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),

Town of Ipswich

is authorized to discharge from the facility located at

Ipswich Wastewater Treatment Facility
20 Fowlers Lane Street
Ipswich, MA 01983

to receiving water named

Greenwood Creek, MA92-23, (SA)

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

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

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on February 19, 2003.

This permit consists of **Part I (**16 pages including effluent limitations and monitoring requirements); **Attachment A** (USEPA Region 1 Marine Chronic Toxicity Test Procedure and Protocol (November 2013, 12 pages); and **Part II (**25 pages including NPDES Part II Standard Conditions).

Signed this 6th day of July, 2016

/S/SIGNATURE ON FILE
Ken Moraff, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

/S/SIGNATURE ON FILE
David R. Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

Part I

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number **001** to Greenwood Creek. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTICS	**EFFLUENT LIMITS**					**MONITORING REQUIREMENTS[3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
EFFLUENT FLOW[2]	*********	*********	1.8 MGD	*********	REPORT MGD	CONTINUOUS	RECORDER
EFFLUENT FLOW[2]	*********	*********	REPORT MGD	*********	*********	CONTINUOUS	RECORDER
BOD_5 [4]	450 lbs/Day	676 lbs/Day	30.0 mg/l	45.0 mg/l	REPORT mg/l	1/WEEK	24-HR COMP[5]
TSS [4]	450 lbs/Day	676 lbs/Day	30.0 mg/l	45.0 mg/l	REPORT mg/l	1/WEEK	24-HR COMP[5]
pH RANGE[1]	6.5 - 8.5 SU (SEE PERMIT PARAGRAPH I.A.1.b.)					1/DAY	GRAB
FECAL COLIFORM[1,6]	**********	**********	14 cfu/100 ml	*********	43 cfu/100 ml	2/WEEK	GRAB
FECAL COLIFORM[1,6]	**********	**********	14 cfu/100 ml	*********	28 cfu/100 ml	2/WEEK	GRAB
ENTEROCOCCI [1,6]	*********	**********	35 cfu/100 ml	*********	104 cfu/100 ml	3/WEEK	GRAB
TOTAL COPPER[7]	0.330 lbs/day	*********	22 ug/l	*********	31 ug/l	1/MONTH	24-HR COMP[5]
DISSOLVED OXYGEN (April 1-October 31)	NOT LESS THAN 6.0 mg/l (SEE PERMIT PARAGRAPH I.A.1.i)					1/DAY	GRAB
AMMONIA-NITROGEN (April 1-October 31)	36.0 lbs/Day	REPORT lbs/Day	2.4 mg/l	*********	*********	2/WEEK	24-HR COMP[5]

Sampling Location: Samples are collected immediately after ultraviolet disinfection at the treatment plant.

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number **001** to Greenwood Creek. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTICS	**EFFLUENT LIMITS**					**MONITORING REQUIREMENTS[3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
AMMONIA-NITROGEN (November 1-March 31)	REPORT lbs/Day	REPORT lbs/Day	REPORT mg/l	********	********	1/WEEK	24-HR COMP[5]
TOTAL NITROGEN	REPORT lbs/Day	******** ********	REPORT mg/l	******** ********	REPORT mg/l	1/MONTH	24-HR COMP[5]
TOTAL KJELDAHL NITROGEN	REPORT lbs/Day	******** ********	REPORT mg/l	******** ********	REPORT mg/l	1/MONTH	24-HR COMP[5]
TOTAL NITRATE	REPORT lbs/Day	******** ********	REPORT mg/l	******** ********	REPORT mg/l	1/MONTH	24-HR COMP[5]
TOTAL NITRITE	REPORT lbs/Day	******** ********	REPORT mg/l	******** ********	REPORT mg/l	1/MONTH	24-HR COMP[5]
WHOLE EFFLUENT TOXICITY [8,9,10,11]	CHRONIC C-NOEC $\geq$ 100%					4/YEAR	24-HR COMP[5]
Hardness[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]
Ammonia Nitrogen as N[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]
Total Recoverable Cadmium[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]
Total Recoverable Copper[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]

Sampling Location: Samples are collected immediately after ultraviolet disinfection at the treatment plant.

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number **001** to Greenwood Creek. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTICS	**EFFLUENT LIMITS**					**MONITORING REQUIREMENTS[3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
Total Recoverable Nickel[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]
Total Recoverable Lead[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]
Total Recoverable Zinc[11]	REPORT mg/l					4/YEAR	24-HR COMP[5]

Sampling Location: Samples are collected immediately after ultraviolet disinfection at the treatment plant.

Footnotes:

1. Required for State Certification.

2. Report annual average, monthly average, and the maximum daily effluent flow that flows to Greenwood Creek. 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.

3. Effluent sampling shall be representative of the discharge. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

   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. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.

   All samples shall be tested using the analytical methods found in 40 CFR § 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR § 136.

4. Sampling required for influent and effluent.

5. 24-hour composite samples 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 proportionally to flow.

6. The monthly average fecal coliform limit applies when the permit becomes effective. A maximum daily fecal coliform limit of 43 colony forming unit per milliliter (cfu/ml) applies the first year the permit is in effect. The maximum daily limit of 28 cfu/ml applies one year from the effective date of the permit and shall remain in effect for the duration of the permit.

   Monitoring and reporting of e*nterococci* shall begin upon the effective date of the permit, and permit limits shall be in effect one year after the effective date of the permit.

   The monthly average limits for fecal coliform and e*nterococci* are expressed as a geometric mean and are in effect the entire year.

   Bacteria tests must be conducted using 40 CFR Part 136 methods. Both Most Probable Number (MPN) methods and Membrane Filtration methods are acceptable. Measurement units corresponding to the method used (MPN or CFU) shall be reported on the discharge monitoring report.

7. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). This method or another EPA-approved method with an equivalent or lower ML shall be used. For an effluent limitation less than the ML, the compliance level will be the ML. Sampling results less than the detection limit shall be reported as "≤ [detection limit]" on the Discharge Monitoring Report.

8. The permittee shall conduct chronic toxicity tests *four* times per year. The permittee shall test the Inland Silverside, (*Menidia berllina*) and the Sea Urchin (*Arbacia punctulata*). Toxicity test samples shall be collected at the same time during the same week in the months of February, May, August and November. The test results shall be submitted by the last day of the month following the completion of the test. The results are due March 31, June 30, September 30 and December 31, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A, Marine Chronic Toxicity Tests Procedure and Protocol** of this permit.

Test Dates During the month of	**Submit Results By:**	**Test Species**	**Chronic Limit C-NOEC**
February May August November	March 31 June 30 September 30 December 31	*Menidia beryllina* (Inland Silverside) *Arbacia punctulata* (Sea Urchin)	≥ 100%

9. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The "100 % or greater" limit is defined as a sample which is composed of 100 % (or greater) effluent, the remainder being dilution water.

10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A, Marine Chronic Toxicity Test Procedure and Protocol, Section IV., DILUTION WATER** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance, which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region I web site at http://www.epa.gov/Region1/enforcementandassistance/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A, Marine Chronic Toxicity Test Procedure and Protocol.** Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**, **Marine Chronic Toxicity Test Procedure and Protocol.**

11. For each whole effluent toxicity test the permittee shall report on the appropriate discharge monitoring report (DMR), the concentrations of the hardness, ammonia nitrogen as nitrogen, total

recoverable cadmium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the minimum quantification level shown in **Attachment A, Marine Chronic Toxicity Test Procedure and Protocol**. Also the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

Part I.A.1. (Continued)

a. The discharge shall not cause a violation of the water quality standards of the receiving waters.

b. The pH of the effluent shall not be less than 6.5 or greater than 8.5 at any time. There shall be no change from background conditions that would impair any use assigned to this class.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall be free from oil and grease and petrochemicals.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. The results of sampling for any parameter done in accordance with EPA approved methods above its required frequency must also be reported.

g. If the average annual flow in any calendar year exceeds 1.44 MGD, which is 80 percent of the facility's design flow, the permittee shall submit a report to MassDEP by March 31 of the following calendar year describing its plans for further flow increases and describing how it will maintain compliance with the flow limit and all other effluent limitations and conditions.

h. The dissolved oxygen of the effluent shall not be less than 6 mg/l at any time. The permittee shall report the minimum dissolved oxygen value for each month on the discharge monitoring report.

i. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall use sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR Chapter I, Subchapter N or O, for the analysis of pollutants or pollutant parameters limited in this permit (except WET limits). A method is considered "sufficiently sensitive" when either (1) The method minimum level (ML) is at or below the level of the effluent limit established in this permit for the measured pollutant or pollutant parameter; or (2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter. The ML is not the minimum level of detection, but rather the lowest level at which the test equipment produces a recognizable signal and acceptable calibration point for a pollutant or pollutant parameter, representative of the lowest concentration at which a pollutant or pollutant parameter can be measured with a known level of confidence. For the purposes of this permit, the detection limit is the lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions (i.e., the level above which an actual value is reported for an analyte, and the level below which an analyte is reported as non-detect).

2. All POTWs must provide adequate notice to the Director of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; 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.

3. Prohibitions Concerning Interference and Pass Through:

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

4. Toxics Control

   a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

   b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard, which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

   c. Chlorine is not monitored in this permit and the use of chlorine is prohibited.

5. Numerical Effluent Limitations for Toxicants

   EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (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 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

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

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MAssDEP Regional Office telephone numbers). The reporting form and instructions for its completion may be found on-line at http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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

1. Maintenance Staff

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

2. Preventive Maintenance Program

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

3. Infiltration/Inflow

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

4. Collection System Mapping

   Within 30 months of the effective date of this permit, the permittee shall prepare a map of the sewer collection system it owns (see page 1 of this permit for the effective date). The map shall be 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 Operation and Maintenance Plan

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

a. Within six (6) months of the effective date of the permit, the permittee shall submit to EPA, MassDEP and, the Massachusetts Division of Marine Fisheries (DMF)

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

(1) The required information 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; and

(7) An educational public outreach program for all aspects of I/I control, particularly private inflow.

(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 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, MassDEP and the DMF annually by March 31. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;
b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;
c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;
d. A map with areas identified for investigation/action in the coming year;
e. If treatment plant flow has reached 80% of its design flow (1.44 MGD) based on the annual average flow during the reporting year, or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and
f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

7. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works[1] it owns and operates.

[1] As defined at 40 CFR §122.2, which references the definition at 40 CFR §403.3

D. SLUDGE CONDITIONS

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

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

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements including the following elements:

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

   Which of the 40 CFR Part 503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" published in November 4, 1999, may be used by the permittee to assist in determining the applicable requirements.[2]

[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

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

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

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

8. The permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by **February 19** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted to the address contained in the reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:

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

E. MONITORING AND REPORTING

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

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

1. Submittal of DMRs Using NetDMR

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

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. Permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. (See Part I.E.5. 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 particular report due date specified in this permit.

3. Submittal of Requests and Reports to EPA/OEP

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

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

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

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

4. Submittal of Reports in Hard Copy Form

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

A. Written notifications required under Part II
B. Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reporting
C. Collection System Operation and Maintenance Plan
D. Report on annual activities related to O&M Plan

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

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

All sludge monitoring reports required herein shall be submitted to:

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

5. State Reporting

Unless otherwise specified in this permit, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.E.2, I.E.3, and I.E.4 also shall be submitted to the State at the following addresses:

MassDEP – Northeast Region
Bureau of Water Resources
205B Lowell Street
Wilmington, MA 01887

Copies of toxicity tests reports only shall be submitted to:

Massachusetts Department of Environmental Protection
Watershed Planning Program
8 Bond Street
Worcester, Massachusetts 01606

Copies of the six month and the twenty-four month Collection System Operation and Maintenance Plan reports and the annual summary reports referenced in Part 1.C.6 shall be submitted to:

Massachusetts Division of Marine Fisheries
Shellfish Management Program
30 Emerson Avenue
Gloucester, MA 01930
via telephone (978)282-0308 extension 160
or via email at Shellfish.Newburyport@state.ma.us

6. Verbal Reports and Verbal Notifications

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

U.S. Environmental Protection Agency
Office of Environmental Stewardship
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912
617-918-1510

F. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) 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 (ii) 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 CFR 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 U.S. Environmental Protection Agency. 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

MARINE CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
Ipswich Wastewater Treatment Plant

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable silverside chronic and sea urchin chronic toxicity tests in accordance with the appropriate test protocols described below:

- Inland Silverside (Menidia beryllina) Larval Growth and Survival Test
- Sea Urchin (Arbacia punctulata) 1 Hour Fertilization Test

Chronic toxicity 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/swguidance/methods/wet/index.cfm#methods

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. Where 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 AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a marine, 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 fresh 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 fresh 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.

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.

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. For TRC analysis performed on site the results must be included on the chain of custody (COC) presented to WET laboratory. For the purpose of sample preparation, i.e. eliminating chlorine prior to toxicity testing, if called for by the permit, TRC analysis may also be performed by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing. According to 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 mg/L chlorine.

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.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol. Grab samples must be used for pH, temperature, and total residual oxidants (as per 40 CFR Part 122.21).

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 test acceptability criteria (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 the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternatedilution water (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
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.

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.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted Menidia and Arbacia toxicity test conditions and

test acceptability criteria:

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE SEA URCHIN, ARBACIA PUNCTULATA, FERTILIZATION TEST[1]

1. Test type	Static, non-renewal
2. Salinity	30 o/oo ± 2 o/oo by adding dry ocean salts
3. Temperature	20 ± 1°C temperature must not deviate by more than 3°C during test
4. Light quality	Ambient laboratory illumination
5. Light intensity	10-20 uE/m^2/s, or 50-100 ft-c (Ambient Laboratory Levels)
6. Test vessel size	Disposal (glass) liquid scintillation vials (20 ml capacity), presoaked in control water
7. Test solution volume	5 ml
8. Number of sea urchins	Pooled sperm from four males and pooled eggs from four females are used per test
9. Number of egg and sperm cells	About 2000 eggs per chamber and 5,000,000 sperm cells per vial
10. Number of replicate chambers	4 per treatment
11. Dilution water	Uncontaminated source of natural seawater or deionized water mixed with artificial sea salts
12. Dilution factor	Approximately 0.5, must bracket the permitted RWC
13. Test duration	1 hour and 20 minutes
14. Effects measured	Fertilization of sea urchin eggs
15. Number of treatments per test[2]	5 and a control. (receiving water and laboratory water control) An additional dilution at the permitted effluent concentration (% effluent) is required.

