, not just CSO discharges. A requirement for rapid public notification of CSO discharges may give the erroneous impression that the receiving waters are safe during and immediately after storms in the absence of CSO discharges.

More helpful to the public and protective of public health would be a much more general short-term notification of the potential for one or more CSO discharges to a receiving water segments (along with stormwater and other discharges). The risk to public health is best determined and communicated by public health authorities rather than wastewater Permittees. MWRA recommends that the language be changed to provide a general notification that because large storms can trigger CSOs, public health officials recommend avoiding contact with water bodies during rainstorms and for 48 hours afterwards, as there may be increased health risks due to bacteria or other pollutants associated with urban stormwater runoff and CSO discharges.

Follow-up notification

The draft permit requires a supplemental notification within 24 hours after becoming aware of the end of a CSO discharge. This supplemental notification would confirm whether the CSO did indeed discharge and provide the start and stop times. MWRA believes it is infeasible to provide accurate information on the timing of each activation within 24 hours at any CSO outfall other than those from CSO treatment facilities. As discussed above, the Permittee should be given adequate time to analyze, process and validate data (or model results) to report accurate information. Furthermore, it is not clear what public health benefit would be obtained by such a notification. The potential benefit of these notifications is not immediate public health protection but as input to longer term CSO public policy and control efforts, adequately provided for with the other CSO discharge reporting requirements in the draft permit.

MWRA recommends that the follow-up notification requirement be eliminated.

Response 33

The Final Rule Public Notification for CSOs to the Great Lakes implements Section 425 of the Consolidated Appropriations Act of 2016, which requires EPA to work with the Great Lakes States to establish public notification requirements for combined sewer discharges to the Great Lakes. It does not apply to dischargers outside of the area.

EPA maintains its position that the objective of the monitoring required under the nine minimum controls is to provide data that can be used to evaluate compliance with the technology based effluent limitations for CSOs that are set forth in the permit (i.e., the nine minimum controls), the efficacy of the CSO controls that have been implemented and to validate the assumptions set forth in the permittee's LTCP, as well as to facilitate the CSO notification program. It has been EPA and MassDEP's experience that direct measurement provides the most accurate indication of CSO activations. Therefore, the collection of data through direct measurement is essential for the regulatory agencies to conduct these evaluations. Forms of direct measurement *may* include, but are not limited to, metering of flows at each CSO outfall. Alternate approaches could include, for example, extrapolating the flow volume discharged through a CSO outfall from measurements of water levels in the interceptor sewers (or some other measured metric of a known quantity from which the flow volume could be derived). The requirement to monitor CSO discharges through direct measurement remains unchanged in the Final Permit.

EPA understands that additional time may be needed to validate and refine CSO data that is collected each month through direct measurement, and as such, the permit requires CSO discharge data to be submitted with the Annual Report that is submitted in accordance with Part I.F.4. of the permit.

EPA agrees that CSO discharge estimates may change between the time the initial and supplemental notifications are provided. This understanding is reflected in Part I.F.3.e.(2) (initial notification) of the Draft Permit, which states that "Initial notification of a *probable* CSO activation shall be provided…". This language has been maintained in the Final Permit.

Public notification plan

With respect to the commenter's request that the deadline for the submittal and implementation of the public notification plan be extended to 36 months, the deadline for complying with this requirement remains unchanged in the Final Permit. Neither the commenter nor the permittee have identified any specific impediments to meeting this requirement within the time frame established in the permit.

With respect to the commenter's request for guidance on determining "potentially affected parties", upon further consideration, EPA has determined that the notification requirements in the Draft Permit, including the requirements in Part I.F.3.g. to provide the general public with notification of CSO discharges and the requirements in Part I.H.2. and Part I.H.3. to notify downstream community water systems and the Massachusetts Division of Marine Fisheries of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure that has the potential to violate permit limits or affect the quality of the water to be withdrawn for drinking water purposes, are inclusive of all categories of the public, and the references to "affected entities" and "affected parties" have been removed from Part I.F.3.g. of the Final Permit.

Initial Notification

EPA disagrees with the commenter's statement that notifying the public of the cessation of a CSO discharge will provide a false sense of security that the water is safe. While water quality may be negatively impacted by non-CSO sources, including stormwater runoff, providing timely notice of CSO discharges may allow the public to take steps to reduce potential exposure to pathogens associated with untreated wastewater. EPA does, however, encourage the permittee to provide the public with information relative to the impacts of wet weather, including those due to stormwater and other non-CSO sources, on the quality of the receiving water as well as to public health. Additionally, EPA supports the collaboration between the permittee and public health entities in communicating the health risks presented by untreated discharges of combined stormwater and wastewater.

Follow-up Notification

EPA disagrees with the commenter's suggestion that confirmation of a CSO discharge can only be made if the discharge is from a CSO treatment facility. The concerns expressed by the commenter regarding the time needed to analyze, process and validate data (or model results) to report accurate information appear to be more appropriately directed towards the collection and reporting of flow volumes, as opposed to confirming whether a CSO discharge occurred.

The intent of the supplemental notification, in conjunction with the initial notification, is to provide the public with timely information relative to CSO discharges so that appropriate precautions can be taken to minimize exposure risks associated with

recreating on or near receiving waters into which CSO discharges occur. These public notification requirements are reasonable given the uses of the receiving water and remain unchanged in the Final Permit.

Comment 34

Comments on Special Conditions

Condition I.H.6 requires monitoring of phosphorus (see also Footnote 10.) There is no justification for this requirement provided in the Fact Sheet. It is not clear what the purpose is or how the proposed study design is going to meet that purpose. The classic reference for designing marine pollution monitoring programs, Managing Troubled Waters, emphasizes the importance of starting with clear monitoring questions in order to assure that the study design will generate data that will answer those questions.

If there were a rationale provided for the study, reviewers could make more relevant comments on the appropriateness of the study design. What is the reason for sampling in dry weather? How will tidal aliasing be avoided?

Furthermore, the requirement to collect monthly samples in dry weather is infeasible. The permittee may schedule sampling during an expected dry day, only to have the weather change. If there are no dry days during a month, how should the lack of data be reported on the DMR?

If this ambient monitoring condition is retained, EPA should clarify that Part I.H.6 refers to monitoring for total phosphorus only.

Response 34

EPA clarifies that the purpose of the ambient monitoring requirement for phosphorus is to track background conditions over the life of the permit. These data can be used in the next permit reissuance to ensure that appropriate limits are in place to protect water quality standards.

The comment questions the condition of dry weather and tidal aliasing. Monitoring during dry weather is required because the critical condition for the impact of phosphorus loading from the GLSD discharge is during periods of low flow. If it is raining, then the conditions of the river are likely impacted by stormwater and are not representative of critical dry weather conditions.

During the summer of 2017, EPA deployed datasondes in the lower Merrimack River. The farthest station upstream was just above the POTW located in Merrimac, MA. The maximum salinity at this location was 3.4 ppt so tidal aliasing would not be expected to cause any issues upstream of Merrimac, MA. Since Merrimac, MA is downstream of GLSD, EPA does not believe that tidal aliasing will be an issue for GLSD.

EPA disagrees that monitoring during dry weather is infeasible. However, if there are no dry days during a month, the Permittee may report a No Data Indicator (“NODI”) code “V” (Weather Related) for that month.

Part I.H.4 applies to total phosphorus monitoring only.

Comment 35

Typographic errors

Fact Sheet pages 21 and 22

The units of chlorophyll 'a' in the CDM report cited, are μg/L (parts per million), not "ppt" (parts per thousand or parts per trillion, not clear from the context).

Page 30 of the Fact Sheet, section 5.5

"Specific permit conditions have also been included in Part I.C. and I.D. of the Draft Permit."

The reference here should be to Part I.B and I.C.

Fact Sheet page 37

"Acute toxicity tests will be continued four times a year. Present toxicity test results are in compliance with the permit limits"

should say

"Acute and chronic toxicity tests will be continued four times a year. Present toxicity test results are in compliance with the permit limits"

Response 35

EPA agrees with these typographical edits, and they are noted here for the record.

C. Comments from Julia Blatt, Executive Director, Massachusetts River Alliance and Caitlin Peale Sloan, Senior Attorney, Conservation Law Foundation on July 23, 2019:

Comment 36

We strongly support the inclusion of a total aluminum average monthly limit of 87 μg/L. Given updates made to EPA's aluminum criteria in 2018 and MassDEP's ongoing efforts to update their own Surface Water Quality Standards to include this updated metric, we appreciate the inclusion of the three-year compliance schedule in the permit. We urge EPA to strongly consider the significant ecological implications of excess aluminum on critical species functions, particularly respiratory functions, as they evaluate compliance with this metric.

Response 36

Comment noted. See Response 6.

Comment 37

We strongly support the inclusion of heavy metal average monthly limits, including total cadmium average monthly limit of 0.1 µg/L, total copper average monthly limit of 4.3 µg/L, and total lead average monthly limit of 1.0 µg/L. Dissolved fractions of these metals in water can be toxic to aquatic life. There is a demonstrated need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. Given the presence of state and federally-listed endangered and threatened species including the Atlantic and shortnose sturgeon, it is critical that limits are established for effluent to minimize impacts wherever possible.

Response 37

Comment noted. See Response 6. The reasonable potential analysis for these metals was updated with more recent data collected using clean techniques. This analysis demonstrated that effluent limitations for these metals are not necessary to meet applicable aquatic life criteria.

Comment 38

We strongly support the inclusion of a total phosphorous average monthly limit of 0.53 mg/L. The MassDEP's Massachusetts Year 2014 Integrated List of Waters (2014 Integrated List), the 303(d) list, includes the Merrimack River, Segment MA84A-04 and the Spicket River, Segment MA84A-10 as Massachusetts Category 5 Waters, with the Merrimack River impaired for total phosphorous. Given these significant impairments, we were pleased to see the inclusion of a total phosphorous limit in this permit.

Response 38

Comment noted. See Response 8.

Comment 39

We support the addition of total Kjeldahl nitrogen, total nitrate/nitrite, and total nitrogen weekly (April - October) and monthly (November - March) monitoring and reporting, but we recommend that EPA proposes a total nitrogen average monthly limit for the permit. As noted in the Fact Sheet, nitrogen levels in the Merrimack River estuary are higher than is acceptable for a healthy nearshore coastal system. Nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicate elevated total nitrogen and chlorophyll 'a' levels. In addition, in 2012, the Gulf of Maine Council on the Marine Environment reported that the Merrimack was the second greatest contributor of nitrogen and phosphorus to the Gulf of Maine. We disagree that any additional reasonable potential analyses need to be conducted for this criterion. Delaying reductions in nutrients is not a viable strategy, as noted by the EAB: "Due to the tendency of nutrients to recycle once released into the system and contribute to future impairment, delay in addressing point source nutrient contributions will only compound the challenges in restoring receiving waters" (Upper Blackstone Water Pollution Abatement District, Determination on Remand, EAB, 7/7/2010, p. 3). EPA should move forward with establishing a total nitrogen limit. In addition, as EPA moves forward with other CSO NPDES permits on the Merrimack, we remind EPA that discharge permitting on the Merrimack River in both Massachusetts and New Hampshire should be consistent and ensure that the concentrations and loads of nutrients discharged in the river system as whole will prevent the creation of eutrophic conditions both in the river and in the lower Merrimack estuary.

Response 39

As EPA evaluated both phosphorus and nitrogen impacts from this discharge, it notes that there is an inherent distinction in the approach to ensure the attainment of water quality standards and evaluate eutrophic impacts from each nutrient. Typically, phosphorus is the limiting nutrient in freshwaters, such as the Merrimack River immediately downstream of this discharge. Nitrogen is the limiting nutrient in downstream estuarine segments, such as near the mouth of the Merrimack River. This distinction plays an important role in EPA's evaluation of whether the discharge has the reasonable potential to cause or contribute to an excursion of water quality standards with respect to each nutrient specifically.

For phosphorus, the impacted waterbody is immediately downstream and impacts can be measured or predicted with relative ease using all available site-specific ambient and effluent data. For nitrogen, on the other hand, impacts to segments much farther downstream may be impacted by a variety of sources including over 40 POTWs in the Merrimack River watershed as well as significant non-point source loads. The evaluation of watershed-wide nitrogen loading and far-field impacts of such nitrogen loading lends itself to a much larger-scale evaluation and approach to establishing reasonable potential and setting permit limits to ensure water quality standards are met.

EPA has the discretion to apply a site-specific analysis and establish nitrogen permit limits for any individual discharger based on information available at the time of permit reissuance; it need not base that decision on the collection of a comprehensive watershed-wide data set. The reasonable potential standard governing the imposition of effluent limitations in NPDES requires, after all, certainty only beyond a "mere possibility" of a water quality impact. However, the Agency has chosen at this juncture to evaluate nitrogen impacts, including those from this discharger, on a watershed-wide basis. This permit cycle will be focused on gathering information to characterize watershed loading and evaluate far-field impacts so that the next permitting cycle can more definitively determine whether such loadings have the reasonable potential to cause or contribute to a violation of water quality standards and, if necessary, establish appropriate nitrogen limits throughout the watershed to ensure that water quality standards are met. EPA concurs with the commenter's view that permitting should follow a consistent approach in both New Hampshire and Massachusetts, which it believes counsels as a matter of policy, in favor of collecting a more comprehensive dataset on which to base limits, in order to lay the groundwork for consensus between upstream and downstream states, which will generate more sustainable and impactful water quality-based solutions to any problems that are found. Again, should EPA's preferred approach fail to cohere prior to the next permit cycle, EPA is authorized to move forward on a more disaggregated, individualized basis with information that is reasonably available at the time concerning a particular discharge.

EPA fully agrees with the comment that delaying nutrient reductions is not a viable strategy when confronted with a waterbody impaired for nitrogen such as in the Upper Blackstone permit. However, more data are necessary at this time to better understand the impact of nitrogen loading in the Merrimack River and the Gulf of Maine. A model,

sophisticated statistical analyses and years of water quality information were available for Blackstone and Upper Narragansett Bay; although EPA requires a far lower quantum of proof prior to making a permitting decision, EPA remains cognizant of the fact that, at this time, the Merrimack River is not well characterized for nitrogen impacts. *See, e.g.*, "National Estuarine Eutrophication Assessment, Effects of Nutrient Enrichment in the Nation's Estuaries" (National Oceanic and Atmospheric Administration) at 18 https://ian.umces.edu/neea/pdfs/eutro_report.pdf. Although this report is dated, EPA is not aware of any comprehensive assessment that has been conducted and made available since its publication. It is in the interests of the watershed and all stakeholders for EPA to make as informed a decision as possible on this critically important issue, in order for EPA to select an appropriate permit regime (*i.e.*, one that will be effective on a watershed-wide basis should EPA find permit limits to be necessary and that will entail an systematic and efficient expenditure of federal, state and municipal resources toward that end).

See Response 9.

Comment 40

We support the inclusion of additional characteristics beyond LC50 and C-NOEC for Whole Effluent Toxicity (WET) testing in the permit, but recommend that EPA includes specific time frames for quarterly monitoring, similar to the schedule established in the Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613).

Response 40

EPA notes that footnote 13 of the GLSD Draft Permit states: "Toxicity test samples shall be collected, and tests completed, during the same weeks in January, April, July and October." This level of specificity in the timing of the WET tests is already consistent with the Draft Permit for the Springfield WWTF referenced in the comment. Therefore, no change has been made to the Final Permit.

Comment 41

We support the inclusion of public notifications for unauthorized discharges on a publicly available website, but we strongly recommend that notices be made to the public within two hours rather than within 24 hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. Twenty-four hours is not sufficient notice for individuals who choose to recreate in or near the Merrimack River and will not protect public health.

Response 41

Requiring the permittee to provide notification within 24 hours of becoming aware of an unauthorized discharge is appropriate given the nature of such discharges, specifically, because they are unpredictable and not amenable to modeling, as are, for example, discharges from CSOs, which would provide information for providing notifications on a shorter timeframe. EPA must balance the need to notify the public in a timely way while also accounting for administrative, staffing and logistical constraints with which a

permittee may be confronted. EPA also needs to ensure that there is sufficient time for a permittee to preliminarily assess any data and ensure that the information disclosed is reasonably accurate. Finally, EPA observes that the condition mandates disclosure *within* 24 hours; it is likely as a practical matter that, in many if not most cases, notification will occur before that time, given that elected officials and municipal employees have an interest in providing timely information to protect the health and welfare of the City's citizens.

Comment 42

We support the inclusion of a collection system mapping and collection system operation and maintenance plan to ensure that the most accurate data is utilized in system review.

Response 42

Comment noted.

Comment 43

We support the inclusion of inspections and reporting for CSO structures in the permit, but we recommend that the frequency of inspections be increased from once per month to twice per month to ensure that adequate assessments are occurring and operators are able to fix and address problems as they arise.

Response 43

The inspection frequency of once per month that was included in Part I.F.2.b. of the Draft Permit was carried forward from the permit that was issued in 2005. EPA does not have any specific basis to conclude that the existing inspection frequency is inadequate, or that more frequent inspections would materially impact the operational integrity of the CSO structures. The Permittee is required to document any necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. EPA is unaware of any issues that have occurred with this frequency. Should EPA become aware of specific facts relating to this issue, it may revisit its determination. Part I.F.2.b. of the Final Permit remains unchanged from the Draft Permit.

Comment 44

We support the inclusion of additional signage at CSO locations, but recommend that the permit make signage in additional languages a requirement rather than a suggestion. We recommend that signage be posted in both English and Spanish, as according to the most recent U.S. Census data from July 1, 2018, 79% of the population of Lawrence identifies as Hispanic or Latino and according to Data USA, 70% of the populations speaks Spanish or Spanish Creole as their first language.

Response 44

EPA agrees with this comment and has updated Part I.F.3.f. of the Final Permit to require signage in English and Spanish, or the addition of a universal wet weather sewage discharge symbol to existing signs.

Comment 45

We support the inclusion of initial notifications for CSO discharges, but we recommend that the notice be required within two hours rather than four hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. Four hours is not sufficient notice for individuals who choose to recreate in or near the Merrimack River. We note that the most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes a requirement that initial notifications are made by no later than two hours. Despite the fact that discharges across multiple treatment facilities to the Merrimack River collectively number in the hundreds and total more than 800 million gallons of sewage annually, the Merrimack River is still used heavily for recreation. From kayak and boat clubs to spin-rod and fly fishermen, the River supports a substantial recreation community. To provide these individuals with adequate notice and maintain consistency across CSO permits, we strongly recommend that this requirement is corrected to two hours.

Response 45

The 2-hour initial notification requirement that was proposed in the Draft Permit for the Springfield Wastewater Treatment Facility, which has not yet been finalized, was based, in part, on existing requirements in the State of Connecticut, including EPA's obligation to consider and protect the water quality of a downstream state, the proximity of the discharges to the downstream State of Connecticut and the time of travel from the Springfield Water and Sewer Commission's CSOs to the state border (approximately 2 hours). *See* 33 U.S.C. § 1341(a)(2). Again, EPA must balance the need to notify the public in a timely way while also accounting for administrative, staffing and logistical constraints with which a permittee may be confronted. EPA also must ensure that there is sufficient time for a permittee to preliminarily assess any data and ensure that the information disclosed is reasonably accurate. EPA will evaluate the protectiveness of this condition over the course of the permit term, and based on that information, will make a record-based judgment on whether more rapid dissemination of this information is warranted. Therefore, the Final Permit has not been changed.

Comment 46

We support the inclusion of supplemental notifications for CSO discharges, but we recommend that the notifications also include total volume discharged from the CSO. The most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes this information as a requirement for reported information. In the interest of maintaining consistency across CSO permits and ensuring accurate data is presented to the public, we strongly recommend that the total volume discharged from the CSO is included in the notifications as well.

Response 46

EPA acknowledges language contained in the *draft* NPDES permit for the Springfield Regional Waste Water Treatment Facility. EPA continues to review comments and draft language on that permit. That permit has not yet been finalized and remains subject to change.

In consideration of the time needed for the validation, post-processing and interpretation of CSO data, EPA has determined that requiring the reporting of CSO discharge volumes in the annual notification is more appropriate than the supplemental notification See also Response 33 regarding the time needed to verify and process CSO data to ensure the reporting of accurate information. The annual notification requirements in the Final Permit remain unchanged.

Comment 47

We ask that the permit Fact Sheet be updated to include the following information: (1) the most recent annual volume reports for CSO discharges at each outfall, (2) the most recent version of LWRF's Long Term Control Plan and the status of improvements made in accordance with the plan thus far, and (3) summaries of reductions or eliminations of CSO's that have been made in accordance with the plan. It is extremely difficult to evaluate the impacts on receiving waters without complete information on the discharges.

Response 47

Fact sheets are not modified following the public comment period; however, an annual CSO discharge summary from 2014-2018 (as submitted by the permittee with their Annual CSO Reports) is provided in **Attachment A** to this document and is hereby incorporated into the administrative record. Inquiries into Long Term Control Plans may be directed to EPA's Enforcement and Compliance Assurance Division ("ECAD"). Please see https://r1-gis-web.r1.epa.gov/ecad/enforcement_comp.html for relevant contacts.

D. Comments from Christina Eckert, Co-Executive Director and John Macone, Co-Executive Director, Merrimack River Watershed Council on July 22, 2019

Comment 48

We strongly support the inclusion of notification requirements for CSOs, but we encourage the DES to require notifications within 2 hours. Further, we ask that the information reported be consistent between the Lowell, GLSD and Haverhill wastewater treatment plants.

Because these discharges pose a health risk to those fishing, swimming or using the river for recreation, it's imperative to notify the public in a timely manner so they can avoid contact with the water. Currently Lowell sends out notifications almost as soon as CSOs begin, with follow-up notifications when they end. Within 24 hours, they follow up with notifications estimating the volume of effluent released. MRWC believes that GLSD should be held to the same standard, for the health and safety of all those living downstream of a CSO.

Response 48

See Response 41 regarding 2-hour notification.

To address the commenter's concerns regarding consistency between Lowell, GLSD, and Haverhill wastewater treatment plants, the information reported relating to CSOs in the

Draft and Final NPDES Permits for all three permittees is consistent. The requirement in the Draft Permit for CSO discharge volumes to be included in the Annual Notification and Annual Report is appropriate given the additional time that may be needed to validate and refine data that is collected for each discharge event.

Comment 49

MRWC supports the EPA's inclusion of a total phosphorous average monthly limit of 0.53 mg/L.

The MassDEP's Integrated List of Waters in 2014 listed the Merrimack as impaired for total phosphorous. Five years later, it is time to address this issue.

Response 49

EPA agrees with this comment and acknowledges the support for the total phosphorus limit.

See Response 8.

Comment 50

MRWC recommends that the EPA/Mass DES require an average monthly limit for total nitrate/nitrite, total nitrogen, and total Kjeldahl nitrogen.

Recent studies have shown that the Merrimack's nitrogen levels are increasing. As stated above, the Merrimack is the second greatest contributor of nitrogen to the Gulf of Maine. As difficult as it is, our region must find a way to limit or eliminate these pollutants threatening priceless wildlife, not only within the Merrimack, but in the Gulf.

In conclusion, we commend GLSD for their current notifications and for their efforts in seeking out solutions to the CSO issue. We understand that these stringent requirements are costly. Our preference is that resources first be allocated to reducing CSOs; but that the mitigation of phosphorous and nitrogen needs to begin now, and efforts increase in the next 2-3 years.

Response 50

Regarding nitrogen, see Responses 9 and 39.

Comment noted. EPA acknowledges the comment regarding the allocation of resources towards CSOs and nutrient removal.

E. Comments from Heather McMann, Executive Director, Groundwork Lawrence on July 23, 2019:

Comment 51

We strongly support the inclusion of a total aluminum average monthly limit of 87 µg/L. Given updates made to EPA's aluminum criteria in 2018 and MassDEP's ongoing efforts to update their own Surface Water Quality Standards to include this updated metric, we appreciate the inclusion of the three-year compliance schedule in the permit. We urge

EPA to strongly consider the significant ecological implications of excess aluminum on critical species functions, particularly respiratory functions, as they evaluate compliance with this metric.

Response 51

Comment noted. See Response 6.

Comment 52

We strongly support the inclusion of heavy metal average monthly limits, including total cadmium average monthly limit of 0.1 µg/L, total copper average monthly limit of 4.3 µg/L, and total lead average monthly limit of 1.0 µg/L. Dissolved fractions of these metals in water can be toxic to aquatic life. There is a demonstrated need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. Given the presence of state and federally-listed endangered and threatened species including the Atlantic and shortnose sturgeon, it is critical that limits are established for effluent to minimize impacts wherever possible.

Response 52

Comment noted. See Response 6.

Comment 53

We strongly support the inclusion of a total phosphorous average monthly limit of 0.53 mg/L. The MassDEP's Massachusetts Year 2014 Integrated List of Waters (2014 Integrated List), the 303(d) list, includes the Merrimack River, Segment MA84A-04 and the Spicket River, Segment MA84A-10 as Massachusetts Category 5 Waters, with the Merrimack River impaired for total phosphorous. Given these significant impairments, we were pleased to see the inclusion of a total phosphorous limit in this permit.

Response 53

Comment noted. See Response 8.

Comment 54

We support the addition of total Kjeldahl nitrogen, total nitrate/nitrite, and total nitrogen weekly (April - October) and monthly (November - March) monitoring and reporting, but we recommend that EPA proposes a total nitrogen average monthly limit for the permit. As noted in the Fact Sheet, nitrogen levels in the Merrimack River estuary are higher than is acceptable for a healthy nearshore coastal system. Recent nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicates elevated total nitrogen and chlorophyll 'a' levels. In addition, in 2012, the Gulf of Maine Council on the Marine Environment reported that the Merrimack was the second greatest contributor of nitrogen and phosphorus to the Gulf of Maine. We disagree that any additional reasonable potential analyses need to be conducted for this criterion. EPA should move forward with establishing a limit total nitrogen, but at a minimum should include in the current permit that a future permit may require nitrogen limits and/or process optimization at the facility.

Response 54

See Responses 9 and 39.

The commenter suggests that EPA "at a minimum should include in the current permit that a future permit may require nitrogen limits and/or process optimization at the facility." EPA agrees with this comment and has already indicated in the Fact Sheet (at 22) that "The Agencies recommend the Permittee factor in treatment methods to reduce nitrogen in the effluent for any planned upgrades at the treatment plant, as nitrogen limits may be included in subsequent permits."

Comment 55

We support the inclusion of additional characteristics beyond LC_{50} and C-NOEC for hole Effluent Toxicity (WET) testing in the permit, but recommend that EPA includes specific time frames for quarterly monitoring to occur, similar to the schedule established in the Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613).

Response 55

See Response 40.

Comment 56

We support the inclusion of public notifications for unauthorized discharges on a publicly available website, but we recommend that notices be made to the public within two hours rather than within 24 hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. 24 hours is not sufficient notice for individuals who choose to recreate in or near the Merrimack River.

Response 56

See Response 41.

Comment 57

We support the inclusion of a collection system mapping and collection system operation and maintenance plan to ensure that the most accurate data is utilized in system review.

Response 57

Comment noted.

Comment 58

We support the inclusion of inspections and reporting for CSO structures in the permit, but we recommend that the frequency of inspections be increased from once per month to twice per month to ensure that adequate assessments are occurring and fix and address problems as they arise.

Response 58

See Response 43.

Comment 59

We support the inclusion of additional signage at CSO locations, but recommend that the permit makes signage in additional languages a requirement rather than a suggestion. We recommend that signage be posted in both English and Spanish, as according to the most recent U.S. Census data from July 1, 2018, 79% of the population of Lawrence identifies as Hispanic or Latino and according to Data USA, 70% of the populations speaks Spanish or Spanish Creole as their first-language.

Response 59

See Response 44.

Comment 60

We support the inclusion of initial notifications for CSO discharges, but we recommend that the notice is required within two hours rather than four hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. Four hours is not sufficient notice for individuals who choose to recreate in or near the Merrimack River. In addition, the most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes a requirement that initial notifications are made by no later than two hours. Despite the fact that discharges across multiple treatment facilities to the Merrimack River collectively number in the hundreds and total more than 800 million gallons of sewage annually, the Merrimack River is still used heavily for recreation. From kayak and boat clubs to spin-rod and fly fishermen, the River supports a substantial recreation community. To provide these individuals with adequate notice and maintain consistency across CSO permits, we strongly recommend that this requirement is corrected to two hours.

Response 60

See Response 45.

Comment 61

We support the inclusion of supplemental notifications for CSO discharges, but we recommend that the notifications also include total volume discharged from the CSO. The most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes this information as a requirement for reported information. In the interest of maintaining consistency across CSO permits and ensuring accurate data is presented to the public, we strongly recommend that the total volume discharged from the CSO is included in the notifications as well.

Response 61

See Response 46.

Comment 62

We ask that the permit Fact Sheet be updated to include the following information: (1) the most recent annual volume reports for CSO discharges at each outfall, (2) the most recent version of GLSD's Long Term Control Plan and the status of improvements made in accordance with the plan thus far, and (3) summaries of reductions or eliminations of CSO's that have been made in accordance with the plan. It is extremely difficult to evaluate the impacts on receiving waters without complete information on the discharges.

Response 62

See Response 47.

F. Comments from Philip D. Guerin, President & Chairman, Massachusetts Coalition for Water Resources Stewardship on July 22, 2019

Comment 63

The Massachusetts Coalition for Water Resources Stewardship (MCWRS) is a nonprofit organization committed to promoting watershed-based policies and regulations that effectively manage and conserve water resources. Members include municipalities; public agencies that transport and treat drinking water, wastewater and storm water; quasi-government agencies; and private organizations whose members are committed to the principles of stewardship and sustainability in protecting the environment and public health. Find us at mcwrs.org.

MCWRS offers these comments on the Greater Lawrence Sanitary District (GLSD) draft NPDES Permit because GLSD is a long-standing member of our organization. We also find that many of the conditions contained in the permit have implications for other communities in the Merrimack Valley and throughout Massachusetts.

On June 24, 2019, MCWRS had requested from EPA Region 1 a 90-day extension of the comment period for this draft permit. That request was denied and instead a 15-day extension was granted. Given the complexities and far-reaching impacts of this permit, MCWRS again suggests that a comment period extension of an additional 90 days would best serve the agencies and stakeholders. The additional time would allow further discussion of many issues and perhaps resolution of most. In lieu of an extension, EPA will have to reissue the draft permit as it needs to be substantially modified to remain fair, accurate and consistent.

Response 63

Comment noted. See Response 1.

Comment 64

MCWRS fully supports the comments submitted by GLSD. In particular, their request for a revised Draft permit should be heeded. As pointed out by GLSD, there are a number of factual inaccuracies in the draft permit including 7Q10 flows and dilution factors. While these may be corrected in the final permit, these metrics have far reaching implications. When the correct values are introduced the need for discharge limits on some pollutants disappear altogether. The

need to correct the inaccurate data and then reevaluate the permit in its entirety go hand-in-hand and calls for a revised permit.

Response 64

EPA has responded to the comments submitted by GLSD in the relevant sections above. *See* Responses 1 through 24.

Comment 65

In addition to GLSD's comments, MCWRS also suggests that EPA Region 1 is missing a wonderful opportunity to advance watershed–based permitting by handling permits for GLSD, Lowell and Haverhill in an isolated fashion. These three large communities are each situated on the Merrimack River within a relatively short stretch of river. They all share the same issues of wastewater treatment, CSOs and aging water infrastructure. Through new language in a revised draft permit, EPA could allow and encourage collaboration between these communities in a way that advances river improvement while minimizing fiscal impacts and duplicative work. Some form of pollution trading or similar actions which allow a community to utilize its strengths and work with a neighboring system to share costs and implement beneficial improvements would be a great step forward in NPDES permitting in New England.

Response 65

EPA appreciates the suggestion to encourage more collaboration between Permittees within the Merrimack River watershed and notes that the concurrent development of the Draft Permits for these three Permittees has certainly resulted in an increase in collaboration, efficiency and consistency. EPA welcomes more specific suggestions for how environmental benefits can be achieved in a more collaborative fashion in the future. Note that collaborative efforts are not precluded by the issuance of the permit and EPA can revisit the structure of permits, including the introduction of general permits, in future permitting cycles should collaborative efforts coalesce.

G. Comments from Jennifer A. Pederson, Executive Director, Massachusetts Water Works Association on July 10, 2019

Comment 66

Massachusetts Water Works Association (MWWA) is writing to offer comments on the draft National Pollutant Discharge Elimination System (NPDES) permit issued to the Greater Lawrence Sanitary District for their Wastewater Treatment Plant. MWWA has been engaged in discussions with the United States Environmental Protection Agency's (EPA) Region 1 office since 2008 on the issue of numeric limits on Aluminum in NPDES permits. We have been specifically focused on EPA's NPDES permit for Potable Water Treatment Facilities but feel compelled to comment on this permit given we see that EPA is proposing to require compliance with an Aluminum standard in this permit. Our comments on this draft permit will be isolated to this one issue.

Response 66

Comment noted. See Response 6.

Comment 67

We previously commented on the Towns of Hudson, Maynard, and Milford's draft permits and appreciate that the language contained in Greater Lawrence Sanitary District's permit offers some flexibility to revisit the Aluminum criteria. However, we remain concerned at any limit being proposed in this permit given the recent guidance issued by EPA Headquarters with a new methodology for looking at Aluminum criteria. The limits noticed in Greater Lawrence Sanitary District's permit draft permit do not acknowledge this new guidance.

Response 67

Comment noted. See Response 6.

Comment 68

MWWA has gone on record numerous times that 87 µg/L is an inappropriate standard for Aluminum in permits in the New England region. Many of the receiving waters in Massachusetts, including many high quality, pristine waterways, already have natural background levels of Aluminum that exceed the national water quality standard that is currently used as the basis for numeric permit limits. The high levels of background Aluminum in waters generally considered to be very clean suggest that the current standard is grossly inaccurate and unnecessarily overprotective.

We are concerned that EPA is moving forward with issuing any permits with Aluminum criteria given the recent adoption of new national guidance and the fact that Massachusetts intends to very shortly update its surface water quality standards to incorporate the new guidance.

As indicated in the Fact Sheet, "EPA is aware of ongoing efforts by MassDEP to soon revise the Massachusetts aluminum criteria based, at least in part, on forthcoming new EPA aluminum criteria recommendations which are expected to be finalized within the coming months. …EPA's draft aluminum criteria recommendations indicate that the new aluminum criteria recommendations may be higher than the current recommendations. …EPA reasonably expects its (MassDEPs) new criteria may also be higher." For this reason, we ask that EPA strike the numeric criteria for Aluminum from this permit and change it to a monitoring requirement until the state updates its surface water quality standards.

Response 68

Comment noted. See Response 6.

H. Comments from Rick Cantu, Osprey Owl Environmental LLC on July 23, 2019:

Comment 69

Comments on Total Phosphorus Limitations

The permit allows a total monthly limit of 0.53 mg/L with a footnote of 10, 11 and a header footnote of 4. Footnote 10 refers the permittee to Part I.H.2, total phosphorus compliance schedule and Part I.H.6, outlining ambient phosphorus monitoring requirements. The header footnote 4 in 'Average Monthly' reporting requirements details using the numerical value of 0 if

the sample was non-detect and if one or more samples demonstrates a value, then all non-detect values are to be listed as 'half the detection limit' for that specific sample.

The expectation is that all samples will have some value, but in the event an ambient river sample measures a ND at a detection limit of 10 ug/l (fairly standard minimum detection level for TP) GLSD would need to report 0.005 mg/L (5 ug/l) on their monthly DMR for the ambient WQ value. At river flows near 7Q10 this would add 25 lbs of total TP mass loading to the Merrimack River that is not warranted. This increases as 7Q10 increased (50 lbs at two times the 7Q10, 100 lbs at four times the 7Q10 etc). This may have significant impact in future waste-load allocations within the watershed.

Total phosphorus should be exempt from the number four footnote, and as other comments will reference, this footnote should be completely eliminated from the draft.

I have reviewed the draft permit, five years of WWTP effluent TP data. This data was used to calculate the 95th percentile of TP discharge from the plant with a calculated concentration of 854 ug/l from 60 samples taken under non-clean sampling conditions. The WWTP pulls a sample from the effluent distribution box (Figure 1)

- Change out the pvc, vinyl sample tubing before taking a NPDES reportable sample;
- Change out the tygon peristaltic pump hose before taking a NPDES reportable sample;
- Draw a sample of certified TP clean diluent water through the sample hose and pump hose and collect directly into a 'clean sample' container to be analyzed for TP. This will determine any TP contamination contributed by the hosing;
- Insert a clean plastic bag liner in the 10-liter carboy every time a sample was being taken to prevent effluent from contact with the interior of the 10-liter carboy.

This practice was done for the May 21st through June 27th effluent composite testing and resulted in lower overall effluent TP than has been reported with the five-years of DMR that was used to calculate the 95 percentile value of 854 ug/1. The values for TP calculation (95th percentile) plant effluent (387.7 ug/l) and for upstream Merrimack River ambient TP concentration (median value of 50 ug/l) are in the below as taken with clean sampling methods.

Total Phosphorus Concentrations

Date	Eff ug/l	M018 ug/l	River Q cfs
5/21/2019	448	41	12,500
6/4/2019	217	54	9,410
6/5/2019	239	37	8,880
6/12/2019	235	32	8,040
6/13/2019	314	38	9,720
6/14/ 2019	147	46	8,290
6/18/2019	220	50	8,140
6/19/2019	238	50	7,550
6/25/2019	139	64	6, 820
6/26/2019	157	64	7,080
Median	227.5	50	
95th Percentile	387.7	64	

Using 'Clean Sampling' values only, cfs values as outlined in the Fact Sheet, and solving for the downstream Total Phosphorus concentration would utilize the following equation;

$$Cr = \frac{(869 \text{ cfs}) \times (50 \text{ ug/l}) + (80.46 \text{ cfs}) \times (387.7 \text{ ug/l})}{949.46}$$

Cr = 78.9 ug/ I

As this is below the Gold Book guidance value of 100 ug/1, there is no reasonable potential to violate the water quality standard.

As this 'Clean Sampling' data is minimal, and the expectation is that the EPA would like to see ongoing proof that this trend is indeed representative of water quality conditions, one of the following should be adopted.

Delay the 0.53 mg/I limit for a year to allow GLSD to continue gathering TP data that adequately reflect the trends that are evident at the plant and ambient river concentrations taken under 'Clean Sampling' conditions.

Place a 'Monitor Only' provision in the permit to allow GLSD to gather five-years worth of data during this permit cycle for use in developing a reflective limit in the next permit renewal.

Begin the process of waste-load allocation with the information contained in the 15-year in the CDM study as coordinated by the USCAE and make the 'Best Use' of this available scientifically-based information.

EPA recommendations published under section 304(a) of the CWA serve several purposes, including providing guidance to States and Tribes in adopting water quality standards for nutrients that ultimately provide a basis for controlling discharges or releases of pollutants.

The values for both causal (total nitrogen, total phosphorus) and biological and physical response (chlorophyll a, turbidity, dissolved oxygen) variables represent a set of starting points for States and Tribes to use in establishing their own criteria in standards to protect uses. EPA recommends that States and Tribes establish numerical criteria based on section 304(a) guidance, section 304/a} guidance modified to reflect site-specific conditions, or other scientifically defensible methods.

EPA has also published methods for modifying 304(a) criteria on a site-specific basis. For nutrients, however, EPA expects that in most cases, it will be necessary for States and authorized Tribes to identify with greater precision the nutrient levels that protect aquatic life and recreational uses.

These sections from the CWA specifically encourage States to go beyond guidance values (100 ug/l Gold Book criterial for TP) and modify values to reflect site -specific conditions, or other scientifically defensible methods. The CDM Merrimack River study does both.

The study was a 15-year compilation of datasets throughout the Merrimack River Watershed in three phases. Data has been collected, verified, tabulated and used to demonstrate the current viability of the Merrimack River and modelled future scenarios under varying loading conditions. This document meets all the site-specific conditions and scientifically defensible methods as outlined in the 304(a) guidance.

In Table 4-1, Scenario #2, the baseline current conditions demonstrate that 1,540 lbs of average TP/day is discharged throughout the watershed at average total daily discharge from the WWTPs at an average daily flow of 98 mgd. These are current conditions in which the COM study does not demonstrate any non-compliance with Merrimack River D.O., oxygen saturation, pH or any visible algal blooms or signs of eutrophication. EPA also indicates in the draft permit that there were no known instances of nutrient induced algal blooms at the time of draft permit release

Table 4-1, Scenario #6 shows full design discharge amounts from all large treatment plants at 198 mgd (this modeled result is twice the current average daily discharge). The modelling is done with a maximum discharge of 1 mg/L of TP from each large contributing WWTP. The modelled daily maximum loading to the Merrimack River is 1,378 lbs of TP. This is 162 lbs less TP that the current daily discharge that is causing no adverse effects to the Merrimack River.

The CDM Study modelling illustrate that a 1 mg/L TP concentration at full design flows of all WWTPs discharging to the Merrimack River would demonstrate compliance with conditions and even exhibit less total overall TP discharge than was evident during the 15-year study.

At a design flow of 52 mgd for GLSD that would equate to 1 x 8.34 x 52 = 433.68 lbs/day of total phosphorus discharge.

When looking at current permitted TP discharges to the Merrimack River, the GLSD discharge of 433 lbs/day would be the second lowest allocated lbs of TP/mgd within the watershed. This demonstrates an equitable distribution among the three largest dischargers.

City	LBS/DAY	Design Q	**Lbs of TP/MGD**	Permit Date
Concord, NH	199	10.1	**19.7**	2011
Franklin, NH	201	11.1	**18.1**	2017
Manchester, NH	236	34	**6.9**	2015
Merrimack, NH	168.8	5	**33.8**	2014
Nashua, NH	227	16	**14.2**	2016
Lowell, MA[1]	288	32	**9.0**	2019
GLSD, MA	433	52	**8.3**	2019

Response 69

Regarding footnote 4, see Response 22.

Regarding total phosphorus, see Response 8.

As described in Response 8, in EPA's technical judgment, the U.S. Army Corps of Engineers study was not nearly as expansive as the comment suggests. Rather, the sparse dataset, and any modeling scenarios based on this data, are not sufficiently representative for EPA to use as a basis to establishing phosphorus limits in this permit.

Finally, regarding equitability, EPA notes that more stringent effluent limitations may be necessary for certain dischargers that have a greater impact and proximity to instream impacts. Permitting decisions are based on site-specific factors that may result in effluent limits that may or may not be "equitable" throughout a given watershed.

I. Comments from Gene Porter, Chair, Lower Merrimack River Local Advisory Committee on July 20, 2019

Comment 70

I am the Chair of New Hampshire's Lower Merrimack River Local Advisory Committee (LMRLAC) and have a vested interest in the EPA's efforts to upgrade the permits for all wastewater treatment facilities that discharge untreated effluent to the River. Although the two major permits in New Hampshire are not scheduled for review until next year, the precedent set by the Massachusetts permits will be important.

The more people who feel confident in using the River for recreational purposes, the more people who will have a vested interest in helping ensure that environmental safeguards are observed and strengthened. To that end, greater transparency of the limits of any pollution threats will increase public confidence in the safety of the River's waters.

My major comment applies to all three Massachusetts permits. I trust you will transmit these comments to the appropriate officials before the 7/23 deadline.

CSO discharges pose a significant public health risk to the recreational users of the River. It is therefore gratifying to see that the draft EPA permits specifically call out the threat to recreational use as a major reason for strengthening the CSO reporting requirements from only

downstream drinking water suppliers but to now include the general public. Nevertheless, the draft language requiring such reporting is needlessly vague and needs to be strengthened to at least reflect more explicitly current "best practices" for the notification of potentially affected parties of the emergence of an imminent public health hazard.
To that end, the existing draft public notification language:

- **Public Notification of CSO discharges**: within 4 hours of becoming aware of a probable CSO discharge, notice shall be provided to the public and downstream communities; supplemental notification confirming the occurrence of a CSO discharge, the CSO outfall number, and the start and stop times of the discharge shall be provided within 24 hours of the termination of any CSO discharge; an annual report shall be posted, summarizing annual CSO activation information.

should be strengthened, not just by allowing electronic notification, but by mandating that each municipality that employs CSOs establish an internet-based public alerting system that allows interested downstream individuals and recreation oriented entities, such as marinas, to subscribe to a free alerting service that conveys the foregoing information in a timely fashion. Such "list-serve" systems have already been established in many municipalities for disseminating similar time-sensitive information and would not pose an undue burden if CSO reports were to be added to the menu.

Response 70

EPA sought to strike a balance in fashioning the draft permit requirements for the minimum implementation level for NMC #8 (Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts). As contemplated by NMC #8, the public notification plan affords the permittee reasonable flexibility in implementing the plan to account for facility-specific concerns (e.g., logistics in obtaining and disseminating information in a timely and efficient manner given funding and staffing resources), while at the same time ensuring that important health and safety information is disseminated to the public in a timely manner. *Combined Sewer Overflow, Guidance For Nine Minimum Controls*, at 9-1 (EPA 1995) (“The measure selected should be the most cost-effective measure that provides reasonable assurance that the affected public is informed in a timely manner.”). The communication strategy described in the above comment is one approach that may be employed to satisfy the Public Notification requirement, and the permittee is encouraged to consider this as it develops its public notification plan in accordance with Part I.F.g.3. of the Final Permit.

Comment 71

There is also a larger issue involving the need for at least rudimentary predictions of the geographic and temporal boundaries of the likely plume of contaminated water under various river flow conditions. The absence of a rigorous river sampling program immediately after major CSO events in each location precludes the establishment of reliable models that permit prediction of the limits of the public health threat. The resulting general advice to "stay away from the river for 48 hours" may be excessively conservative. It would seem to me appropriate that the EPA include such sampling and modeling requirements in the emerging NPDES permits. Users of the River would benefit greatly.

Response 71

EPA encourages collaboration between stakeholders, including community-based organizations, MassDEP and the Permittee to develop and implement an extensive ambient monitoring program, such as the one suggested in the comment.

J. Comments from Peter Severance, River Merrimack on July 22, 2019

Comment 72

I. Ambient Monitoring.

a. I would suggest that Chlorophyll-*a* be added to the list of parameters for ambient monitoring. This will add valuable information concerning response to / need for additional nutrient controls.

b. I would further suggest that ambient monitoring (all monitoring?) be conducted with sufficient quality and controls so as to be useful and acceptable per the quality standards of the the MassDEP Watershed Planning Program. This would entail a couple of additional things:

1. Writing of a detailed QAPP per the Watershed Planning Program standards.
2. Having all testing of grab samples be conducted by labs which hold current Massachusetts certification for the analytical methods specified in the QAPP.

Response 72

EPA anticipates that water quality monitoring for chlorophyll-a and other nutrient response variables will be conducted in the coming years by EPA, MassDEP and other stakeholders. EPA has been contacted by Massachusetts Coastal Zone Management and the Mass Bays Program about monitoring needs in the lower Merrimack. This has been a poorly monitored area for a long time but it is now receiving more attention from local watershed groups and the state related to increased monitoring needs. Therefore, EPA has not added additional parameters to the ambient monitoring requirement in the Final Permit but notes that such parameters may be required in a future permit.

EPA recommends that any sampling and analysis performed should be conducted consistent with a state-approved quality assurance project plan ("QAPP") developed for the monitoring work to ensure inclusion in MassDEP's assessment program. Additionally, EPA approved analytical methods found in 40 C.F.R. Part 136 must be employed by any state-certified lab.

Comment 73

II. Nitrogen controls.

You probably would be implementing controls on Total Nitrogen if MassDEP had a finding that the lower Merrimack was IMPAIRED for nutrients according to their current standards. Unfortunately, they have never looked at the estuary.

I believe that the monitoring the USACE and EPA has done for the past 5 or 6 years shows clear need for this, taking into consideration several things we know about the estuary.

a. As outlined in the draft permits, the levels of Total nitrogen in the lower Merrimack are clearly very high.

b. Taking a look at the 45 observations from USACE (2014-2016) and EPA (2017) data for Chlorophyll-*a* -- for stations downstream from Rivermile 7 (the estuary proper). Consider them non-parametric perspective, in light of the 2018 Massachusetts CALM guidance:

51% exceeded the 10 mg/L "impaired" standard
22% met the <= 5 mg/L "healthy" standard
27% fell in between the "impaired" and "healthy" standards
78% exceeded the "healthy" standard.

c. Historical records make the case for long-standing nutrient impairment of the estuary:
1. NOAA and the EPA have known for decades that nitrogen in the Merrimack estuary is among the worst in all of Massachusetts. For example, in 1994, NOAA published data from 1989 and 1990 for the 14 estuarine systems from Cape Cod and Massachusetts Bay to Passamaquoddy Bay in Maine -- the Merrimack estuary was far and away the worst for nitrogen pollution:

Table 4. Summary of physical and hydrological characteristics, nitrogen and phosphorus discharges, and predicted nutrient concentration statuses for estuarine systems bordering the Gulf of Maine [a]

Estuarine System	Total Drain. Area (mi^2)	Water Surf. Area (mi^2)	Water Depth (ft)	Average Daily Freshw. Inflow (10^2 cfs)	Volume ($10^9 ft^3$)	1980 Pop. Density (no./mi^2)	Total Nitrogen Disch. (tons/yr)	Nitrogen Conc. & Status[b] (mg/l)	Total Phos. Disch. (tons/yr)	Phos. Conc. & Status [b] (mg/l)
Passamaquoddy Bay	3200	157	72	62	315	11	293	0.008L	28	0.001L
Englishman Bay	900	76	38	16	80	12	150	0.014L	22	0.002L
Narraguagus Bay	400	70	32	9	63	17	104	0.016L	11	0.002L
Blue Hill Bay	800	115	75	13	241	28	154	0.016L	35	0.004L
Penobscot Bay	9400	361	72	161	725	58	7808	0.102M	771	0.010M
Muscongus Bay	300	72	43	6	85	67	56	0.013L	16	0.004L
Sheepscot Bay	10100	103	41	176	118	66	8745	0.077L	641	0.006L
Casco Bay	1200	164	42	21	191	172	1412	0.086L	465	0.028M
Saco Bay	1800	17	32	36	15	71	1257	0.057L	193	0.009L
Great Bay	1000	15	11	20	5	243	636	0.098L	204	0.031M
Merrimack River	5000	6	12	84	2	423	10111	1.021H	1625	0.164H
Massachusetts Bay	1200	364	77	29	786	2228	7995	0.216M	4091	0.110H
Boston Bay	700	69	26	18	50	2789	N/A	N/A	N/A	N/A
Cape Cod Bay	800	548	77	18	1178	392	377	0.026L	187	0.013M

[a] Data sources:Strategic Assessment Branch (1990); NOAA/EPA Team on Near Coastal Waters (1989).
[b] Concentration status: L = low; M = medium; H = high.

2. Decades ago, specialists on the vascular plants and algae of estuaries were studying New England estuaries and concluded that pollution was having a dramatic impact on the Merrimack. Miller (1971) included this analysis:

"Pollution is often an important limiting factor in algal distribution and abundance. A comparison of species composition of seaweeds from the Merrimack River Estuary with that of the Hampton-Seabrook Estuary (Mathieson and Fralick, In Press) and the Great Bay Estuary Systems {Mathieson, Reynolds, and Hehre, In Press) of New Hampshire indicates a paucity of species in the Merrimack."
Hampton-Seabrook Estuary: 118 species
Great Bay: 150 species
Merrimack: 28 species
"The abundance of many Ulotrichalean green algae (e.g., Enteromorpha spp., Ulva lactuca, Ulva flexuosa subsp. paradoxa, and Monostroma sp.) typifies a polluted estuarine habitat. The latter species are not only tolerant of extremes in pollution, but to gross fluctuations in hydrographic factors."

c. Consider the following historical notes concerning the state of eelgrass in the estuary. While it is currently present, it used to be thriving, but is likely to be impaired at present:
Jerome (1965) made note of a 1903 Newburyport Daily News article on clammers digging back "abundant" beds of eelgrass from Plum Island to what is now known as Ring's Island (Salisbury).

"Abundant growth" of eelgrass was observed in the lower Merrimack River, Plum Island Sound and the Ipswich River (Addy and Aylward, 1944).
By 2010 there was no eelgrass recorded in Plum Island Sound (Novak, 2012).
Fred Short (personal communication) observed beds of eelgrass in the Merrimack in the 1980s; however, it had disappeared in the 1990s.
Within the last decade, the eelgrass beds of the Merrimack were surveyed and catalogued in the Massachusetts NHESP Natural Communities inventory (MassGIS, 2016), and described as follows:
COMMUN_NAM Seagrass Community
COMMUN_RAN S3
Acres 849.231
COMMUN_DES Seagrass Communities occur on estuarine or marine flats with sand or mud substrates that are submerged by, usually, less than 2m of water at high tide.
SPECIFIC_D This example of Marine Subtidal Flats is **extremely sparsely vegetated** but has a rich diversity of invertebrate fauna that provide forage for many species of birds. *[emphasis added]*

6. Four of the nine EFH species have eelgrass mentioned in association with habitat of one or more of their life stages.

I would suggest that if there is any hope of restoring the richness of the eelgrass beds to this ~850 acres of EFH (which by the way is used by an additional 38 economically and ecologically important marine species - ELMR) the high levels of TN and resulting Chlorophyll-*a* in the estuary are probably the key impediment to success of that effort.

d. Macroalgae growth on the shorelines of Deer Island appears to be significant, per the photos sent with the email I forwarded to you from Dr. Mathiesson.

Response 73

EPA appreciates the detailed information regarding the history of nitrogen loading and eelgrass health within the lower Merrimack River estuary. EPA agrees that this information may be useful in determining the impairment status of the estuary. MassDEP will consider this information in its next assessment of the lower Merrimack River.

As explained above, EPA plans to require nitrogen monitoring in NPDES permits throughout the Merrimack River watershed and expects monitoring for other response variables (*e.g.*, chlorophyll-a, dissolved oxygen, eelgrass) to be collected by EPA, MassDEP and other stakeholders, which will result in a comprehensive dataset on which to make systematic regulatory decisions. This approach will ensure EPA has sufficiently representative effluent and ambient data to make effective permitting decisions on a watershed level, as it has done in Upper Narragansett Bay and more recently in the Taunton River Estuary/Mount Hope Bay.

Comment 74

III. The most abundant species of fish using the Merrimack estuary are forage fish (Jerome, 1965; ELMR) -- the prey species that feed the cod, the seabirds, the dolphins and whales of the Gulf of Maine and Massachusetts bay. The populations of many of the fish using the Merrimack as a nursery – the river herring, Atlantic herring, mackerel and others – are not doing well. The list of ELMR species utilizing the estuary and their life stages is found in this shared directory.

The Atlantic States Marine Fisheries Commission is considering designating important shad and river herring spawning and nursery habitat as HAPC (January, 2019).

Response 74

Comment noted.

Comment 75

IV. Additional Economic considerations for taking steps to restore the estuary:
a. Jerome (1965) estimated that the estuary would support the harvest of 30,000 bushels of soft-shell clams, worth $4,500,000 - $6,000,000 at today's wholesale prices.
b. Ipswich Shellfish Group is interested in farming oysters in the estuary, but not until it's cleaned up.

Response 75

Comment noted.

Attachment A – Combined Sewer Overflows Background and Annual CSO Discharge Summary 2014-2018

Greater Lawrence Sanitary District (NPDES Permit No. MA0100447)

This Attachment provides background on the statutory and regulatory framework that applies to combined sewer overflows (CSOs). It briefly describes the Region's approach to key permitting and enforcement issues. Finally, it provides data documenting the trends in CSO discharges at the Greater Lawrence Sanitary District.

A combined sewer system ("CSS") is a wastewater collection system owned by a state or municipality (as defined by section 502(4) of the Clean Water Act ("CWA")) which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and storm water through a single-pipe system to a Publicly Owned Treatment Works ("POTW") Treatment Plant (as defined in 40 C.F.R. § 403.3(p)). A CSO is the discharge from a CSS at a point prior to the POTW Treatment Plant. CSO discharges occur when the volume of wastewater exceeds the capacity of the CSS or treatment plant (e.g., during heavy rainfall events or snowmelt). When this occurs, untreated stormwater and wastewater, discharges directly to nearby streams, rivers, and other water bodies.

Like all point sources, CSOs are subject to sections 301 and 402 of the CWA. CSOs require National Pollutant Discharge Elimination System (NPDES) permits, which may include technology-based and water quality-based requirements of the CWA. Additionally, where EPA is the permitting authority it must ensure that the state or authorized tribe where the CSO discharge may originate either issues a section 401 water quality certification finding compliance with existing water quality requirements or waives the certification requirement.

Further, Section 402(q) of the CWA states that: "[e]ach permit, order, or decree issued pursuant to this chapter after December 21, 2000 for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994." The Combined Sewer Overflow Control Policy ("CSO Policy"), 59 Fed. Reg. 18688 (April 19, 1994), provides a national strategy for the control of CSOs through the NPDES program at 40 C.F.R. Part 122. The CSO Policy "presents a uniform, nationally consistent permitting approach that should … result in the establishment of both technology-based and water quality-based requirements for all CSOs."[24]

Under the CSO Policy, permittees must undertake a process to accurately characterize their CSS and CSO discharges, demonstrate implementation of the nine-minimum technology-based controls (NMCs), and develop long-term CSO controls plans ("LTCPs") which evaluate alternatives for attaining compliance with the CWA, including compliance with water quality standards and protection of designated uses. All CSO permittees are required to implement the Best Available Technology Economically Achievable / Best Conventional Pollutant Control Technology ("BAT/BCT"), which at a minimum includes the NMCs, as determined on a best

[24] "Combined Sewer Overflows Guidance for Permit Writers," at 2-1 (September 1995), available at https://www.epa.gov/sites/production/files/2015-10/documents/csopermitwriters_full.pdf ("CSO Guidance for Permit Writers")

professional judgment basis (BPJ) by the permitting authority. Implementation of the NMCs is achieved through specific control measures deemed most appropriate for a specific permit and necessary to satisfy the BAT/BCT requirement based on BPJ of the permit writer, considering the factors presented in 40 C.F.R. § 125.3(d).[25]

The CSO Policy sets out a phased approach to CSO permitting. The immediate requirement for CSO permits are: (1) immediately implement the BAT/BCT, which includes at a minimum the NMCs; (2) submit a report documenting such implementation; (3) comply with applicable WQS, no later than the date allows under the State's WQS, "expressed in the form of a narrative limitation;" and (4) develop and submit a LTCP.[26] Once a permittee has developed a LTCP and selected controls necessary to achieve WQS, the CSO Policy articulates the following, among other elements, for inclusion in CSO permits: (1) requirements to implement the NMCs and (2) water quality-based effluent limits under 40 C.F.R. § 122.44(d)(1) and 122.44(k), requiring, at a minimum, numeric performance standards for the selected CSO controls.[27]

For CSO permits on the Merrimack River, EPA has and continues to require implementation of the NMCs. Development of LTCPs, on the other hand, has been and continues to be addressed as part of enforcement actions taken by Region 1's Enforcement and Compliance Assurance Division.

EPA or the relevant state has worked with virtually every CSO community in New England to develop CSO abatement schedules to be memorialized in administrative or judicial enforcement mechanisms. As necessary, such schedules are adjusted to reflect new information and evolving financial conditions.

[25] *Id*. at 3-6.
[26] 59 Fed. Reg. at 18696.
[27] *Id*.

GLSD CSO Discharges - Activations and Volume by Year

EPA notes that the data on activations and volume discharged are significantly influenced by the number and intensity of rainfall events in a given year and/or by improvements made by the permittee in measuring and reporting CSO events and volumes. This permit requires, for the first time, direct measurement of CSO flows. EPA and MassDEP have also taken various enforcement actions against WWTF permittees on the Merrimack River similarly requiring improvements in CSO monitoring and reporting. Accordingly, EPA expects the quality and accuracy of this data to continue to improve.

	YEAR	**2014**	**YEAR**	**2015**	**YEAR**	**2016**
Outfall	Activations	Volume (MG)	Activations	Volume (MG)	Activations	Volume (MG)
002	0	0	0	0	1	*> 0*
003	0	0	0	0	1	*> 0*
004	10	*> 6.15*	4	12.66	8	35.69
005	0	0	0	0	1	*> 0*
006	0	0	0	0	1	*> 0*
TOTAL	**10**	***> 6.1***	**4**	**13**	**12**	**> 36**

	YEAR 2017		**YEAR 2018**	
Outfall	Activations	Volume (MG)	Activations	Volume (MG)
002	4	*> 3.1*	5	22.91
003	2	***> 0***	2	0.07
004	7	***> 14***	14	65.965
005	2	***> 0***	4	0.5
006	0	0	4	3.57
TOTAL	**15**	***> 17***	**29**	**93.015**

italics <-- one storm unknown volume
bold italics <-- more than one event of unknown volume

Outfall annual totals were taken from GLSD CSO Annual Reports
Totals rounded to two significant digits.