16. Acceptability of test	70% - 90% egg fertilization in all controls. Minimum of 70% fertilization in dilution water control. Effluent concentrations exhibiting greater than 70% fertilization, flagged as statistically significantly different from the controls, will not be considered statistically different from the controls for NOEC reporting.
17. Sampling requirements	For on-site tests, samples are to be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
18. Sample volume required	Minimum 1 liter

Footnotes:

[1] Adapted from EPA 821-R-02-014

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA, GROWTH AND SURVIVAL TEST[1]

1. Test type	Static, renewal
2. Salinity	5 o/oo to 32 o/oo +/- 2 o/oo of the selected salinity by adding artificial sea salts
3. Temperature	25 ± 1°C, temperature must not deviate by more than 3°C during test
4. Light quality	Ambient laboratory light
5. Light intensity	10-20 uE/m^2/s, or 50-100 ft-C (Ambient Laboratory Levels)
6. Photoperiod	16 hr light, 8 hr darkness
7. Test vessel size	600 - 1000 mL beakers or equivalent (glass test chambers should be used)
8. Test solution volume	500-750 mL/replicate loading and DO restrictions must be met)
9. Renewal of test solutions	Daily using most recently collected sample
10. Age of test organisms	Seven to eleven days post hatch; 24 hr range in age
11. Larvae/test chamber	15 (minimum of 10)
12. Number of replicate chambers	4 per treatment
13. Source of food	Newly hatched and rinsed Artemia nauplii less than 24 hr old
14. Feeding regime	Feed once a day 0.10 g wet wt Artemia nauplii per replicate on days 0 – 2 feed 0.15 g wet wt Artemia nauplii per replicate on days 3-6
15. Cleaning	Siphon daily, immediately before test solution renewal and feeding
16. Aeration[2]	None
17. Dilution water	Uncontaminated source of natural seawater; or deionized water mixed with artificial sea salts

18. Effluent concentrations	5 and a control (receiving water and laboratory water control) An additional dilution at the permitted effluent concentration (% effluent) is required
19. Dilution factor	$\geq$ 0.5, must bracket the permitted RWC
20. Test duration	7 days
21. Effects measured	Survival and growth (weight)
22. Acceptability of test	The average survival of dilution water control larvae is a minimum of 80%, and the average dry wt of unpreserved control larvae is a minimum of 0.5 mg, or the average dry wt of preserved control larvae is a minimum of 0.43 mg if preserved not more than 7 days in 4% formalin or 70% ethanol
23. Sampling requirements	For on-site tests, samples are collected daily and used within 24 hours of the time they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
24. Sample Volume Required	Minimum of 6 liters/day.

Footnotes:

[1] Adapted from EPA 821-R-02-014

[2] If dissolved oxygen (D.O.) falls below 4.0 mg/L, aerate all chambers at a rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

V.1. Test Acceptability Criteria

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.2. Use of Reference Toxicity Testing

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

In general, 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 as prescribed below.

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.2.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. $\geq$3 standard deviations for IC25s values and $\geq$ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

VI. CHEMICAL ANALYSIS

The toxicity test requires measurement of pH, salinity, and temperature at the beginning and end of each 24 hour period in each dilution and controls for both daily test renewal and waste. The following chemical analyses shall be performed for each initial sample as well as any renewal samples, if necessary pursuant to the requirement of Part III above.

Parameter	Effluent	Diluent	Minimum Level for effluent[*1] (mg/L)
pH	x	x	---
Salinity	x	x	ppt(o/oo)
Total Residual Chlorine [*2]	x	x	0.02
Total Solids and Suspended Solids	x	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

Superscript:

[*1] These are the minimum levels for effluent (fresh water) samples. Tests on diluents (marine waters) shall be conducted using the Part 136 methods that yield the lowest MLs.

[*2] Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

-Method 4500-Cl E Low Level Amperometric Titration (the preferred method);
-Method 4500-CL G DPD Photometric Method.

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-02-014. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_disk1_ctm.pdf.

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 endpoint growth for *Menidia beryllina* 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-02-014.

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 marine tests in Section 10.2.8.3, p. 54, Table 6 of EPA-821-R-02-014. 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 document can be located under Guidance Documents

at the following website location http://water.epa.gov/scitech/methods/cwa/wet/index.cfm#guidance. 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-02-014, page 45

For discussion on Hypothesis Testing, refer to EPA 821-R-02-014, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-014, Section 9.7

2. *Menidia beryllina*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-014, page 181

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 182

Refer to growth data statistical analysis flowchart, EPA 821-R-02-014, page 193

3. *Arbacia punctulata*

Refer to fertilization data testing flowchart, EPA 821-R-02-014, page 312

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Toxicity Test summary sheet(s) (Attachment F to the DMR Instructions) 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)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at http://www.epa.gov/NE/enforcementandassistance/dmr.html

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; and
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

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

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

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

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

2. Permit Actions

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

3. Duty to Provide Information

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

4. Reopener Clause

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

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

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

5. Oil and Hazardous Substance Liability

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

6. Property Rights

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

7. Confidentiality of Information

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

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

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

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

8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. Bypass not exceeding limitations

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

c. Notice

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

d. Prohibition of bypass

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

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

5. Upset

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

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

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

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

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

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

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

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

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

c. Records of monitoring information shall include:

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

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

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

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

2. Inspection and Entry

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

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

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

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

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

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

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

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

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

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

e. Twenty-four hour reporting.

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

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

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

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

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

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

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

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

2. Signatory Requirement

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

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

3. Availability of Reports.

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

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

Construction Activities - The following definitions apply to construction activities:

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

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

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

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

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

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

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

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

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

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

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

Discharge of a pollutant means:

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

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

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

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

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

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

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

EPA means the United States "Environmental Protection Agency".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System".

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

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

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

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

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

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

(a) Sewage from vessels; or

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Waters of the United States means:

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

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

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

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

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

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

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

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

(f) The territorial sea; and

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Range land is open land with indigenous vegetation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Commonly Used Abbreviations

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

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

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0100609**

DATE OF PUBLIC NOTICE**: March 9, 2016 – April 7, 2016**

NAME AND ADDRESS OF APPLICANT:

Ipswich Wastewater Treatment Facility
P.O. Box 151
Ipswich, Massachusetts 01938

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Ipswich Wastewater Treatment Facility (WWTF)
20 Fowlers Lane
Ipswich, Massachusetts 01938

RECEIVING WATER: **Greenwood Creek[1] to Ipswich River Estuary**

CLASSIFICATION: **SA** (segment MA92-23)

[1] The effluent is discharged to an unnamed tidal stream, known locally, as Greenwood Creek.

Table of Contents

I. Proposed Action, Type of Facility and Discharge Location

The Town of Ipswich has requested that the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) reissue its National Pollutant Discharge Elimination System (NPDES) permit to discharge into Greenwood Creek. The Ipswich Wastewater Treatment Facility (WWTF) is engaged in the collection and treatment of municipal wastewater. The current NPDES permit was signed and became effective on February 19, 2003. The permit expired on February 19, 2008.

The applicant filed a complete application as required by 40 Code of Federal Regulations (CFR) Part 122.6 so the current permit has been administratively extended and will remain in effect until a renewed permit has been issued. The current permit and Draft Permit authorize only one discharge, from Outfall 001 at the facility. The Draft Permit has been written to reflect current operations and conditions at the facility.

II. Quantitative Data, Tables and Figures in the Fact Sheet

A quantitative description of the facility's discharge in terms of significant effluent parameters based on Discharge Monitoring Reports (DMRs) from January 2010 through July 2015 is shown in Attachment A, Ipswich Wastewater Treatment Plant - Discharge Monitoring Report Data of this fact sheet. Data in Attachment B, Ipswich Wastewater Treatment Plant-Toxicity Test Data are from the Town's recent Whole Effluent Toxicity (WET) tests. Attachment C, Town of Ipswich Bacteria Monitoring Letter, addresses change in the sampling location for bacteria.

Table 1, Total Recoverable Metals Criteria and Table 2, Reasonable Potential Analysis, provide data used to determine if the metals listed have reasonable potential to cause or contribute to an excursion above any State water quality standard. Table 3, Proposed Copper Limits show the change in the copper limits from the current permit to the Draft Permit. Table 4, Species within area of outfall, provides a list of species in the vicinity of the treatment plant discharge location.

Figure 1 is a site locus map that shows the geographic location of the treatment plant and outfall, Figure 2 is a diagram of the facility's treatment process and Figure 3 is a map of the shellfish area in the vicinity of the outfall.

Fact sheet attachments, tables and figures.

Attachment A	Ipswich Wastewater Treatment Plant-Discharge Monitoring Report Data
Attachment B	Ipswich Wastewater Treatment Plant-Toxicity Test Data
Attachment C	Town of Ipswich Bacteria Monitoring Letter
Table 1	Total Recoverable Metals Criteria
Table 2	Reasonable Potential Analysis
Table 3	Proposed Copper Limits
Table 4	Species within area of outfall
Figure 1	Site Locus Map
Figure 2	Flow Process Diagram
Figure 3	Shellfish Area Classification Map

III. Limits and Conditions

The effluent limitations and the monitoring requirements may be found in the Draft Permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Treatment Plant Description

The Town of Ipswich operates its 1.8 million gallons per day (MGD) secondary wastewater treatment plant using a conventional activated sludge process that serves approximately 7850 people. The plant is designed to accept and treat septage and accepts up to 20,000 gallons per day of septage from 15 haulers. The collection system consists of 23 miles of sewer pipes, 700 manholes and 5 pumping stations. Wastewater is conveyed by gravity through pipes 6 inches to 24 inches in diameter that lead to the Town Wharf Pumping Station where it passes through a grinder into a divided wet well. The wastewater is then pumped through the force main to the treatment plant.

At the treatment plant the influent flow passes through a magnetic flow meter which measures, records and totalizes the flow. Sewage enters the influent channel and passes through a mechanical bar screen into the aerated grit chamber. The sewage is aerated to keep the organic matter in suspension while the heavier grit particles are removed by settling. Septic tank waste is introduced at a controlled rate through an adjustable slide gate and mixed with sewage in the aerated grit chamber. The grit is periodically removed using a clam shell bucket hoist and is transferred to a compost facility.

The sewage then flows to the influent channel at the center of the aeration tank where it is mixed with activated sludge from the clarifiers. At this stage of the treatment process, fine bubble diffusers add dissolved oxygen to support the biological treatment process. After the required detention time in the aeration tank the mixed liquor flows through a splitter box to the clarifier for settling. The clarified effluent is disinfected by an ultraviolet system and the final effluent flows over cascade steps where it is re-aerated prior to entering a mile long outfall pipe to a tidal water of the United States, at latitude - 42^{o} 41’30.12” and longitude - 70^{o} 49’ 17.4, known as Greenwood Creek.

A portion of the activated sludge is returned, (commonly known as return activated sludge) to the aeration tank to maintain consistent mixed liquor suspended solids and the remaining sludge is wasted and passes through to the solids handling process.

Administrative Order

EPA issued an Administrative Order (AO) to the Town in February 2003 for violations of the fecal coliform and total copper limits.

For fecal coliform exceedances, the AO required the Town submit a report evaluating and explaining the causes of the exceedances of the monthly average fecal coliform limit. The AO required the Town to recommend interim and long-term corrective measures to eliminate the fecal coliform violations. The Town’s long-term corrective measure has been implemented. See the discussion on fecal coliform and enterococci in this fact sheet. The 2015 Discharge Monitoring Reports (DMRs) show that the fecal coliform limits have been achieved.

For copper, the AO established a maximum daily interim limit of 20 ug/l to be reported quarterly. It also required that the Town submit an annual copper optimization report to EPA and MassDEP to identify sources of copper entering the facility and methods implemented to optimize the removal of copper from the effluent. The AO also required the Town submit a detailed engineering report to EPA and MassDEP describing how the Town would fully comply with the permit's copper limits in the event treatment did not achieved the interim copper limit for two consecutive sampling events or for three sampling events within a twelve-month period. The Town has achieved the interim copper limits since the AO was issued.

Overview of Federal and State Regulations

General Requirements

The Clean Water Act (CWA or the Act) prohibits the discharge of pollutants to waters of the United States without an NPDES permit unless such a discharge is otherwise authorized by the Act. An NPDES permit implements technology-based and water quality-based effluent limitations as well as other requirements including monitoring and reporting. This Draft NPDES Permit was developed in accordance with statutory and regulatory authorities established pursuant to the Act. The regulations governing the NPDES program are found in 40 CFR Parts 122, 124, and 125.

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Act. Under Section 301(b)(1)(B) of the CWA, publicly owned treatment works (POTWs) must have achieved effluent limitations based upon secondary treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to limits in addition to or more stringent than technology-based limits where necessary to meet water quality standards at 40 CFR 122.40(d). The Massachusetts Surface Water Quality Standards (MA SWQS), found in 314 Code of Massachusetts Regulations (CMR) 4.00, include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, be used unless a site specific criterion is established. MA SWQS also require that discharges of pollutants to surface waters be limited or prohibited to assure that surface water quality standards of the receiving waters are protected and maintained or attained. See 314 (CMR) 4.03(1)(a). EPA regulations at 40 CFR 122.44(d)(1)(i), require that the permit limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, has reasonable potential to cause, or contribute to an excursion above any water quality criterion. An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and, where appropriate, the dilution of the effluent in the receiving water.

EPA's anti-backsliding provisions, found in Sections 402(o) and 303(d)(4) of the CWA and at 40 CFR§ 122.44(l), prohibit less stringent permit limits, standards, and conditions, except under certain, limited conditions. Therefore, the effluent limits in the reissued permit must be at least as stringent as those in the previous permit, unless in compliance with the anti-backsliding requirement of the CWA. Anti-backsliding provisions apply to effluent limits based on technology, water quality, best professional judgment and State Certification requirements.

Waterbody Classification and Usage

Greenwood Creek is listed as a Class SA water in the MA SWQS, 314 CMR 4.06, by the MassDEP. From the headwaters, Greenwood Creek flows just east of Jeffreys Neck Road in Ipswich, in an easterly direction to its confluence with the Ipswich River estuary.

314 CMR 4.05(4) states,

"Class SA waters are designated as excellent 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. In certain waters, excellent habitat for fish, other aquatic life and wildlife may include, but not be limited to, seagrass. Where designated in the tables to 314 CMR 4.00 for shellfishing, these waters shall be suitable for shellfish harvesting without depuration (Approved and Conditionally Approved Shellfish Areas). These waters shall have excellent aesthetic value."

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 the 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 the states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories:

1) Unimpaired and not threatened for all designated uses; 2) Unimpaired waters for some uses and not assessed for others; 3) Insufficient information to make assessments for any uses; 4) Impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) Impaired or threatened for one or more uses and requiring a TMDL. Section 303(d) of the CWA requires states to identify and list those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such, require the development of Total Maximum Daily Load.

The MassDEP combines the requirements in Sections 305(b) and 303(d) of the CWA into one report titled, Final Massachusetts Year 2012 Integrated Lists of Water (2012 Integrated List) and it is available on the MassDEP website at http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

The 2012 Integrated List (and the proposed 2014 Integrated List) has the receiving water listed as impaired for fecal coliform and requires completion of a total maximum daily load, TMDL.