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"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§ 26-53),

Greater Lawrence Sanitary District

is authorized to discharge from the facility located at

240 Charles Street
North Andover, MA 01845
And
Combined Sewer Overflow (CSO) discharges at 5 locations

to receiving waters named:

Merrimack River Segment MA 84A-04 (Waste Water Treatment Facility Outfall # 001 and CSO outfalls #002, 003, 004, and 005), Spicket River Segment MA84A-10 (CSO outfall #006)

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

The Cities of Lawrence and Methuen, Towns of Andover, North Andover in Massachusetts and Town of Salem, New Hampshire[1] are co-permittees for Part B, Unauthorized Discharges; Part C, Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems owned and operated by the Cities and Towns; Part D, Alternate Power Source; and Part II, General Conditions. The Permittee and co-permittees are severally liable under Part B, Part C and Part D for their own activities and required reporting with respect to the portions of the collection system that they own or operate. They are not liable for violations of Part B, Part C and Part D committed by others relative to the portions of the collection system owned and operated by others. Nor are they responsible for any reporting that is required of other permittees under Part B, Part C and Part D. The responsible municipal departments are:

City of Lawrence Department of Public Works 200 Common Street Lawrence, MA 01840	Town of Andover Department of Public Works 397 Lowell Street Andover, MA 01810	Town of North Andover Department of Public Works 384 Osgood Street North Andover, MA 01845
City of Methuen 41 Pleasant Street Room 205 Methuen, MA 01844	Town of Salem Public Works Department 21 Cross Street Salem, New Hampshire	

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.[2]

[1] This permit is issued jointly by EPA and MassDEP to GLSD and the co-permittees in Massachusetts. The permit is issued to the Town of Salem, New Hampshire solely by EPA.
[2] 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.

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 August 11, 2005.

This permit consists of the cover pages, **Part I**, **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013), **Attachment C** (Reassessment of Technically Based Industrial Discharge Limits), **Attachment D** (Industrial Pretreatment Program Annual Report Requirements), and **Part II (**NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

_____
Lealdon Langley, Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

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 Merrimack 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[5]
Effluent Flow[6]	52 MGD Rolling Average	---	Report MGD	Continuous	Recorder
Effluent Flow[6]	Report MGD	---	---	Continuous	Recorder
BOD_5	30 mg/L 13,000 lb/day	45 mg/L 19,516 lb/day	50 mg/L Report lb/day	5/week	Composite
BOD_5 Removal	≥ 85 %	---	---	---	---
TSS	30 mg/L 13,010 lb/day	45 mg/L 19,516 lb/day	50 mg/L Report lb/day	5/week	Composite
TSS Removal	≥ 85 %	---	---	---	---
pH Range[7]	6.5 - 8.3 S.U.			1/day	Grab
Total Residual Chlorine[8,9]	130 µg/L	---	224 µg/L	1/day	Grab
Total Residual Chlorine[8]	Report µg/L	---	Report, µg/L	Continuous	Recorder
Escherichia coli[8,9]	126 cfu/100 mL	---	409 cfu/100 mL	5/week	Grab
Total Aluminum[10]	87 µg/L	---	---	1/month	Composite
Total Cadmium[10]	0.1 µg/L	---	---	1/month	Composite
Total Copper[10]	4.3 µg/L	---	6.0 µg/L	1/month	Composite
Total Lead[10]	1.0 µg/L	---	---	1/month	Composite
Dissolved Oxygen (April 1 - October 31)	≥ 5.0 mg/L			1/day	Grab

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly[4]	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[5]**
Total Phosphorus[10,11]					
(April 1 – October 31)	0.53 mg/L	---	Report mg/L	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Total Nitrogen[11,12]					
(April 1 – October 31)	Report lb/day	---	Report lb/day	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Total Kjeldahl Nitrogen[11,12]					
(April 1 – October 31)	Report mg/L	---	Report mg/L	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Total Nitrate+Nitrite[11,12]					
(April 1 – October 31)	Report mg/L	---	Report mg/L	1/week	Composite
(November 1 – March 31)	Report mg/L	---	---	1/month	Composite
Whole Effluent Toxicity (WET) Testing[13,14]					
LC_{50}	---	---	≥ 100 %	1/quarter	Composite
C-NOEC	---	---	Report %	1/quarter	Composite
Hardness	---	---	Report mg/L	1/quarter	Composite
Total Organic Carbon	---	---	Report mg/L	1/quarter	Composite
Dissolved Organic Carbon	---	---	Report mg/L	1/quarter	Composite
Ammonia Nitrogen	---	---	Report mg/L	1/quarter	Composite
Total Aluminum	---	---	Report mg/L	1/quarter	Composite
Total Cadmium	---	---	Report mg/L	1/quarter	Composite
Total Copper	---	---	Report mg/L	1/quarter	Composite
Total Nickel	---	---	Report mg/L	1/quarter	Composite
Total Lead	---	---	Report mg/L	1/quarter	Composite
Total Zinc	---	---	Report mg/L	1/quarter	Composite

Ambient Characteristic[15]	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly[4]	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[5]
Hardness	---	---	Report mg/L	1/quarter	Grab
Total Organic Carbon	---	---	Report mg/L	1/quarter	Grab
Dissolved Organic Carbon	---	---	Report mg/L	1/quarter	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/quarter	Grab
Total Aluminum	---	---	Report mg/L	1/quarter	Grab
Total Cadmium	---	---	Report mg/L	1/quarter	Grab
Total Copper	---	---	Report mg/L	1/quarter	Grab
Total Nickel	---	---	Report mg/L	1/quarter	Grab
Total Lead	---	---	Report mg/L	1/quarter	Grab
Total Zinc	---	---	Report mg/L	1/quarter	Grab
pH[16]	---	---	Report S.U.	1/quarter	Grab
Temperature[16]	---	---	Report °C	1/quarter	Grab
Total Phosphorus[10] (April 1 – October 31)	---	---	Report mg/L	1/month	Grab

Influent Characteristic	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly[4]	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[5]
BOD_5	Report mg/L	---	---	2/month	Composite
TSS	Report mg/L	---	---	2/month	Composite

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 report 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 monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter. 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), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on 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 laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L).

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. Each composite sample will consist of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

6. 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.

The following information shall be reported and submitted as an attachment to the monthly DMRs for each day there was a bypass of secondary treatment:

- date and time of initiation
- total influent flow at time of initiation
- date and time of termination
- total influent flow at time of termination
- total duration of flow
- total volume of flow

A bypass of secondary treatment also is subject to the requirements of Part II.B.4.c. and Part II.D.1.e. of this permit. Bypass flows shall be measured using a meter.

The Permittee shall not accept septage during any calendar day in which a bypass of secondary treatment is anticipated.

7. 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.).

8. 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.

   The Permittee shall report the average monthly and maximum daily discharge of TRC using data collected by the continuous TRC analyzer. The Permittee shall collect and analyze a minimum of one grab sample per day for calibration purposes. The same grab sample can be used for both compliance and calibration. Four continuous recording charts (1/week), showing weekly data shall be submitted as an attachment to the monthly DMRs. The Permittee shall substitute the average of three TRC grab samples per day, for any day that they are unable to comply with the continuous reporting requirement.

   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.

9. 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.

10. See Part I.H. (Special Condition) for compliance schedules pertaining to aluminum (Part I.H.1), total phosphorus (Part I.H.2), cadmium, copper and lead (Part I.H.3). See Part I.H.6. for ambient phosphorus monitoring requirements.

11. Monitoring frequency shall be once per week from April 1 through October 31 and once per month from November 1 through March 31.

12. Total Nitrogen shall be calculated as the sum of Total Kjeldhal Nitrogen and Total Nitrate + Nitrite.

13. The Permittee shall conduct acute toxicity tests (LC_{50}) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. LC_{50} and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid (*Ceriodaphnia dubia*). Toxicity test samples shall be collected, and tests completed, during the same weeks in January, April, July and October. The complete report for each toxicity test shall be submitted as an attachment to the monthly DMR submittal immediately following the completion of the test.

14. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

15. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for 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 and B**. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

16. 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.

Part I.A. 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 pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

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 and five combined sewer overflow outfalls (CSOs) listed in Part I.F.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).

2. Starting December 21, 2020, the Permittee must provide notification to the public within 24 hours of any unauthorized discharge on a publicly available web site. Such notification shall include the location and description of the discharge; estimated volume; 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.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the collection system owned and operated respectively by the Greater Lawrence Sanitary District, the Cities of Lawrence and Methuen, Massachusetts, the Towns of Andover and North Andover, Massachusetts and the Town of Salem, New Hampshire ("co-permittees") shall be in compliance with the activities and required reporting with respect to the portions of the collection system that each owns or operates. The Permittee and co-permittees shall only be responsible for violations relative to the portions of the collection system that they own and operate.

The Permittee and co-permittees are required to complete the following activities for the respective portions of the collection system which they operate:

1. Maintenance Staff

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

4. Collection System Mapping

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

   a. All sanitary sewer lines and related manholes;
   b. All combined sewer lines, related manholes, and catch basins;
   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. 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 and co-permittees shall develop and implement a Collection System O&M Plan.

   a. Within six (6) months of the effective date of the permit, the Permittee shall submit to EPA and the State

(1) A description of the collection system management goals, staffing, information management, and legal authorities;
(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and
(3) A schedule for the development and implementation of the full Collection System O&M Plan including the elements in paragraphs b.1. through b.8. below.

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

(1) The required submittal from paragraph 5.a. above, updated to reflect current information;
(2) A preventive maintenance and monitoring program for the collection system;
(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;
(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;
(5) 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;
(6) 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;
(7) An educational public outreach program for all aspects of I/I control, particularly private inflow; and
(8) 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 and co-permittees 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 the first March 31st following submittal of the collection system O&M Plan required by Part I.C.5.b. of this permit. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. 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 facility's 52 MGD design flow (41.6 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 and Co-permittees 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 AND PRETREATMENT PROGRAM

1. The Permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of this permit, the Permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the Permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the Permittee shall complete and submit the attached form (see **Attachment C –** Reassessment of Technically Based Industrial Discharge Limits) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the Permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

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

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

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

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

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

3. The Permittee shall provide the EPA and the State with an annual report describing the Permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in **Attachment D** (Industrial Pretreatment Program Annual Report Requirements) of this permit and shall be submitted no later than **September 1** of each year.

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

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

6. The Permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The Permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the Permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the Permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The Permittee will implement these proposed changes pending EPA Region I's approval under 40 C.F.R. § 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.E.1.

F. COMBINED SEWER OVERFLOWS (CSOs)

1. Effluent Limitations

   During wet weather, the Permittee is authorized to discharge storm water/wastewater from the CSO outfalls listed below:

Outfall #	Latitude	Longitude	Receiving Water
002	42˚ 42' 11"	71˚ 08' 59"	Merrimack River
003	42˚ 42' 02"	71˚ 09' 19"	Merrimack River
004	42˚ 42' 21"	71˚ 08' 31"	Merrimack River
005	42˚ 42' 15"	71˚ 09' 03"	Merrimack River
006	42˚ 42' 33"	71˚ 08' 42"	Spicket River

2. The effluent discharged from these CSOs is subject to the following limitations:

   a. The discharges shall receive treatment at a level providing Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) to control and abate conventional pollutants and Best Available Technology Economically Achievable (BAT) to control and abate non-conventional and toxic pollutants. The EPA has made a Best Professional Judgment (BPJ) determination that BPT, BCT, and BAT for combined sewer overflow (CSO) control includes the implementation of Nine Minimum Controls (NMC) specified below. These Nine Minimum Controls and the Nine Minimum Controls Minimum Implementation Levels which are detailed further in Part I.F.3. are requirements of this permit.

      (1) Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows;

      (2) Maximum use of the collection system for storage;

      (3) Review and modification of the pretreatment program to assure CSO impacts are minimized;

      (4) Maximization of flow to the POTW for treatment;

      (5) Prohibition of dry weather overflows from CSOs;

      (6) Control of solid and floatable materials in CSOs;

      (7) Pollution prevention programs that focus on contaminant reduction activities;

(8) Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts;

(9) Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

b. The discharges shall not cause or contribute to violations of federal or state Water Quality Standards.

3. Nine Minimum Controls Minimum Implementation Levels

a. The Permittee must implement the nine minimum controls in accordance with the documentation provided to EPA and MassDEP or as subsequently modified to enhance the effectiveness of the controls. This implementation must include the following controls plus other controls the Permittee can reasonably undertake as set forth in the documentation.

b. Each CSO structure/regulator, pumping station and/or tidegate shall be routinely inspected, at a minimum of once per month, to ensure that they are in good working condition and adjusted to minimize combined sewer discharges (NMC # 1, 2 and 4). The following inspection results shall be recorded: the date and time of inspection, the general condition of the facility, and whether the facility is operating satisfactorily. If maintenance is necessary, the Permittee shall record: the description of the necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. The Permittee shall maintain all records of inspections for at least three years.

c. **Annually, no later than March 31st,** the Permittee shall submit a certification to MassDEP and EPA which states that the previous calendar year's monthly inspections were conducted, results recorded, and records maintained. MassDEP and EPA have the right to inspect any CSO related structure or outfall at any time without prior notification to the Permittee. Discharges to the combined system of septage, holding tank wastes, or other material which may cause a visible oil sheen or containing floatable material are prohibited during wet weather when CSO discharges may be active (NMC # 3, 6, and 7).

d. Dry weather overflows (DWOs) are prohibited (NMC # 5). All dry weather sanitary and/or industrial discharges from CSOs must be reported to EPA and MassDEP orally within 24 hours of the time the Permittee becomes aware of the circumstances and a written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. See also Paragraph D.1.e of Part II of this permit.

e. The Permittee shall quantify and record all discharges from combined sewer outfalls (NMC # 9). Quantification shall be through direct measurement. The following information must be recorded for each combined sewer outfall for each discharge event, as set forth in Part I.F.5.:

- Duration (hours) of discharge;
- Volume (gallons) of discharge;
- National Weather Service precipitation data from the nearest gage where precipitation is available at daily (24-hour) intervals and the nearest gage where precipitation is available at one-hour intervals. Cumulative precipitation per discharge event shall be calculated.

The Permittee shall maintain all records of discharges for at least six years after the effective date of this permit.

f. The Permittee shall install and maintain identification signs for all combined sewer outfall structures (NMC # 8). The signs must be located at or near the combined sewer outfall structures and easily readable by the public from the land and water. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

GREATER LAWRENCE SANITARY DISTRICT
WET WEATHER
SEWAGE DISCHARGE
OUTFALL (discharge serial number)

Where easements over property not owned by the Permittee must be obtained to meet this requirement, the Permittee shall identify the appropriate landowners and obtain the necessary easements, to the extent practicable.

The Permittee, to the extent feasible, shall place additional signs in Spanish or add a universal wet weather sewage discharge symbol to existing signs.

g. Public Notification Plan

(1) Within 180 days of the effective date of the permit, the Permittee shall submit to EPA and MassDEP a Public Notification Plan describing the measures that will be taken to meet NMC#8 in Part I.F.2 of this permit (NMC #8). The public notification plan shall include the means for disseminating information to the public, including communicating the initial and supplemental notifications required in Part I.F.3.g.(2) and (3) of this permit, as well as procedures for communicating with public health departments and any other potentially affected entities, including downstream communities, whose waters may be affected by discharges from the Permittee's CSOs.

(2) Initial notification of a probable CSO activation shall be provided to the public and any other potentially affected party as soon as practicable, but no later than, four (4) hours after becoming aware by monitoring, modeling or other means that a CSO discharge has occurred. Notification may be made through electronic means, including posting to the Permittee's website. The initial notification shall include the following information:

- Date and time of probable CSO discharge
- CSO number and location

(3) Supplemental notification shall be provided to the public and any other potentially affected party as soon as practicable, but no later than, twenty-four (24) hours after becoming aware of the termination of any CSO discharge(s). Notification may be made through electronic means, including posting to the Permittee's website. The supplemental notification shall include the following information:

- CSO number and location
- Confirmation of CSO discharge
- Date, start time and stop time of the CSO discharge

(4) Annual notification - **Annually, by March 31st,** the Permittee shall post information on the locations of CSOs, a summary of CSO activations and volumes, status and progress of CSO abatement work, and contacts for additional information on CSOs and water quality on a website. This information shall be disseminated through the means identified in the Public Notification Plan that is submitted in accordance with Part I.F.3.g.(1) of this permit.

The Public Notification Plan shall be implemented no later than 180 days following the effective date of the permit. The initial, supplemental, and annual public notification requirements shall become effective 180 days following the effective date of the permit.

4. Nine Minimum Controls Reporting Requirement

Annually, no later than March 31st, the Permittee shall submit a report summarizing activities during the previous calendar year relating to compliance with the nine minimum controls. The annual report shall include the CSO outfall monitoring data required by Part I.F.5. of this permit.

5. Combined Sewer Overflow Outfall Monitoring

For each combined sewer outfall listed in Part I.F.1 of this permit, the Permittee must monitor the following:

Parameters	**Reporting Requirements**	**Monitoring Requirements**	
	Total Monthly	**Measurement Frequency**	**Sample Type**
Total Flow	Report Gallons	Daily, when discharging	Continuous
Total Flow Duration (Duration of flow through CSO)	Report Hours	Daily, when discharging	Continuous
Number of CSO Discharge Events	Report Monthly Count	Daily, when discharging	Count

a. For Total Flow, measure the total flow discharged from each CSO outfall during the month. Quantification shall be through direct measurement. For Total Flow Duration, report the total duration (hours) of discharges for each CSO outfall during the month.

b. For those months in which a CSO discharge does not occur, the Permitee must indicate "no discharge" for the outfall for which data was not collected.

c. This information shall be submitted with the annual report required by Part I.F.4. of this permit.

G. 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.[3]

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:

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. The Permittee 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).

H. SPECIAL CONDITIONS

1. The effluent limit for total aluminum shall be subject to a schedule of compliance whereby the limit takes effect three years after the effective date of the permit. For the period starting on the effective date of this permit and ending three (3) years after the effective date, the Permittee shall report only the monthly average aluminum concentration on the monthly DMR. After this initial three (3) year period, the Permittee shall comply with the monthly average total aluminum limit of 87 µg/L ("final aluminum effluent limit"). The Permittee

[3] 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

shall submit an annual report due by January 15th of each of the first three (3) years of the permit that will detail its progress towards meeting the final aluminum effluent limit.

If during the three-year period after the effective date of the permit, Massachusetts adopts revised aluminum criteria, then the Permittee may request a permit modification, pursuant to 40 C.F.R. § 122.62(a)(3), for a further delay in the effective date of the final aluminum effluent limits. If new criteria are approved by EPA before the effective date of the final aluminum effluent limit, the Permittee may apply for a permit modification, pursuant to 40 C.F.R. § 122.62(a)(3), to revise the time to meet the final aluminum effluent limit and/or for revisions to the permit based on whether there is reasonable potential for the facility's aluminum discharge to cause or contribute to a violation of the newly approved aluminum criteria.[4]

2. The effluent limit for total phosphorus shall be subject to a compliance schedule whereby the limit takes effect one year from the effective date of the permit.

3. The effluent limits for cadmium, copper and lead shall be subject to a schedule of compliance whereby the limit takes effect one year after the effective date of the permit.

4. The Permittee shall notify all downstream community water systems listed below of any emergency condition, plant upset, bypass, CSO discharges, or other system failure which has the potential to violate permit limits or the quality of the water to be withdrawn for drinking water purposes. This notification should be made as soon as possible but within 4 hours, and in the anticipation of such an event, if feasible, without taking away from any response time necessary to alleviate the situation. The permittee shall follow up with written notification within 5 days to the contact below. This notification shall include the reason for the emergency, any sampling information, any visual data recorded, a description of how the situation was handled, and when it would be considered to no longer be an emergency.

Haverhill Water Treatment Plant
131 Amesbury Road
Haverhill, MA
Phone Number: (978) 374-2385

5. The Permittee shall notify the Massachusetts Division of Marine Fisheries within 4 hours of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure which has the potential to violate bacteria permit limits. Within 24 hours a notification of a permit excursion or plant failure shall be sent to the following address and telephone number:

4 The final effluent limit of 87 µg/l for aluminum may be modified prior to the end of the three-year compliance schedule if warranted by the new criteria and a reasonable potential analysis and consistent with anti-degradation requirements. Such a modification would not trigger anti-backsliding prohibitions, as reflected in CWA 402 § (o) and 40 C.F.R. § 122.44(l).

Division of Marine Fisheries
Shellfish Management Program
30 Emerson Avenue
Gloucester, MA 01930
(978) 282-0308

6. The Permittee shall develop and implement a sampling and analysis plan for collecting monthly samples from the Merrimack River at a representative location upstream of the facility. Samples shall be collected once per month, from April through October, during dry weather. Dry weather is defined as any calendar day on which there is less than 0.1 inch of rainfall that is preceded by at least 72 hours without rainfall. The sampling plan shall be submitted to EPA and DEP as part of a Quality Assurance Project at least three months prior to the first planned sampling date.

I. 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 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 accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

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. *See* Part I.I.7. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Industrial User and Pretreatment Related Reports

   a. Prior to 21 December 2020, all reports and information required of the Permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Pretreatment Coordinator in Region 1 EPA Water Division (EPA WD). Starting on 21 December 2020, these submittals must be done electronically as NetDMR attachments and/or using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. These requests, reports and notices include:

(1) Annual Pretreatment Reports,
(2) Pretreatment Reports Reassessment of Technically Based Industrial Discharge Limits Form,
(3) Revisions to Industrial Discharge Limits,
(4) Report describing Pretreatment Program activities, and
(5) Proposed changes to a Pretreatment Program

b. This information shall be submitted to EPA WD as a hard copy at the following address:

U.S. Environmental Protection Agency
Water Division
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. 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"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

5. Submittal of Requests and Reports to EPA WD

a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA WD:

(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.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

6. Submittal of Reports to EPA ECAD 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) Prior to 21 December 2020, written notifications required under Part II.B.4.c, for bypasses, and Part II.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2020, such notifications must be done electronically using EPA's NPDES

Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

(2) Collection System Operation and Maintenance Plan (from co-permittee)

(3) Report on annual activities related to O&M Plan (from co-permittee)

b. This information shall be submitted to EPA Enforcement and Compliance Assurance (ECAD) at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assistance Division (ECAD)Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

7. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

8. 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 ECAD at 617-918-1510
and
MassDEP's Emergency Response at 888-304-1133

J. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are 1) a Federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§ 1251 et seq.; and 2) an identical State surface water discharge permit issued by the Commissioner of the Massachusetts Department of

Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 CMR 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this State surface water discharge permit.

2. This authorization also incorporates the State water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this State surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

3. Each agency shall have the independent right to enforce the terms and conditions of this permit. 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 this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the EPA. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

ATTACHMENT A
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.

ATTACHMENT B
FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL

USEPA Region 1

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

III. SAMPLE COLLECTION AND USE

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

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

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

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

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

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

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

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

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

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

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

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

and

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

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

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

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

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

V.1. Use of Reference Toxicity Testing

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

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

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

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

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

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

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

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

VI. CHEMICAL ANALYSIS

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

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

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

Notes:

1. Hardness may be determined by:

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

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

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

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

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

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

2. Test Variability (Test Sensitivity)

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

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

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

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

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

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

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

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

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

2. *Pimephales promelas*

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

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

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

3. *Ceriodaphnia dubia*

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

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

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

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

In addition to the summary sheets the report must include:

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

ATTACHMENT C

EPA - New England

Reassessment of Technically Based Industrial Discharge Limits

Under 40 CFR §122.21(j)(4), all Publicly Owned Treatment Works (POTWs) with approved Industrial Pretreatment Programs (IPPs) shall provide the following information to the Director: a written evaluation of the need to revise local industrial discharge limits under 40 CFR §403.5(c)(1).

Below is a form designed by the U.S. Environmental Protection Agency (EPA - New England) to assist POTWs with approved IPPs in evaluating whether their existing Technically Based Local Limits (TBLLs) need to be recalculated. The form allows the permittee and EPA to evaluate and compare pertinent information used in previous TBLLs calculations against present conditions at the POTW.

Please read direction below before filling out form.

ITEM I.

* In Column (1), list what your POTW's influent flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present influent flow rate. Your current flow rate should be calculated using the POTW's average daily flow rate from the previous 12 months.

* In Column (1) list what your POTW's SIU flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present SIU flow rate.

* In Column (1), list what dilution ratio and/or 7Q10 value was used in your old/expired NPDES permit. In Column (2), list what dilution ration and/or 7Q10 value is presently being used in your new/reissued NPDES permit.

  The 7Q10 value is the lowest seven day average flow rate, in the river, over a ten year period. The 7Q10 value and/or dilution ratio used by EPA in your new NPDES permit can be found in your NPDES permit "Fact Sheet."

* In Column (1), list the safety factor, if any, that was used when your existing TBLLs were calculated.

* In Column (1), note how your bio-solids were managed when your existing TBLLs were calculated. In Column (2), note how your POTW is presently disposing of its biosolids and how your POTW will be disposing of its biosolids in the future.

ITEM II.

* List what your existing TBLLs are - as they appear in your current Sewer Use Ordinance (SUO).

ITEM III.

* Identify how your existing TBLLs are allocated out to your industrial community. Some pollutants may be allocated differently than others, if so please explain.

ITEM IV.

* Since your existing TBLLs were calculated, identify the following in detail:

  (1) if your POTW has experienced any upsets, inhibition, interference or pass-through as a result of an industrial discharge.

  (2) if your POTW is presently violating any of its current NPDES permit limitations - include toxicity.

ITEM V.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in pounds per day) received in the POTW's influent. Current sampling data is defined as data obtained over the last 24 month period.

  All influent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* Based on your existing TBLLs, as presented in Item II., list in Column (2), for each pollutant the Maximum Allowable Headwork Loading (MAHL) values derived from an applicable environmental criteria or standard, e.g. water quality, sludge, NPDES, inhibition, etc. For more information, please see EPA's Local Limit Guidance Document (July 2004).

Item VI.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in micrograms per liter) present your POTW's effluent. Current sampling data is defined as data obtained during the last 24 month period.

(Item VI. continued)

All effluent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* List in Column (2A) what the Water Quality Standards (WQS) were (in micrograms per liter) when your TBLLs were calculated, please note what hardness value was used at that time. Hardness should be expressed in milligram per liter of Calcium Carbonate.

  List in Column (2B) the current WQSs or "Chronic Gold Book" values for each pollutant multiplied by the dilution ratio used in your new/reissued NPDES permit. For example, with a dilution ratio of 25:1 at a hardness of 25 mg/l - Calcium Carbonate (copper's chronic WQS equals 6.54 ug/l) the chronic NPDES permit limit for copper would equal 156.25 ug/l.

ITEM VII.

* In Column (1), list all pollutants (in micrograms per liter) limited in your new/reissued NPDES permit. In Column (2), list all pollutants limited in your old/expired NPDES permit.

ITEM VIII.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants in your POTW's biosolids. Current data is defined as data obtained during the last 24 month period. Results are to be expressed as total dry weight.

  All biosolids data collected and analyzed must be in accordance with 40 CFR §136.

  In Column (2A), list current State and/or Federal sludge standards that your facility's biosolids must comply with. Also note how your POTW currently manages the disposal of its biosolids. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria will be and method of disposal.

In general, please be sure the units reported are correct and all pertinent information is included in your evaluation. If you have any questions, please contact your pretreatment representative at EPA - New England.

REASSESSMENT OF TECHNICALLY BASED LOCAL LIMITS (TBLLs)

POTW Name & Address : _____

NPDES PERMIT # : _____

Date EPA approved current TBLLs : _____

Date EPA approved current Sewer Use Ordinance : _____

ITEM I.

In Column (1) list the conditions that existed when your current TBLLs were calculated. In Column (2), list current conditions or expected conditions at your POTW.		
	Column (1) EXISTING TBLLs	Column (2) PRESENT CONDITIONS
POTW Flow (MGD)		
Dilution Ratio or 7Q10 (from NPDES Permit)		
SIU Flow (MGD)		
Safety Factor		N/A
Biosolids Disposal Method(s)		

ITEM II.

EXISTING TBLLs			
POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)	POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)

ITEM III.

Note how your existing TBLLs, listed in Item II., are allocated to your Significant Industrial Users (SIUs), i.e. uniform concentration, contributory flow, mass proportioning, other. Please specify by circling.

ITEM IV.

Has your POTW experienced any upsets, inhibition, interference or pass-through from industrial sources since your existing TBLLs were calculated?
If yes, explain.

_____

_____

Has your POTW violated any of its NPDES permit limits and/or toxicity test requirements?

If yes, explain.

_____

_____

ITEM V.

Using current POTW influent sampling data fill in Column (1). In Column (2), list your Maximum Allowable Headwork Loading (MAHL) values used to derive your TBLLs listed in Item II. In addition, please note the Environmental Criteria for which each MAHL value was established, i.e. water quality, sludge, NPDES etc.				
Pollutant	Column (1) Influent Data Analyses Maximum (lb/day)	Average (lb/day)	Column (2) MAHL Values (lb/day)	Criteria
Arsenic				
Cadmium				
Chromium				
Copper				
Cyanide				
Lead				
Mercury				
Nickel				
Silver				
Zinc				
Other (List)				

ITEM VI.

Using current POTW effluent sampling data, fill in Column (1). In Column (2A) list what the Water Quality Standards (Gold Book Criteria) were at the time your existing TBLLs were developed. List in Column (2B) current Gold Book values multiplied by the dilution ratio used in your new/reissued NPDES permit.

Pollutant	Column (1) Effluent Data Analyses		Columns (2A) (2B) Water Quality Criteria (Gold Book) From TBLLs Today	
	Maximum (ug/l)	Average (ug/l)	(ug/l)	(ug/l)
Arsenic				
*Cadmium				
*Chromium				
*Copper				
Cyanide				
*Lead				
Mercury				
*Nickel				
Silver				
*Zinc				
Other (List)				

*Hardness Dependent (mg/l - $CaCO_3$)

ITEM VII.

In Column (1), identify all pollutants limited in your new/reissued NPDES permit. In Column (2), identify all pollutants that were limited in your old/expired NPDES permit.			
Column (1) NEW PERMIT Pollutants Limitations (ug/l)		Column (2) OLD PERMIT Pollutants	Limitations (ug/l)

ITEM VIII.

Using current POTW biosolids data, fill in Column (1). In Column (2A), list the biosolids criteria that was used at the time your existing TBLLs were calculated. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria would be and method of disposal.

Pollutant	Column (1) Biosolids Data Analyses Average (mg/kg)	Columns (2A) (2B) Biosolids Criteria From TBLLs New (mg/kg)	(mg/kg)
Arsenic			
Cadmium			
Chromium			
Copper			
Cyanide			
Lead			
Mercury			
Nickel			
Silver			
Zinc			
Molybdenum			
Selenium			
Other (List)			

Attachment D
Industrial Pretreatment Program Annual Report Requirements

The Permittee shall provide to the Approval Authority with an annual report that briefly describes the POTW's program activities, including activities of all participating agencies, if more than one jurisdiction is involved in the local program. The report required by this section shall be submitted no later than one year after approval of the POTW's Pretreatment Program, and at least annually thereafter, and must include, at a minimum, the applicable required data in appendix A to 40 CFR Part 127. The report required by this section must also include a summary of changes to the POTW's pretreatment program that have not been previously reported to the Approval Authority and any other relevant information requested by the Approval Authority. As of December 21, 2020 all annual reports submitted in compliance with this section must be submitted electronically by the POTW Pretreatment Program to the Approval Authority or initial recipient, as defined in 40 CFR 127.2(b), in compliance with this section and 40 CFR Part 3 (including, in all cases, Subpart D to Part 3), 40 CFR 122.22, and 40 CFR Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, the Approval Authority may also require POTW Pretreatment Programs to electronically submit annual reports under this section if specified by a particular permit or if required to do so by state law.