Greenwood Creek Stream Flow and Effluent Flow and Available Dilution

The effluent is discharged to Greenwood Creek at head of tide. This is the furthest point upstream where the stream is influenced by tidal fluctuations. At times there is minimal or no streamflow (such as during low tide) that provides available dilution for the discharge. During these low flow periods the final effluent may be discharged to a wetland and the 7Q10 flow is considered 0.

Facility Design Flow is 1.8 MGD or 2.78 cfs
7Q10 is 0

Dilution Factor = (river flow at 7Q10 flow + design flow of the treatment plant (cfs)/design flow of the treatment plant (cfs)

Dilution Factor = (0 + 2.78 cfs)/2.78 cfs = 1

A dilution factor of 1, the same as in the current permit, has been used for the water quality-based effluent limits in the Draft Permit. Permit limit are based on the numeric water quality criteria when the dilution factor is one.

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).

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). The limitation on sewage effluent flow is within EPA's authority to condition a permit in order to carry out the objectives of the Act. *See* CWA §§ Sections 402(a)(2) and 301(b)(1)(C); 40 C.F.R. §§ 122.4(a) and (d); 122.43 and 122.44(d). 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. Failure to restrict flow could result in an increased loading of individual pollutants, such as pharmaceuticals, endocrine disrupters, etc., which are not currently limited in the permit and which for many of these pollutants, there is no monitoring data.

In this case, where the receiving water downstream of the discharge under 7Q10 flow conditions is comprised almost entirely of wastewater effluent, it is even more important to limit the quantity of flow allowed to be discharged. Permit limits are calculated using a dilution factor for the receiving water under 7Q10 flow conditions. This approach is generally considered to address the critical conditions of maximum pollutant impact, where dilution of the discharge is at a minimum. Since at most times receiving water flow is well above the 7Q10, use of the 7Q10 as an assumed flow ensures that exceedances of the water quality criteria will be limited in duration and frequency as assumed in the calculation of the criteria (for example, chronic criteria reflect concentrations to be exceeded less than once every three years for a four day period), so that the limit is protective.

Effluent dominated receiving waters, where there is essentially no dilution by the receiving water for extended periods of time, represent a challenge in the context of setting water quality-based limits. When there is no significant dilution of the discharge, permit limits must be set that ensure that the discharge itself meets water quality standards. However, where the varying flow of the receiving water is not sufficient to ensure that critical pollutant concentrations are limited in duration and frequency, it is not always clear that average monthly and maximum daily permit limits will be sufficiently protective to meet water quality standards. For most facilities a permit limit based on the ambient criteria value will ensure that concentrations are below the criteria value for most of the year, which should be sufficient to protect the duration and frequency component of the criteria. Increased discharge flows in already effluent dominated streams can result in stream concentrations being equal to the criteria value with a greater frequency and for longer durations which is not consistent with achieving the magnitude, duration, and frequency components of the criteria.

Additionally, as provided in Part II.B.1 and 40 CFR § 122.41(e), the permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facility's wastewater treatment systems as designed includes operating within the facility's design effluent flow.

Thus, the permit's effluent flow limitation is necessary to ensure proper facility operation, which in turn is a requirement applicable to all NPDES permits. See 40 CFR § 122.41.

Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

The BOD_5 and TSS effluent concentration limits are based on secondary treatment requirements at 40 CFR Part 133. The mass limits are based on the concentration limits and the design flow of 1.8 MGD. The BOD_5 and TSS monthly average and weekly average effluent limits in the current permit are 30 mg/l and 45 mg/l.

A review of data on the monthly DMRs from January 2010 through July 2015 show the average monthly and average weekly BOD_5 were exceeded in July 2012. The BOD_5 percent removal limit was also less than the permit limit in July 2012. The average weekly TSS limit was exceeded in October 2012. See Attachment A, Ipswich Wastewater Treatment Plant Discharge Monitoring Data for BOD_5 and TSS data.

The BOD_5 and TSS monthly average and weekly average effluent limits remain 30 mg/l (450 lbs/day) and 45 mg/l (676 lbs/day).

Dissolved Oxygen (DO)

The MA SWQS at 314 CMR 4.05 (4)(b)(1) require that dissolved oxygen concentration for a Class SA water shall not be less than 6.0 mg/l unless background conditions are lower. The dissolved oxygen limit in the current permit is 6.0 mg/l with a monitoring frequency of once per day. A review of data submitted on the monthly discharge monitoring reports demonstrates compliance with the permit limit from January 2010 through July 2015. The dissolved oxygen limitation of 6.0 mg/l with a once per day monitoring frequency is included in the Draft Permit.

pH

Massachusetts WQS at 314 CMR 4.05(4)(a)(3) specify that pH in a Class SA water, " shall be in the range of 6.5 through 8.5 standard units and not more than 0.2 standard units outside the background range. There shall be no change from background conditions that would impair any use assigned to this Class." The current permit includes a minimum pH limit of 6.5 su and a maximum pH limit of 8.5 with a once per day monitoring frequency. The pH data submitted for the period from January 2010 through July 2015 are in compliance with the pH range for a Class SA water.

The Draft Permit includes pH limitations based on MA SWQS and the limits have been carried forward from the current permit.

Fecal Coliform and Enterococci

On December 29, 2006, the State revised the bacteria criteria in the MA SWQS. The maximum fecal coliform criterion was changed from 43 cfu/100 ml to 28 cfu/100 ml to be consistent with the standards established by the National Shellfish Sanitation Program and to protect shellfish uses. Criteria for enterococci were added to protect recreational uses. EPA approved these revisions on September 19, 2007 and these changes are reflected in the Draft Permit. The bacteria standards for Class SA waters state,

"Waters designated for shellfishing: fecal coliform shall not exceed a geometric mean Most Probable Number (MPN) of 14 organisms per 100 ml, nor shall more that 10% of the samples exceed an MPN of 28 per 100 ml, or other values of equivalent protection based on sampling and analytical methods used by the Massachusetts Division of Marine Fisheries and approved by the National Shellfish Sanitation Program in the latest Guide for the Control of Molluscan Shellfish." and " in non-bathing beach waters and bathing beach waters during the non-bathing season, no single enterococci sample shall exceed 104 colonies per 100 ml and the geometric mean of all samples taken within the most recent six months based on a minimum of five samples shall not exceed 35 enterococci colonies per 100 ml.

The current permit has a year-round, monthly geometric mean fecal coliform limit of 14 colony forming unit (cfu)/100 milliliter (ml) and a year-round maximum daily fecal coliform limit of 43 cfu/100 ml based on pre-2006 MA SWQS for bacteria criteria.

As shown in Attachment A, Ipswich Wastewater Treatment Plant-Discharge Monitoring Report Data, the Town frequently exceeded the monthly average and maximum daily fecal coliform limits from January 2010 through July 2015 and, as discussed earlier in the fact sheet, EPA issued an AO to the Town to address the exceedances. To address this issue, the Town requested a change in the sampling location for bacteria during a recent inspection of the treatment plant by EPA. The Town requested this change because the bacteria samples collected at the end of pipe are not an accurate representation of bacteria levels in the treated effluent and the Agencies concur with the Town on this matter. EPA sent a letter to the Town dated December 22, 2015, stating the sampling location for bacteria could be collected immediately after disinfection. See Attachment C, Town of Ipswich Bacteria Monitoring Letter concerning a change in the fecal coliform sampling location. The Town has been reporting bacteria data from this location since December 2014 and all of the data achieves compliance with the effluent limits

Based on the revised MA SWQS, the Draft Permit includes a monthly average fecal coliform effluent limit of 14 cfu/100 ml and a maximum daily fecal coliform effluent limit of 28 cfu/100 ml. These limits are calculated as a geometric mean. The Draft Permit has a one-year compliance schedule to provide time for the Town to make any necessary equipment changes or operational changes to ensure consistent attainment of these limits. Compliance schedules are allowed under MA SWQS for limitations based on new, newly interpreted, or revised water quality standards (see 314 CMR 4.03(1)(b)). The schedule is also consistent with federal regulations found at 40 CFR 122.47.

In addition to the fecal coliform limits, the Draft Permit also includes a monthly average limit of 35 *enterococci* cfu/100 ml and a maximum daily limit of 104 *enterococci* cfu/100 ml, consistent with the revised MA SWQS criteria. A one year compliance schedule for *enterococci* is also included in the Draft Permit to provide time for the facility to make any necessary equipment changes or operational changes to ensure consistent attainment of the limits. The Draft Permit requires *enterococci* monitoring and reporting only for one year from the effective date of the permit and the limits become effective at the end of the one year compliance schedule.

Toxic Pollutants

EPA is required to limit any pollutant that is or may be discharged at a level that caused, or has reasonable potential to cause, or contribute to an excursion above any water quality criterion. See 40 CFR §122.44(d)(1)(VI). Data submitted with the permit renewal application and the Town's quarterly toxicity tests were used to determine reasonable potential to cause or contribute to a violation of water quality criteria.

Metals

Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation of the February 2010 through May 2015 toxicity test data were used to determine reasonable potential for toxicity caused by cadmium, chromium, copper, lead, nickel and, zinc.

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

However, many inorganic components of domestic wastewater, including metals, are in the particulate form, and differences in the chemical composition between the effluent and the receiving water affects the partitioning of metals between the particulate and dissolved fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water.

Regulations at 40 CFR 122.45(c) require, with limited exception, that metal limits in NPDES permits be expressed as total recoverable metals. The facility's effluent concentrations were characterized assuming a lognormal distribution in order to determine the estimated 95th percentile of the daily maximum.

The following mass balance equation is used to project in-stream metal concentrations downstream from the discharge 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.

$$Q_rC_r = Q_dC_d + Q_bC_b$$

rewritten as:

$$C_r = \frac{Q_dC_d + Q_bC_b}{Q_r}$$

where:

Q_d = effluent flow (design flow = 1.8 mgd = 2.78 cfs)
C_d = effluent metals concentration in ug/L (95th percentile)
Q_b = low flow upstream (0)
C_b = background in-stream metals concentration in ug/L (median)
Q_r = downstream in-stream flow, downstream of the discharge ($Q_b + Q_d$ = 2.78 cfs)
C_r = in-stream concentration downstream of the discharge in ug/L

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

The total recoverable criteria of metals being discharged to saltwater environments is calculated by dividing the Criterion Maximum Concentration (CMC) and the Criterion Chronic Concentration (CCC) by the appropriate conversion factors. Per example, for cadmium, the calculations are:

Acute Criteria = CMC/CMC Conversion Factor

where:

CMC = 40 µg/l
CMC Conversion Factor = 0.994

Acute Criteria = 40/0.994 = 40.2 µg/l

and

Chronic Criteria = CCC/CCC Conversion Factor

where:

CCC = 8.8 ug/l
CCC Conversion Factor = 0.994

Chronic Criteria = 8.8/0.994 = 8.9 µg/l

The following table contains the calculated acute and chronic criteria for metals of concern for the Ipswich WWTP discharge.

Table 1. Total Recoverable Metals Criteria

	Dissolved Criteria				**Total Recoverable Criteria**	
Metals	**CMC**	**CCC**	**CMC Factor**	**CCC Factor**	**Acute, ug/l**	**Chronic, ug/l**
Cadmium	40	8.8	0.994	0.994	40.2	8.9
Copper	25.7	18.1	0.83	0.83	31	22
Lead	210	8.1	0.951	0.951	220.8	8.5
Nickel	74	8.2	0.99	0.99	74.7	8.3
Zinc	90	81	0.946	0.946	95.1	86

Table 2. Reasonable Potential Analysis

Metal	Qd	Cd[1] (95th Percentile)	Qs	Cs[2] (Median)	Qr = Qs + Qd	Cr = (QdCd+QsCs) / Q_R	Criteria Total Recoverable		Reason Potential	Limit = (QrCr-QsCs) / Qd	
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	Chronic (ug/l)	Cr > Criteria	Acute (ug/l)	Chronic (ug/l)
Cadmium	2.78	ND	0	N/R	2.78	ND	40	8.9	N	N/A	N/A
Chromium		ND		N/R		ND	1,100	50	N	N/A	N/A
Copper		32.15		N/R		32.15	25.7	18.1	Y	31	22
Lead		1.53		N/R		1.53	221	8.5	N	N/A	N/A
Nickel		2.79		N/R		2.79	75	8.3	N	N/A	N/A
Zinc		68.97		N/R		68.97	95	86	N	N/A	N/A

[1] values calculated using data from the statistical analysis. The statistical analysis for each metal is available for review in the Ipswich NPDES administrative file.

[2] upstream metals concentration not reported (N/R) in Whole Effluent Toxicity (WET) test.

As shown in Table 2, Reasonable Potential Analysis there is reasonable potential for the discharge of copper to cause or contribute to an exceedance of applicable acute and chronic water quality criteria. There is not reasonable potential for other metals listed in Table 2 since the instream concentration is less than the water quality criteria ($C_r < C$) however, monitoring of all listed metals in the table above will continue to be required as part of the quarterly WET tests.

Copper

The limits for copper in the current permit were calculated based on the saltwater chronic and acute criteria set forth in the 1998 *National Recommended Water Quality Criteria*, pursuant to the MA SWQS in effect when the current permit was issued in 2003. Since that time the Commonwealth of Massachusetts has issued, and EPA approved in 2007, site-specific water quality criteria for copper for Greenwood Creek that are less stringent than the 1998 *National Recommended Water Quality Criteria*. The new site specific criteria for copper establish a chronic criterion of 18.1 ug/l(dissolved, "d"),[2] and an acute criterion of 25.7 ug/l(d). The Draft Permit contains effluent limits of 22 ug/l(total recoverable "tr")(monthly average) and 31 ug/l(tr)(maximum daily). The derivation of these limits is set forth below.

In determining the appropriate effluent limitation in response to this revised MA SWQS, EPA must apply the requirements of the revised state standard, as set forth in the MassDEP *Protocol for and Determination of Site-Specific Copper Criteria for Ambient Waters in Massachusetts*, January 2007 (the "site-specific protocol").

Site-Specific Protocol: In determining effluent limitations under the revised standard, the site-specific protocol allows for relaxation of permit limits to reflect the higher criteria only to the extent that the actual performance of the facility has been achieved. It states:

[A]s part of the site-specific criteria, all reasonable efforts to minimize the loads of metals, and copper in this case, are part of the criteria revision protocol. So, the Department on a case-by-case basis will develop permit copper limits. Each determination will be based not only on the adjusted concentration resulting from the appropriate multiplier but will reflect the demonstrated level of copper reduction routinely achievable at the facility in order to minimize copper loads and thereby reduce its accumulation in the sediment.