The permitted shall submit to Approval Authority and the state permitting authority a report that contains the following information requested by EPA:

1. An updated list of the POTW's Industrial Users by category as set forth in 40 C.F.R. 403.8(f)(2)(i), to include:

    a. Names and addresses, or a list of deletions and additions keyed to a previously submitted list. The POTW shall provide a brief explanation of each deletion. This list shall identify which Industrial Users are subject to categorical Pretreatment Standards and specify which Standards are applicable to each Industrial User. The list shall indicate which Industrial Users are subject to local standards that are more stringent than the categorical Pretreatment Standards. The POTW shall also list the Industrial Users that are subject only to local Requirements. The list must also identify Industrial Users subject to categorical Pretreatment Standards that are subject to reduced reporting requirements under paragraph (e)(3), and identify which Industrial Users are Non-Significant Categorical Industrial Users.
    b. Permit status. Whether each SIU has an unexpired control mechanism and an explanation as to why any SIUs are operating without a current, unexpired control mechanism (e.g. permit);
    c. Baseline monitoring reporting requirements for newly promulgated industries
    d. In addition, a brief description of the industry and general activities;

2. A summary of compliance and enforcement activities during the preceding year, including the number of:

a. significant industrial users inspected by POTW (include inspection dates for each industrial user),
b. significant industrial users sampled by POTW (include sampling dates for each industrial user),
c. compliance schedules issued (include list of subject users),
d. written notices of violations issued (include list of subject users),
e. administrative orders issued (include list of subject users),
f. criminal or civil suits filed (include list of subject users) and,
g. penalties obtained (include list of subject users and penalty amounts);

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

4. The Permittee shall prepare annually a list of industrial users, which during the preceding twelve (12) months have significantly violated Pretreatment Standards or requirements 40 C.F.R. 403.8(f)(2)(vii). This list is to be published annually in a newspaper of general circulation in the Permittee's service area.

5. A summary of all monitoring activities performed within the previous twelve (12) months. The following information shall be reported:

   Total number of SIUs inspected; and
   Total number of SIUs sampled.

   a. For all industrial users that were in Significant Non-Compliance during the previous twelve (12) months, provide the name of the violating industrial user; indicate the nature of the violations, the type and number of actions taken (administrative order, criminal or civil suit, fines or penalties collected, etc.) and current compliance status. Indicate if the company returned to compliance and the date compliance was attained. Determination of Significant Non-Compliance shall be performed.

6. A summary of all enforcement actions not covered by the paragraph above conducted in accordance with the approved Enforcement Response Plan.

7. A description of actions being taken to reduce the incidence of significant violations by significant industrial users.

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

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

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

11. The Permittee shall analyze the treatment facility influent and effluent at least Annually for the presence of the toxic pollutants listed in 40 CFR Part 122 Appendix D (NPDES Application Testing Requirements) Table III as follows:

    - Antimony
    - Arsenic
    - Beryllium
    - Cadmium
    - Chromium
    - Copper
    - Lead
    - Mercury
    - Nickel
    - Selenium
    - Silver
    - Thallium
    - Zinc
    - Cyanide
    - Phenols

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

12. The Permittee shall analyze the treatment facility sludge (biosolids) prior to disposal, for the presence of toxic pollutants listed above in 40 CFR Part 122 Appendix D (NPDES Application Testing Requirements) Table III at least once per year. If the Permittee does not dispose of biosolids during the calendar year, the Permittee shall certify to that in the Pretreatment Annual Report and the monitoring requirements in this paragraph shall be suspended for that calendar year.

    a. The Permittee shall use sample collection and analysis procedures as approved for use under 40 CFR Part 503 or specified in the EPA Region 8 General Permit for biosolids.

13. The summary shall include an evaluation of influent sampling results versus threshold inhibitory concentrations for the Wastewater Treatment System and effluent sampling results versus water quality standards. Such a comparison shall be based on the sampling program described in the paragraphs above or any similar sampling program described in this Permit.

14. Identification of the specific locations, if any, designated by the Permittee for receipt (discharge) of trucked or hauled waste, if modified;

15. Information as required by the Approval Authority or state permitting authority on the discharge to the POTW from the following activities:

    (A) Ground water clean-up from underground storage tanks;
    (B) Trucked or hauled waste; and,
    (C) Groundwater clean-up from RCRA or Superfund sites.

16. A description of all changes made during the previous calendar year to the Permittee's pretreatment program that were not submitted as substantial or non-substantial modifications to EPA.

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

18. Any other information that may be deemed necessary by the Approval Authority.

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
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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: MA0100447

PUBLIC NOTICE START AND END DATES: June 6, 2019 – July 8, 2019

NAME AND MAILING ADDRESS OF APPLICANT:

Greater Lawrence Sanitary District
24 Charles Street
North Andover, MA 01845

The Massachusetts municipalities of Lawrence, Andover, North Andover, Methuen and Salem, New Hampshire, are co-permittees for specific activities required in Sections I.B., I.C. and I.D. of the Draft Permit and described in Section 5.5 of this Fact Sheet. The responsible municipal departments are:

City of Lawrence Department of Public Works 200 Common Street Lawrence, MA 01840	Town of Andover Department of Public Works 397 Lowell Street Andover, MA 01810	Town of North Andover Department of Public Works 384 Osgood Street North Andover, MA 01845
City of Methuen 41 Pleasant Street, Rm 205 Methuen, MA 01844	Town of Salem Public Works Department 21 Cross Street Salem, New Hampshire 03079	

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Greater Lawrence Sanitary District
24 Charles Street
North Andover, MA 01845

and five combined sewer overflows (CSO)

RECEIVING WATER AND CLASSIFICATION:

Merrimack Watershed – USGS Code: 010070002
Merrimack River (MA84A-04): Class B – Warm Water Fishery, CSO
Spicket River (MA84A-10): Class B – Warm Water Fishery

TABLE OF CONTENTS

TABLE OF FIGURES

APPENDICES

1 Proposed Action

The above-named applicant (the "Permittee") has applied to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Greater Lawrence Sanitary District (the "GLSD") to the designated receiving water.

The permit currently in effect was issued on August 11, 2005 with an effective date of October 9, 2005 and expired on September 30, 2010 (the "2005 Permit"). The Permittee filed an application for permit reissuance with EPA dated March 30, 2010, 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 May 10, 2010 the GLSD's 2005 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 March 19, 2019.

This NPDES Permit is issued jointly by EPA and MassDEP under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the Director of the Division of Watershed Management pursuant to M.G.L. Chap. 21, § 43.

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, 1977. Since 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 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 Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00)

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.

Massachusetts' statewide anti-degradation policy, entitled "Antidegradation Provisions", is found in the State's WQSs at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedure for the Anti-degradation Provisions of the State Water Quality Standards", dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the anti-degradation policy, and all existing in-stream uses and the level of water quality necessary to protect the existing uses of a receiving water must be maintained and protected.

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 of 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 parameters (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.

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.

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

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 facilities wastewater treatment systems 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 during each calendar month as a Discharge Monitoring Report (DMR) to EPA and the State

[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.

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, Best Professional Judgement (BPJ) and state certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2005 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 Outfall 001 to the Merrimack River are shown in Figure 1. The latitude and longitude of Outfall 001 are 42.71781 N and 71.13357 W.

The Facility is an activated sludge secondary wastewater treatment facility that is engaged in the collection and treatment of municipal and industrial wastewater. Currently, the Facility serves approximately 171,100 residents. The Facility serves five Massachusetts communities: approximately 31,500 residents in Andover, 72,200 residents in Lawrence, 44,200 residents in Methuen, 27,700 residents in the North Andover and 100 residents in Dracut (service to Dracut in minimal at this time), as well as serving approximately 28,300 residents in Salem, New Hampshire. The collection systems are primarily focused around the Merrimack River main

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

stem.

The GLSD has a design flow of 52 MGD, the annual average daily flow reported in the 2010 application was 29.02 MGD and the average for the last 5 years has been 26.8 MGD. The system is a combined sewer in Lawrence; it is a separate system in Andover, Methuen, North Andover, Salem, and Dracut. Wastewater is primarily comprised of domestic sewage with some commercial sewage and septage.

There are 37 significant industrial users that discharge to the POTW. Pollutants introduced into POTWs by a non-domestic source shall not pass through the POTW or interfere with the operation or performance of the treatment works.

There are five co-permittees on the Draft Permit. The municipalities of Andover, Methuen, North Andover, and Lawrence, Massachusetts and Salem, New Hampshire own and operate sanitary wastewater collection systems that discharge flows to the GLSD for treatment. These municipalities are co-permittees for certain activities pertaining to proper operation and maintenance of their respective collection systems (*See* Part I.B, I.C and I.D of the Draft Permit). Adding them to the Draft Permit ensures that they comply with requirements to operate and maintain the collection systems so as to avoid discharges of sewage from the collection systems. EPA waived the application requirement for the co-permittees in a letter dated August 6, 2015.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the permittee from January 2014 through December 2018 is provided in Appendix A of this Fact Sheet.

3.1.1 Treatment Process Description

GLSD is an activated sludge treatment plant that provides secondary treatment. Influent enters the Facility and flows through a Parshall flume, aerated grit chambers, and mechanical bar screens to two primary sedimentation tanks. Next, the wastewater flows to the aeration basins for secondary treatment. In the aeration basins, the primary effluent is mixed with activated sludge from the four secondary clarifiers. The resulting mixed liquor passes through an anaerobic selector zone to two aeration zones. The flow then enters an open channel towards four secondary clarifiers where the activated sludge settles out. After exiting the secondary clarifiers, the flow passes through another Parshall flume before entering chlorine contact tanks. Afterwards, sodium bisulfite is added to remove residual chlorine. The flow is discharged through a spiral vortex chamber and a sub-surface outfall with diffusers.

Sludge initially comes from settled solids from the primary clarifiers (primary sludge). This solution is pumped to gravity thickeners. The thickeners thicken the sludge and pump the resulting mass to anaerobic sludge digesters. Waste activated sludge is pumped from the secondary clarifiers to the gravity belt thickeners. After thickening, the sludge is sent to sludge storage tanks. The thickened waste activated sludge is then pumped to anaerobic digesters. Alternatively, activated sludge can be pumped to the primary clarifiers, where it co-settles with primary sludge. Scum is collected from the primary and secondary clarifiers and pumped to the anaerobic digesters. Digested sludge is dewatered and dried using triple pass rotary drum dryers.

Once the sludge has been processed it is sold to the public as Class A biosolids. The amount produced in 2010 was 4,529 metric tons.

3.1.2 Collection System Description

The collection system in Lawrence is a combined sewer system while the collections systems in Andover, Methuen, North Andover, Salem, and Dracut are separate systems. A combined sanitary sewer conveys domestic, industrial and commercial sewage, in addition to stormwater. The combined sewer leads directly to the wastewater treatment plant; during intense storms, however, the system overflows; the excess combined flow is discharged to a nearby waterbody. 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

The GLSD discharges through outfall 001 into the Merrimack River within Segment MA84A-04. This segment is 10 miles in length and travels from the Essex Dam, Lawrence to the confluence with the Little River in Haverhill.

GLSD is also authorized to discharge from five (5) Combined Sewer Overflows (CSOs). CSOs 002, 003, 004 and 005 discharge to Segment MA84A-04 of the Merrimack River. CSO 006 discharges to the Spicket River within segment MA84A-10. The Spicket River, Segment 84A-10, is 5.8 miles in length and travels from the New Hampshire state line in Methuen to the confluence with the Merrimack River in Lawrence.

Both receiving water segments have been classified as a Class B warm water fishery in the Massachusetts WQSs, 314 Code of Massachusetts Regulations ("CMR") 4.05(4)(a). The MA WQS at 314 CMR 4.05(3)(b) state that Class B "*waters are designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. They shall be a source of public water supply (i.e., where designated and with appropriate treatment). They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. They shall also have consistently good aesthetic value.*"

The Merrimack River segment MA84A-04 also includes a classification qualifier for CSO. The MA SWQS at 314 CMR 4.06(1)(d)10 states that waters with the qualifier "CSO" "*are identified as impacted by the discharge of combined sewer overflows; however, a long-term control plan has not been approved or fully implemented for the CSO discharges.*"

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

The MassDEP's Massachusetts Year 2014 Integrated List of Waters (2014 Integrated List), the 303(d) list, includes the Merrimack River, Segment MA84A-04 and the Spicket River, Segment MA84A-10 as Massachusetts Category 5 Waters and in need of a total maximum daily load

(TMDL) assessment. The Merrimack River, Segment MA84A-04, impairments causes are: Escherichia coli, PCB in Fish Tissue and Phosphorus (Total). The Spicket River, Segment MA84A-10 listed impairments are: Debris/Floatables/Trash, physical substrate habitat alterations, aquatic macroinvertebrate bioassessments, copper, Escherichia coli, mercury in water column and other. To date no TMDL has been developed for these segments for any of the listed impairments. TMDLs are not required for impairments for Debris/Floatables/Trash and physical substrate habitat alteration as they are non-pollutants.

In 1975 a Water Quality Management Plan was developed for the Merrimack River[5]. The report includes a wasteload allocation for GLSD based on BOD_5 of 30 mg/L at the design flow of 52 MGD for a BOD_5 load of 13,000 lb/day.

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. Massachusetts 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 (314 CMR 4.03(3)(1)). 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 the most recent 30 years (January 1989 to October 2017) at one U.S. Geological Survey gage station (#01100000) in the area of the Merrimack River in Lawrence, MA (which does not have a permanent flow gage station). The discharge is located about 88 miles downstream from the headwaters of the Merrimack River (at the confluence of the Pemigewassett and Winnipesaukee Rivers in Franklin, NH). The total drainage area for the Merrimack River watershed is about 5,010 square miles; the drainage area upstream of the discharge is about 4,839.83 square miles.

7Q10 at USGS #01100000 - Merrimack River below Concord River at Lowell, MA January 1, 1989 - October 30, 2017

= 832 cubic feet per second (cfs)

Drainage Area at Gage = 4,635 square miles

$$Flow\ factor\ for\ USGS\ \#01100000 = \frac{832.0\ cfs}{4{,}635\ square\ miles} \approx 0.1795\ \ cfs/sq.mi.$$

[5] Massachusetts Department of Environmental Quality Engineering, Division of Water Pollution Control, 1975, "Merrimack River Basin, Water Quality Management Plan"

Using a low-flow factor of 0.1795 cfs per square mile yields a receiving water 7Q10 flow of about 869 cfs or 561 million gallons per day (MGD).

The dilution factor (DF) at the 7Q10 flow of 561 MGD in the receiving water upstream of the discharge, Q_s, and the Facility's design flow of 52 MGD, Q_d, was calculated as shown below:

$$DF = (Q_s + Q_d)/Q_d = (561 \text{ MGD} + 52 \text{ MGD})/52 \text{ MGD} = 11.8$$

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 Whole Effluent Toxicity (WET) test reports from January 2014 to December 2018 (the "review period") were used to identify the pollutants of concern and to evaluate the discharge during the effluent limitations development process (*See* Appendix A**)**.

5.1.1 Wastewater Effluent Flow

The effluent flow limit in the 2005 Permit is 52 MGD, as a rolling annual average flow, based on the Facility's design flow. The DMR data during the review period shows that there have been no violations of the flow limit.

The Draft Permit continues the 52 MGD flow limit from the 2005 Permit. 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 on the DMRs. The rolling annual average flow 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 limit in the 2005 Permit was established in the Massachusetts 1975 Merrimack River Water Quality Management Plan. The document established BOD_5 wasteload allocations (WLA) for GLSD, Lowell Regional Water Utility, and Haverhill WWTF [6]; the average monthly concentration limit for all of the facilities was 30 mg/L. The average weekly limit of 45 mg/l was

[6] Massachusetts Department of Environmental Quality Engineering, *The Merrimack River Water Quality Management Plan,* 1975, page 59.

based on the secondary treatment standards in 40 C.F.R. § 133.102.

There were no violations of monthly average or weekly average BOD_5 concentration limits during the review period.

The Draft Permit proposes the same BOD_5 concentration limits as in the 2005 Permit as no new WLAs have been established and there have been no changes to the secondary treatment standards. The monitoring frequency remains 5 times per week.

5.1.2.2 BOD_5 Mass Limits

The mass-based BOD_5 limits in the 2005 Permit of 13,010 lb/day (monthly average) was based on EPA's secondary treatment standards and the design flow of the Facility.

There were no violations of BOD_5 mass limits during the review period.

In the Draft Permit, 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
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

Monthly Average: 30 mg/L * 52 MGD * 8.34 = 13,010 lb/day
Weekly Average: 45 mg/L* 52 MGD * 8.34 = 19,516 lb/day

The weekly average mass-based limit is newly established based on secondary treatment standards in 40 C.F.R. § 133.102.

In the derivation of the monthly average mass limit for the Draft Permit, EPA found that in order to be consistent with the intention of the 1975 WLA, the BOD_5 mass limit must be 13,000 lb/day, as was explicitly enumerated at the time the WLA was issued.[7] Neither the WLA nor the Facility's design flow have changed since 1975. Therefore, the new mass based BOD_5 limits are 13,000 lb/day (monthly average) and 19,516 lb/day (weekly average). The new limits are 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. The monitoring frequency remains 5 times per week.

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[7] Massachusetts Department of Environmental Quality Engineering, *The Merrimack River Water Quality Management Plan,* 1975, page 59.

5.1.3 Total Suspended Solids (TSS)

5.1.3.1 TSS Concentration Limits

The TSS limit in the 2005 Permit was based on secondary treatment standards in 40 C.F.R. § 133.102. The average monthly limit is 30 mg/L, and the average weekly limit is 45 mg/L.

There were no violations of monthly average or weekly average TSS concentration limits during the review period.

The Draft Permit proposes the same TSS concentration limits as in the 2005 Permit as no new WLAs have been established and there have been no changes to the secondary treatment standards. The monitoring frequency remains 5 times per week.

5.1.3.2 TSS Mass Limits

The mass-based TSS limit in the 2005 Permit of 13,010 lb/day (monthly average) was based on EPA's secondary treatment standards and the design flow of the Facility.

There were no violations of TSS mass limits during the review period.

TSS Mass Loading Calculations:

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 at the time of 1975 WLA
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

Limit:

Monthly Average: 30 mg/L * 52 MGD * 8.34 = 13,010 lb/day
Weekly Average: 45 mg/L* 52 MGD * 8.34 = 19,516 lb/day

The monthly average mass-based limit is the same as the limit in the 2005 Permit, and the weekly average mass-based limit is newly established. It is based on secondary treatment standards in 40 C.F.R. § 133.102. The new limit is 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.

The Draft Permit proposes the same TSS mass-based limits as in the 2005 Permit as no new

WLAs have been established and there have been no changes to the secondary treatment standards. The monitoring frequency remains 5 times per week.

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 2005 Permit requires that the 30-day average percent removals for BOD_5 and TSS are not less than 85%.

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 Massachusetts WQS at 314 CMR 4.05(3)(b)(3), the Permit requires that the pH of the effluent is not less than 6.5 or greater than 8.3 standard units (S.U.) at any time. The monitoring frequency is once per day. There were no violations of the pH limitations during the review period.

The pH requirements in the 2005 Permit are carried forward into the Draft Permit as there has been no change in the WQS with regards to pH.

5.1.6 Bacteria

The 2005 Permit includes effluent limitations for bacteria using fecal coliform bacteria as the indicator bacteria with an average monthly limit of 200 colony forming units (cfu)/100 ml and daily maximum limit of 400 cfu/100 ml. These limits were based on the applicable WQS at the time the permit was issued. There were no violations of the average monthly limit and two violations of the maximum daily fecal coliform limit during the review period.

Consistent with Massachusetts' new bacteria criteria, which were approved by EPA on September 19, 2007, the bacteria limits proposed in the Draft Permit for Outfall 001 are 126 colony forming units (cfu) of *Escherichia coli* (*E.coli*) per 100 milliliters (mL) as a geometric mean and 409 cfu of *E.coli* per 100 mL maximum daily value (this is the 90% distribution of the geometric mean of 126 cfu/100 mL[8]). The bacteria limits apply year-round and the monitoring frequency is five (5) per week. Due to the change in the Massachusetts bacteria criteria, there are no effluent limits or monitoring requirements for fecal coliform in the Draft Permit.

5.1.7 Dissolved Oxygen

The 2005 Permit includes a dissolved oxygen (DO) minimum limit of 5.0 mg/L. This requirement was established to ensure that dissolved oxygen levels remain above the state water quality standard of 5.0 mg/L, particularly during low flow periods.

There were no violations of the DO limitations during the review period. State water quality

[8] MassDEP, "Draft 6/25/2007 Guidance on Implementation of Proposed Primary Contact Recreation Bacteria Criteria in Massachusetts Surface Water Quality Standards, 314 CMR 4.00," 2007, p.11, Table 2.

standards have not changed, and there have been no WLAs promulgated since the 2005 Permit.

Therefore, the Draft Permit continues the DO limit of ≥ 5.0 mg/L effective April 1 through October 31 to be consistent with the state water quality standard. The monitoring frequency remains once per day.

5.1.8 Total Residual Chlorine

The Permittee uses chlorine disinfection. The 2005 Permit includes effluent limitations for total residual chlorine (TRC) of 150 ug/l (monthly average) and 260 ug/l (maximum daily). The DMR data during the review period show that there have been no violations of the TRC limitations.

The TRC permit limits are based on the instream chlorine criteria defined in *National Recommended Water Quality Criteria: 2002*, EPA 822R-02-047 (November 2002), as adopted by the MassDEP into the state water quality standards at 314 CMR 4.05(5)(e). These freshwater instream criteria for chlorine are 11 ug/l (chronic) and 19 ug/l (acute). Because the upstream chlorine is assumed to be zero in this case, the water quality-based chlorine limits are calculated as the criteria times the dilution factor, as follows:

Chronic criteria * dilution factor = Chronic limit
11 ug/l * 11.8 = 130 ug/l (average monthly)

Acute criteria * dilution factor = Acute limit
19 ug/l * 11.8 = 224 ug/l (maximum daily)

These limits are included in the Draft Permit and are more stringent than the limits in the 2005 Permit since the revised dilution factor is lower. The monitoring frequency for TRC is once per day using a grab sample. Additionally, TRC in the effluent shall continue to be monitored continuously. Compliance will be based upon grab sample results. The results of the grab sample and comparison to the continuous analyzer reading, including the time of the grab sample, shall be included with the discharge monitoring reports (DMRs). Continuous monitoring should continue, and the Draft Permit requires that the chlorination system include an alarm system for indicating interruptions and malfunctions.

5.1.9 Ammonia

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 applicable ammonia water quality criteria are pH and, for the chronic criteria, temperature dependent and can be derived using EPA-recommended ammonia criteria from the document: *Update of Ammonia Water Quality Criteria for Ammonia,* 1999 (EPA 822-R-99-014). These are the freshwater ammonia criteria in EPA's *National Recommended Water Quality Criteria,* 2002 (EPA 822-R-02-047) document, which are included by reference in the Massachusetts WQS (*See* 314 CMR 4.05(5)(e)). The chronic criteria are also dependent on whether early life stages of fish are present. The Merrimack River in the vicinity of the GLSD discharge is within Essential Fish Habitat (EFH) for Atlantic salmon (*Salmo salar*), so EPA has assumed that salmonids could be present in the receiving waters.

The 2005 Permit required quarterly monitoring for ammonia as well as quarterly ambient monitoring as part of the Whole Effluent Toxicity (WET) testing. Ambient data, taken upstream of the GLSD outfall in the Merrimack River, is presented in Appendix A and shows ammonia concentrations that range from 0 to 0.93 mg/L. The median concentration for the warm weather period (April 1 through October 31) is 0 mg/L and for the cold weather period (November 1 through March 31) is 0.22 mg/L. Ambient sampling included pH monitoring as well, which indicates that the median pH is 7.1 S.U. in warm weather and 7.0 S.U. in cold weather. Ambient temperature data is not available, so EPA has assumed a warm weather temperature of 25° C and a cold weather temperature of 5° C. Based on this information, the applicable ammonia criteria are summarized in Table 1 below.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality criteria for ammonia, the following mass balance equation is used to project the instream ammonia concentrations downstream from the discharge under 7Q10 conditions during both warm and cold weather.

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

Solving for the downstream pollutant concentration (C_r) gives:

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

Where:

Q_s = 7Q10 flow upstream of Facility (869 cfs)
Q_d = design flow of Facility (52 MGD = 80.46 cfs)
Q_r = combined stream flow (7Q10 + design flow = 869 + 80.46 = 949.46 cfs)
C_s = median upstream ammonia concentration
= 0.0 mg/L in warm weather
= 0.22 mg/L in cold weather
C_d = effluent ammonia concentration
= 95th percentile[9] of warm weather data (N=15) = 26.35 mg/L
= maximum of cold weather data (N=5) = 30 mg/l

Reasonable potential is then determined by comparing this resultant in-stream concentration with the relevant acute and chronic criteria. The discharge is determined to have the reasonable potential to cause or contribute to a violation of water quality standards if both the effluent concentration (C_d) and the downstream concentration (C_r) exceed the criteria. 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, the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the relevant

[9] The Facility's effluent concentrations (*See* Appendix A) were characterized assuming a lognormal distribution to determine the estimated 95th percentile of the daily maximum (*See* Appendix C).

criterion as the resultant in-stream concentration (C_r). Table 1 shows the results of the reasonable potential analysis and the resulting limits, if necessary.

Table 1: Ammonia Reasonable Potential Analysis and Limit Derivation

Season	Q_s	C_s	Q_d	C_d	Q_r	C_r	Criteria	Reasonable Potential	Limits
	cfs	mg/l	cfs	mg/l	cfs	mg/l	mg/l	C_d & C_r > Criteria	mg/l
Warm Weather – Chronic	869	0	80	26.35	949	2.23	2.9	N	N/A
Warm Weather – Acute		0		26.35		2.23	21.9	N	N/A
Cold Weather – Chronic		0.22		30		2.74	5.9	N	N/A
Cold Weather - Acute		0.22		30		2.74	24.1	N	N/A

Based on the analysis, there is no reasonable potential, so the Draft Permit does not require ammonia limits. Effluent and ambient monitoring for ammonia will continue to be required in the quarterly WET tests.

5.1.10 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 phosphorus and nitrogen are both nutrients of concern at this location. The GLSD discharges into a freshwater segment of the Merrimack River and downstream of the discharge the river is a marine water.

5.1.10.1 Nitrogen

The Merrimack River, which has a large and densely populated watershed including 40 POTW discharges in Massachusetts and New Hampshire. EPA estimates that approximately 15,000 lb/day of nitrogen is discharged by POTWs into the fresh water portion of the watershed and another 2,000 lb/day into the marine portion. Recent nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicates elevated total nitrogen and chlorophyll ‘a’ levels. High nutrient concentrations can lead to increased levels of chlorophyll ‘a’, therefore chlorophyll ‘a’ can be an indicator of elevated nutrient concentrations. In samples with salinity greater than 10 ppt, total nitrogen ranged from 0.442 to 1.67 mg/L while

chlorophyll 'a' ranged from 4 to 42 ppt[10]. EPA also collected samples on the outgoing tide in 2017 in this area and found total nitrogen levels in the range of 0.62 mg/L to 1.3 mg/L and chlorophyll 'a' ranging from 2 to 11 ppt in samples with salinity greater than 10 ppt. EPA is concerned about the impacts that these nitrogen levels may be having on aquatic life in the estuary as most of these results are outside the range typically found in healthy estuaries in Massachusetts.[11] However, more data is necessary to determine whether there is reasonable potential for nitrogen discharges from the facility to cause or contribute to a violation of the Massachusetts narrative nutrient criteria in the Merrimack River estuary, particularly data that characterizes aquatic life designated uses that may be affected in this area so that the narrative criteria can be interpreted numerically. In the meantime, EPA finds that quantifying the load of total nitrogen from this facility and others in the Merrimack River watershed is an important first step to understanding the nitrogen load from point sources and their potential impact on the estuary.

The 2005 Permit included monitoring and reporting requirements for the sum of nitrite and nitrate and total Kjeldahl nitrogen (TKN). The average nitrate plus nitrite is 1.45 mg/L and the average TKN was 20.7 mg/L during the review period.

The Draft Permit includes weekly monitoring and reporting requirements for total nitrate plus total nitrite, TKN and total nitrogen from April through October and monthly monitoring and reporting from November through March. The monitoring data will provide additional information on the fate of nitrogen through the treatment process and the impact to the Merrimack River in the estuary at the mouth of the River. The Agencies recommend the District factor in treatment methods to reduce nitrogen in the effluent for any planned upgrades at the treatment plant, as nitrogen limits may be included in subsequent permits.

5.1.10.2 Phosphorus

Phosphorus is an essential nutrient for the growth of aquatic plants and 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 as a result 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

[10] CDM Smith/US Army Corps of Engineers New England District, *Merrimack River Watershed Assessment Study - Phase III Final Monitoring Data Report August 2017*, Appendix C.

[11] Howes, Brian, et al, Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators Interim Report, Massachusetts Estuaries Project, December 22, 2003.

in surface waters.

The 2005 Permit has a total phosphorus monitoring and reporting requirement of the maximum daily effluent concentration discharged into the receiving water. Review of the total phosphorus data reported on the DMRs from January 2014 through December 2018 is shown in Appendix A. During the growing season of the review period (April through October), the range of total phosphorus was 0.119 mg/L to 1.08 mg/L with an average of 0.39 mg/L.

The MA WQS under 314 CMR 4.05(5)(c) requires that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria develop in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication.

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. The recommended water quality criteria that applies downstream of the discharge is 0.100 mg/L.

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. The Merrimack River is located within Ecoregion XIV, Eastern Coastal Plains. 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 XIV (EPA December 2000) is 31.25 µg/L (0.03125 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 this segment of the Merrimack 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 this segment of the Merrimack River downstream of the discharge.

Elevated concentration of chlorophyll a, 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 the Merrimack River at the Lawrence Community Boat Dock, MO18, in 2017[12] is shown in Table 2. The median phosphorus concentration upstream of the discharge is 0.060 mg/L.

Table 2: Instream Total Phosphorus Data

	Instream Total Phosphorus data upstream of WWTF, mg/L
7/31/17	0.050
8/14/17	0.054
8/29/17	0.062
9/14/17	0.057
9/26/17	0.090
10/11/17	0.087
Median	0.060

EPA has decided to apply the Gold Book threshold because it was developed from an effects-based approach versus the reference conditions-based approach used to develop the ecoregion criteria. The effects-based approach is taken because it is more directly associated with an impairment to a designated use (e.g. fishing). The effects-based approach provides a threshold value above which water quality impairments are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. algal growth) associated with designated use impairments. Referenced-base values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality standards for phosphorus, a mass balance equation is used to project the instream phosphorus concentration downstream of the discharge under 7Q10 conditions.