Thus, determination of the appropriate effluent limits under the site-specific protocol requires calculating both (i) the required effluent limits that would meet the site-specific numeric criteria (criteria-based limits) and (ii) the actual effluent concentrations achieved by the facility (performance-based limits), and selecting the more stringent of the two.

[2] Water quality criteria for copper are expressed in terms of dissolved metals. However, permit limitations for copper are expressed in terms of total recoverable metals in accordance with the requirements of 40 CFR §122.45(c). As such, conversion factors are used to develop total recoverable limits from dissolved criteria. The conversion factor reflects how the discharge of a particular metal partitions between the particulate and dissolved form after mixing with the receiving water. In the absence of site-specific data describing how a particular discharge partitions in the receiving water, a default assumption equivalent to the criteria conversion factor is used in accordance with the *Metal Translator Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]). Therefore, a conversion factor of 0.83 was used to convert between total recoverable and dissolved copper concentrations. Dissolved concentrations are denoted ug/l(d), while total recoverable concentrations are denoted ug/l(tr).

Facility Performance-Based Copper Limits

The copper concentrations routinely achieved through treatment were determined using a statistical analysis of discharge monitoring data for the period of March 2010 through May 2015. The analysis was based on the methodology set forth in the "Technical Support Document for Water Quality based Toxics Control, Appendix E", published in March 1991, EPA/505/2-90-001. The maximum daily and average monthly discharge concentrations were estimated as the 99th and 95th percentiles of a lognormal distribution, based on the facility's effluent data in the quarterly WET tests. The Reasonable Potential Analysis is available for review in the administrative file at EPA Region 1.

Using this method, the estimated monthly average discharge is 32mg/l and the maximum daily discharge is 51 mg/l.

Site Specific Criteria-Based Copper Limits

The effluent copper concentrations necessary to achieve the site specific water quality criteria downstream of the discharge were determined using mass balance equations. The site specific criteria, the upstream copper data reported in recent WET tests, the receiving water 7Q10 low flow, and facility design flow were used in this calculation.

$$C_d = \frac{(Q_r C_r - Q_s C_s)}{Q_d}$$

Q_r = receiving water flow downstream of the discharge (7Q10 + plant flow), 2.78 cfs
C_r = copper concentration in the receiving water downstream of the discharge (equal to the site-specific criteria), 18.1 µg/l and 25.7 µg/l
Q_d = design flow of the discharge, 2.78 cfs
C_d = copper concentration in the discharge (the allowable effluent limit)
Q_s= receiving water flow upstream of the discharge, 0
C_s = copper concentration in the receiving water upstream of the discharge, 0 µg/l

In the equation above, the monthly average and daily maximum effluent limits were calculated with the in-stream copper concentration equivalent to the site specific criteria, 18.1 µg/l and 25.7 µg/l. Assuming an there is no upstream copper concentration the treatment plant design flow of 2.78 cfs, (Q_d), the upstream 7Q10 low flow of 0, (Q_s), the downstream flow of 2.78 (Q_r), and downstream copper concentration equal to the total recoverable criteria (C_r = 18.1 µg/l, chronic and 25.7 µg/l, acute) the monthly average copper limit would be 22 µg/l and the maximum daily limit would be 31 µg/l.

Chronic criterion is 18.1 ug/l (dissolved) Acute criterion is 25.7 ug/l (dissolved)
Chronic criterion is (18.1/0.83) = 22 ug/l (tr) Acute criterion is (25.7/0.83) = 31 ug/l (tr)

$$C_d = (Q_r * C_r) - (Q_s * C_s)/Q_d$$

(2.78 cfs * 31 ug/l)/(2.78 cfs) = 31 ug/l
(2.78 cfs * 22 ug/l)/(2.78 cfs) = 22 ug/l

Table 3. Proposed Copper Limits

	Monthly Average Limit	Daily Maximum Limit
Current Permit Limits	3.1 µg/l	4.8 µg/l
Site-Specific Criteria Based Limits	22 µg/l	31 µg/l
Facility Performance Based Limits	32 µg/l	51 µg/l

The monthly average and maximum daily effluent limits in the Draft Permit are 22 µg/l and 31 µg/l.

Nutrients

Nutrient, compounds containing nitrogen and phosphorus, are essential for plant growth however, high concentrations of either can cause eutrophication. Eutrophication is a condition in which aquatic plant and algal growth is excessive in a waterbody and reduces oxygen concentrations in the water column. Lack of oxygen in the water column creates poor habitat for fish and other aquatic animals.

The results of a study[3] comparing water quality characteristics of Greenwood Creek to characteristics of Club Head Creek in Rowley, MA were reviewed to consider the need for total nitrogen limits in the Draft Permit. Club Head Creek is a stream that does not receive treated wastewater effluent but, has similar geomorphology to Greenwood Creek. The study compared data for nitrate, salinity, temperature, chlorophyll a, algal standing stock and the abundance of benthic invertebrates in Club Head Creek with data from Greenwood Creek at several locations downstream of the Ipswich WWTP outfall.

The data for each parameter only differed between the two creeks in the immediate vicinity of the outfall. The data reported for samples collected further downstream of the outfall in Greenwood Creek were similar to the data reported for Club Head Creek. Therefore, the Draft Permit does not include a limit for total nitrogen but includes monitoring and reporting requirements for total nitrogen, total nitrite, total nitrate and total Kjeldahl nitrogen. This data in conjunction with other pertinent water quality data will be used to determine the need for a water quality-based permit limit in subsequent NPDES permits.

Ammonia-nitrogen

Nitrogen in the form of ammonia can be toxic to aquatic life. The monthly average seasonal limit of 2.4 mg/l for ammonia-nitrogen in the existing permit has been carried forward in the Draft Permit. The Draft Permit also includes a weekly monitoring requirement for ammonia-nitrogen from November 1 through March 31.

The ammonia-nitrogen limit of 2.4 mg/l, was exceeded 13 times from January 2010 through July 2015. Attachment A, Ipswich Wastewater Treatment Plant–Discharge Monitoring Report Data has a range of 0.9 mg/l to 17.6 mg/l for ammonia-nitrogen for the same time period. The chronic evaluation in the whole effluent toxicity tests in May 2010, May 2014 and May 2015 did not achieve the permit limit. The

[3] Twichell S., Sheldon S., Deegan L., Garritt R., "Nutrient and Freshwater Inputs from Sewage Effluent Discharge Alter Benthic Algal and Infaunal Communities in Tidal Marsh Creek", Biological Bulletin October 2003, vol. 203, no.2, 256-258.

effluent concentrations of ammonia in the three tests were 6.7 mg/l, 12 mg/l and 25 mg/l. The data indicates there is reasonable potential that the ammonia-nitrogen in the effluent may cause or contribute to an excursion of the state water quality narrative criteria for nutrients at 314 CMR 4.05(c).

Whole Effluent Toxicity (WET) Testing

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The MA SWQS [314 CMR 4.05(5)(e)], include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(l) of the CWA be used as guidance for interpretation of the following narrative criteria:

"*All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. Where the State determines that a specific pollutant not otherwise listed in 314 CMR 4.00 could reasonably be expected to adversely affect existing or designated uses, the State shall use the recommended limit published by EPA pursuant to 33 U.S.C. 1251 §304(a) as the allowable receiving water concentrations for the affected waters unless a site-specific limit is established. Site specific limits, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).*"

National studies conducted by the EPA have demonstrated that industrial and domestic sources contribute toxic constituents, such as metals, chlorinated solvents aromatic hydrocarbons, and other pollutants, to POTWs and the impact of such complex mixtures is often difficult to assess. Therefore, the toxicity of several constituents in a single effluent can only be accurately examined by whole effluent toxicity testing. In addition, 40 CFR 122.44 (d) requires whole effluent toxicity limits in NPDES permits when the effluent has a reasonable potential to cause toxicity.

The principal advantages of biological toxicity assessment techniques such as WET are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analysis; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effect of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant-specific control procedures to control the discharge of toxic pollutants.

EPA Region 1 and MassDEP have developed a toxicity control policy. The policy requires wastewater treatment facilities to perform toxicity bioassays on their effluent. Facilities that discharge into a water body having a dilution of 10:1 require toxicity testing four times per year and the draft permit includes quarterly testing. (See, e.g., "Policy for the Development of Water quality based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784-July 24, 1985. See also EPA's Technical Support Document for Water Quality Based Toxics Control, EPA/505-90-001).

The Lethal Concentration causing mortality to 50% of the test organisms in 100% effluent is referred to as the LC_{50}. A LC_{50} permit limit prohibits acute effects causing lethality when aquatic organisms are exposed to 100% POTW effluent. The LC_{50} limit of $\geq$ 100% in the current permit has not been carried forward in the Draft Permit because results from previous WET tests show the limit has been consistently achieved.

The Chronic-No Observed Effect Concentration (C-NOEC) limitation in the Draft Permit prohibits chronic effects that adversely affect survival, growth, or reproduction when aquatic organisms are exposed to the POTW effluent at the available dilution. The C-NOEC is established equal to the receiving

water concentration, (the inverse of the dilution factor) consistent with MassDEP's "Implementation Policy for the Control of Toxic Pollutants in Surface Waters", February 23, 1990.

Whole Effluent Toxicity Test Permit Requirements

The current permit requires the Town conduct chronic and modified acute WET tests quarterly with two species, the (Arbacia punctulata) and the inland silverside (Menidia beryllina). The Draft Permit includes chronic WET testing with the sea urchin (Arbacia punctulata) and the inland silverside (Menidia beryllina) only.

The acute WET test results from February 2010 to May 2015 achieved compliance with the effluent limit. The results of the chronic tests show effluent toxicity with the Menidia beryllina in May 2010, May 2014 and May 2015. The results of the chronic tests show effluent toxicity with the Arbacia punctulata in May 2014 and May 2015. The results of the quarterly tests from February 2010 through May 2015 are shown in Attachment B, Ipswich Wastewater Treatment Plant-Toxicity Test Data.

The toxicity test requirements in the Draft Permit have changed from those in the current permit. The Draft Permit carries forward quarterly chronic WET testing with the sea urchin (Arbacia punctulata) and the inland silverside (Menidia beryllina), only. The Draft Permit requires the test be conducted at the same time and same week in February, May, August and November (for example, the third Tuesday of each month at noon). The Draft Permit eliminates the requirements for acute WET tests.

See Attachment A, Marine Chronic Toxicity Test Procedures and Protocols of the Draft Permit for the most recent test procedures and protocols. Toxicity test reports are part of the administrative file and available for review at the EPA Region 1 office.

The Draft Permit includes a C-NOEC limit of 100% based on the following dilution calculation.

C-NOEC
1/dilution factor *100 = C-NOEC
Dilution Factor = 10
1/1 * 100 = 100%

V. Unauthorized Discharges

The permittee is not authorized to discharge wastewater from any pump station emergency overflow. Overflows, including sanitary sewer overflows (SSOs), must be reported in accordance with reporting requirements found in Part II, General Requirements, Section D.1.e, of the permit (24-hour reporting). If a discharge does occur, the Town must notify the EPA, the MassDEP, and others, as appropriate (i.e. local Public Health Department), both orally and in writing as specified in the Draft Permit.

VI. Operation and Maintenance of the Sewer System

The Town of Ipswich owns, operates and maintains the sewer collection system that transports sewage to the treatment plant.

EPA regulations set forth a standard condition for "Proper Operation and Maintenance" that is included in all NPDES permits. *See* 40 CFR § 122.41(e). This condition is specified in Part II.B.1 (General

Conditions) of the Draft Permit and it requires the proper operation and maintenance of all wastewater treatment systems and related facilities installed or used to achieve permit conditions.

EPA regulations also specify a standard condition to be included in all NPDES permits that specifically imposes on permittees a "duty to mitigate." *See* 40 CFR § 122.41(d). This condition is specified in Part II. B. General Conditions of the Draft Permit and it requires the permittees to take all reasonable steps – which in some cases may include operations and maintenance work - to minimize or prevent any discharge in violation of the permit which has the reasonable likelihood of adversely affecting human health or the environment.

Proper operation of collection systems is critical to prevent blockages and equipment failures that would cause overflows of the collection system (sanitary sewer overflows, or SSOs), and to limit the amount of non-wastewater flow entering the collection system such as inflow and infiltration (I/I). I/I in a collection system can pose a significant environmental problem because it may displace wastewater flow and thereby cause, or contribute to causing, SSOs. Moreover, I/I could reduce the capacity and efficiency of the treatment plant and cause bypasses of secondary treatment. Therefore, reducing I/I will help to minimize any SSOs and maximize the flow receiving proper treatment at the treatment plant. MassDEP has stated that I/I control conditions will be included in NPDES Permits and these conditions will be a standard State Certification requirement under Section 401 of the CWA and 40 CFR § 124.55(b).

Therefore, specific permit conditions have been included in Parts I.B. and I.C. of the Draft Permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling infiltration and inflow to the extent necessary to prevent SSOs and I/I related-effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary. These requirements are intended to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment.

The permittee is required to develop and implement the Collection System Operation and Maintenance Plan (the Plan) within two years of the effective date of the Final Permit. The Plan is to include a description of the collection system and its current condition, information on managing and maintaining the collection system, a map of the collection system and data on infiltration and inflow. The purpose of the Plan is to assist the Town preventing unauthorized discharges, minimizing infiltration and inflow and protecting public health and the environment by eliminating bypasses and sanitary sewer overflows.

The Draft Permit also requires the permittee to provide a summary report of activities related to implementation of its Plan to EPA and MassDEP each year.

Several of the requirements in this section of the Draft Permit are not included in the current 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 proper operation and maintenance.

VII. Pretreatment

The facility does not treat pollutants from major industrial facilities and is not required to have a Pretreatment Program. Therefore, the Draft Permit specifies, in part I.A.3, that pollutants introduced into the POTW by a non-domestic source are prohibited from entering the POTW or interfering with the operation or performance of the works.

VIII. Sludge Information and Requirements

Section 405(d) of the CWA requires that sludge conditions be included in all POTW permits. The sludge conditions in the Draft Permit satisfy this requirement and are taken from EPA's Standard for the disposal of sewage sludge (40 CFR 503). The Sludge Compliance Guidance can be seen at http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf.

Wasted sludge at the Ipswich WWTF is thickened in a digester and sent to a sludge holding tank where polymer is added to enhance the separation of water and solids. The sludge is then sent through a belt filter press for dewatering. The sludge cake is transported off-site where it is composted at the Ipswich Composting Facility and used for land application.

IX. Essential Fish Habitat (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C.§ 1801 et seq. (1998)), EPA is required to consult with 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." 16 U.S.C.§ 1855(b). The Amendments broadly define "essential fish habitat" as waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C.§ 1802(10). Adverse impact means any impact, which reduces the quality and/or quantity of EFH. 50 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. Id.

The federal action being considered in this case is EPA's proposed NPDES permit reissuance for the Ipswich WWTP in the Town of Ipswich, Massachusetts.

Essential fish habitat is only designated for fish species for which Federal Fisheries Management Plans exist. 16 U.S.C.§ 1855(b)(1)(A). The U.S. Department of Commerce on March 3, 1999 approved EFH designations for New England.

A review of the relevant essential fish habitat information provided in the table below indicates there is Essential Fish Habitat in the Atlantic Ocean near Ipswich, Massachusetts.

Coordinates within the area of outfall

10 x 10 x Square Coordinates:

Boundary	North	East	South	West
Coordinate	42° 50.0x N	70° 40.0x W	42° 40.0x N	70° 50.0x W

Square Description (i.e. habitat, landmarks, coastline markers)

Waters within the Atlantic Ocean within the square affecting the following: from Ipswich Bay, past most of Castle Neck, northern Hog Island, Plum Island, Plum Island Sound, Ipswich, MA., Rowley, MA., Newburyport, MA., Newbury, MA., past Joppa Flats at the entrance to the Merrimack River up to Salisbury, MA. Features also affected include: a discontinued dumping ground just east of the opening to the Merrimack River, Woodbridge I., Plum I., Parker River Inlet, Rowley River Inlet, Eagle Hill River Inlet, Great Neck, and Ipswich River, and Ipswich Bay.

Table 4. Species in area of outfall

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod *(Gadus morhua)*	X	X	X	X
haddock *(Melanogrammus aeglefinus)*			X	
pollock *(Pollachius virens)*			X	
whiting *(Merluccius bilinearis)*	X	X	X	X
offshore hake *(Merluccius albidus)*				
red hake *(Urophycis chuss)*	X	X	X	X
white hake *(Urophycis tenuis)*				
redfish *(Sebastes fasciatus)*	n/a	X	X	X
witch flounder *(Glyptocephalus cynoglossus)*				
winter flounder *(Pseudopleuronectes americanus)*	X	X	X	X
yellowtail flounder *(Limanda ferruginea)*			X	X
windowpane flounder *(Scophthalmus aquosus)*	X		X	X
American plaice *(Hippoglossoides platessoides)*	X			X
ocean pout *(Macrozoarces americanus)*	X	X	X	X
Atlantic halibut *(Hippoglossus hippoglossus)*	X	X	X	X
Atlantic sea scallop *(Placopecten magellanicus)*	X	X	X	X
Atlantic sea herring *(Clupea harengus)*		X	X	X
monkfish *(Lophius americanus)*	X	X		

bluefish *(Pomatomus saltatrix)*				
long finned squid *(Loligo pealeii)*	n/a	n/a	X	X
short finned squid *(Illex illecebrosus)*	n/a	n/a	X	X
Atlantic butterfish *(Peprilus triacanthus)*	X	X	X	X
Atlantic mackerel *(Scomber scombrus)*	X	X	X	X
summer flounder *(Paralichthys dentatus)*				X
scup *(Stenotomus chrysops)*	n/a	n/a	X	X
black sea bass *(Centropristis striata)*	n/a		X	
surf clam *(Spisula solidissima)*	n/a	n/a	X	X
ocean quahog *(Artica islandica)*	n/a	n/a		
spiny dogfish *(Squalus acanthias)*	n/a	n/a		
tilefish *(Lopholatilus chamaeleonticeps)*				
bluefin tuna *(Thunnus thynnus)*			X	X

Greenwood Creek, the receiving water for the treatment plant discharge, meanders approximately 1.5 miles before joining the Ipswich River and Ipswich Bay. The effluent must travel the distance of the creek before encountering any of the essential fish habitat species listed above.

EPA has determined that the limits and conditions in the Draft Permit minimize adverse effects to the EFH species present for the following reasons:

- This permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit and while the dilution factor is 1 for the approximately 1.5 mile long tidal creek referred to as Greenwood Creek, this creek is not expected to be suitable habitat for EFH species.
- The flow from the creek during an outgoing tide is a small percentage of the tidal volume of the Ipswich River.
- Dilution of the creek discharge with the tidal energy of the main stem of the river is expected to be complete and instantaneous;
- The effluent limitations and conditions in the Draft Permit were developed to be protective of all aquatic life;
- The Draft Permit prohibits violations of the MA SWQS;
- The facility does not withdraw from the Ipswich River or Ipswich Bay, therefore no life stages of EFH species are vulnerable to impingement or entrainment from this facility;
- The complete and instantaneous dilution of the creek discharge with the tidal energy of the main

stem of the river will result in a sufficient zone of passage unaffected by the discharge. This will allow the movement of EFH species in the Ipswich River; and

- The Draft Permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.

EPA believes that the conditions and limitations contained within the proposed permit adequately protect all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for these conclusions, EPA will contact NMFS Habitat Division.

X. Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, imposes requirements on Federal agencies related to the potential effects of their actions on endangered or threatened species of fish, wildlife, or plants (listed species) and their designated "critical habitat." Section 7 of the ESA requires, in general, that Federal agencies insure that any actions they authorize, fund, or carry out, in the United States or upon the high seas, are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated "critical habitat" for those species. Federal agencies carry out their responsibilities under the ESA in consultation with, and assisted by, the Departments of Interior (DOI) and/or Commerce (DOC), depending on the species involved. The United States Fish & Wildlife Service (USFWS) of the DOI administers Section 7 consultations for freshwater species, while the National Marine Fisheries Service (NMFS) of DOC does so for marine species and anadromous fish.

As the federal agency responsible for authorizing the discharge from this facility, EPA has reviewed available information and determined that a number of federally listed species inhabit (seasonally) waters in the broad general area of the relevant discharge. Further analysis was done with regard to the presence or absence of these protected species in the action area. Coastal areas of Massachusetts provide habitat for a number of federally protected marine species, including: mammals (whales: North Atlantic Right, Humpback, Fin, Sei, Sperm, Blue – all endangered); reptiles (sea turtles: Kemp's Ridley, Leatherback, Green – all endangered; Northwest Atlantic Ocean Distinct Population Segment of Loggerhead – threatened) and two species of fish, the shortnose sturgeon (*Acipenser brevirostrum*) and the Atlantic sturgeon (*Acipenser oxyrinchus*). However, EPA does not consider the area in the vicinity of the facility discharge to be suitable habitat for the species listed above. Based on the normal distribution of these species, it is unlikely that any of the coastal NMFS listed species identified above would be expected to be present in the vicinity of the treatment plant's discharge in the unnamed tidal creek that flows to the main stem of the Ipswich River. EPA has made the determination that these protected marine species are not present in the action area of the discharge. Therefore, consultation with NMFS under Section 7 of the ESA is not required.

XI. State Certification Requirements

EPA may not issue a permit unless the Agency (MassDEP) with jurisdiction over the receiving waters 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 Massachusetts State Water Quality Standards or that this certification is deemed to be waived. The staff of the MassDEP has reviewed the Draft Permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State and expects that the permit will be certified.

XII. Public Comment Period, Hearing Requests and Procedures for Final Decision

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 U.S.EPA, 5 Post Office Square-Suite 100, Mailcode OEP06-1, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the MassDEP. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the Draft Permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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

XIII. EPA and MassDEP Contacts

Additional information concerning the Draft Permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Betsy Davis
US Environmental Protection Agency
5 Post Office Square
Suite 100 (CPE)
Boston, Massachusetts 02109-3912
Telephone: (617) 918-1576

or

Claire Golden
Massachusetts Department of Environmental
Division of Watershed Management
205B Lowell Street
Wilmington, MA 01887
Telephone: (978) 694-3244

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

Date:

Attachment A.	Ipswich Wastewater Treatment Plant - Discharge Monitoring Report Data									
MONITORING PERIOD END DATE	Flow (MGD)	BOD, 05 day, 20 C (mg/l)			BOD, 05 day, 20 C (lb/d)		BOD, 5-day, % removal	Dissolved Oxygen (mg/l)	pH (s.u.)	pH (s.u.)
	Annual Ave.	Average Monthly	Average Weekly	Daily Maximum	Monthly Average	Average Weekly	Monthly Minimum	Daily Minimum	Minimum	Maximum
1/31/2010	1.1	6.7	8.1	8.1	65.	111.	97.	9.7	6.6	7.3
2/28/2010	1.1	8.5	12.	12.	84.	165.	94.	10.1	6.5	6.9
3/31/2010	1.2	7.6	13.	13.	176.	314.	90.	10.	6.5	6.9
4/30/2010	1.2	9.9	13.	13.	113.	189.	91.	9.	6.5	7.3
5/31/2010	1.2	6.2	9.1	9.1	50.	68.	97.	8.5	6.5	7.1
6/30/2010	1.2	5.2	6.8	6.8	34.	41.	97.	8.1	6.5	7.1
7/31/2010	1.2	5.9	6.5	6.5	32.	38.	96.	7.	6.5	7.1
8/31/2010	1.1	6.4	5.8	5.8	35.	76.	98.	6.9	6.5	7.1
9/30/2010	1.1	6.1	7.9	7.9	32.	40.	97.	7.	6.5	7.3
10/31/2010	1.1	5.5	8.	8.	35.	63.	96.	7.	6.5	7.1
11/30/2010	1.1	2.9	4.9	4.9	20.	25.	98.	8.4	6.5	7.
12/31/2010	1.	4.3	6.5	6.5	27.	44.	99.	9.3	6.5	7.
1/31/2011	1.	7.8	14.	14.	61.	104.	95.	7.3	6.5	7.
2/28/2011	1.	4.2	6.3	6.3	33.0	48.	98.	8.5	6.5	7.1
3/31/2011	1.	5.8	7.2	7.2	76.	110.	98.	8.9	6.5	7.
4/30/2011	.9	8.2	12.	12.	94.	135.	97.	9.3	6.5	7.2
5/31/2011	1.	7.6	10.8	10.8	69.	83.	97.	8.8	6.5	7.2
6/30/2011	1.	3.6	5.6	5.6	28.	47.	98.	8.5	6.5	6.9
7/31/2011	1.	4.4	8.2	8.2	28.	55.	99.	8.	6.5	7.1
8/31/2011	1.	3.8	4.6	4.6	30.	41.	98.	8.1	6.5	7.1
9/30/2011	.9	5.1	6.3	6.3	38.	46.	97.	8.1	6.5	7.
10/31/2011	1.1	6.	8.4	8.4	62.	76.	98.	8.1	6.5	7.1
11/30/2011	1.1	7.3	8.3	8.3	65.	95.	96.	6.1	6.6	7.1
12/31/2011	1.1	5.2	6.9	6.9	53.	87.	98.	6.	6.6	7.3
1/31/2012	1.1	5.5	7.2	7.2	42.	57.	98.	6.1	6.5	7.1
2/29/2012	1.1	4.5	5.5	5.5	32.	36.	98.	6.9	6.5	7.
3/31/2012	1.	4.1	5.	5.	31.	38.	98.	8.8	6.6	7.
4/30/2012	1.	6.4	8.7	8.7	43.	54.	98.	8.8	6.5	7.
5/31/2012	1.	9.7	15.	15.	75.	119.	97.	8.	6.5	7.5
6/30/2012	1.	6.	8.	8.	51.	84.	99.	8.	6.6	7.7
7/31/2012	1.	72.	264.	264.	404.	1457.	80.	6.	6.5	7.2
8/31/2012	1.	5.7	8.8	8.8	30.	54.	98.	8.1	6.6	6.7
9/30/2012	.9	8.	14.6	14.6	40.	77.	98.	8.2	6.5	7.2
10/31/2012	.9	19.	30.	30.	97.	160.	96.	8.1	6.5	7.3

MONITORING PERIOD END DATE	Flow (MGD)	BOD, 05 day, 20 C (mg/l)			BOD, 05 day, 20 C (lb/d)		BOD, 5-day, percent removal	Dissolved Oxygen (mg/l)	pH (s.u.)	pH (s.u.)
	Annual Average	Average Monthly	Average Weekly	Daily Maximum	Monthly Average	Average Weekly	Monthly Minimum	Daily Minimum	Minimum	Maximum
11/30/2012	.8	8.	13.	13.	47.	70.	98.	9.6	6.5	7.3
12/31/2012	.8	5.	6.2	6.2	49.	113.	99.	10.	6.5	7.2
1/31/2013	.8	6.8	9.2	9.2	20.	65.	98.	10.	6.5	7.2
2/30/2013	.8	7.	9.	9.	77.	177.	98.	10.	6.5	7.1
3/31/2013	.8	6.8	8.	8.	84.	92.	97.	10.	6.5	7.2
4/30/2013	1.	10.4	14.2	14.2	84.	111.	98.	10.8	6.5	7.
5/31/2013	.84	6.2	9.	9.	69.	8.	98.	10.5	6.5	7.
6/30/2013	1.2	8.2	13.	13.	9.	13.	95.	10.2	6.5	7.2
7/31/2013	.9	4.4	7.1	7.1	22.	44.	99.	10.3	6.5	7.
8/31/2013	.68	6.1	7.9	7.9	46.	5.	99.	11.2	6.5	7.1
9/30/2013	.9	4.3	5.3	5.3	29.	43.	not reported	10.8	6.5	7.1
10/31/2013	1.	6.4	9.3	9.3	31.	43.	not reported	9.2	6.5	7.1
11/30/2014	1.	6.8	9.8	9.8	31.	43.	99.	9.8	6.5	7.
12/31/2014	.9	3.8	5.1	5.1	21.	29.	99.	10.	6.5	7.4
1/31/2014	.95	8.5	11.8	11.8	66.	87.	98.	9.9	6.5	7.2
2/28/2014	.9	7.7	9.1	9.1	53.	69.	98.	7.6	6.7	7.3
3/31/2014	.9	6.7	8.2	8.2	57.	66.	98.	8.9	6.9	7.4
4/30/2014	.9	12.3	25.5	25.5	131.	213.	97.	10.	6.7	7.4
5/31/2014	.9	8.8	15.	15.	63.	106.	98.	9.3	6.8	7.4
6/30/2014	.8	13.5	17.	17.	83.	106.	98.	8.8	6.7	7.3
7/31/2014	.8	8.5	13.	13.	50.	77.	99.	8.	6.5	7.3
8/31/2014	.8	4.2	5.6	5.6	24.	35.	99.	8.	6.7	7.3
9/30/2014	.8	6.9	13.	13.	35.	73.	99.	8.8	6.6	7.4
10/31/2014	.8	5.2	7.3	7.3	30.	38.	99.	8.7	6.5	7.4
11/30/2014	.8	6.6	10.2	10.2	58.	106.	99.	9.	6.7	7.3
12/31/2014	.9	3.8	6.	6.	49.	63.	98.	8.8	6.5	7.5
1/31/2015	.9	5.5	8.	8.	37.	59.	98.	9.8	6.5	7.5
2/28/2015	.9	11.8	23.	12.8	64.	117.	96.	9.7	6.8	7.3
3/31/2015	.9	6.8	10.	10.4	63.	106.	98.	10.2	6.6	7.4
4/30/2015	.9	8.	14.	10.2	88.	120.	97.	9.7	6.6	7.4
5/31/2015	.9	12.	16.	12.	74.	95.	97.	8.	6.7	7.6
6/30/2015	.9	14.5	36.	26.	108.	288.	96.	8.	6.6	7.4
7/31/2015	.9	7.8	11.	16.	54.	80.	98.	7.2	6.6	7.2
2003 Permit Limit	**1.8**	**30**	**45**	**Report**	**450**	**676**	**0.85**	**6**	**6.5**	**8.5**