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

Solving for the downstream phosphorus concentration

$$C_r = \frac{[(Q_d C_d) + (Q_s C_s)]}{Q_r}$$

[12] Lower Merrimack River Monitoring Project Summer/Fall 2017. United States Environmental Protection Agency New England, Office of Environmental Monitoring and Evaluation, EPA March 2018.

C_r = downstream phosphorus concentration in the Merrimack River (mg/L)
Q_d = design flow of treatment plant (80.46 cfs)
C_d = 95th percentile of effluent phosphorus concentrations discharged from the facility during the growing season (0.854 mg/L)
Q_s = 7Q10 flow of Merrimack River upstream of the discharge (869 cfs)
C_s = median phosphorus concentration in the Merrimack River at sampling station MO18 (0.060 mg/L)
Q_r = flow in the river downstream of the discharge (80.46 + 869 = 945.46 cfs)

$$C_r = \frac{[(869 \text{ cfs})(0.060 \text{ mg/L}) + (80.46 \text{ cfs})(0.854 \text{ mg/L})]}{949.46 \text{ cfs}}$$

C_r = 0.127 mg/L

The concentration of phosphorus downstream of the discharge equals 0.127 mg/L and is greater than the Gold Book recommended water quality criterion. There is reasonable potential that the phosphorus concentration discharged from the Facility may cause or contribute to an excursion of the water quality criterion of 0.100 mg/L and EPA is required to include a phosphorus limit in the Draft Permit. Hence, the limit is calculated below.

$$C_d = (Q_r C_r - Q_s C_s)/Q_d$$

C_r = downstream phosphorus concentration in the Merrimack River (Gold Book criterion of 0.100 mg/L)
Q_d = design flow of treatment plant (80.46 cfs)
C_d = allowable phosphorus effluent concentration to achieve the recommended Gold Book criteria
Q_s = 7Q10 low flow of Merrimack River upstream of the discharge (869 cfs)
C_s = median phosphorus concentration in the Merrimack River at sampling station MO18 (0.060 mg/L)
Q_r = downstream flow of Merrimack River (949.46 cfs)

$$C_d = \frac{((949.46 \text{ cfs})(0.100 \text{ mg/L}) - (869 \text{ cfs})(0.060 \text{ mg/L}))}{80.46 \text{ cfs}}$$

C_d = 0.53 mg/L

The resulting allowable phosphorus effluent concentration is 0.53 mg/L. Therefore, the Draft Permit includes a monthly average phosphorus limit of 0.53 mg/L from April 1 through October 31. The Permittee is required to monitor total phosphorus for the months of November 1-March 31. The monitoring frequency is once per week during the warm weather season and once per month from November through March.

The range of total phosphorus reported in the monthly discharge monitoring report from January 2014 through December 2018 is 0.04 mg/L to 1.08 mg/L. Therefore, EPA has included a compliance schedule of one (1) year for the facility to come into compliance with the total phosphorus limit of 0.53 mg/L.

Alternative Mass-Based Approach

Given the significant dilution factor (11.8), EPA is also soliciting comment on an alternative approach which may be used to incorporate a mass-based limit for total phosphorus instead of a concentration-based limit. While the Draft Permit incorporates a concentration-based limit as described above, this alternative mass-based approach is presented below and may replace the concentration-based limit following review of any relevant comments submitted during the public notice period.

A mass-based limit must be calculated to be protective of the same instream Gold Book threshold of 0.100 mg/L. To ensure a mass-based limit is protective under critical flow conditions, the limit is calculated using the lowest expected receiving water flow and lowest expected effluent flow. In this case, the upstream 7Q10 receiving water flow is 869 cfs and the lowest monthly average effluent flow during the review period is 17.4 MGD or 26.9 cfs (from Sept 2016; data provided by GLSD on May 20, 2019). The numeric mass-based limit is determined based upon the following mass balance equation:

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

Rewritten as:

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

Converting to mass-based:

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

Where:

M_d = mass-based phosphorus limit
Q_d = effluent flow in MGD (lowest effluent monthly average flow = 26.9 cfs)
C_d = effluent phosphorus concentration in mg/L
Q_s = 7Q10 flow of Merrimack River upstream of the discharge (869 cfs)
C_s = median phosphorus concentration in the Merrimack River at sampling station MO18 (0.060 mg/L)
Q_r = downstream 7Q10 flow ($Q_s + Q_d$ = 895.9 cfs)
C_r = downstream river phosphorus concentration (Gold Book target = 0.100 mg/l)
8.345 = factor to convert from *MGD * mg/l* to *lb/d*

Solving for M_d gives the maximum allowable mass the facility may discharge without violating water quality standards. This allowable discharge is 202 lb/day, which is equivalent to a concentration of 0.46 mg/L at the design flow of 52 MGD and equivalent to 1.39 mg/L at the

lowest monthly average flow of 17.4 MGD.

From 2014 through 2018, monthly average total phosphorus discharged by the facility from April to October ranged from 27.7 lb/day to 194.9 lb/day with an average of 80.2 lb/day over this 5-year period. As the facility total phosphorus discharges are already below this mass-based limit under the current flows, there would be no compliance schedule accompanying the alternative mass-based limit.

Under this alternative approach, the Draft Permit would include a monthly average phosphorus limit of 202 lb/day from April 1 through October 31 with monitoring frequency of once per week during April through October and once per month from November through March.

5.1.11 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, given the updated upstream hydrologic and chemical characteristics of the receiving water. A summary of recent metals monitoring data is provided in Appendix B.

5.1.11.1 Applicable Metals Criteria

State water quality criteria for cadmium, copper, lead, nickel and zinc are established in terms of dissolved metals. 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.

Additionally, the criteria for cadmium, copper, lead, nickel and zinc are hardness-dependent using the equations in EPA's National Recommended Water Quality Criteria: 2002, which are incorporated into the Massachusetts WQS by reference. The estimated hardness of the Merrimack River downstream of the treatment plant is calculated using the critical low flow (7Q10), the design flow of the treatment plant, and the median hardness for both the receiving water upstream of the discharge and the treatment plant effluent. Effluent and receiving water data are presented in Appendix A. Using the mass balance equation discussed in the next section (substituting hardness for metal concentration), the resulting downstream hardness is 40.8 mg/L and the corresponding criteria are presented in Appendix B.

Massachusetts aluminum criteria are not hardness-dependent and are expressed as total recoverable aluminum.

5.1.11.2 Reasonable Potential Analysis and Limit Derivation

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 metal concentration downstream of the discharge (C_r) yields:

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

Where:

Q_s = 7Q10 flow upstream of Facility
Q_d = design flow of Facility
Q_r = combined stream flow (7Q10 + design flow)
C_s = median upstream metal concentration
C_d = effluent metals concentration (95th percentile[13])

Reasonable potential is then determined by comparing this resultant in-stream concentration with the acute and chronic criteria for each metal. The discharge is determined to have the reasonable potential to cause or contribute to a violation of water quality standards if both the effluent concentration (C_d) and the downstream concentration (C_r) exceed the criteria. 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 relevant criterion as the resultant in-stream concentration (C_r).

The results of this analysis for each metal are presented in Appendix B, indicating the Draft Permit must include limits for aluminum, copper and lead. The chronic (monthly average) aluminum limit of 87 µg/L, the chronic (monthly average) cadmium limit of 0.1 µg/L, the acute (daily maximum) copper limit of 6.0 µg/L, the chronic (monthly average) copper limit of 4.4 µg/L and the chronic (monthly average) lead limit of 1.0 µg/L are established to protect WQSs. Each of these metals shall be monitored once per month.

During the site visit on March 19, 2019, EPA and MassDEP visited the sampling location where GLSD collects river samples. It was determined the location may not provide data that is representative of the metals concentrations in the river. The river samples were collected with a metal bucket and accumulated debris was visible on the riverbank at the sampling location.

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[13] The Facility's effluent concentrations (from Appendix A) were characterized assuming a lognormal distribution to determine the estimated 95th percentile of the daily maximum (*See* Appendix C).

GLSD has decided to take additional samples using clean sampling techniques. EPA notes that the Permittee may collect and submit additional ambient monitoring data. Prior to final issuance of the permit, EPA will review any additional data and, if appropriate, reevaluate reasonable potential for these metals limits.

Cadmium, Copper and Lead Compliance Schedule:

The Draft Permit includes a one (1) year compliance schedule to comply with the cadmium, copper and lead limits in the Draft Permit.

Aluminum Compliance Schedule:

The final aluminum effluent limit is based on current Massachusetts, EPA approved, aluminum criteria to protect fresh water aquatic life. However, EPA is aware of ongoing efforts by MassDEP to soon revise the Massachusetts aluminum criteria based upon EPA aluminum criteria finalized in December 2018. MassDEP has informed EPA that it expects to propose the revisions to its aluminum criteria in 2019. For three years after the effective date of the permit, MassDEP will inform EPA at reasonable intervals of its progress on the development and promulgation of new aluminum criteria.

EPA's aluminum criteria recommendations indicate that the new aluminum criteria recommendations may be higher than the current recommendations. Because MassDEP has indicated to EPA that its planned revisions to its aluminum criteria will be based on EPA's recommended criteria, EPA reasonably expects its new criteria may also be higher. EPA has therefore determined that it is appropriate to include a schedule of compliance, pursuant to 40 C.F.R. § 122.47, in the draft permit which provides the permittee with a 3-year period to achieve compliance with the final aluminum effluent limit. Additionally, the permittee may apply for a permit modification to allow additional time for compliance if Massachusetts has adopted new aluminum criteria but has not yet submitted the criteria to EPA for review or EPA has not yet acted on the new criteria. If new aluminum criteria are adopted by Massachusetts, approved by EPA, and before the final aluminum effluent limit goes into effect, the permittee may apply for a permit modification to amend the permit based on the new criteria. If warranted by the new criteria and a reasonable potential analysis, EPA may relax or remove the effluent limit to the extent consistent with anti-degradation requirements. Such a relaxation or removal would not trigger anti-backsliding requirements as those requirements do not apply to effluent limits which have yet to take effect pursuant to a schedule of compliance. *See American Iron and Steel Institute v. EPA*, 115 F.3d 979, 993 n.6 (D.C. Cir. 1997) ("EPA interprets § 402 to allow later relaxation of [an effluent limit] so long as the limit has yet become effective.")

5.1.12 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". The Massachusetts WQSs at 314 CMR 4.05(5)(e) state, "*All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife."*

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.

Further, EPA Region 1 and MassDEP[14] current toxic policy requires toxicity testing for all dischargers such as the Greater Lawrence Sanitary District WWTF. In accordance with these policies, whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the LC_{50}. According to this policy dischargers having a dilution factor between 10 and 20 are required to conduct acute and chronic toxicity testing four times per year for two species.

The chronic and acute WET limits in the 2005 Permit are C-NOEC reporting requirement and LC_{50} greater than or equal to 100%, respectively, 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.

Based on the potential for toxicity from domestic and industrial contributions, the state narrative water quality criterion, the dilution factor of 11.8, 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 2005 Permit including the test organism and the testing frequency. Toxicity testing must be performed in accordance with the updated EPA Region 1 WET test procedures and protocols specified in Attachments A and B of the Draft Permit (USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol, February 2011 and USEPA Region 1 Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013).

[14] Implementation Policy for the Control of Toxic Pollutants in Surface Waters, MassDEP 1990

5.2 Industrial Pretreatment Program

The Permittee is required to administer a pretreatment program based on the authority granted under 40 C.F.R. 122.44(j), 40 C.F.R. Part 403 and Section 307 of the Act. The GLSD's pretreatment program received EPA approval on September 24,1984 and, as a result, appropriate pretreatment program requirements were incorporated into the previous permit, which were consistent with that approval and federal pretreatment regulations in effect when the permit was issued.

The Federal Pretreatment Regulations in 40 C.F.R. Part 403 were amended in October 1988, in July 1990, and again in October 2005. Those amendments established new requirements for implementation of pretreatment programs. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with current Federal Regulations. Those activities that the permittee must address include, but are not limited to, the following: 1) develop and enforce EPA approved specific effluent limits (technically-based local limits); 2) revise the local sewer-use ordinance or regulation, as appropriate, to be consistent with Federal Regulations; 3) develop an enforcement response plan; 4) implement a slug control evaluation program; 5) track significant noncompliance for industrial users; and 6) establish a definition of and track significant industrial users.

These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices.

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

5.3 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.

5.4 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 and co-permittees to control infiltration and inflow (I/I) within the sewer collections systems that they own and operate. The Permittee and co-permittees shall each develop an I/I removal program commensurate with the severity of I/I in their respective collection systems. This program may be scaled down in sections of the collection system that have minimal I/I.

5.5 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 and MassDEP maintain 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.

Several of the requirements in the Draft Permit are not included in the 2005 Permit, including collection system mapping, and preparation of a collection system operation and maintenance plan. EPA has determined that these additional requirements are necessary to ensure the proper operation and maintenance of the collection system and has included schedules for completing these requirements in the Draft Permit.

Because the Towns of Andover, Methuen, and North Andover, Massachusetts and Salem, New Hampshire each own and operate collection systems that discharge to the GLSD WWTP, these municipalities have been included as co-permittees for the specific permit requirements discussed in the paragraph above. The historical background and legal framework underlying this co-permittee approach is set forth in Appendix D to this Fact Sheet, EPA Region 1 NPDES Permitting Approach for Publicly Owned Treatment Works that Include Municipal Satellite Sewage Collection Systems.

5.6 Combined Sewer Overflows

Description

The wastewater collection system that conveys flow to the GLSD WWTF consists partially of combined sewers that convey both sanitary sewage and stormwater runoff during rain events. During wet weather, the combined flow exceeds the capacity of the interceptor sewers and the wastewater treatment plant, and a portion of the combined flow is discharged to the Merrimack and Spicket Rivers through combined sewer overflows (CSOs). CSOs have been identified as causing or contributing to water quality impairments in the segment of the Merrimack River where GLSD's CSO discharges occur. See *Merrimack River Watershed 2004 Water Quality Assessment Report* (MassDEP January 2010).

The system currently has five CSO outfalls which discharge to the Merrimack and Spicket Rivers (see list of outfalls in Appendix E and map of CSO Outfall Locations in Appendix F).

Regulatory Framework

CSOs are point sources subject to NPDES permit requirements for both water-quality based and technology-based requirements but are not subject to the secondary treatment regulations applicable to publicly owned treatment works in accordance with 40 C.F.R. §133.103(a). Section 301(b)(1)(C) of the Clean Water Act of 1977 mandated compliance with water quality standards by July 1, 1977. Technology-based permit limits must be established for best conventional pollutant control technology (BCT) and best available technology economically achievable (BAT) based on best professional judgment (BPJ) in accordance with Section 301(b) and Section 402(a) of the Water Quality Act Amendments of 1987 (WQA). The framework for compliance with Clean Water Act requirements for CSOs is set forth in EPA's National CSO Control Policy, 59 Fed. Reg. 18688 (1994). It sets the following objectives:

1) To ensure that if the CSO discharges occur, they are only as a result of wet weather;

2) To bring all wet weather CSO discharge points into compliance with the technology-based requirements of the CWA and applicable federal and state water quality standards; and

3) To minimize water quality, aquatic biota, and human health impacts from wet weather flows.

Among the elements established to achieve these objectives, the CSO Policy set forth the minimum BCT/BAT controls (i.e., technology-based limits) that represent the BPJ of the Agency on a consistent, national basis. These are the Nine Minimum Controls (NMCs) defined in the CSO Policy and set forth in Part I.F. of the Draft Permit: 1) proper operation and regular maintenance programs for the sewer system and the combined sewer overflows; 2) maximum use of the collection system for storage; 3) review and modification of the pretreatment programs to assure CSO impacts are minimized; 4) maximization of flow to the POTW for treatment; 5) prohibition of dry weather overflows; 6) control of solid and floatable materials in CSOs; 7) pollution prevention programs which focus on contaminant reduction activities; 8) public notification to ensure that the public receives adequate notification of CSO occurrences and CSO

impacts; and 9) monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

To reflect advances in technologies, the Draft Permit includes more specific public notification implementation level requirements to ensure that the public receives adequate notification of CSO occurrences and CSO impacts. The Draft Permit requires the Permittee to develop a public notification plan to fulfill NMC #8. As part of this plan, notification shall be provided electronically to any interested party, and a posting made on the permittee's website, of a probable CSO activation. EPA is proposing a requirement in the revised Draft Permit for the Permittee to provide initial notification to the public of a probable CSO discharge no later than four hours after becoming aware of a likely CSO discharge. This notification may be based on modeling estimates of discharge(s) based on rainfall (or other predictive modeling methodologies) rather than on actual CSO discharge measurements.

This initial notification shall be followed by supplemental notification within twenty-four hours of the cessation of a discharge event to confirm whether an actual discharge occurred, and if so, to include information specific to each discharge, including the CSO outfall number and location, the date of the discharge, as well as the time the discharge commenced and ceased.

The CSO Policy also recommended that each community that has a combined sewer system develop and implement a CSO Long-Term Control Plan (CSO LTCP) that will ultimately result in compliance with the requirements of the CWA. GLSD has been implementing the LTCP it submitted to EPA and MassDEP in 2010, which includes various projects to reduce or eliminate CSO discharges.

Permit Requirements

In accordance with the National CSO Policy, the Draft Permit contains the following conditions for the CSO discharges:

(i) Dry weather discharges from CSO outfalls are prohibited. Dry weather discharges must be immediately reported to EPA and MassDEP.
(ii) During wet weather, the discharges must not cause any exceedance of water quality standards.
(iii) The permittee shall meet the technology-based NMCs described above and shall comply with the implementation levels as set forth in Part I.B. of the Draft Permit.
(iv) The permittee shall review its entire NMC program and revise it as necessary. Documentation of this review and any resultant revisions made to the NMC program shall be submitted to EPA and MassDEP within 6 months of the effective date of the permit. An annual report shall be provided by March 31st of each year which describes any subsequent revisions made to the NMC program and shall also include monitoring results from CSO discharges, and the status of CSO abatement projects.

5.7 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 assistance 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 Greater Lawrence Sanitary District Facility, which discharges to the Merrimack River from Outfall 001 at latitude 42.71781 N and longitude 71.13357 W, along with five Combined Sewer Overflow (CSO) discharges. The action area is within Merrimack River Segment MA84A-04. The Draft Permit is intended to replace the 2005 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 with the Services when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the expected action area of the outfall to determine if EPA's proposed NPDES permit could potentially impact any such listed species. For protected species under the jurisdiction of the USFWS, one listed endangered species, the northern long-eared bat (*Myotis septentrionalis*), was identified as potentially occurring in the action area of Merrimack River.[15] According to the USFWS, the northern long-eared bat is found in "winter – mines and caves, summer – wide variety of forested habitats. This species is not aquatic, so the discharge will have no direct effect on this mammal. Further, the permit action is also expected to have no indirect effect on the species because it is not expected to impact insects, the primary prey of the northern long-eared bat. Therefore, the proposed permit action is deemed to have no impact on this listed species.

For protected species under the jurisdiction of NMFS, subadult and adult life stages of Atlantic sturgeon (*Acipenser oxyrinchus*), as well as young-of-year, juvenile and adult life stages of shortnose sturgeon (*Acipenser brevirostrom*), are present in the Merrimack River . Their

[15]See §7 resources for USFWS at https://ecos.fws.gov/ipac/.

upstream passage is limited by the Essex Dam (Great Stone Dam) in Lawrence, Massachusetts. In addition, areas of the Merrimack River downstream of the Essex Dam have been designated as critical habitat for Atlantic sturgeon.[16] These protected species life stages, as well as the listed Atlantic sturgeon critical habitat, are likely influences by the discharge from this Facility.

Because these species may be affected by the discharge authorized by the proposed permit, EPA has evaluated the potential impacts of the permit action on these two species of sturgeon. On the basis of the evaluation, EPA's preliminary determination is that this action mat affect, but is not likely to adversely affect, the life stages of shortnose sturgeon and Atlantic sturgeon expected to inhabit the Merrimack River in the vicinity of the action area of the discharge. In addition, EPA has made the preliminary determination that the proposed action may affect, but is not likely to adversely affect, the designated critical habitat that overlaps with the action area. Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NMFS regarding this determination through the information in the Draft Permit, this Fact Sheet, as well as a letter that will be sent to NMFS Protected Resources Division under separate cover.

Reinitiation of consultation will take place: (a) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) if a new species is listed or critical habitat is designated that may be affected by the identified action.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (*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. In some cases, a narrative identifies rivers and

[16] See §7 resources for NMFS at https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27

other waterways that should be considered EFH due to present or historic use by federally managed species.[17]

The Federal action being considered in this case is EPA's proposed NPDES permit for the Greater Lawrence Sanitary District Facility, which discharges to the Merrimack River from Outfall 001 at latitude 42.71781 N and longitude 71.13357 W, along with five Combined Sewer Overflow (CSO) discharges. The action area is within Merrimack River Segment MA84A-04. The Draft Permit is intended to replace the 2005 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to EFH and initiates consultation with the NMFS when required by the MSFCMA.

The following EFH species and life stages (Table 3) are believed to be present within the EFH Area, which encompasses the existing discharge site.

Table 3. EFH Species and Life Stages Found in the Merrimack River Segment MA84A-04

Species/Management Unit	Lifestage(s) Found at Location
Atlantic Wolffish	ALL
Winter Flounder	Eggs, Juvenile,Larvae/Adult, ALL
Atlantic Herring	Juvenile, Larvae, ALL
Pollock	Juvenile, Eggs, Larvae, ALL
Red Hake	Eggs/Larvae/Juvenile, ALL
Silver Hake	Eggs/Larvae, ALL
White Hake	Eggs, ALL
Atlantic Salmon	ALL

No "habitat areas of particular concern", as defined under §600.815(a)(9) of the Magnuson-Stevens Act, have been designated for this site. Although EFH has been designated for this location, EPA has concluded that this activity is not likely to adversely affect EFH or its associated species for the following reasons:

- This permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit;
- The Facility withdraws no water from the Merrimack River, so no life stages of EFH species are vulnerable to impingement or entrainment from this facility;

[17] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/

- The flow from the Facility is limited by the Draft Permit to 52 mgd, as a monthly average;
- Effluent receives secondary treatment with extended aeration process;
- Effluent is discharged into the Merrimack River via a diffuser with a dilution factor of 11.8;
- The Draft Permit proposes to limit BOD, TSS, pH, total residual chlorine, *E. coli*, total aluminum, total cadmium, total copper, total lead, dissolved oxygen and total phosphorus;
- The Permittee is required to minimize the use of chlorine while maintaining adequate bacterial control;
- Acute toxicity tests will be continued four times a year. Present toxicity test results are in compliance with the permit limits;

- The Draft Permit prohibits the discharge of pollutants or combination of pollutants in toxic amounts;
- The effluent limitations and conditions in the Draft Permit were developed to be protective of all aquatic life; and
- The Draft Permit prohibits violations of the state water quality standards.

EPA believes that the conditions and limitations contained within the Draft Permit adequately protect all aquatic life, including the designated EFH species in the receiving water, and that further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NMFS will be contacted and an EFH consultation will be reinitiated.

In addition to this Fact Sheet and the Draft Permit, information to support EPA's finding is included in a letter under separate cover that will be sent to the NMFS Habitat Division during the public comment period.

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 Betsy Davis, U.S. EPA, Water Division**,** Municipal Permits Section, 5 Post Office Square, Suite 100 (06-1), Boston, Massachusetts 02109-3912 or via email to davis.betsy@epa.gov; and Jennifer Wood, MassDEP, Surface Water Discharge Program, One Winter Street, 5th Floor, Boston, MA 02108 or via email to jennifer.wood@mass.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 and/or submit a request for an adjudicatory hearing to MassDEP's Office of Appeals and Dispute Resolution consistent with 310 CMR 1.00.

8 EPA and MassDEP 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:

Betsy Davis
EPA New England, Region 1
5 Post Office Square, Suite-100 (06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1576, FAX: (617)918-0576
Email: davis.betsy@epa.gov

Jennifer Wood
Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
One Winter Street, 5th Floor
Boston, MA 02108
Telephone: (617) 654-6536
Email: jennifer.wood@mass.gov

06/07/2019
Date

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

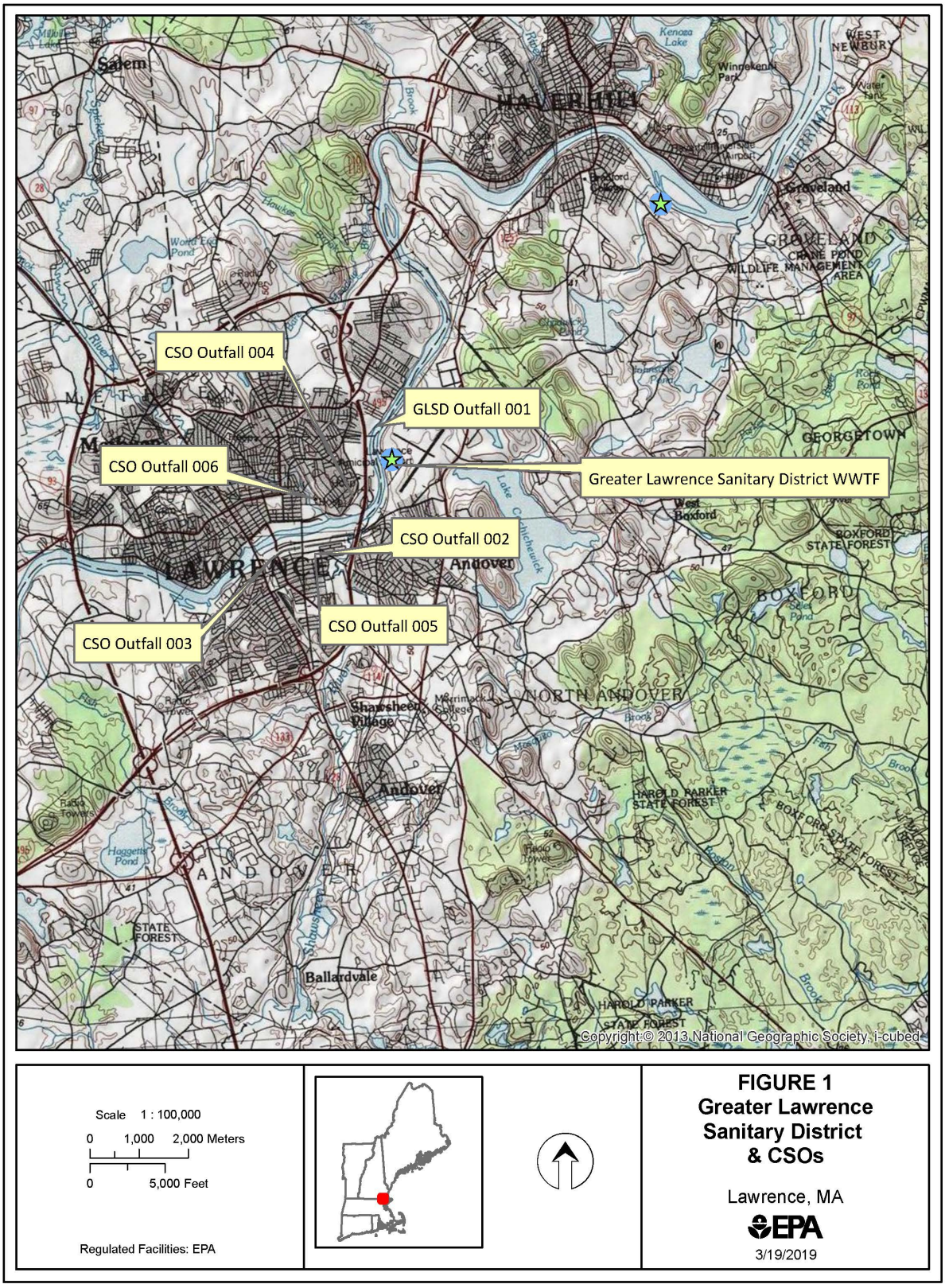
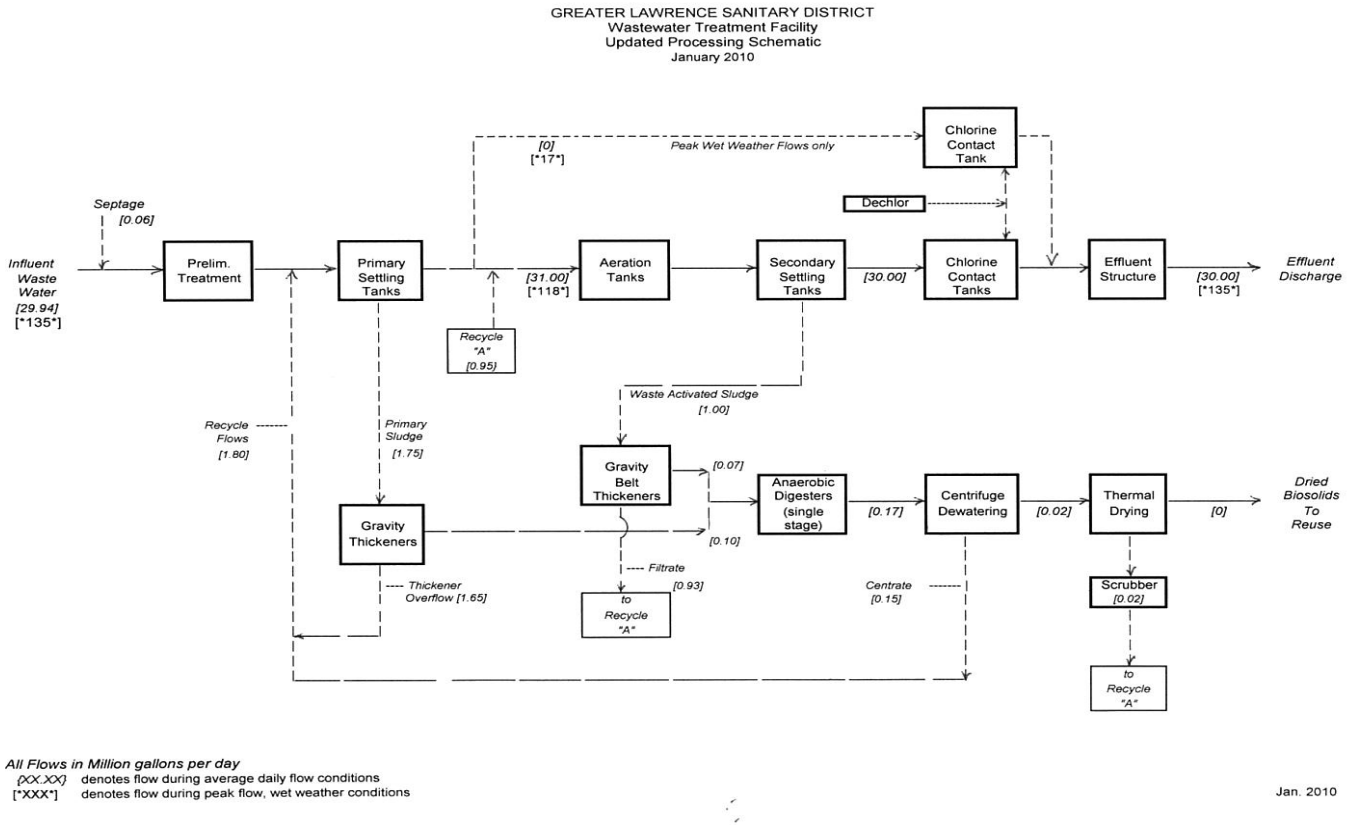