Minimum	0.68	2.90	4.60	4.60	9.00	5.00	80.00	6.00	6.50	6.70
Maximum	1.20	72.00	264.00	264.00	404.00	1457.00	99.00	11.20	6.90	7.70
Average	1.0	8.0	14.2	13.9	59.6	104.4	97.2	8.7	6.5	7.2
StDEV	0.1	8.4	31.5	31.4	52	177	3	1	0	0
# Measurements	67	67	67	67	67	67	65	67	67	67
# Exceeds Limits	0	1	1	n/a	0	1	0	0	0	0

Attachment A.	Ipswich Wastewater Treatment Plant - Discharge Monitoring Report Data										
	Fecal Coliform, 14 cfu/100 mL	Fecal Coliform, 43/100 mL	Copper, Total (ug/l)	Nitrogen Total, mg/l	Ammonia, Total, mg/l	Ammonia, Total, lbs/day	TSS (mg/l)			TSS (lb/d)	
MONITORING PERIOD END DATE	Monthly Average	Daily Max	Monthly Average	Monthly Average	Monthly Average	Monthly Average	Average Monthly	Average Weekly	Daily Max	Monthly Average	Monthly Average
1/31/2010	5.9	14.		12.2			3.9	4.9	4.9	38.	67.
2/28/2010	1.4	27.		12.2			6.3	6.4	6.4	58.	88.
3/31/2010	2.5	42.	19.5	6.6			6.8	9.2	9.2	142.	181.
4/30/2010	1.1	200.		9.7	7.9	108.	9.8	17.	17.	117.	243.
5/31/2010	4.9	125.		8.1	2.	15.	3.7	4.6	4.6	30.	41.
6/30/2010	26.5			7.4	1.4	8.8	4.6	6.4	6.4	30.	40.
7/31/2010	34.	120.		15.1	1.2	6.5	4.3	5.2	5.2	23.	29.
8/31/2010	26.2	142.5		18.3	3.2	17.6	6.6	9.9	9.9	52.	122.
9/30/2010	32.5	124.	14.	17.6	2.4	12.2	9.7	12.6	12.6	50.	67.
10/31/2010	29.7	200.		15.6	2.2	12.8	9.9	16.	16.	64.	125.
11/30/2010	4.9	85.1		16.			3.8	4.2	4.2	29.	39.
12/31/2010	.7	32.	15.	13.2			5.7	9.2	9.2	36.	63.
1/31/2011	.9	20.		14.5			6.9	10.	10.	53.	80.
2/28/2011	.1	102.		14.5			5.3	5.8	5.8	42.	45.
3/31/2011	.2	3.4		4.8			4.7	5.8	5.8	63.	114.
4/30/2011	1.4	17.		12.6	8.7	96.	5.9	7.9	7.9	69.	98.
5/31/2011	.3	8.3	11.	10.1	1.4	12.4	8.7	11.	11.	79.	80.
6/30/2011	1.6	256.		6.	1.6	12.	3.5	4.5	4.5	27.	35.
7/31/2011	16.5	61.7		7.9	2.	12.2	4.2	5.5	5.5	27.	37.
8/31/2011	24.4	176.	2.	11.4	1.8	14.	4.6	6.5	6.5	36.	62.
9/30/2011	19.4	200.		11.4	1.7	12.8	4.4	5.7	5.7	33.	44.
10/31/2011	3.8	17.3		10.8	1.1	12.1	4.3	6.8	6.8	49.	99.
11/30/2011	2.3	42.	18.	12.9			5.9	6.6	6.6	56.	71.
12/31/2011	.	14.		10.3			3.9	5.	5.	39.	51.
1/31/2012	.	2.2		17.8			4.1	5.5	5.5	31.	40.
2/29/2012	.	3.1	14.	10.3			3.	4.4	4.4	22.	30.
3/31/2012	.2	40.		12.6			3.7	4.6	4.6	26.	30.
4/30/2012	.6	80.		6.7	2.2	15.	8.	11.4	11.4	52.	70.
5/31/2012	5.8	70.	9.	7.2	5.	38.	8.9	15.	15.	68.	105.
6/30/2012	16.	200.		9.7	5.	39.	6.	7.	7.	48.	64.
7/31/2012	.	2000.		14.	17.6	100.	16.	36.	36.	91.	201.
8/31/2012	.	270.		6.8	2.3	11.9	7.9	12.	12.	42.	73.
9/30/2012	169.	500.		13.4	2.2	11.	9.9	11.	11.	50.	58.
10/31/2012	117.	2450.	10.	16.	15.5	83.	30.	55.	55.	157.	294.

MONITORING PERIOD END DATE	Fecal Coliform, 14 cfu/100 mL	Fecal Coliform, 100/100 mL	Copper, Total (ug/l)	Nitrogen Total, mg/l	Nitrogen Ammonia, Total, mg/l	Ammonia, Total, lbs/day	TSS (mg/l)			TSS (lb/d)	
	Monthly Average	Daily Maximum	Monthly Average	Monthly Average	Monthly Average	Monthly Average,	Average Monthly	Average Weekly	Daily Maximu	Monthly Average	Average Weekly
11/30/2012	12.7	80.		16.1			8.7	15.	15.	52.	82.
12/31/2012	13.	34.		6.8			11.3	15.5	15.5	110.	229.
1/31/2013	2.	90.		14.8			13.5	25.6	25.6	96.	167.
2/30/2013	1.1	151.		17.			12.	34.	34.	192.	675.
3/31/2013	.7	5.7		7.			9.7	22.	22.	117.	248.
4/30/2013	4.5	42.		7.	4.8	40.	9.2	14.2	14.2	74.	111.
5/31/2013	18.4	50.		9.8	1.2	8.31	20.1	36.	36.	162.	252.
6/30/2013	37.3	80.		9.6	1.6	16.	8.5	13.	13.	74.	96.
7/31/2013	25.7	100.		22.3	1.3	7.4	12.6	23.	23.	70.	157.
8/31/2013	113.	384.		11.	1.2	6.8	6.1	7.9	7.9	35.	46.
9/30/2013	not reported	not reported		14.1	.9	4.7	8.2	12.2	12.2	55.	63.
10/31/2013	not reported	not reported		not reported	1.1	5.2	5.9	9.4	9.4	29.	44.
11/30/2014	18.	47.	6.	8.8			6.4	11.	11.	30.	52.
12/31/2014	6.7	38.		11.2			10.7	26.	26.	60.	150.
1/31/2014	5.3	218.		15.1			7.2	11.	11.	55.	73.
2/28/2014	3.9	24.	.6	19.58			7.5	10.8	10.8	53.	76.
3/31/2014	2.3	7.		14.3			7.5	11.2	11.2	53.	98.
4/30/2014	6.4	105.		5.	6.6	55.	13.4	19.2	19.2	169.	392.
5/31/2014	2.9	54.	5.	11.2	4.8	40.	6.6	14.8	14.8	48.	105.
6/30/2014	5.9	41.	5.	3.1	1.4	11.7	8.	11.	11.	49.	65.
7/31/2014	18.8	63.		4.38	1.4	12.	7.3	10.5	10.5	43.	55.
8/31/2014	22.	50.	9.	6.4	1.4	11.6	7.5	17.	17.	41.	79.
9/30/2014	26.1	50.		4.6	1.5	12.5	9.6	11.	11.	47.	50.
10/31/2014	18.	73.		7.5	1.	8.3	10.4	14.	14.	60.	77.
11/30/2014	16.3	150.	7.	5.5			9.6	10.7	10.7	55.	104.
12/31/2014	1.4	16.		4.			9.6	21.	21.	164.	522.
1/31/2015	2.4	30.		5.5			5.6	8.	8.	37.	48.
2/28/2015	2.	17.	8.	7.9			10.9	12.8	12.8	61.	86.
3/31/2015	1.	12.		9.6			8.9	10.4	10.4	85.	110.
4/30/2015	1.	12.		11.8	6.7	55.8	6.6	10.2	10.2	75.	125.
5/31/2015	1.	13.	8.	12.1	13.2	86.	10.3	12.	12.	65.	78.
6/30/2015	.3	5.		10.1	6.3	43.	12.7	26.	26.	84.	158.
7/31/2015	.3	1.		5.	2.2	14.	10.8	16.	16.	78.	147.
2003 Permit	14	43	20	Report	2.4	36	30	45	Report	450	676

Minimum	0.00	1.00	0.60	3.10	0.90	4.70	3.00	4.20	4.20	22.00	29.00
Maximum	169.00	2450.00	19.50	22.30	17.60	108.00	30.00	55.00	55.00	192.00	675.00
Average	14.5	151.4	9.5	10.8	3.8	27.9	8.2	13.0	13.0	64.3	115.0
StDev	28.8	389.0	5.3	4.3	4.0	29.3	4.2	9.0	9.0	38.5	110.9
# Measurements	65	64	17	66	39	39	67	67	67	67	67
# Exceeds Limits	21	35	0	n/a	13	12	0	1	n/a	0	0

Attachment A.	Ipswich Waste
MONITORING PERIOD END DATE	TSS, percent removal Monthly Minimum
1/31/2010	97.
2/28/2010	95.
3/31/2010	88.
4/30/2010	92.
5/31/2010	97.
6/30/2010	97.
7/31/2010	97.
8/31/2010	96.
9/30/2010	93.
10/31/2010	93.
11/30/2010	96.
12/31/2010	95.
1/31/2011	93.
2/28/2011	97.
3/31/2011	96.
4/30/2011	96.
5/31/2011	96.
6/30/2011	97.
7/31/2011	96.
8/31/2011	97.
9/30/2011	96.
10/31/2011	96.
11/30/2011	95.
12/31/2011	97.
1/31/2012	97.
2/29/2012	97.
3/31/2012	97.
4/30/2012	96.
5/31/2012	95.
6/30/2012	98.
7/31/2012	92.
8/31/2012	97.
9/30/2012	97.
10/31/2012	90.

MONITORING PERIOD END DATE	TSS, percent removal
	% removal
11/30/2012	97.
12/31/2012	97.
1/31/2013	94.
2/30/2013	95.
3/31/2013	95.
4/30/2013	96.
5/31/2013	94.
6/30/2013	95.
7/31/2013	95.
8/31/2013	97.
9/30/2013	not reported
10/31/2013	not reported
11/30/2014	96.
12/31/2014	94.
1/31/2014	96.
2/28/2014	97.
3/31/2014	98.
4/30/2014	92.
5/31/2014	96.
6/30/2014	98.
7/31/2014	99.
8/31/2014	98.
9/30/2014	99.
10/31/2014	97.
11/30/2014	97.
12/31/2014	95.
1/31/2015	97.
2/28/2015	95.
3/31/2015	96.
4/30/2015	96.
5/31/2015	97.
6/30/2015	98.
7/31/2015	99.
2003 Permit	85%

Minimum	88.00
Maximum	99.00
Average	95.8
StDev	2.0
# Measurements	65
# Exceeds Limits	0

Attachment B.	**Ipswich Wastewater Treatment Plant - Toxicity Test Data**										
MONITORING PERIOD END DATE	Aluminum, mg/l	Cadmium, mg/l	Chromium, mg/l	Copper, mg/l	Nickel, mg/l	Lead, mg/l	Zinc, mg/l	Ammonia as Nitrogen,	Chronic Arbacia punctula	Acute Menidia beryllina	Chronic Menidia beryllina
February 2010	non-detect	non-detect	non-detect	0.025	0.002	0.002	0.051	6.7	100	100	**100**
May 2010	0.14	<0.0005	<0.002	0.013	0.002	0.001	0.034	<0.1	100	100	6.25
August 2010	0.1	<0.0005	<0.002	0.11	0.003	0.002	0.03	<0.1	100	100	100
November 2010	0.17	<0.0005	<0.002	0.016	<0.002	0.0005	0.032	<0.1	100	100	100
February 2011	0.28	<0.0005	<0.002	0.01	<0.002	0.0007	0.055	0.2	100	100	100
May 2011	0.19	<0.0005	<0.002	0.014	0.002	0.0008	0.035	0.37	100	100	100
August 2011	0.29	<0.0005	<0.002	0.01	0.002	0.0007	0.024	1.2	100	100	100
November 2011	0.085	non-detect	non-detect	0.012	non-detect	0.0007	0.026	2.2	100	100	100
February 2012	0.1	non-detect	non-detect	0.011	non-detect	0.0006	0.032	0.13	100	100	100
May 2012	0.048	non-detect	non-detect	non-detect	non-detect	0.0007	0.029	2.6	100	100	100
August 2012	0.19	non-detect	non-detect	0.018	0.002	0.0006	0.041	1.1	100	100	100
November 2012	0.46	<0.0005	<0.002	0.014	<0.002	0.0009	0.018	7.4	100	100	100
February 2013	0.13	<0.0005	<0.002	0.009	<0.002	<0.0005	0.038	0.22	100	100	100
May 2013	0.64	<0.0005	<0.002	0.024	<0.002	0.0007	0.044	<0.1	100	100	100
August 2013	0.2	<0.0005	<0.002	0.01	<0.002	0.0007	0.079	0.11	100	100	100
November 2013	0.33	<0.0005	<0.002	0.006	<0.002	<0.0005	0.047	0.33	100	100	100
February 2014	0.25	<0.0005	<0.002	0.006	<0.002	0.001	0.043	14	100	100	100
May 2014	0.045	<0.0005	<0.002	0.002	<0.002	<0.0005	0.019	12	50	100	50
August 2014	0.1	<0.0005	<0.002	0.009	0.003	<0.0005	0.066	0.26	100	100	100
November 2014	0.24	<0.0005	<0.002	0.007	<0.002	0.0005	0.044	0.28	100	100	100
February 2015	0.4	<0.0005	<0.002	0.008	<0.002	0.0008	0.042	12	100	100	100
May 2015	1.1	<0.0005	<0.002	0.004	0.003	0.001	0.043	25	100	100	50
Minimum	non-detect	<0.0005	<0.002	0.002	<0.002	<0.0005	0.018	0.1			
Maximum	1.100	0.000	0.000	0.110	0.003	0.002	0.079	25			
Average	0.261	<0.005	<0.005	0.016	0.002	0.001	0.040	4.783			
# Measurements	21	21	21	21	21	21	21	21			

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
BOSTON, MA 02109-3912

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Vicki Halmen, Water and Wastewater Manager
Ipswich Utilities Department
272 High Street
P.O. Box 151
Ipswich, Massachusetts 01938

DEC 2 2 2014

Re: Public Notice
NPDES Application No. MA0100609

Dear Ms. Halmen:

This letter is in response to the Town's request to change the monitoring location of the fecal coliform sample required in their National Pollutant Discharge Elimination System (NDPES) Permit. According to the Town, the sample collected immediately after disinfection would be more representative of the effluent treated at the facility. After reviewing the data, EPA concurs with this monitoring change for fecal coliform.