CSO Outfall 004
GLSD Outfall 001
CSO Outfall 006
Greater Lawrence Sanitary District WWTF
CSO Outfall 002
CSO Outfall 005
CSO Outfall 003
Salem
HAVERHILL
Groveland
GEORGETOWN
LAWRENCE
Andover
BOXFORD
NORTH ANDOVER
Ballardvale
Copyright © 2013 National Geographic Society, i-cubed
Scale 1 : 100,000
0 1,000 2,000 Meters
0 5,000 Feet
Regulated Facilities: EPA
FIGURE 1
Greater Lawrence Sanitary District & CSOs
Lawrence, MA
EPA
3/19/2019

Figure 1: Flow diagram



APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

Outfall 001

Parameter	Flow	Flow	BOD5	BOD5	BOD5	BOD5	BOD5	TSS
	Annual Rolling Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Daily Max	Monthly Ave
Units	MGD	MGD	lb/d	mg/L	lb/d	mg/L	mg/L	lb/d
Effluent Limit	52	Report	13010	30	Report	45	50	13010
Minimum	22.7	22.7	1839	5	2064	10	13	601
Maximum	34.24	94.1	7508	27	10005	36	58	4728
Average	26.8	49.6	3440	14.6	4660	18.5	27.5	1450
No. of Violations	0	N/A	0	0	N/A	0	1	0
1/31/2014	25	61	2667	8	3616	10	13	1505
2/28/2014	27	61	2725	9	3423	11	13	2267
3/31/2014	34.24	55.15	3331	10	3504	11	29	2885
4/30/2014	29	66	4044	10	5555	15	19	2418
5/31/2014	30.88	54.3	4521	15	6460	22	33	1368
6/30/2014	30.14	41.82	3281	14	4105	16	33	972
7/31/2014	30.1	52.3	4672	20	7257	29	38	1721
8/31/2014	30.4	51.8	2888	13	4032	18	20	1168
9/30/2014	30.65	34.5	4549	23	6467	34	43	1564
10/31/2014	31.1	86.2	4577	21	7152	25	34	1358
11/30/2014	31.5	44.73	4142	19	5279	23	35	1446
12/31/2014	32.5	79.3	3226	10	3955	13	21	2333
1/31/2015	31.7	52.3	3282	14	4223	18	24	1332
2/28/2015	30.7	22.7	2290	13	2455	14	22	1310
3/31/2015	30	51.4	3842	15	5110	21	38	2078
4/30/2015	29	48.9	4292	14	6646	20	30	1959
5/31/2015	27.9	36.9	3893	20	4310	22	40	1451
6/30/2015	27.8	66.5	3481	15	3936	19	37	1369
7/31/2015	27.1	40.9	3100	17	4434	24	27	1371
8/31/2015	26.5	30.1	2572	18	3670	27	33	609
9/30/2015	26.1	67.3	2635	14	2064	14	33	1130
10/31/2015	25.7	38.2	2525	14	5196	18	29	856
11/30/2015	25.3	36.5	2253	14	2444	16	18	670
12/31/2015	23.7	35.3	3276	15	4364	21	26	1089
1/31/2016	23.7	60.4	4536	16	7342	23	31	2483
2/29/2016	24.4	48.2	4015	16	4913	19	24	1383
3/31/2016	24.4	44.2	4873	17	5843	21	35	1812
4/30/2016	23.7	58.8	4163	15	5517	20	22	1321
5/31/2016	23.8	29.6	4186	17	4590	22	39	941
6/30/2016	23.2	43	2683	15	4987	19	24	995
7/31/2016	22.8	26.6	2242	17	3168	23	27	601
8/31/2016	22.8	32.2	3197	19	4675	24	58	1011
9/30/2016	22.7	34.2	2359	17	2747	19	23	678
10/31/2016	22.9	41.01	2960	19	4056	24	30	1055

APPENDIX A

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	Annual Rolling Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Daily Max	Monthly Ave
Units	MGD	MGD	lb/d	mg/L	lb/d	mg/L	mg/L	lb/d
Effluent Limit	**52**	**Report**	**13010**	**30**	**Report**	**45**	**50**	**13010**
11/30/2016	23	31	2984	17	3769	22	26	691
12/31/2016	23.2	40.7	2635	13	3612	15	20	1009
1/31/2017	23.4	49	3262	13	4100	17	22	1403
2/28/2017	23.3	42.7	2944	13	2968	14	20	1611
3/31/2017	23.1	47.3	3256	13	4397	15	23	1510
4/30/2017	24.4	85.8	4538	5	7261	12	19	2305
5/31/2017	25.1	49.8	7348	27	10005	36	43	1678
6/30/2017	26	60.7	2672	10	4555	19	14	1037
7/31/2017	26.4	38.9	2894	15	3365	17	31	791
8/31/2017	26.5	27.6	2909	18	3922	22	49.6	1378
9/30/2017	26.8	43.8	1839	10	2410	16	17	670
10/31/2017	26.6	32	1988	11	2603	13	20	812
11/30/2017	26.9	33.7	1901	10	2166	11	16	781
12/31/2017	26.7	31.01	2235	13	2502	13.6	20	789
1/31/2018	26.4	53.94	2122	10	2981	11	15	1094
2/28/2018	26.7	63.3	2855	10	2896	12	15	1622
3/31/2018	27.6	65.5	3662	11	3921	13	16	2229
4/30/2018	26.92	76.7	3796	10	5840	13	17	1861
5/31/2018	26.44	38.73	3449	15	4342	15	25	1477
6/30/2018	25.61	42.26	2952	15	4670	19	28	1057
7/31/2018	25.5	54.7	2537	13	4087	15	31	1034
8/31/2018	26	44.9	3366	16	3965	16	32	1217
9/30/2018	26.5	76.7	4754	18	8263	21	44	2112
10/31/2018	27.2	44.5	3822	16	5216	21	37	1098
11/30/2018	30.27	94.1	7508	15	8962	18	21	4728
12/31/2018	31.7	71.33	4886	14	9500	21	26	2227

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

Outfall 001

Parameter	TSS	TSS	TSS	TSS	pH	pH	Fecal Coliform	Fecal Coliform
	Monthly Ave	Weekly Ave	Weekly Ave	Daily Max	Minimum	Maximum	Monthly Geometric Mean	Daily Max
Units	mg/L	lb/d	mg/L	mg/L	SU	SU	#/100mL	#/100mL
Effluent Limit	30	Report	45	50	6.5	8.3	200	400
Minimum	3	697	4	5	6.7	7.1	1	1.2
Maximum	10	6332	17	66	7.6	8	98	840
Average	5.9	2230	7.72	14.6	7.11	7.54	5.41	60.7
No. of Violations	0	N/A	0	1	0	0	0	2
1/31/2014	5	1890	6	8	6.9	7.2	3	8
2/28/2014	7	3266	10	20	7	7.3	4	54
3/31/2014	9	3064	8	42	7.2	7.5	3.7	25
4/30/2014	5	5337	13	11	6.87	7.3	2	18
5/31/2014	5	1941	6	9	7.51	7.77	2	35
6/30/2014	4	1124	4	6	7.4	7.7	98	3
7/31/2014	7	3335	13	20	6.8	7.5	5	31
8/31/2014	5	1429	7	11	6.7	7.6	7	68
9/30/2014	8	2467	13	17	7.1	7.6	NODI:	NODI:
10/31/2014	6	2674	7	14	6.8	7.6	5	116
11/30/2014	7	1999	8	15	7.1	7.6	2	44
12/31/2014	7	4095	8	14	6.7	7.5	2	3
1/31/2015	6	2173	8	9	7	7.4	2	9
2/28/2015	7	1554	9	14	6.9	7.4	3	24
3/31/2015	8	3599	13	24	7.1	7.5	1	2
4/30/2015	6	2502	7	10	7.1	7.4	1	6
5/31/2015	8	1652	9	12	7.2	7.6	3	16
6/30/2015	6	1760	6	11	7	7.6	5	**840**
7/31/2015	7	3240	17	**66**	6.9	8	7	27
8/31/2015	4	708	5	10	7.4	7.7	6	14
9/30/2015	5	697	5	21	7.2	7.6	9	360
10/31/2015	5	2804	7	14	6.9	7.6	5	16
11/30/2015	5	825	5	7	7.2	7.6	2.4	8
12/31/2015	6	1503	7	13	7	7.6	1.3	4
1/31/2016	10	4563	14	21	7.2	7.5	1.7	4
2/29/2016	6	1692	8	10	7	7.4	1.3	3
3/31/2016	7	2463	9	16	7	7.4	1.24	3
4/30/2016	5	2067	7	10	7.2	7.5	3	1.2
5/31/2016	5	1074	5	8	7.4	7.6	1.6	11
6/30/2016	5	1998	8	15	7.2	7.6	5	19
7/31/2016	4	787	6	12	7.3	7.7	7.9	21
8/31/2016	6	2391	11	37	7.2	7.7	4.5	30
9/30/2016	5	878	5	8	7.1	7.9	5.4	32
10/31/2016	7	1174	8	13	7.1	7.6	7.6	44

APPENDIX A

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Outfall 001

Parameter	TSS	TSS	TSS	TSS	pH	pH	Fecal Coliform	Fecal Coliform
	Monthly Ave	Weekly Ave	Weekly Ave	Daily Max	Minimum	Maximum	Monthly Geometric Mean	Daily Max
Units	mg/L	lb/d	mg/L	mg/L	SU	SU	#/100mL	#/100mL
Effluent Limit	**30**	**Report**	**45**	**50**	**6.5**	**8.3**	**200**	**400**
11/30/2016	4	725	4	5	7.2	7.5	2.4	10
12/31/2016	5	1321	5	10	7	7.4	1.25	3
1/31/2017	6	2266	8	13	7.1	7.4	2.01	9
2/28/2017	7	1782	8	15	7.2	7.5	5.2	21
3/31/2017	6	1976	7	13	7	7.5	4.5	54
4/30/2017	5	6081	8	14	7	7.4	1.7	11
5/31/2017	6	2073	7	12	7.2	7.5	2.4	13
6/30/2017	4	1484	4	5	7.1	7.5	1.97	11
7/31/2017	4	1105	5	9	7.1	7.7	5.96	43
8/31/2017	9	1972	10	34	7.4	7.6	13.65	314
9/30/2017	3	841	4	6	7.3	7.7	4.97	18
10/31/2017	5	1011	5	13	7.3	7.6	2.9	120
11/30/2017	4	1258	6	5	7.3	7.9	1.03	2
12/31/2017	4	1020	5	9	7.3	7.9	1.75	9
1/31/2018	5	1705	6	8	7.6	7.1	1.16	5
2/28/2018	6	1795	7	9	7.2	7.4	1.12	3
3/31/2018	7	2869	8	10	7	7.3	1.51	8
4/30/2018	5	2807	6	11	7.03	7.49	1.86	4
5/31/2018	7	1904	10	11	7.2	7.7	3.52	17
6/30/2018	5	1471	7	20	7.2	7.6	2.94	56
7/31/2018	5	1824	6	15	6.9	7.5	3.67	32
8/31/2018	6	1940	7	14	7	7.5	3.54	31
9/30/2018	7	4210	9	26	7.2	7.6	9.17	**727**
10/31/2018	5	1449	6	12	7	7.5	4.19	18
11/30/2018	9	6332	13	16	6.9	7.3	8.5	117
12/31/2018	7	6071	10	11	7.14	7.48	7.56	26

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

Outfall 001

Parameter	TRC	TRC	TRC	TRC	DO	TP
	Monthly Ave	Daily Max	Continuous - Monthly Ave Min	Continuous - Daily Max	Minimum	Daily Max
Units	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L
Effluent Limit	150	260	Report	Report	5	Report
Minimum	0	0	22.7	22.7	7.2	0.04
Maximum	20	20	34.24	94.1	9.1	1.08
Average	0.681	0.681	26.8	49.6	8.15	0.37
No. of Violations	0	0	N/A	N/A	0	N/A
1/31/2014	0.002	0.002	0	0		0.231
2/28/2014	20	20	0	0		0.407
3/31/2014	0	0	0	0		0.354
4/30/2014	0	0.002	0	0.1	8.6	0.383
5/31/2014	20	20	0	0	8.2	0.191
6/30/2014	0	0	0	0	8.1	0.14
7/31/2014	0	0	0	0	7.4	0.195
8/31/2014	0	0	0	0	7.6	0.435
9/30/2014	0	0	0	0	8.1	0.447
10/31/2014	0	0	0	0	8.1	0.388
11/30/2014	0	0	0	0		0.332
12/31/2014	0	0	0	0		0.251
1/31/2015	0	0	0	0		0.31
2/28/2015	0	0	0	0		0.339
3/31/2015	0	0	0	0		0.38
4/30/2015	0	0	0	0	8.3	0.327
5/31/2015	0	0	0	0	8.1	0.17
6/30/2015	0	0	0	0	8.1	0.144
7/31/2015	0	0	0	0	8	1.04
8/31/2015	0	0	0	0	7.6	0.274
9/30/2015	0	0	0	0	7.2	0.788
10/31/2015	0	0	0	0	8.1	0.77
11/30/2015	0	0	0	0		0.376
12/31/2015	0	0	0	0		0.29
1/31/2016	0	0	0	0		0.357
2/29/2016	0	0	0	0		0.347
3/31/2016	0	0	0	0		0.525
4/30/2016	0	0	0	0	8.8	0.196
5/31/2016	0	0	0	0	8.2	0.157
6/30/2016	0	0	0	0	8	0.286
7/31/2016	0	0	0	0	7.3	0.396
8/31/2016	0	0	0	0.02	7.4	0.723
9/30/2016	0	0	0	0	7.9	0.392
10/31/2016	0	0	0	0	8.2	0.465

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

Outfall 001

Parameter	TRC	TRC	TRC	TRC	DO	TP
	Monthly Ave	Daily Max	Continuous - Monthly Ave Min	Continuous - Daily Max	Minimum	Daily Max
Units	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L
Effluent Limit	150	260	Report	Report	5	Report
11/30/2016	0	0	0	0		0.238
12/31/2016	0	0	0	0		0.261
1/31/2017	0.02	0.02	0	0		0.118
2/28/2017	0.02	0.02	0	0		0.234
3/31/2017	0.02	0.02	0	0		0.927
4/30/2017	0.2	0.2	0	0	8.6	0.383
5/31/2017	0.2	0.2	0	0	8.5	0.238
6/30/2017	0.02	0.02	0	0	8.5	0.119
7/31/2017	0.02	0.02	0	0	8	0.464
8/31/2017	0.02	0.02	0	0	7.9	1.08
9/30/2017	0.02	0.02	0	0	8.3	0.253
10/31/2017	0.02	0.02	0	0	8.3	0.558
11/30/2017	0.02	0.02	0	0		0.32
12/31/2017	0.02	0.02	0	0		0.463
1/31/2018	0.02	0.02	0	0		0.301
2/28/2018	0.02	0.02	0	0		0.04
3/31/2018	0.02	0.02	0	0		0.368
4/30/2018	0.02	0.02	0	0	9.1	0.255
5/31/2018	0.02	0.02	0	0	9	0.458
6/30/2018	0.02	0.02	0	0	8.2	0.151
7/31/2018	0.02	0.02	0	0	8.3	0.182
8/31/2018	0.02	0.02	0	0	8.4	0.33
9/30/2018	0.02	0.02	0	0	7.7	0.452
10/31/2018	0.02	0.02	0	0	9	0.369
11/30/2018	0.02	0.02	0	0		0.354
12/31/2018	0.02	0.02	0	0		0.503

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

Outfall 001

Parameter	Ammonia	Nitrite+Nitrate	TKN
	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report
Minimum	7.95	1	14.2
Maximum	30	3.33	34.9
Average	18.4	1.45	20.7
No. of Violations	N/A	N/A	N/A
1/31/2014	15	1	17
4/30/2014	10.2	1	14.3
7/31/2014	13.3	2.97	14.8
10/31/2014	20	1.43	27
1/31/2015	23.6	1	20.7
4/30/2015	14.9	1	14.2
7/31/2015	23.6	1	27.8
10/31/2015	14.4	NODI: E	NODI: E
1/31/2016	22.6	1.69	22.2
4/30/2016	13.8	1	16.3
7/31/2016	26.8	1	26.5
10/31/2016	18.3	1.54	22.3
1/31/2017	27.6	1	22.8
4/30/2017	7.95	1	17.2
7/31/2017	19.2	1	16.3
10/31/2017	16.1	3.33	19.1
1/31/2018	30	1	34.9
4/30/2018	15.1	1	18.5
7/31/2018	17.5	3.29	20.2
10/31/2018	18	1.33	21.8

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

WET - Effluent Data

Parameter	LC50 Acute Ceriodaphnia	C-NOEC Chronic Ceriodaphnia	Ammonia	pH	Hardness	Aluminum	Cadmium	Copper
	Daily Min	Daily Min	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	%	%	mg/L	S.U.	mg/L	mg/L	mg/L	mg/L
Effluent Limit	100	Report	Report	Report	Report	Report	Report	Report
Minimum	100	25	7.9	7.5	56	0.0204	0	0.0038
Maximum	100	100	30	7.9	110	0.392	0.0013	0.029
Average	100	79.5	18	7.69	85.1	0.109	0.00033	0.0131
No. of Violations	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/31/2014	100	100	14.8	7.5	65	0.2037	0	0.0143
4/30/2014	100	100	10.2	7.5	89	0.0204	0	0.0073
7/31/2014	100	100	13.3	7.6	66	0.144	0	0.013
10/31/2014	100	25	19.9	7.7	66	0.0721	0	0.0089
1/31/2015	100	50	23.6	7.8	89	0.0607	0.0007	0.0135
4/30/2015	100	100	14.9	7.5	110	0.105	0.0009	0.0117
7/31/2015	100	65.5	23.6	7.9	97	0.067	0.0008	0.02
10/31/2015	100	100	14.1	7.7	81	0.0957	0.0013	0.0191
1/31/2016	100	100	15.7	7.7	76	0.392	0.0007	0.0167
4/30/2016	100	100	13.8	7.7	82	0.0709	0	0.0111
7/31/2016	100	NODI: 8	26.8	7.9	76	0.0524	0	0.029
10/31/2016	100	100	18.3	7.8	56	0.157	0.0011	0.0196
1/31/2017	100	50	27.6	7.8	110	0.0778	0	0.0065
4/30/2017	100	50	7.9	7.6	110	0.246	0.0008	0.0038
7/31/2017	100	100	19.2	7.7	79	0.0444	0	0.0075
10/31/2017	100	50	16.1	7.76	75	0.0713	0	0.0145
1/31/2018	100	70.2	30	7.7	86	0.0509	0	0.0131
4/30/2018	100	100	15.1	7.6	110	0.0925	0	0.014
7/31/2018	100	50	17.5	7.7	89	0.0532	0.0003	0.0091
10/31/2018	100	100	18	7.72	90	0.108	0	0.0097

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

WET - Effluent Data

Parameter	Lead	Nickel	Zinc
	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report
Minimum	**0**	**0**	**0.0104**
Maximum	**0.0064**	**0.008**	**0.0667**
Average	**0.00165**	**0.00318**	**0.0311**
No. of Violations	N/A	N/A	N/A
1/31/2014	0.0017	0	0.0667
4/30/2014	0	0	0.0289
7/31/2014	0.002	0	0.066
10/31/2014	0.0064	0.0042	0.0223
1/31/2015	0.0019	0.0048	0.0303
4/30/2015	0.0017	0.0051	0.028
7/31/2015	0.0022	0.0042	0.021
10/31/2015	0.0042	0.005	0.0336
1/31/2016	0.0038	0.0029	0.0231
4/30/2016	0	0.0037	0.0252
7/31/2016	0.0016	0.004	0.0237
10/31/2016	0.0011	0.0032	0.0337
1/31/2017	0.0012	0	0.0239
4/30/2017	0.0014	0.0017	0.0104
7/31/2017	0	0	0.0231
10/31/2017	0.0011	0.0035	0.0316
1/31/2018	0.0006	0.0038	0.0402
4/30/2018	0.0006	0.0025	0.0263
7/31/2018	0.0008	0.008	0.037
10/31/2018	0.0006	0.007	0.0278

APPENDIX A

DISCHARGE MONITORING REPORT SUMMARY

WET - Ambient Data

Parameter	Ammonia	pH	Hardness	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	mg/L	S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report	Report	Report	Report	Report	Report	Report
Minimum	**0**	**6.87**	**20**	**0.058**	**0**	**0**	**0**	**0**	**0.0061**
Maximum	**0.93**	**7.36**	**54**	**1.12**	**0.0014**	**0.0545**	**0.0076**	**0.084**	**1.26**
Median	**0**	**7.07**	**37**	**0.113**	**0.0002**	**0.0075**	**0.0017**	**0.0021**	**0.0133**
1/31/2014	0.93	6.88	39	0.1693	0	0.0103	0.0018	0	0.0421
4/30/2014	0.075	6.94	20	0.227	0	0.0036	0.0007	0	0.0108
7/31/2014	0.298	7.19	31	0.087	0	0	0.001	0	0.007
10/31/2014	0.119	7.18	41	0.102	0	0.0545	0.0076	0.084	1.26
1/31/2015	0.216	7	39	0.102	0.0006	0.0093	0.0018	0.0037	0.013
4/30/2015	0.122	6.94	30	0.166	0.001	0.008	0.0026	0.0037	0.0124
7/31/2015	0	7.36	46	0.058	0.0008	0.0015	0.0019	0.003	0.0061
10/31/2015	0	6.94	29	0.279	0.0014	0.0033	0.0033	0.0037	0.0106
1/31/2016	0	7.1	39	0.301	0.0007	0.008	0.0032	0.0022	0.0143
4/30/2016	0	7.09	35	0.262	0	0.0058	0	0.0029	0.0118
7/31/2016	0	7.25	33	0.0944	0	0.0179	0.0017	0.002	0.0227
10/31/2016	0	7.11	41	0.141	0.0011	0.0074	0.0018	0.002	0.0145
1/31/2017	0	7	54	0.0777	0	0.0076	0.0012	0	0.0246
4/30/2017	0	6.87	35	0.0651	0.0009	0.0107	0.0007	0.0042	0.0374
7/31/2017	0	7.05	37	0.347	0	0.0079	0.0017	0	0.0136
10/31/2017	0	7.2	44	1.12	0.0005	0.0066	0.0061	0.0027	0.0407
1/31/2018	0.46	6.88	29	0.0777	0	0.0082	0.0015	0.0019	0.0128
4/30/2018	0	6.96	33	0.101	0	0.006	0.001	0	0.015
7/31/2018	0	7.27	45	0.0915	0.0004	0.0026	0.0012	0.006	0.0085
10/31/2018	0	7.1	37	0.123	0.0005	0.0023	0.0009	0	0.0084

APPENDIX B
METALS REASONABLE POTENTIAL AND LIMITS CALCULATIONS

Metal	Q_s	C_s [1]	Q_d	C_d [2]		Q_r	C_r		Criteria		Acute Reasonable Potential	Chronic Reasonable Potential	Limits	
	cfs	µg/l	cfs	Acute (µg/l)	Chronic (µg/l)	cfs	Acute (µg/l)	Chronic (µg/l)	Acute (µg/l)	Chronic (µg/l)	C_d & C_r > Criteria	C_d & C_r > Criteria	Acute (µg/l)	Chronic (µg/l)
Aluminum	869	112.5	80.5	261.3	261.3	949.5	125.1	125.1	750	87	N	**Y**	N/A	**87.0**
Cadmium		0.2		1.3	1.3		0.29	0.29	0.86	0.14	N	**Y**	N/A	**0.1**
Copper		7.5		25.6	25.6		9.0	9.0	6.0	4.3	**Y**	**Y**	**6.0**	**4.3**
Lead		1.7		4.5	4.5		1.9	1.9	26.1	1.0	N	**Y**	N/A	**1.0**
Nickel		2.1		7.1	7.1		2.5	2.5	219.8	24.4	N	N	N/A	N/A
Zinc		13.3		55.6	55.6		16.9	16.9	56.1	56.1	N	N	N/A	N/A

[1]Median concentration for the receiving water just upstream of the facility's discharge taken from the WET testing data during the review period (see Appendix A).

[2]Values represent the 95th percentile (for $n \geq 10$) or maximum (for $n < 10$) concentrations from the DMR data and/or WET testing data during the review period (see Appendices A & C). If the metal already has a limit (for either acute or chronic conditions), the value represents the existing limit.

Appendix C
Statistical Approach for Effluent Data (N ≥ 10)

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

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

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

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

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

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

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

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

Datasets including non-detect values

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

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

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
δ = r/k

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

Example calculations of z_p* for 95th percentile

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

Appendix D

EPA REGION 1 NPDES PERMITTING APPROACH FOR PUBLICLY OWNED TREATMENT WORKS THAT INCLUDE MUNICIPAL SATELLITE SEWAGE COLLECTION SYSTEMS

This regional interpretative statement provides notice to the public of EPA Region 1's interpretation of the Clean Water Act ("CWA" or "Act") and implementing regulations, and advises the public of relevant policy considerations, regarding the applicability of the National Pollutant Discharge Elimination System ("NPDES") program to publicly owned treatment works ("POTWs") that include municipal satellite sewage collection systems ("regionally integrated POTWs"). When issuing NPDES permits to these types of sanitary sewer systems, it is EPA Region 1's practice to include and regulate the owners/operators of the municipal satellite collection systems through a co-permitting structure. This interpretative statement is intended to explain, generally, the basis for this practice. EPA Region 1's decision in any particular case will be made by applying the law and regulations on the basis of specific facts when permits are issued.

EPA has set out a national policy goal for the nation's sanitary sewer systems to adhere to strict design and operational standards:

> "Proper [operation and maintenance] of the nation's sewers is integral to ensuring that wastewater is collected, transported, and treated at POTWs; and to reducing the volume and frequency of …[sanitary sewer overflow] discharges. Municipal owners and operators of sewer systems and wastewater treatment facilities need to manage their assets effectively and implement new controls, where necessary, as this infrastructure continues to age. Innovative responses from all levels of government and consumers are needed to close the gap."[1]

Because ownership/operation of a regionally integrated POTW is divided among multiple parties, the owner/operator of the treatment plant many times lacks the means to implement comprehensive, system-wide operation and maintenance ("O & M") procedures. Failure to properly implement O & M measures in a POTW can cause, among other things, excessive extraneous flow (*i.e.*, inflow and infiltration) to enter, strain and occasionally overload treatment system capacity. This failure not only impedes EPA's national policy goal concerning preservation of the nation's wastewater infrastructure assets, but also frustrates achievement of the water quality- and technology-based requirements of CWA § 301 to the extent it results in sanitary sewer overflows and degraded treatment plant performance, with adverse impacts on human health and the environment.

In light of these policy objectives and legal requirements, it is EPA Region 1's permitting practice to subject all portions of the POTW to NPDES requirements in order to ensure that the treatment system as a whole is properly operated and maintained and that human health and water quality impacts resulting from excessive extraneous flow are minimized. The approach of addressing O&M concerns in a regionally integrated treatment works by adding municipal

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[1] *See Report to Congress: Impacts and Control of CSOs and SSOs* (EPA 833-R-04-001) (2004), at p. 10-2. *See also* "1989 National CSO Control Strategy," 54 Fed. Reg. 37371 (September 8, 1989).

satellite collection systems as co-permittees is consistent with the definition of "publicly owned treatment works," which by definition includes sewage collection systems. Under this approach, the POTW in its entirety is subject to NPDES regulation as a point source discharger under the Act. This entails imposition of permitting requirements applicable to the POTW treatment plant along with a more limited set of conditions applicable to the connected municipal satellite collection systems.

The factual and legal basis for the Region's position is set forth in greater detail in *Attachment A*.

Attachment A

ANALYSIS SUPPORTING EPA REGION 1 NPDES PERMITTING APPROACH FOR PUBLICLY OWNED TREATMENT WORKS THAT INCLUDE MUNICIPAL SATELLITE SEWAGE COLLECTION SYSTEMS

Exhibit A	List of regional centralized POTW treatment plants and municipal satellite collection systems subject to the co-permittee policy
Exhibit B	Analysis of extraneous flow trends for representative systems
Exhibit C	List of municipal satellite collection systems that have had SSOs
Exhibit D	Form of Regional Administrator's waiver of permit application requirements for municipal satellite collection systems

Introduction

On May 28, 2010, the U.S. EPA Environmental Appeals Board ("Board") issued a decision remanding to the Region certain NPDES permit provisions that included and regulated satellite collection systems as co-permittees. *See In re Upper Blackstone Water Pollution Abatement District*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06, 14 E.A.D. __ (*Order Denying Review in Part and Remanding in Part*, EAB, May 28, 2010).[2] While the Board "did not pass judgment" on the Region's position that its NPDES jurisdiction encompassed the entire POTW and not only the treatment plant, it held that "where the Region has abandoned its historical practice of limiting the permit only to the legal entity owning and operating the wastewater treatment plant, the Region had not sufficiently articulated in the record of this proceeding the statutory, regulatory, and factual bases for expanding the scope of NPDES authority beyond the treatment plant owner/operator to separately owned/operated collection systems that do not discharge directly to waters of the United States, but instead that discharge to the treatment plant." *Id.*, *slip op.* at 2, 18. In the event the Region decided to include and regulate municipal satellite collection systems as co-permittees in a future permit, the Board posed several questions for the Region to address in the analysis supporting its decision:

(1) Is the scope of NPDES authority limited to owners/operators of the treatment plant, or does the authority extend to owners/operators of the municipal satellite collection systems that comprise the wider POTW?

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[2] The decision is available on the Board's website via the following link: http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/30b93f139d3788908525706c005185b4/34e841c87f346d94852577360068976f!OpenDocument.

(2) If the latter, how far up the collection system does NPDES jurisdiction reach, *i.e.*, where does the "collection system" end and the "user" begin?

(3) Do municipal satellite collection systems "discharge [ ] a pollutant" within the meaning of the statute and regulations?