On September 30, 2014, Lisa Thuot of the United States Environmental Protection Agency (EPA) Region 1 met with John Parkhurst, Supervisor of the Ipswich Wastewater Treatment Plant to conduct a NDPES Compliance Evaluation Inspection (CEI) at the facility. The purpose of the inspection was to assess compliance with the facility's NPDES permit (MA0100609). During the inspection, Mr. Parkhurst said the bacteria data from Outfall 001 does not accurately characterize the bacteria levels of the effluent discharged from the facility. This inaccuracy indicates the Town is in violation of their NPDES Permit when they are not.

Mr. Parkhurst explained the 5,000+ ft. pipe (which transports the facility's final effluent to Greenwood Creek) receives salt water/tidal inflow from the Creek during storms and full moon tides which skews the fecal coliform data. There is no tide gate at the end of the outfall pipe, and clusters of small eels have been observed swimming into the pipe. Tidal inflow and aquatic species swimming in the outfall pipe would contribute to increased bacteria levels at the site.

Fecal coliform data from the monthly discharge monitoring reports (DMRs) were compared with bacteria samples collected immediately after disinfection that indicates the data from Outfall 001 are consistently higher than those reported from the samples collected immediately after ultra-violet (UV) disinfection. The facility has an Ozonia Aquaray® 40 UV system with 5 banks and 3 to 4 UV banks are running at all times.

EPA agrees for purposes of monthly monitoring and reporting the fecal coliform sample should be collected immediately after disinfection.

Source: EPA Region 1

Please contact my staff, Betsy Davis at 617-918-1576, if you should have additional questions.

Sincerely,

David M. Webster, Chief
Water Permits Branch
Office of Ecosystem Protection

cc: John Parkhurst, Ipswich Wastewater Treatment Plant
Claire Golden, MassDEP,
Kevin Brander, MassDEP
Robert L. Boeri, MCZM
George Harding, USEPA

Scale 1 : 30,343

0 500 Meters

0 1,000 2,000 Feet

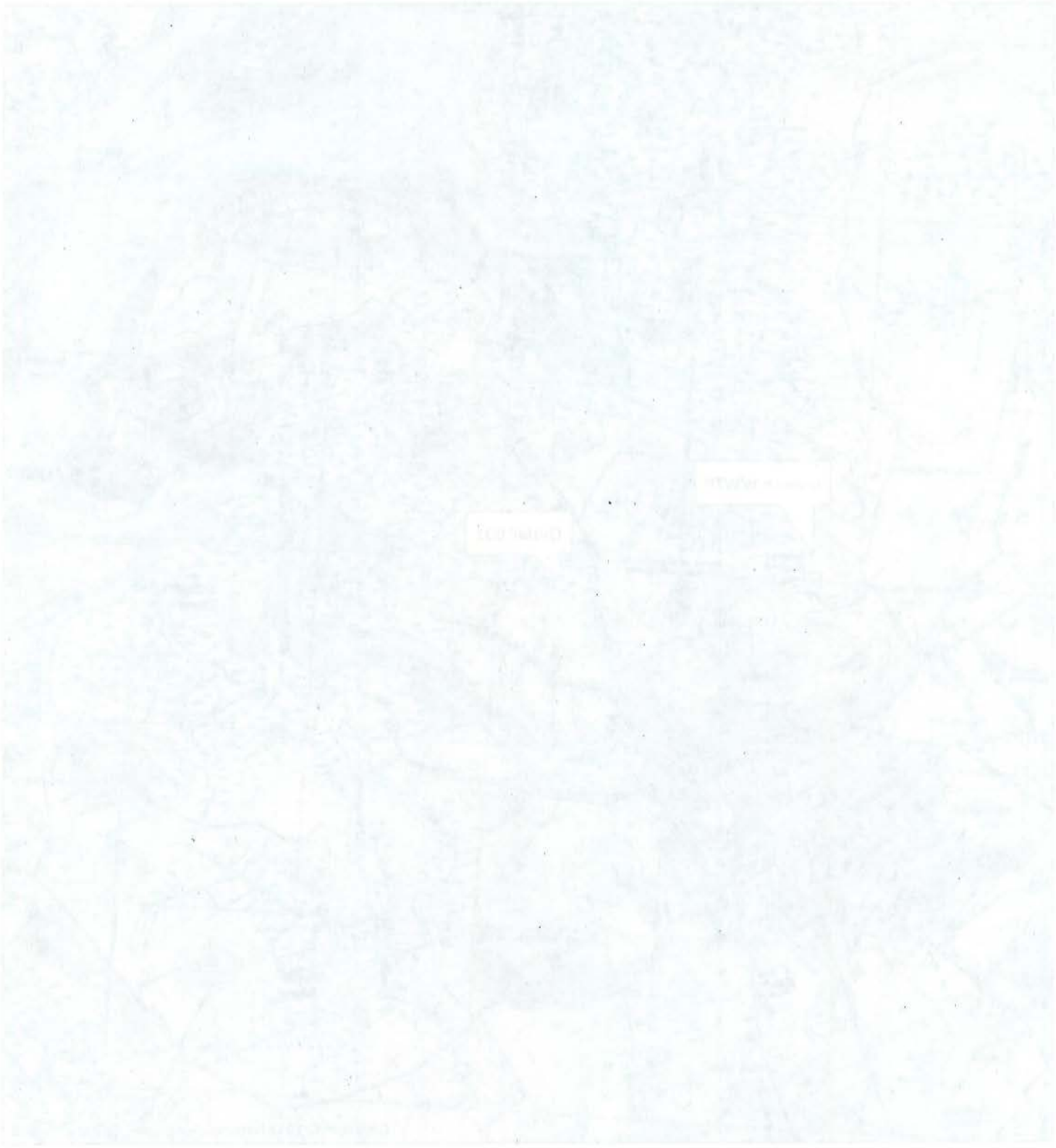
Regulated Facilities: EPA

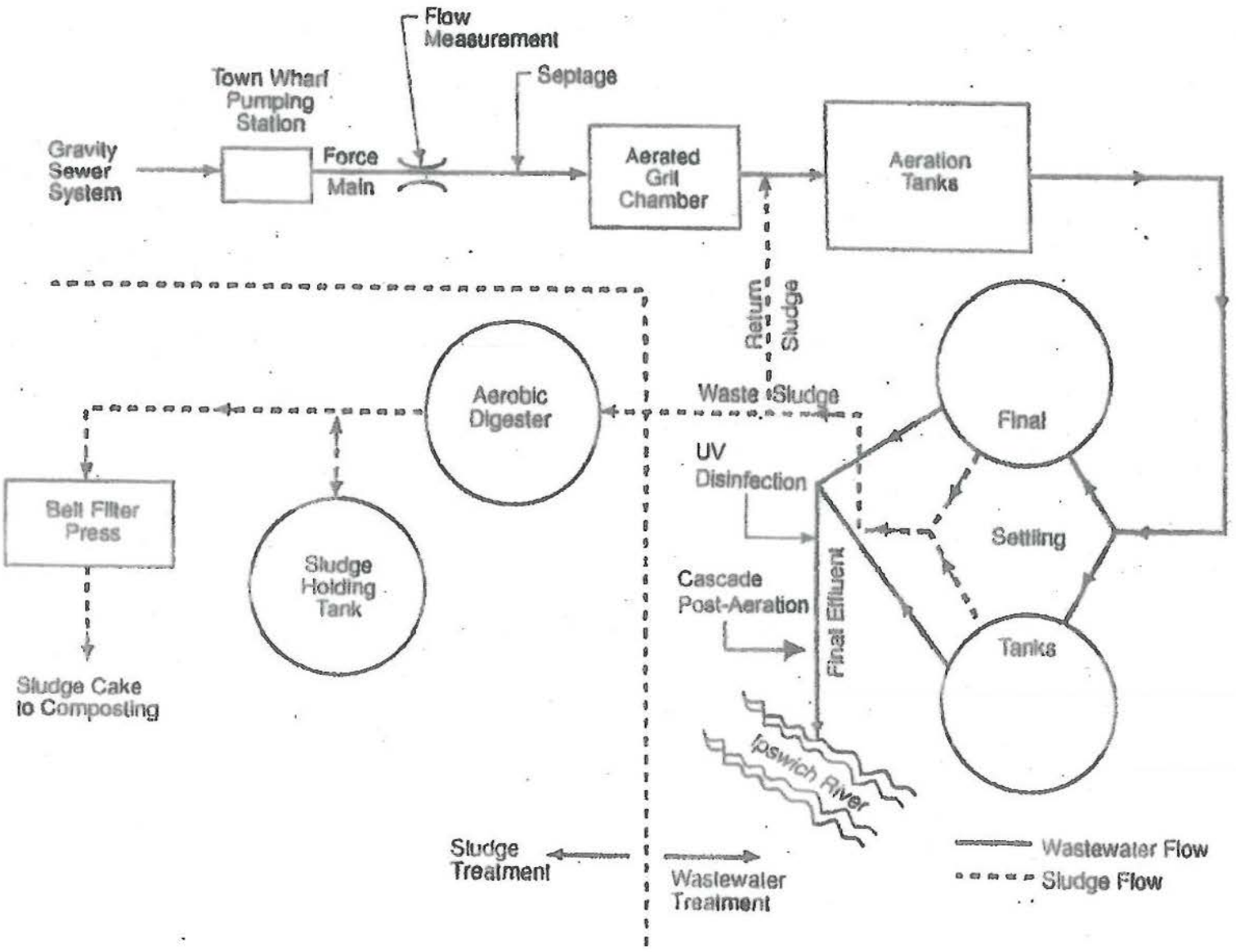
FIGURE 1
Ipswich WWTP
MA0100609

Ipswich, MA

EPA

9/15/2015





Source. NPDES Permit Application, Form 2A

Figure2. Flow Process Diagram

MarineFisheries
Commonwealth of Massachusetts

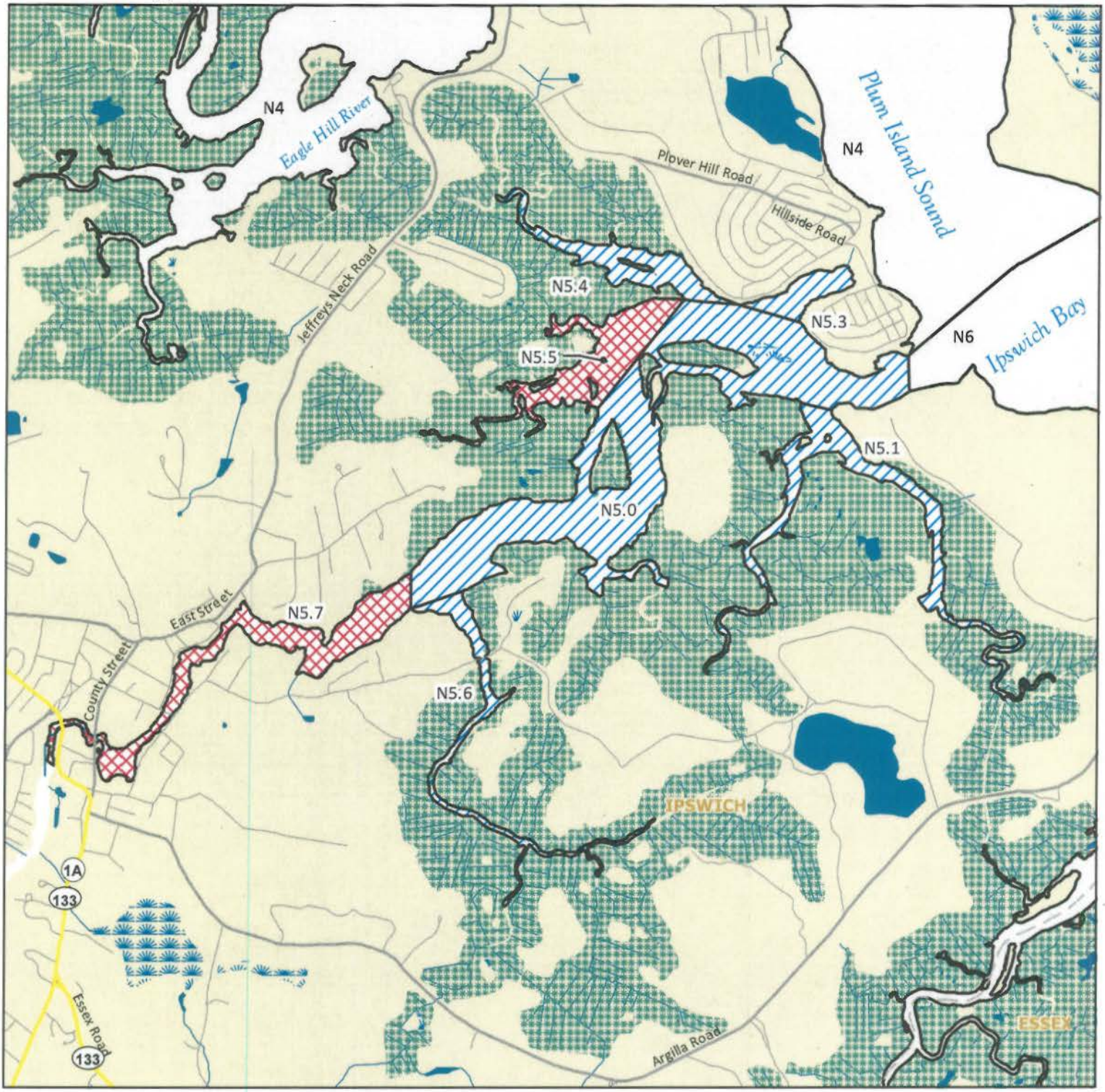
Massachusetts
Division of Marine Fisheries
SHELLFISH SANITATION AND MANAGEMENT

Growing Area Code: N5
Area Name: IPSWICH RIVER
Area Town(s): Ipswich

Shellfish Area Classification

- Approved
- Conditionally Approved
- Restricted
- Conditionally Restricted
- Prohibited

Produced: 6/28/2013



This map depicts the MarineFisheries' sanitary classification of shellfish growing waters in accordance with the National Shellfish Sanitation Program. It does not indicate the current status, either "open" or "closed" to harvesting due to shellfish management or public health reasons. Always confirm the status with local authorities and/or MarineFisheries. Information on this map may be out-dated or otherwise incorrect, and should not be relied upon for legal purposes.