(4) Are municipal satellite collection systems "indirect dischargers" and thus excluded from NPDES permitting requirements?

(5) Is the Region's rationale for regulating municipal satellite collection systems as co-permittees consistent with the references to "municipality" in the regulatory definition of POTW, and the definition's statement that "[t]he term also means the municipality…which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works"?

(6) Is the Region's rationale consistent with the permit application and signatory requirements under NPDES regulations?

See *Blackstone, slip op.* at 18, 20, n. 17.

This regional interpretative statement is, in part, a response to the Board's decision. It details the legal and policy bases for regulating as co-permittees publicly owned treatment works ("POTWs") that include municipal satellite collection systems. Region 1's analysis is divided into five sections. First, the Region provides context for the co-permitting approach by briefly describing the health and environmental impacts associated with poorly maintained sanitary sewer systems. Second, the Region outlines its evolving permitting practice regarding regionally integrated POTWs, particularly its attempts to ensure that such entity's municipal satellite collection systems are properly maintained and operated. Third, the Region explains the legal authority to include municipal satellite collection systems as co-permittees when permitting regionally integrated POTWs. In this section, the Region answers the questions posed by the Board in the order presented above. Fourth, the Region sets forth the basis for the specific conditions to which the municipal satellite collection systems are subject as co-permittees. Finally, the Region discusses other considerations informing its decision to employ a co-permittee structure when permitting regionally integrated POTWs.

I. Background

A sanitary sewer system (SSS) is a wastewater collection system owned by a state or municipality that is designed to collect and convey only sanitary wastewater (domestic sewage from homes as well as industrial and commercial wastewater).[3] The purpose of these systems is

[3] A combined sewer, on the other hand, is a type of sewer system that collects and conveys sanitary sewage and stormwater runoff in a single-pipe system to a POTW treatment plant. *See generally* Report to Congress: Impacts and Control of CSOs and SSOs (EPA 833-R-04-001) (2004), from which EPA Region 1 has drawn this background material.

to transport wastewater uninterrupted from its source to a treatment facility. Developed areas that are served by sanitary sewers often also have a separate storm sewer system (*e.g.*, storm drains) that collects and conveys runoff, street wash waters and drainage and discharges them directly to a receiving water (*i.e.*, without treatment at a POTW). While sanitary sewers are not designed to collect large amounts of runoff from precipitation events or provide widespread drainage, they typically are built with some allowance for higher flows that occur during periods of high groundwater and storm events. They are thus able to handle minor and controllable amounts of extraneous flow (*i.e.*, inflow and infiltration, or I/I) that enter the system. Inflow generally refers to water other than wastewater—typically precipitation like rain or snowmelt—that enters a sewer system through a direct connection to the sewer. Infiltration generally refers to other water that enters a sewer system from the ground, for example through defects in the sewer.

Municipal sanitary sewer collection systems can consist of a widespread network of pipes and associated components (*e.g.*, pump stations). These systems provide wastewater collection service to the community in which they are located. In some situations, the municipality that owns the collector sewers may not provide treatment of wastewater, but only conveys its wastewater to a collection system that is owned and operated by a different municipal entity (such as a regional sewer district). This is known as a satellite community. A "satellite" community is a sewage collection system owner/operator that does not have ownership of the treatment facility and a specific or identified point of discharge but rather the responsibility to collect and convey the community's wastewater to a POTW treatment plant for treatment. *See* 75 Fed. Reg. 30395, 30400 (June 1, 2010).

Municipal sanitary sewer collection systems play a critical role in protecting human health and the environment. Proper operation and maintenance of sanitary sewer collection systems is integral to ensuring that wastewater is collected, transported, and treated at POTW treatment plants. Through effective operation and maintenance, collection system operators can maintain the capacity of the collection system; reduce the occurrence of temporary problem situations such as blockages; protect the structural integrity and capacity of the system; anticipate potential problems and take preventive measures; and indirectly improve treatment plant performance by minimizing deterioration due to I/I-related hydraulic overloading.

Despite their critical role in the nation's infrastructure, many collection systems exhibit poor performance and are subjected to flows that exceed system capacity. Untreated or partially treated overflows from a sanitary sewer system are termed "sanitary sewer overflows" (SSOs). SSOs include releases from sanitary sewers that reach waters of the United States as well as those that back up into buildings and flow out of manholes into city streets.

There are many underlying reasons for the poor performance of collection systems. Much of the nation's sanitary sewer infrastructure is old, and aging infrastructure has deteriorated with time. Communities also sometimes fail to provide capacity to accommodate increased sewage delivery and treatment demand from increasing populations. Furthermore, institutional arrangements relating to the operation of sewers can pose barriers to coordinated action, because many

municipal sanitary sewer collection systems are not entirely owned or operated by a single municipal entity.

The performance and efficiency of municipal collection systems influence the performance of sewage treatment plants. When the structural integrity of a sanitary sewer collection system deteriorates, large quantities of infiltration (including rainfall-induced infiltration) and inflow can enter the collection system, causing it to overflow. These extraneous flows are among the most serious and widespread operational challenges confronting treatment works.[4]

Infiltration can be long-term seepage of water into a sewer system from the water table. In some systems, however, the flow characteristics of infiltration can resemble those of inflow, *i.e.*, there is a rapid increase in flow during and immediately after a rainfall event, due, for example, to rapidly rising groundwater. This phenomenon is sometimes referred to as rainfall-induced infiltration.

Sanitary sewer systems can also overflow during periods of normal dry weather flows. Many sewer system failures are attributable to natural aging processes or poor operation and maintenance. Examples include years of wear and tear on system equipment such as pumps, lift stations, check valves, and other moveable parts that can lead to mechanical or electrical failure; freeze/thaw cycles, groundwater flow, and subsurface seismic activity that can result in pipe movement, warping, brittleness, misalignment, and breakage; and deterioration of pipes and joints due to root intrusion or other blockages.

Inflow and infiltration impacts are often regional in nature. Satellite collection systems in the communities farthest from the POTW treatment plant can cause sanitary sewer overflows ("SSOs") in communities between them and the treatment plant by using up capacity in the interceptors. This can cause SSOs in the interceptors themselves or in the municipal sanitary sewers that lead to them. The implication of this is that corrective solutions often must also be regional in scope to be effective.

The health and environmental risks attributed to SSOs vary depending on a number of factors including location and season (potential for public exposure), frequency, volume, the amount and type of pollutants present in the discharge, and the uses, conditions, and characteristics of the receiving waters. The most immediate health risks associated with SSOs to waters and other areas with a potential for human contact are associated with exposure to bacteria, viruses, and other pathogens.

Human health impacts occur when people become ill due to contact with water or ingestion of water or shellfish that have been contaminated by SSO discharges. In addition, sanitary sewer systems can back up into buildings, including private residences. These discharges provide a

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[4] In a 1989 Water Pollution Control Federation survey, 1,003 POTWs identified facility performance problems. Infiltration and inflow was the most frequently cited problem, with 85 percent of the facilities reporting I/I as a problem. I/I was cited as a major problem by 41 percent of the facilities (32 percent as a periodic problem). [BP: Is there anything more recent?]

direct pathway for human contact with untreated wastewater. Exposure to land-based SSOs typically occurs through the skin via direct contact. The resulting diseases are often similar to those associated with exposure through drinking water and swimming (*e.g.*, gastroenteritis), but may also include illness caused by inhaling microbial pathogens. In addition to pathogens, raw sewage may contain metals, synthetic chemicals, nutrients, pesticides, and oils, which also can be detrimental to the health of humans and wildlife.

II. EPA Region 1 Past Practice of Permitting POTWs that Include Municipal Satellite Collection Systems

EPA Region 1's practice in permitting regionally integrated POTWs has developed in tandem with its increasing focus on addressing I/I in sewer collection systems, in response to the concerns outlined above. Up to the early 1990s, POTW permits issued by Region 1 generally did not include specific requirements for collection systems. When I/I and the related issue of SSOs became a focus of concern both nationally and within the region in the mid-1990s, Region 1 began adding general requirements to POTW permits that required the permittees to "eliminate excessive infiltration and inflow" and provide an annual "summary report" of activities to reduce I/I. As the Region gathered more information and gained more experience in assessing these reports and activities, it began to include more detailed requirements and reporting provisions in these permits.

MassDEP also engaged in a parallel effort to address I/I, culminating in 2001 with the issuance of MassDEP Policy No. BRP01-1, "Interim Infiltration and Inflow Policy." Among other provisions, this policy established a set of standard NPDES permit conditions for POTWs that included development of an I/I control plan (including funding sources, identification and prioritization of problem areas, and public education programs) and detailed annual reporting requirements (including mapping, reporting of expenditures and I/I flow calculations). Since September 2001, these requirements have been the basis for the standard operation and maintenance conditions related to I/I.

Regional treatment plants presented special issues as I/I requirements became more specific, as it is generally the member communities, rather than the regional sewer district, that own the collection systems that are the primary source of I/I. Before the focus on I/I, POTW permits did not contain specific requirements related to the collection system component of POTWs. Therefore, when issuing NPDES permits to authorize discharges from regionally integrated treatment POTWs, EPA Region 1 had generally only included the legal entity owning and/or operating the regionally centralized wastewater treatment plant. As the permit conditions were focused on the treatment plant itself, this was sufficient to ensure that EPA had authority to enforce the permit requirements.

In implementing the I/I conditions, Region 1 initially sought to maintain the same structure, placing the responsibility on the regional sewer district to require I/I activities by the contributing systems and to collect the necessary information from those systems for submittal to EPA. MassDEP's 2001 Interim I/I Policy reflected this approach, containing a condition for regional systems:

> ((FOR REGIONAL FACILITIES ONLY)) The permittee shall require, through appropriate agreements, that all member communities develop and implement infiltration and inflow control plans sufficient to ensure that high flows do not cause or contribute to a violation of the permittees effluent limitations, or cause overflows from the permittees collection system.

As existing NPDES permittees, the POTW treatment plants were an obvious locus of regulation. The Region assumed the plants would be in a position to leverage preexisting legal and/or contractual relationships with the satellite collection systems they serve to perform a coordinating function, and that utilizing this existing structure would be more efficient than establishing a new system of direct reporting to EPA by the collection system owners. The Region also believed that the owner/operator of the POTW treatment plant would have an incentive to reduce flow from contributing satellite systems because doing so would improve treatment plant performance and reduce operation costs. While relying on this cooperative approach, however, EPA Region 1 also asserted that it had the authority to require that POTW collection systems be included as NPDES permittees and that it would do so if it proved necessary. Indeed, in 2001 Region 1 acceded to Massachusetts Water Resources Authority's ("MWRA") request that the contributing systems to the MWRA Clinton wastewater treatment plant ("WWTP") be included as co-permittees, based on evidence provided by MWRA that its specific relationship with those communities would not permit it to run an effective I/I reduction program for these collection systems. EPA Region 1 also put satellite collection systems on notice that they would be directly regulated through legally enforceable permit requirements if I/I reductions were not pursued or achieved.

In time, the Region realized that its failure to assert direct jurisdiction over municipal satellite dischargers was becoming untenable in the face of mounting evidence that cooperative (or in some cases non-existent) efforts on the part of the POTW treatment plant and associated satellites were failing to comprehensively address the problem of extraneous flow entering the POTW. The ability and/or willingness of regional sewer districts to attain meaningful I/I efforts in their member communities varied widely. The indirect structure of the requirements also tended to make it difficult for EPA to enforce the implementation of meaningful I/I reduction programs.

It became evident to EPA Region 1 that a POTW's ability to comply with CWA requirements depended on successful operation and maintenance of not only the treatment plant but also the collection system. For example, the absence of effective I/I reduction and operation/maintenance programs was impeding the Region's ability to prevent or mitigate the human health and water quality impacts associated with SSOs. *See Exhibit B* (Municipal satellite collection systems with SSOs). Additionally, these excess flows stressed POTW treatment plants from a hydraulic capacity and performance standpoint, adversely impacting effluent quality. *See Exhibit C* (Analysis of extraneous flow trends for representative systems). Addressing these issues in regional systems was essential, as these include most of the largest systems in terms of flow, population served and area covered, and serve the largest population centers.

The Region's practice of imposing NPDES permit conditions on the municipal collection systems in addition to the treatment plant owner/operator represents a necessary and logical progression in its continuing effort to effectively address the serious problem of I/I in sewer collection systems.[5] In light of its past permitting experience and the need to effectively address the problem of extraneous flow on a system-wide basis, Region 1 decided that it was necessary to refashion permits issued to regionally integrated POTWs to encompass all owners/operators of the treatment works (*i.e.*, the regional centralized POTW treatment plant and the municipal satellite collection systems.[6] Specifically, Region 1 determined that the satellite systems should be subject as co-permittees to a limited set of O&M-related conditions on permits issued for discharges from regionally integrated treatment works. These conditions pertain only to the portions of the POTW collection system that the satellites own. This ensures maintenance and pollution control programs are implemented with respect to all portions of the POTW. Accordingly, since 2005, Region 1 has generally included municipal satellite collection systems as co-permittees for limited purposes, in addition to the owner/operator of the treatment plant as the main permittee subject to the full array of NPDES requirements, including secondary treatment and water-quality based effluent limitations. The Region has identified 25 permits issued by the Region to POTWs in New Hampshire and Massachusetts that include municipal satellite collection systems as co-permittees. *See Exhibit A*. The 25 permits include a total of 55 satellite collection systems as co-permittees.

III. Legal Authority

The Region's prior and now superseded practice of limiting the permit only to the legal entity owning and/or operating the wastewater treatment plant had never been announced as a regional policy or interpretation. Similarly, the Region's practice of imposing NPDES permit conditions on the municipal collection systems in addition to the treatment plant owner/operator has also never been expressly announced as a uniform, region-wide policy or interpretation. Upon consideration of the Board's decision, described above, EPA Region 1 has decided to supply a clearer, more detailed explanation regarding its use of a co-permittee structure when issuing NPDES permits to regionally integrated POTWs. In this section, the Region addresses the questions posed by the Board in the *Upper Blackstone* decision referenced above.

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[5] Although EPA Region 1 has in the past issued NPDES permits only to the legal entities owning and operating the wastewater treatment plant (*i.e.*, only a portion of the "treatment works"), the Region's reframing of permits to include municipal satellite collection systems does not represent a break or reversal from its historical legal position. EPA Region 1 has never taken the legal position that the satellite collection systems are beyond the reach of the CWA and the NPDES permitting program. Rather, the Region as a matter of discretion had merely never determined it necessary to exercise its statutory authority to directly reach these facilities in order to carry out its NPDES permitting obligations under the Act.

[6] EPA has "considerable flexibility in framing the permit to achieve a desired reduction in pollutant discharges." *Natural Resources Defense Council, Inc. v. Costle*, 568 F.2d 1369, 1380 (D.C.Cir.1977). ("[T]his ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.").

(1) Is the scope of NPDES authority limited to owners/operators of the treatment plant, or does the authority extend to owners/operators of the municipal satellite collection systems that comprise the wider POTW?

The scope of NPDES authority extends beyond the owners/operators of the treatment plant to include to owners/operators of portions of the wider POTW, for the reasons discussed below.

The CWA prohibits the "discharge of any pollutant by any person" from any point source to waters of the United States, except, *inter alia,* in compliance with an NPDES permit issued by EPA or an authorized state pursuant to Section 402 of the CWA. CWA § 301, 402(a)(1); 40 C.F.R. § 122.1(b). Where there is a discharge of pollutants, NPDES regulations require the "operator" of the discharging "facility or activity" to obtain a permit in circumstances where the operator is different from the owner. *Id.* § 122.21(b). "Owner or operator" is defined as "the owner or operator of any 'facility or activity' subject to regulation under the NPDES program," and a "facility or activity" is "any NPDES 'point source' or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program." *Id.* § 122.2.

"Publicly owned treatment works" are facilities subject to the NPDES program. Statutorily, POTWs as a class must meet performance-based requirements based on available wastewater treatment technology. *See* CWA § 402(a)(1) ("[t]he Administrator may…issue a permit for the discharge of any pollutant….upon condition that such discharge will meet (A) all applicable requirements under [section 301]…"); § 301(b)(1)(B) ("In order to carry out the objective of this chapter there shall be achieved…for publicly owned treatment works in existence on July 1, 1977...effluent limitations based upon secondary treatment[.]"); *see also* 40 C.F.R. pt 133. In addition to secondary treatment requirements, POTWs are also subject to water quality-based effluent limits if necessary to achieve applicable state water quality standards. *See* CWA § 301(b)(1)(C). *See also* 40 C.F.R. § 122.44(a)(1) ("…each NPDES permit shall include…[t]echnology-based effluent limitations based on: effluent limitations and standards published under section 301 of the Act") and (d)(1) (same for water quality standards and state requirements). NPDES regulations similarly identify the "POTW" as the entity subject to regulation. *See* 40 C.F.R. § 122.21(a), (requiring "new and existing POTWs" to submit information required in 122.21(j)," which in turn requires "all POTWs," among others, to provide permit application information).

A municipal satellite collection system is part of a POTW under applicable law. The CWA and its implementing regulations broadly define "POTW" to include not only wastewater treatment plants but also the sewer systems and associated equipment that collect wastewater and convey it to the plants. Under NPDES regulations at 40 C.F.R. §§ 122.2 and 403.3(q), the term "Publicly Owned Treatment Works" or "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 502(4) of the Act)." Under section 212 of the Act,

> "(2)(A) The term 'treatment works' means any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid

> nature to implement section 1281 of this title, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall sewers, *sewage collection systems* [emphasis added], pumping, power, and other equipment, and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of the treatment process (including land used for the storage of treated wastewater in land treatment systems prior to land application) or is used for ultimate disposal of residues resulting from such treatment.
>
> (B) In addition to the definition contained in subparagraph (A) of this paragraph, 'treatment works' means any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste, including storm water runoff, or industrial waste, including waste in combined storm water and *sanitary sewer systems* [emphasis added]. Any application for construction grants which includes wholly or in part such methods or systems shall, in accordance with guidelines published by the Administrator pursuant to subparagraph (C) of this paragraph, contain adequate data and analysis demonstrating such proposal to be, over the life of such works, the most cost efficient alternative to comply with sections 1311 or 1312 of this title, or the requirements of section 1281 of this title."

Under the NPDES program regulations, this definition has been interpreted as follows:

> "The term *Publicly Owned Treatment Works* or *POTW* [emphasis in original]…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."

See 40 C.F.R. § 122.2, cross-referencing 403.3(q).

The statutory and regulatory definitions plainly encompass both the POTW treatment plant and municipal satellite collection systems. Municipal satellite collection systems are part of a POTW by definition (*i.e.*, they are "sewage collection systems" under section 212(A) and "sanitary sewer systems" under section 212(B)). They are also conveyances that send wastewater to a POTW treatment plant for treatment under 40 C.F.R. 403.3(q)). The preamble to the rule that created the regulatory definition of POTW supports the reading that the treatment plant comprises only a portion of the POTW. *See* 44 Fed. Reg. 62260, 62261 (Oct. 29, 1979).[7]

[7] "A new provision…defining the term 'POTW Treatment Plant' has been added to avoid an ambiguity that now exists whenever a reference is made to a POTW (publicly owned treatment works). …[T]he existing regulation defines a POTW to include both the treatment plant and the sewer pipes and other conveyances leading to it. As a result, it is unclear whether a particular reference is to the pipes, the treatment plant, or both. The term "POTW

Consistent with EPA Region 1's interpretation, courts have similarly taken a broad reading of the terms treatment works and POTW.[8]

(2) If the latter, how far up the collection system does NPDES jurisdiction reach, i.e., where does the "collection system" end and the "user" begin?

NPDES jurisdiction extends beyond the treatment plant to the outer boundary of the municipally-owned sewage collection systems, which are defined as sewers whose purpose is to be a common carrier of wastewater for others to a POTW treatment plant for treatment, as explained below.

As discussed in response to Question 1 above, the term "treatment works" is defined to include "sewage collection systems." CWA § 212. In order to define the extent of the sewage collection system for purposes of co-permittee regulation—*i.e.*, to identify the boundary between the portions of the collection system that are subject to NPDES requirements and those that are not—Region 1 is relying on EPA's regulatory interpretation of the term "sewage collection system." In relevant part, EPA regulations define "sewage collection system" at 40 C.F.R. § 35.905 as:

> ".... each, and all, of the common lateral sewers, within a publicly owned treatment system, which are primarily installed to receive waste waters directly from facilities which convey waste water from individual structures or from private property and which include service connection "Y" fittings designed for connection with those facilities. The facilities which convey waste water from individual structures, from private property to the public lateral sewer, or its equivalent, are specifically excluded from the definition…."

Put otherwise, a municipal satellite collection system is subject to NPDES jurisdiction under the Region's approach insofar as its purpose is to be a common carrier of wastewater for others to a POTW treatment plant for treatment. The use of this primary purpose test (i.e., common sewer installed as a recipient and carrier waste water from others) allows Region 1 to draw a principled, predictable and readily ascertainable boundary between the POTW's collection system and user. This test would exclude, for example, branch drainpipes that collect and transport wastewater from fixtures in a commercial building or public school to the common lateral sewer. This type

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treatment plant" will be used to designate that portion of the municipal system which is actually designed to provide treatment to the wastes received by the municipal system."

[8] *See, e.g., United States v. Borowski, 977 F.2d 27, 30 n.5* (1st Cir. 1992) ("We read this language [POTW definition] to refer to such sewers, pipes and other conveyances that are publicly owned. Here, for example, the City of Burlington's sewer is included in the definition because it conveys waste water to the Massachusetts Water Resource Authority's treatment works."); *Shanty Town Assoc. v. Envtl. Prot. Agency, 843 F.2d 782, 785* (4th Cir. 1988) ("As defined in the statute, a 'treatment work' need not be a building or facility, but can be any device, system, or other method for treating, recycling, reclaiming, preventing, or reducing liquid municipal sewage and industrial waste, including storm water runoff.") (citation omitted); *Comm. for Consideration Jones Fall Sewage System v. Train*, 375 F. Supp. 1148, 1150-51 (D. Md. 1974) (holding that NPDES wastewater discharge permit coverage for a wastewater treatment plant also encompasses the associated sanitary sewer system and pump stations under § 1292 definition of "treatment work").

of infrastructure would not be considered part of the collection system, because it is not designed to be a common recipient and carrier of wastewaters from other users. Rather, it is designed to transport its users' wastewater to such a common collection system at a point further down the sanitary sewer system.

EPA's reliance on the definition of "sewage collection system" from outside the NPDES regulations for interpretative guidance is reasonable as the construction grants regulations at 40 C.F.R. Part 35, subpart E pertain to grants for POTWs, the entity that is the subject of this NPDES policy. Additionally, the term "sewage collection systems" expressly appears in the definition of treatment works under section 212 of the Act as noted above. Finally, this approach is also consistent with EPA's interpretation in other contexts, such as the SSO listening session notice, published in the Federal Register on June 1, 2010, which describes wastewater collection systems as those that "collect domestic sewage and other wastewater from homes and other buildings and convey it to wastewater sewage treatment plants for proper treatment and disposal." *See* "Municipal Sanitary Sewer Collection Systems, Municipal Satellite Collection Systems, Sanitary Sewer Overflows, and Peak Wet Weather Discharges From Publicly Owned Treatment Works Treatment Plants Serving Separate Sanitary Sewer Collection Systems," 75 Fed. Reg. 30395.[9]

(3) Do municipal satellite collection systems "discharge [] a pollutant" within the meaning of the statute and regulations?

Yes, because they are a part of the POTW, municipal satellite collection systems discharge pollutants to waters of the United States through one or more outfalls (point sources).

The "discharge of a pollutant," triggers the need for a facility to obtain an NPDES permit. A POTW "discharges [ ] pollutant[s]" if it adds pollutants from a point source to waters of the U.S. (See 40 C.F.R. § 122.2, section (a) of the definition of "discharge of a pollutant.") As explained above, municipal satellite collection systems are part of the POTW. The entire POTW is the entity that discharges pollutants to waters of the U.S. through point source outfalls typically located at the treatment plant but also occasionally through other outfalls within the overall system. The fact that a collection system may be located in the upstream portions of the POTW and not necessarily near the ultimate discharge point at the treatment plant is not material to the question of whether it "discharges" a pollutant and consequently may be subject to conditions of an NPDES permit issued for discharges from the POTW. [10]

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[9] That EPA has in the past looked for guidance from Part 35 when construing the NPDES permitting program, for instance, in the context of storm water permitting, provides further support to the Region that its practice in this regard is sound. *See, e.g.*, "National Pollutant Discharge Elimination System Permit Application Regulations for Storm Water Discharges," 55 Fed. Reg. 47990, 47955 (looking to the definition of "storm sewer" at 40 C.F.R. § 35.2005(b)(47) when defining "storm water" under the NDPES program).

[10] This position differs from that taken by the Region in the *Upper Blackstone* litigation. There, the Region argued that the treatment plant was the sole discharging entity for regulatory purposes. The Region has revised this view upon further consideration of the statute, regulations and case law and determined that the POTW as a whole is the discharging entity.

"Discharge of a pollutant" at 40 C.F.R. § 122.2 is also defined to include "… discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person *which do not lead to a treatment works.*"(emphasis added). Some municipal collection systems have argued that this sentence means that only municipal discharges that do not lead to a "treatment plant" fall within the scope of "discharge of a pollutant." They further argue that because discharges through satellite collection systems do lead to a treatment plant, such systems do not "discharge [] pollutant[s]" and therefore are not subject to the NPDES permit requirements. This argument is flawed in that it incorrectly equates "treatment works," the term used in the definition above, with "treatment plant." To interpret "treatment works" as it appears in the regulatory definition of "discharge of a pollutant" as consisting of only the POTW treatment plant would be inconsistent with the definition of "treatment works" at 40 C.F.R. § 403.3(q), which expressly includes the collection system. *See also* § 403.3(r) (defining "POTW Treatment Plant" as "*that portion* [emphasis added] of the POTW which is designed to provide treatment (including recycling and reclamation) of municipal sewage and industrial waste").

(4) Are municipal satellite collection systems "indirect dischargers" and thus excluded from NPDES permitting requirements?

No, municipal satellite collection systems are part of the POTW, not "indirect dischargers" to the POTW.

Section 307(b) of the Act requires EPA to establish regulatory pretreatment requirements to prevent the "introduction of pollutants into treatment works" that interfere, pass through or are otherwise incompatible with such works. Section 307 is implemented through the General Pretreatment Regulations for Existing and New Sources of Pollution (40 C.F.R. Part 403) and categorical pretreatment standards (40 C.F.R. Parts 405-471). Section 403.3(i) defines "indirect discharger" as "any non-domestic" source that introduces pollutants into a POTW and is regulated under pretreatment standards pursuant to CWA § 307(b)-(d). The source of an indirect discharge is termed an "industrial user." *Id*. at § 403.3(j). Under regulations governing the NPDES permitting program, the term "indirect discharger" is defined as "a non-domestic discharger introducing 'pollutants' to a 'publicly owned treatment works.'" 40 C.F.R. § 122.2. Indirect dischargers are excluded from NPDES permit requirements by the indirect discharger rule at 40 C.F.R. § 122.3(c), which provides, "The following discharges do not require an NPDES permit: . . . The introduction of sewage, industrial wastes or other pollutants into publicly owned treatment works by indirect dischargers."

Municipal satellite collection satellite systems are not indirect dischargers as that term is defined under part 122 or 403 regulations. Unlike indirect dischargers, municipal satellite collection systems are not "introducing pollutants" to POTWs under 40 C.F.R. § 122.2; they are, instead, part of the POTW by definition. Similarly, they are not a non-domestic *source* that introduces pollutants into a POTW within the meaning of § 403.3(j), but as part of the POTW collect and convey municipal sewage from industrial, commercial and domestic users of the POTW.

The Region's determination that municipal satellite collection systems are not indirect dischargers is, additionally, consistent with the regulatory history of the term indirect discharger.

The 1979 revision of the part 122 regulations defined "indirect discharger" as "a non-municipal, non-domestic discharger introducing pollutants to a publicly owned treatment works, which introduction does not constitute a 'discharge of pollutants'…" *See* National Pollutant Discharge Elimination System, 44 Fed. Reg. 32854, 32901 (June 7, 1979). The term "non-municipal" was removed in the Consolidated Permit Regulations, 45 Fed. Reg. 33290, 33421 (May 19, 1980) (defining "indirect discharger" as "a nondomestic discharger…"). Although the change was not explained in detail, the substantive intent behind this provision remained the same. EPA characterized the revision as "minor wording changes." 45 Fed. Reg. at 33346 (Table VII: "Relationship of June 7[, 1979] Part 122 to Today's Regulations"). The central point again is that under any past or present regulatory incarnation, municipal satellite collection systems, as POTWs, are not within the definition of "indirect discharger," which is limited to dischargers that introduce pollutants to POTWs.

The position that municipal satellite collection systems are part of, rather than discharge to, the POTW also is consistent with EPA guidance. EPA's 1994 Multijurisdictional Pretreatment Programs Guidance Manual, (EPA 833-B94-005) (June 1994), at p. 19, asserts that EPA has the authority to require municipal satellite collection systems to develop pretreatment programs by virtue of their being part of the POTW.

(5) How is the Region's rationale consistent with the references to "municipality" in the regulatory definition of POTW found at 40 C.F.R. § 403.3(q), and the definition's statement that "[t]he term also means the municipality….which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works?"

There is no inconsistency between the Region's view that municipally-owned satellite collection systems are part of a POTW, and the references to municipality in 40 C.F.R. § 403.3(q), including the final sentence of the regulatory definition of POTW in the pretreatment regulations.

The Region's co-permitting rationale is consistent with the first part of the pretreatment program's regulatory definition of POTW, because the Region is only asserting NPDES jurisdiction over satellite collection systems that are owned by a "State or municipality (as defined by section 502(4) of the Act)." The term "municipality" as defined in CWA § 502(4) "means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes…" Thus, in order to qualify under this definition, a wastewater collection system need only be "owned by a State or municipality." There is no requirement that the constituent components of a regionally integrated POTW, *i.e.*, the collection system and regional centralized POTW treatment plant, be owned by the same State or municipal entity.

Furthermore, there is no inconsistency between the Region's view that a satellite collection system is part of a POTW, and the final sentence of the regulatory definition of POTW in the pretreatment regulations. As noted above, the sentence provides that "POTW" may "also" mean a municipality which has jurisdiction over indirect discharges to and discharges from the treatment works. This is not a limitation because of the use of the word "also" (contrast this with the "only if" language in the preceding sentence of the regulatory definition).

(6) How does the Region's rationale comport with the permit application and signatory requirements under NPDES regulations?

EPA's authority to require municipal satellite collection systems to separately comply with the permit application requirements, or to provide waivers from these requirements where appropriate, is consistent with NPDES regulations, which provide that all POTWs must submit permit application information set forth in 40 C.F.R. § 122.21(j) unless otherwise directed, and municipal satellite collection systems are part of the POTW.

EPA has the authority to require municipal satellite collection systems to submit permit applications. These entities are operators of parts of the POTW. NPDES regulations characterize the operator "of the POTW" (which by definition includes the sewage collection system) as opposed to the operator "of the POTW treatment plant" as an appropriate applicant. *Id.* § 122.21(a), (requiring applicants for "new and existing POTWs" to submit information required in 122.21(j)," which in turn requires "all POTWs," among others, to provide permit application information). This reading of the regulation is in keeping with the statutory text, which subjects the POTW writ large to the secondary treatment and water quality-based requirements. *See* CWA § 301(b)(1)(B), (C). In fact, the NPDES permit application for POTWs solicits information concerning portions of the POTW beyond the treatment plant itself, including the collection system used by the treatment works. *See* 40 C.F.R. 122.21(j)(1).

Notwithstanding that EPA could require applications for all the municipal satellite collection systems, requiring such applications may result in duplicative or immaterial information. The Regional Administrator ("RA") may waive any requirement of this paragraph if he or she has access to substantially identical information. 40 C.F.R. § 122.21(j). *See generally*, 64 Fed. Reg. 42440 (August 4, 1999). The RA may also waive any application requirement that is not of material concern for a specific permit. Region 1 believes that it will typically receive information sufficient for NPDES permitting purposes from the POTW treatment plant operator's application.

In most cases, EPA Region 1 believes that having a single permit application from the POTW treatment plant operator will be more efficient in carrying out the regulation's intent than multiple applications from the satellite systems. (The treatment plant operator would of course be required to coordinate as necessary with the constituent components of the POTW to ensure that the information provided to EPA is accurate and complete). EPA Region 1 therefore intends to issue waivers to exempt municipal satellite collection systems from permit application and signatory requirements in accordance with 40 C.F.R. § 122.21(j). To the extent the Region requires additional information, it intends to use its information collection authority under CWA § 308.

IV. Basis for the Specific Conditions to which the Municipal Satellite Collection Systems are Subject as Co-permittees

The legal authority for extending NPDES conditions to all portions of the municipally-owned treatment works to ensure proper operation and maintenance and to reduce the quantity of extraneous flow into the POTW is Section 402(a) of the CWA. This section of the Act authorizes EPA to issue a permit for the "discharge of pollutants" and to prescribe permit conditions as necessary to carry out the provisions of the CWA, including Section 301 of the Act. Among other things, Section 301 requires POTWs to meet performance-based requirements based on secondary treatment technology, as well as any more stringent requirements of State law or regulation, including water quality standards. *See* CWA § 301(b)(1)(B),(C).

The co-permittee requirements are required to assure continued achievement of secondary treatment requirements and water quality standards in accordance with sections 301 and 402 of the Act and to prevent unauthorized discharges of sewage from collection systems. With respect to secondary treatment, the inclusion of the satellite systems as co-permittees is necessary because high levels of I/I dilute the strength of influent wastewater and increase the hydraulic load on treatment plants, which can reduce treatment efficiency (*e.g.*, result in violations of technology-based percent removal limitations for BOD and TSS due to less concentrated influent, or violation of other technology effluent limitations due to reduction in treatment efficiency), lead to bypassing a portion of the treatment process, or in extreme situations make biological treatment facilities inoperable (*e.g.*, wash out the biological organisms that treat the waste).

As to water quality standards, the addition of the satellite systems as co-permittees is necessary to ensure collection system operation and maintenance, which will reduce extraneous flow entering the system and free up available capacity. This will facilitate compliance with water quality-based effluent limitations—made more difficult by reductions in treatment efficiency and also reduce water quality standard violations that result from the occurrence of SSOs. *See Exhibits B* (Municipal satellite collection systems with SSOs) and *C* (Analysis of extraneous flow trends for representative systems). SSOs that reach waters of the U.S. are discharges in violation of section 301(a) of the CWA to the extent not authorized by an NPDES permit.

Subjecting portions of an NPDES-regulated entity upstream of the ultimate discharge point is consistent with EPA's interpretation of the CWA in other contexts. For example, it is well established that EPA has the ability to apply discharge limitations and monitoring requirements to internal process discharges, rather than to outfalls, on the grounds that compliance with permit limitations "may well involve controls applied at points other than the ultimate point of discharge." *See Decision of the General Counsel No. 27 (In re Inland Steel Company)*, August 4, 1975 ("Limitations upon internal process discharges are proper, if such discharges would ultimately be discharged into waters of the United States, and if such limitations are necessary to carry out the principal regulatory provisions of the Act."). In the case of regionally integrated POTWs, placing conditions on satellite collection systems—though located farther up the system than the point of discharge—is a logical implication of the regulations and serves to effectuate the statute.

Without imposing conditions on the satellite communities, standard permit conditions applicable to all NPDES permits by regulation cannot be given full effect. To illustrate, there is no dispute

that the operator of the POTW treatment plant and outfall is discharging pollutants within the meaning the CWA and, accordingly, is subject to the NPDES permit program. NPDES permitting regulations require standard conditions that "apply to all NPDES permits," pursuant to 40 C.F.R. § 122.41, including a duty to mitigate and to 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 the permit." *Id.* at § 122.41(d), (e). EPA regulations also require additional conditions applicable to specified categories of NPDES permit, including "Publicly owned treatment works." *See id.* at § 122.42(b). A municipal satellite collection system, as demonstrated above, falls within the regulatory definition of a POTW. In light of EPA's authority to require appropriate operation and maintenance of collection systems necessary to achieve compliance with an NPDES permit, and because the operator of the POTW treatment plant may not own or operate a significant portion of the wider treatment works (*i.e.*, the collection systems that send flow to the POTW treatment plant), it is appropriate, and in some cases necessary, to extend pertinent, mandated standard conditions to all portions of the POTW, which is subject to regulation in its entirety. The alternative of allowing state and local jurisdictional boundaries to place significant portions of the POTW beyond the reach of the NPDES permitting program would not only be inconsistent with the broad statutory and regulatory definition of the term POTW but would impede Region 1 from carrying out the objectives of the CWA. It would also, illogically, preclude the Region from imposing on POTWs standard conditions EPA has by regulation mandated for those entities.

Other Considerations Informing EPA Region 1's Decision to Use a Co-permittee Permitting Structure for Regionally Integrated POTWs

In addition to consulting the relevant statutes, regulations, and preambles, Region 1 also considered other EPA guidance in coming to its determination to employ a co-permittee structure for regionally integrated POTWs. EPA's 1994 Multijurisdictional Pretreatment Programs Guidance Manual, p. 19, asserts that EPA has the authority to include municipal satellite collection systems as co-permittees by virtue of their being part of the POTW:

> If the contributing jurisdiction owns or operates the collection system within its boundaries, then it is a co-owner or operator of the POTW. As such, it can be included on the POTW's NPDES permit and be required to develop a pretreatment program. Contributing jurisdictions should be made co-permittees where circumstances or experience indicate that it is necessary to ensure adequate pretreatment program implementation.

The same logic that led EPA to conclude it had authority to require municipal satellite collection systems to develop a pretreatment program pursuant to an NPDES permit supports EPA Region 1's decision to impose permit conditions on such facilities to undertake proper O & M and to reduce inflow and infiltration.

EPA Region 1 also took notice of federal listening session materials on the June 2010 proposed SSO rule and associated model permits and fact sheet. The position articulated by EPA in these

model documents—specifically the application of standard NPDES conditions to municipal satellite collection systems—generally conform to Region 1's co-permitting approach.

Finally, in addition to federal requirements, EPA Region 1 considered the co-permittee approach in light of state regulations and policy pertaining to wastewater treatment works. The Region found its approach to be consistent with such requirements. Under Massachusetts law, "Any person operating treatment works shall maintain the facilities in a manner that will ensure proper operation of the facilities or any part thereof," where "treatment works" is defined as "any and all devices, processes and properties, real or personal, used in the collection, pumping, transmission, storage, treatment, disposal, recycling, reclamation or reuse of waterborne pollutants, but not including any works receiving a hazardous waste from off the site of the works for the purpose of treatment, storage or disposal, or industrial wastewater holding tanks regulated under 314 CMR 18.00" *See* 314 CMR 12.00 ("Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers"). MassDEP has also prioritized this area, issuing detailed operation and maintenance guidelines entitled "Optimizing Operation, Maintenance and Rehabilitation of Sanitary Sewer Collection Systems."

Exhibit A

Name	Issue Date
Massachusetts Water Resources Authority – Clinton (NPDES Permit No. MA0100404)	September 27, 2000
City of Brockton (NPDES Permit No. MA0101010)	May 11, 2005
City of Marlborough (NPDES Permit No. MA0100480)	May 26, 2005
Westborough Wastewater Treatment Plant (NPDES Permit No. MA0100412)	May 20, 2005
Lowell Regional Wastewater Utilities (NPDES Permit No. MA0100633)	September 1, 2005
Town of Webster Sewer Department (NPDES Permit No. MA0100439)	March 24, 2006
Town of South Hadley, Board of Selectmen (NPDES Permit No. MA0100455)	June 12, 2006
City of Leominster (NPDES Permit No. MA0100617)	September 28, 2006
Hoosac Water Quality District (NPDES Permit No. MA0100510)	September 28, 2006
Board of Public Works, North Attleborough (NPDES Permit No. MA0101036)	January 4, 2007
Town of Sunapee (NPDES Permit No. 0100544)	February 21, 2007
Lynn Water and Sewer Commission (NPDES Permit No. MA0100552)	March 3, 2007
City of Concord (NPDES Permit No. NH0100331)	June 29, 2007
City of Keene (NPDES Permit No. NH0100790)	August 24, 2007
Town of Hampton (NPDES No. NH0100625)	August 28, 2007
Town of Merrimack, NH (NPDES No. NH0100161)	September 25, 2007
City of Haverhill (NPDES Permit No. MA0101621)	December 5, 2007
Greater Lawrence Sanitary District (NPDES Permit No. MA0100447)	August 11, 2005

City of Pittsfield, Department of Public Works (NPDES No. MA0101681)	August 22, 2008
City of Manchester (NPDES No. NH0100447)	September 25, 2008
City of New Bedford (NPDES Permit No. MA0100781)	September 28, 2008
Winnipesaukee River Basin Program Wastewater Treatment Plant (NPDES Permit No. NH0100960)	June 19, 2009
City of Westfield (NPDES Permit No. MA0101800)	September 30, 2009
Hull Permanent Sewer Commission (NPDES Permit No. MA0101231)	September 1, 2009
Gardner Department of Public Works (NPDES Permit No. MA0100994)	September 30, 2009

Exhibit B

I/I Flow Analysis for Sample Regional Publicly Owned Treatment Works

I. Representative POTWS

The **South Essex Sewer District (SESD)** is a regional POTW with a treatment plant in Salem, Massachusetts. The SESD serves a total population of 174,931 in six communities: Beverly, Danvers, Marblehead, Middleton, Peabody and Salem. The **Charles River Pollution Control District (CRPCD)** is a regional POTW with a treatment plant in Medway, Massachusetts. The CRPCD serves a total population of approximately 28,000 in four communities: Bellingham, Franklin, Medway and Millis. Both of these facilities have been operating since 2001 under permits that place requirements on the treatment plant to implement I/I reduction programs with the satellite collection systems, in contrast to Region 1's current practice of including the satellite collection systems as co-permittees.

II. Comparison of flows to standards for nonexcessive infiltration and I/I

Flow data from the facilities' discharge monitoring reports (DMRs) are shown in comparison to the EPA standard for nonexcessive infiltration/inflow (I/I) of 275 gpcd wet weather flow and the EPA standard for nonexcessive infiltration of 120 gallons per capita per day (gpcd) dry weather flow; the standards are multiplied by population served for comparison with total flow from the facility. See *I/I Analysis and Project Certification*, EPA Ecol. Pub. 97-03 (1985); 40 CFR 35.2005(b)(28) and (29).

Figures 1 and 2 show the Daily Maximum Flows (the highest flow recorded in a particular month) for the CRPCD and SESD, respectively, along with monthly precipitation data from nearby weather stations. Both facilities experience wet weather flows far exceeding the standard for nonexcessive I/I, particularly in wet months, indicating that these facilities are receiving high levels of inflow and wet weather infiltration.

Figure 1. CRPCD Daily Maximum Flow Compared to Nonexcessive I/I Standard

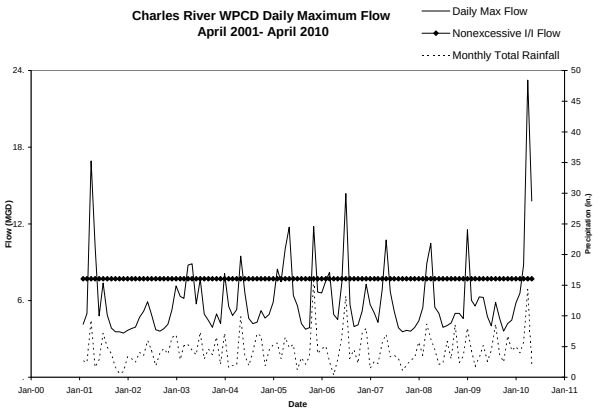
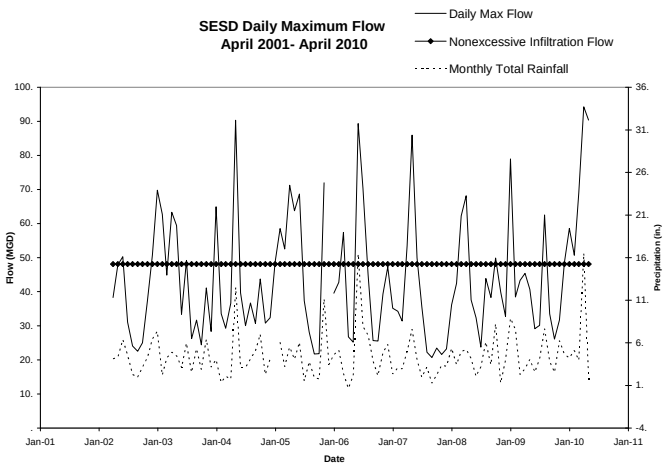


Figure 2. SESD Daily Maximum Flow Compared to Nonexcessive I/I Standard



Figures 3 and 4 shows the Average Monthly Flows for the CRPCD and SESD, which exceed the nonexcessive infiltration standard for all but the driest months. This indicates that these systems experience high levels of groundwater infiltration into the system even during dry weather.

Figure 3. CRPCD Monthly Average Flow Compared to Nonexcessive Infiltration Standard

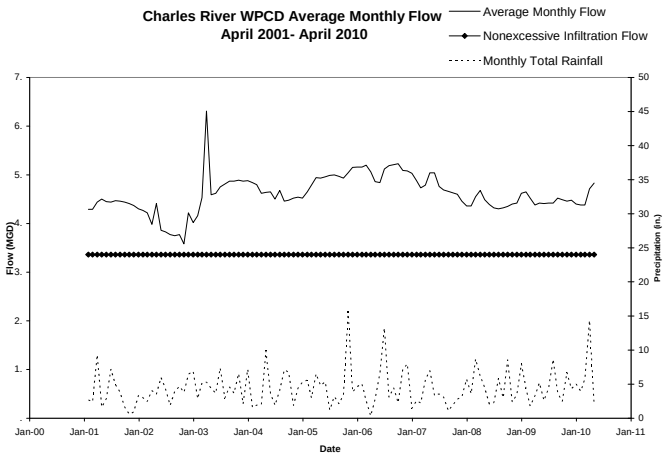
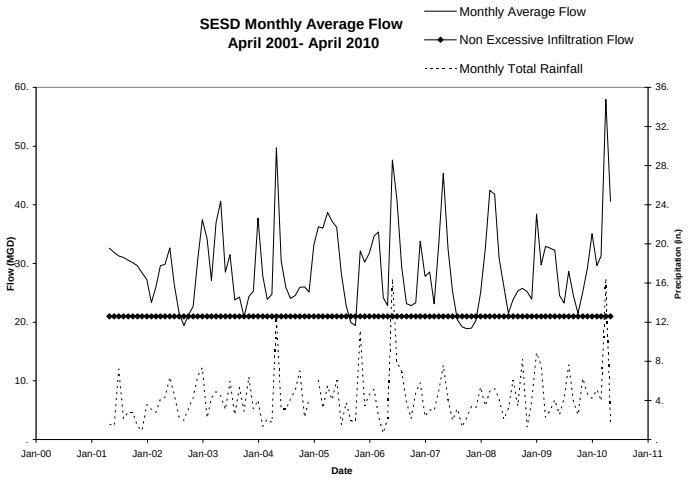


Figure 4. SESD Monthly Average Flow Compared to Nonexcessive Infiltration Standard



II. Flow Trends

Figures 5 and 6 show the trend in Maximum Daily Flows over the period during which these regional facilities have been responsible for implementing cooperative I/I reduction programs with the satellite collection systems. The Maximum Daily Flow reflects the highest wet weather flow for each month. The trend over this time period has been of increasing Maximum Daily Flow, indicating that I/I has not been reduced in either system despite the permit requirements.

Figure 5. CRPCD Daily Maximum Flow Trend

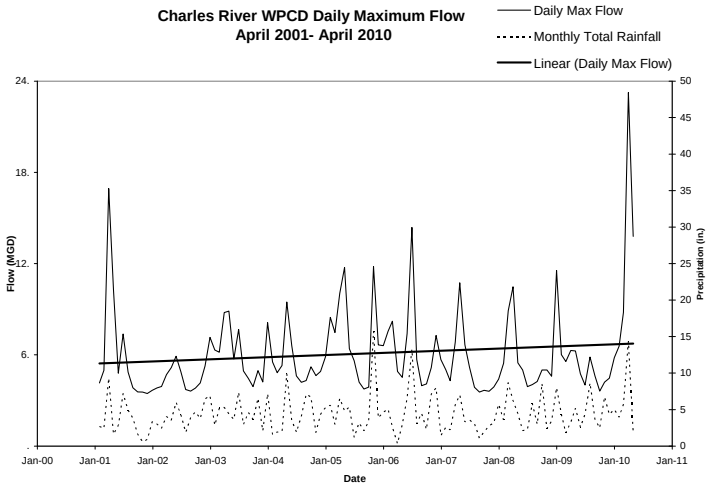
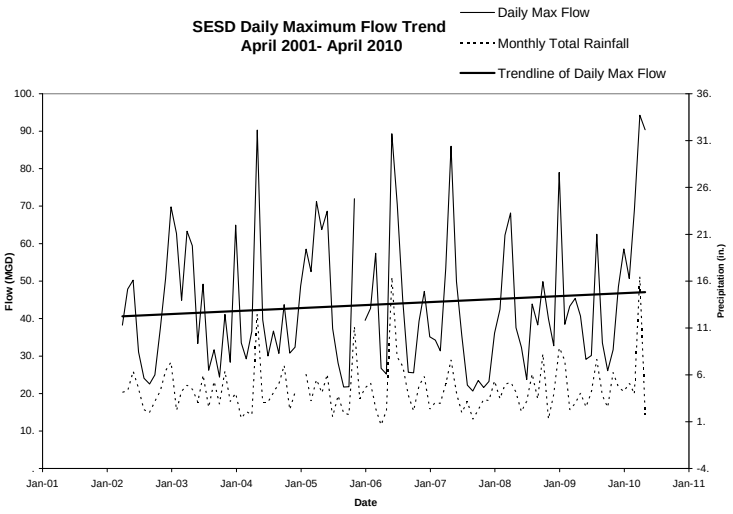


Figure 6. SESD Daily Maximum Flow Trend



III. Violations Associated with Wet Weather Flows

Both the CRPCD and SESD have experienced permit violations that appear to be related to I/I, based on their occurrence during wet weather months when excessive I/I standards are exceeded. Figure 7 shows violations of CRPCD's effluent limits for CBOD (concentration) and TSS (concentration and percent removal). Twelve of the sixteen violations occurred during months when daily maximum flows exceeded the EPA standard.

Figure 7. CRPCD CBOD and TSS Effluent Limit Violations

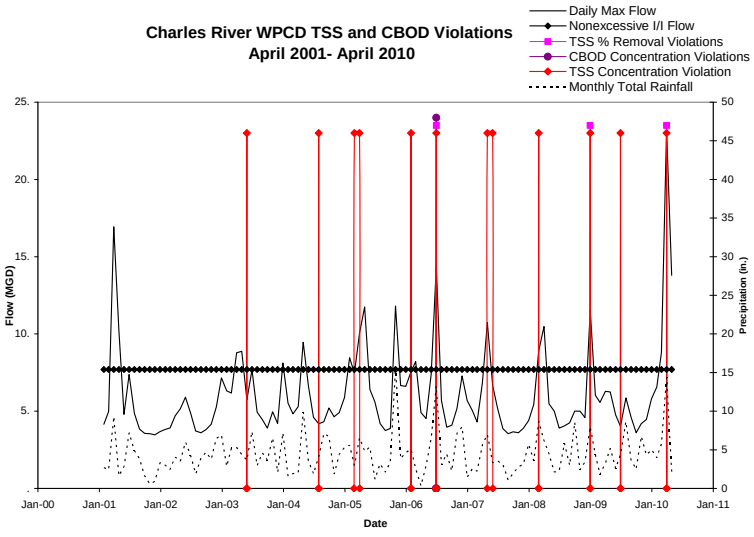
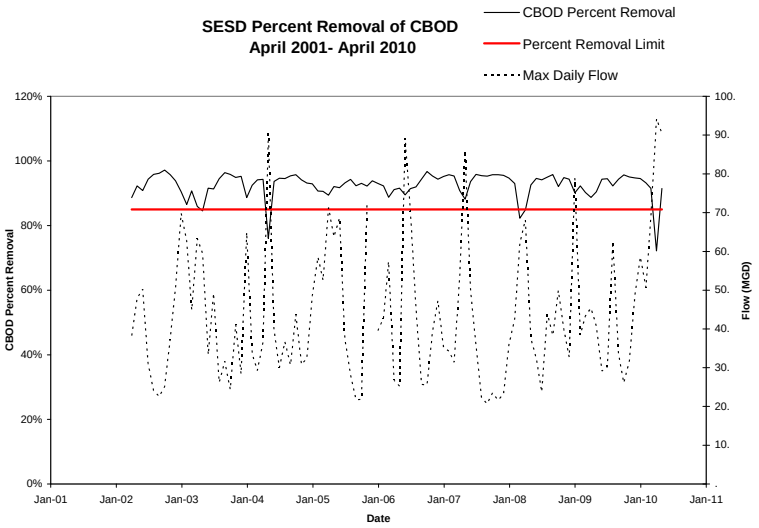


Figure 8 shows SESD's results for removal of CBOD, in percentage, as compared to maximum daily flow. SESD had three permit violations where CBOD removal fell below 85%, all during months with high Maximum Daily Flows.

Figure 8. SESD CBOD Percent Removal



In addition, both of these regional POTWs have experienced SSOs within the municipal satellite collection systems. In the SESD system, Beverly, Danvers, Marblehead and Peabody have reported SSOs between 2006 and 2008, based on data provided by MassDEP. In the CRPCD system, both Franklin and Bellingham have reported SSOs between 2006 and 2009.

Exhibit C

List of municipal satellite collection systems that have had SSOs

Exhibit D

Form of Regional Administrator's waiver of permit application requirements for municipal satellite collection systems

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

Re: Waiver of Permit Application and Signatory Requirements for [Municipal Satellite Sewage Collection System]

Dear _____:

Under NPDES regulations, all POTWs must submit permit application information set forth in 40 C.F.R. § 122.21(j) unless otherwise directed. Where the Region has "access to substantially identical information," the Regional Administrator may waive permit application requirements for new and existing POTWs. *Id.* Pursuant to my authority under this regulation, I am waiving NPDES permit application and signatory requirements applicable to the above-named municipal satellite collection systems.

Although EPA has the authority to require municipal satellite collection systems to submit individual permit applications, in this case I find that requiring a single permit application executed by the regional POTW treatment plant owner/operator will deliver "substantially identical information," and will be more efficient, than requiring separate applications from each municipal satellite collection system owner/operator. Municipal satellite collection system owners/operators are expected to consult and coordinate with the regional POTW treatment plant operators to ensure that any information provided to EPA about their respective entities is accurate and complete. In the event that EPA requires additional information, it may use its information collection authority under CWA § 308. 33 U.S.C. § 1318.

This notice reflects my determination based on the specific facts and circumstances in this case. It is not intended to bind the agency in future determinations where a separate permit for municipal satellites would not be duplicative or immaterial.

If you have any questions or would like to discuss this decision, please contact [EPA Contact] at [Contact Info].

Sincerely,

Regional Administrator

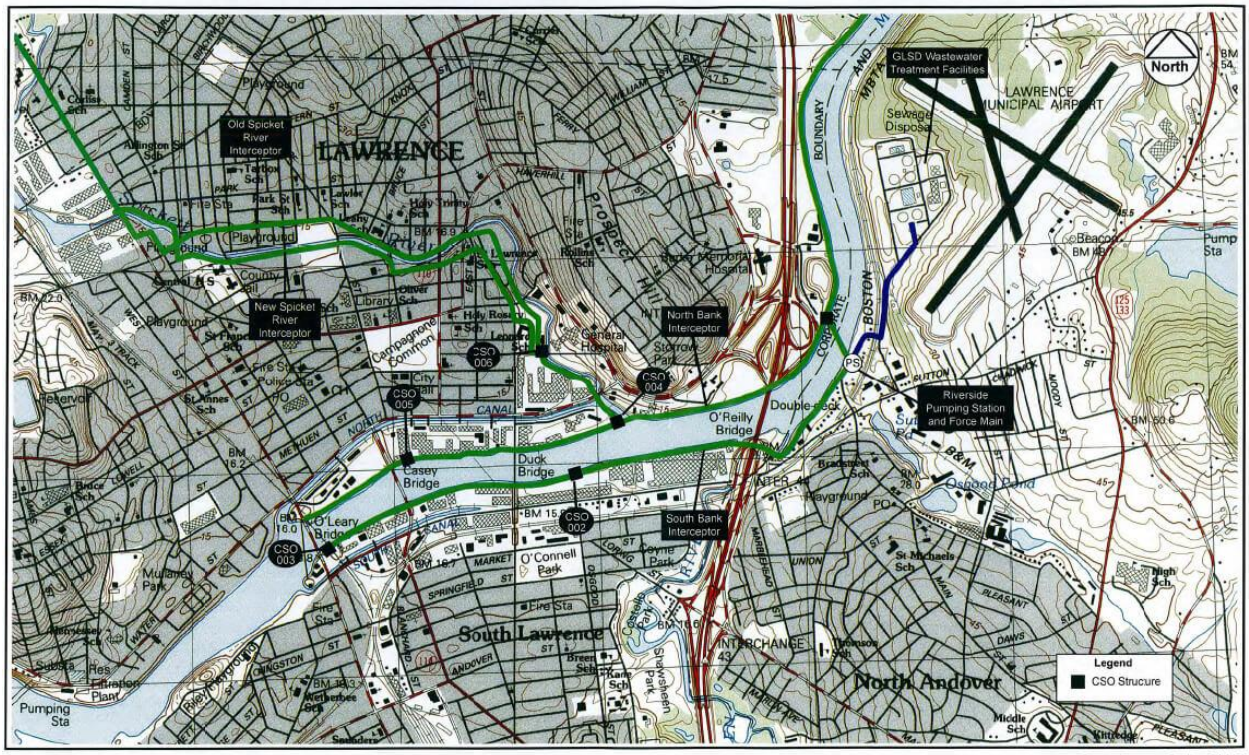
Appendix E

CSO Outfall Locations

Outfall #	Latitude	Longitude	Receiving Water
002	42˚ 42' 11"	71˚ 08' 11"	Merrimack River
003	42˚ 42' 02"	71˚ 09' 19"	Merrimack River
004	42˚ 42' 21"	71˚ 08' 31"	Merrimack River
005	42˚ 42' 15"	71˚ 09' 03"	Merrimack River
006	42˚ 42' 33"	71˚ 08' 42"	Spicket River

Appendix F

Map of CSO Outfall Locations



https://www.glsd.org/combined-sewer-overflow-2/

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WATER DIVISION
REGION I
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 SECTION 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT.

DATE OF NOTICE: **June 7, 2019**

PERMIT NUMBER: **MA0100447**

PUBLIC NOTICE NUMBER: **MA-012-19**

NAME AND MAILING ADDRESS OF APPLICANT:

Greater Lawrence Sanitary District
240 Charles Street
North Andover, MA 01845

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Greater Lawrence Sanitary District
240 Charles Street
North Andover, MA 01845

and 5 Combined Sewer Overflow Outfalls (CSOs)

RECEIVING WATER: Merrimack River and Spicket River

RECEIVING WATER CLASSIFICATION: Class B – Warm Water Fishery

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency, (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the Greater Lawrence Sanitary District, which discharges treated domestic and industrial wastewater. Sludge from this facility is processed through gravity thickeners, anaerobic digesters and drum dryers before being sold as Class A biosolids. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify this 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:

A fact sheet or a statement of basis (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) may be obtained at no cost by writing or calling EPA's contact person named below:

Betsy Davis
US EPA
5 Post Office Square
Suite 100
Boston, MA 02109-3912
Telephone: (617) 918-1576

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 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 this draft permit is inappropriate, must raise all issues and submit all available comments and all supporting material for their comments in full by **July 8, 2019**, to the EPA contact and address listed above. Any person, prior to such date, may submit a request in writing to EPA and the State Agency 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 this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION AND APPEALS:

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. Within 30 days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision.

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY – REGION 1

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WATER DIVISION
REGION I
BOSTON, MASSACHUSETTS 02109

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

DATE OF ORIGINAL PUBLIC NOTICE PERIOD: **June 7, 2019 – July 8, 2019**

PUBLIC NOTICE EXTENDED TO: **July 23, 2019**

PERMIT NUMBER: **MA0100447**

PUBLIC NOTICE NUMBER: **MA-016-19**

NAME AND MAILING ADDRESS OF APPLICANT:

Greater Lawrence Sanitary District
240 Charles Street
North Andover, MA 01845

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Greater Lawrence Sanitary District
240 Charles Street
North Andover, MA 01845

and 5 Combined Sewer Overflow Outfalls (CSOs)

RECEIVING WATER: Merrimack River and Spicket River

RECEIVING WATER CLASSIFICATION: Class B – Warm Water Fishery

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INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet or a statement of basis (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) may be obtained at no cost by writing or calling EPA's contact person named below:

Betsy Davis
US EPA
5 Post Office Square
Suite 100
Boston, MA 02109-3912
Telephone: (617) 918-1576

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

EXTENSION OF PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available comments and all supporting material for their comments in full by **July 23, 2019**, to the EPA contact and address listed above. Any person, prior to such date, may submit a request in writing to EPA and the State Agency 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 this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION AND APPEALS:

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. Within 30 days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision.

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY – REGION 1