Marsh/Wetland · Saltmarsh · Pond/Lake/Reservoir
Town Boundaries · Stream/Ditch/Canal

NORTH 0 0.5 1 miles

Figure 3. Shellfish Classification Area

RESPONSE TO COMMENTS
NPDES PERMIT NO. MA0100609
IPSWICH WASTEWATER TREATMENT PLANT
IPSWICH, MASSACHUSETTS

In accordance with the provisions of 40 CFR §124.17, this document presents EPA's responses to comments received on the draft NPDES Permit, MA0100609. The response to comments explains and supports the EPA determinations that form the basis of the final permit. From March 6, 2016 through April 7, 2016, the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") (together, the "Agencies") solicited public comments on a draft NPDES permit, MA0100609, developed pursuant to a permit application from the Town of Ipswich, for the reissuance of a National Pollutant Discharge Elimination System ("NPDES") permit to discharge treated sanitary wastewater from outfall number 001 to an unnamed tidal creek that is locally known as Greenwood Creek. Greenwood Creek drains to the Ipswich River Estuary in Ipswich, Massachusetts.

After a review of the comments received, EPA and MassDEP have made a final decision to issue this permit authorizing this discharge. The final permit is similar to the draft permit that was available for public comment.

Although EPA's decision-making process has benefitted from the comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit. EPA did, however, make minor changes in response to comments. The analyses underlying these changes are explained in the responses to individual comments that follow and the changes are reflected in the final permit.

A copy of the final permit and this response to comment 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 also be obtained by writing or calling Betsy Davis, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1576.

Changes from the draft permit to the final permit

Page 2 of 16: The monthly average and maximum daily fecal coliform limits of 14 colony forming units (cfu)/ml and 43 cfu/ml for the first year the permit is effective has been added to the table of effluent parameters in the final permit.

Page 2 of 16: The monitoring frequency for fecal coliform has been reduced from 5 times per week to 2 times per week.

(See Response to Comment # 3.)

Page 2 of 16: The monitoring frequency for *enterococci* has been reduced from 5 times per week to 3 times per week.

(See Response to Comment # 3.)

Page 2 of 16: The monitoring frequency for ammonia-nitrogen has been reduced from 3 times per week to 2 times per week.

(See Response to Comment # 4.)

Page 13 of 16: The state reporting requirements have been revised to include a requirement to submit copies of the Collection System Operation and Maintenance Plan reports to the Massachusetts Division of Marine Fisheries.

(See Response to Comment # 1.)

Page 13 of 16: The number 3 was mistakenly omitted in the numbered list in Part 1.E, Monitoring and Reporting, of the draft permit. This error has been has been corrected in the final permit.

Page 15 of 16: The nutrient optimization reporting requirement listed in Part 1.E.6 of the draft permit has been deleted in the final permit. EPA did not intend to include this reporting requirement in the draft permit and deleted it upon review of the final permit.

Page 15 of 16: Part 1.E.5. State Reporting, the following language has been added to the final permit,

> Copies of the six month and the twenty-four month Collection System Operation and Maintenance Plan reports and the annual summary reports referenced in Part 1.C.6 shall be submitted to:
>
> **Massachusetts Division of Marine Fisheries**
> **Shellfish Management Program**
> **30 Emerson Avenue**
> **Gloucester, MA 01930**
> **via telephone (978)282-0308 extension 160**
> **or via email at Shellfish.Newburyport@state.ma.us**

Page 7 of 16: In reviewing the appropriate permit provisions to protect uses in Class SA water, EPA became aware that the narrative draft permit provision in Part I.A.1.d for attaining water quality for oil and grease was appropriate for Class SB waters rather than for Class SA waters. Thus, to correct this oversight, Part I.A.1.d has been changed in the final permit from "The effluent shall not contain a visible oil sheen, foam, or floating solids at any time," to "The effluent shall be free from oil and grease and petrochemicals."

COMMENTS FROM DAVID E. PIERCE, DIRECTOR, MASSACHUSETTS DIVISION OF MARINE FISHERIES, BOSTON, MASSACHUSETTS.

COMMENT #1:

Prior to 2005, the permittee routinely provided copies of monthly discharge monitoring reports (DMRs) to *MarineFisheries*. Subsequently, this practice was discontinued. DMRs provide important information on plant performance for the discharge of fecal coliform bacteria and other effluent characteristics included in the draft permit. *MarineFisheries* requests to receive copies of

monthly DMRs when submitted to EPA and the Massachusetts Department of Environmental Protection (MassDEP).

RESPONSE TO COMMENT #1

The Town of Ipswich uses NetDMR to submit their monthly discharge monitoring reports (DMRs) to EPA and MassDEP. NetDMR is a web-based application that allow National Pollutant Discharge Elimination System (NPDES) permittees to electronically submit discharge monitoring reports (DMRs) to EPA's data system for discharge information, the Integrated Compliance Information System (ICIS)-NPDES database.

The NetDMR application, or "installation", resides at CDX and allows each State Agency, to have their own separate working environment, or "Instance" that can be customized with their own logos, permits, and contact information. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR 122.41 and 403.12.

The Town of Ipswich began submitting their monthly discharge monitoring reports (DMRs) electronically to NetDMR in November 2012. NetDMR is available to the Massachusetts Divison of Marine Fisheries for review of monthly DMRs, toxicity test reports and general information about the Town's POTW. To sign up for access, training and technical information to NetDMR please refer to www.epa.gov/netdmr.

COMMENT #2: Collection System Reports

Maintaining the approved sanitary classification and management plan for shellfish harvest requires information on existing and potential sources of contamination obtained through the shellfish sanitary survey program, which is required by the NSSP. This includes information on the existing and/or modified WWTP and sewage system infrastructure, and field reconnaissance to identify existing and potential areas where other discharges may be occurring. We are therefore requesting to receive the following reports and documents when submitted to EPA and the Massachusetts Department of Environmental Protection (*Mass*DEP): Operation and Maintenance of the Sewer System (Part 1.C.4), Collection System Operation and Maintenance Plan (Part 1.C.5), and Annual Reporting Requirement (Part 1.C.6).

RESPONSE TO COMMENT #2

The final permit was revised to require the permittee to send hard copies of the following operation and maintenance reports to the Massachusetts Division of Marine Fisheries;

- six-month operation and maintenance plan as required in Part 1.C.5(a) of the final permit
- twenty-four month operation and maintenance report as required in Part 1.C.5(b) of the final permit
- summary annual report of activities related to the implementation of the collection system operation and maintenance report as required in Part 1.C.6 of the final permit.

The address of the Division of Marine Fisheries is listed in Section 1.E.5. of the final permit.

As described in Part 1.C.4 of the draft permit, the collection system map should reflect the current condition of the Town's collection system. The collection system map should be available to

federal, state or local agencies to review upon request. The draft permit did not require the permittee to send hard copies of the collection system map to each Agency. This requirement has not been changed in the final permit. The Division of Marine Fisheries will be able to review the collection system map at any time upon request of the permittee.

COMMENTS FROM ROBIN E. CROSBIE, TOWN MANAGER, TOWN OF IPSWICH UTILITIES DEPARTMENT, IPSWICH, MASSACHUSETTS.

COMMENT #3: Part I.A.1 (Page 2 of 16): *enterococci monitoring*

The draft permit includes new monitoring requirements and effluent limitations for *enterococci*. We are concerned by the proposed measurement frequency of 5 measurements per week. We are concerned about this frequency for the following reasons:

We currently do not have the capacity to complete analysis of these parameters in house, and doing so would require up front capital expenditures. The high measurement frequency would result in high daily laboratory supply expenses to process the samples. Alternatively we could contract with a third party laboratory to process the samples, however, this may come at an even greater expense to the Town than sampling in house. Regardless of the *enterococci* processing option selected, the time and cost associated with the high sampling frequency will require us to shift our limited resources in our operating budget from other important preventive maintenance and operations activities to meet this daily sampling and analysis requirement.

This sampling requirement is inconsistent with many other similarly sized coastal facilities. The table below summarizes sampling frequencies for *enterococci* for other Massachusetts coastal treatment facilities. Note that these coastal facilities, both on the North Shore and South Shore, are of similar flow to Ipswich and have measurement frequencies of only 1 to 3 times per week.

Facility	**Flow**	**Frequency**
Salisbury	1.3 MGD	3/Week
Amesbury	2.4 MGD	1/Week
Rockport	0.8 MGD	2/Week
Manchester-By-The-Sea	1.2 MGD May - December	1/Week
Scituate	1.60 MGD	3/Week
Marshfield	2.10 MGD	3/Week
Wareham	1.56 MGD	2/month
Marion	0.58 MGD	2/Week
Dartmouth	4.20 MGD	1/Week

The NPDES regulations specify that permits must require monitoring "including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity."2 As the Fact Sheet notes (and the December 22, 2014 letter from EPA to the Town explains in more detail), EPA approved a change in sampling location for fecal coliform bacteria to better represent bacteria counts in the discharge immediately after disinfection. Since the change in sampling location, the samples have indicated that the fecal coliform limits in the existing permit have been consistently met. Thus, a weekly sample for enterococci will be adequately representative of bacteria counts in the discharge. The Fact Sheet does not state a basis for including a frequency requirement that is significantly greater than that imposed on similar coastal facilities.

Given these comments, we respectfully request that EPA revise the measurement frequency to 1/week for *enterococci* for the new final permit. If the above request for a measurement frequency reduction to 1/week is not granted, we respectfully request that the permit provide for a reduction in the *enterococci* measurement frequency requirement to 1/week if the wastewater treatment system demonstrates compliance with the monthly average limit of 35 *enterococci c*fu/100ml and a maximum daily limit of 104 *enterococci* cfu/100ml for three successive months.

RESPONSE TO COMMENT #3

The Agencies set monitoring frequency for a permit limit to characterize the effluent quality and/or detect events of non-compliance. The additional monitoring frequency for fecal coliform was based on a review of data submitted for the facility's fecal coliform data collected at outfall 001 from January 2010 through July 2015. During this time period, data reported for fecal coliform consistently exceeded the monthly average and maximum daily limits of 14 cfu/100 ml and 43 cfu/100 ml. The monthly average fecal coliform data ranged from non-detect to 169 cfu/ml and the maximum daily fecal coliform data ranged from 1 cfu/ml to 2450 cfu/ml. The monthly data is available for review as an attachment to the fact sheet that was on public notice with the draft permit

The Town identified the cause of the elevated fecal coliform counts as tidal water entering the discharge pipe and mixing with the effluent. As stated in the EPA's December 22, 2014 letter to the Town, the location for collecting bacteria samples was changed to a location immediately after ultraviolet (UV) disinfection to reflect bacteria levels in the treated effluent. There have been no exceedances of the fecal coliform limit reported by the Town since it began collecting samples of the final effluent immediately after UV disinfection.

The draft permit included effluent limits for enterococci based on revised Massachusetts Surface Water Quality Standards (MA SWQS) in 2007 to protect recreational uses in Class SA waters. The monitoring frequency for enterococci in the draft permit was set at 5 times per week because of the consistent pattern of non-compliance for the monthly average and maximum daily fecal coliform when the sample was collected from the discharge pipe during the current permit cycle. Although, the Agencies expect data reported for enterococci will be below the permit limits for samples collected immediately after UV disinfection, there is no baseline data for enterococci available to confirm this assumption. EPA finds that monitoring once per week would not be sufficient to establish a baseline data set for enterococcus and ensure that recreational uses are met. Therefore, the monitoring requirement for enterococci in the final permit has been reduced from 5 times to 3 times per week during this permit cycle to address the permittee's cost concerns while establishing a dataset for enterococci. The data collected during this permit cycle will be reviewed and used to set the monitoring frequency for bacteria limits in subsequent permits.

The fecal coliform sampling frequency has been reduced from 5 times to twice per week. This decision is based on the fecal coliform data collected immediately after disinfection and achieving consistent compliance with the effluent limits since December 2014 with the change in sampling location.

COMMENT #4:

Part I.A.1 (Page 2 and 3 of 16): nitrogen species monitoring

The draft permit includes new and more frequent monitoring requirements for five nitrogen species. We are concerned by the proposed increase in ammonia-nitrogen measurement frequency

of 3 measurements per week between April 1 and October 31, an increase from the previous permit frequency of 1 measurement per week. The draft permit includes a new report only discharge limit for ammonia-nitrogen between November 1 and March 31. As you are aware, this is in addition to the existing and new monitoring and reporting requirements for total nitrogen, total nitrate, total nitrite, and total Kjeldahl nitrogen.

We are concerned about the increased measurement frequency of ammonia-nitrogen for the following reasons:

We currently contract with a third party laboratory to process nitrogen species samples. The increased ammonia-nitrogen sampling frequency of 3 measurements per week between April 1 and October 1 and the 1 measurement per week sampling frequency between November 1 and March 31 will lead to increased time and cost associated with the sampling. This additional testing will require us to shift our limited resources in our operating budget from other important preventive maintenance and operations activities. This sampling frequency is inconsistent with many other similarly sized coastal facilities. The table below summarizes sampling frequencies for ammonia-nitrogen for other Massachusetts coastal treatment facilities. Note that these coastal facilities, which are similar in flow to Ipswich, have report-only measurement frequencies typically 1 time per month, and those facilities with seasonal limits (including Marion, which has a lower proposed limit than Ipswich in its draft permit) typically measure only 1 to 2 times per week.

Facility	Flow	In Season Frequency	In Season Limit	Out Season Frequency	Out Season Limit
Salisbury	1.30 MGD	2/Week	5.0 mg/l	1/Month	Report
Manchester-By-The-Sea	1.2 MGD	1/Quarter	Report	1/Quarter	Report
Scituate	1.60 MGD	1/Week	4.0 mg/l	1/Week	TN=4.0 mg/l
Marshfield	2.10 MGD	1/Month	Report	1/Month	Report
Wareham	1.56 MGD		Report	1/Month	Report
Marion	0.58 MGD	1/Week	2.6 mg/l (May) 1.74 mg/l (Jun-Oct)	1/Month	Report
Dartmouth	4.20 MGD	2/month	Report	2/Month	Report
Somerset	4.20 MGD	1/Month	Report	1/Month	Report

RESPONSE TO COMMENT #4

The ammonia-nitrogen monitoring frequency was increased from the current permit to the draft permit because of the frequent violations that occurred during the previous 5 years. The Town's effluent data shows that the monthly average effluent limit for ammonia nitrogen (2.4 mg/l) from April 2010 through April 2016 was exceeded in 13 of the 43 samples analyzed. The range of data was from 0.09 mg/l to 17.60 mg/l and the average of the entire data set was 3.5 mg/l although since July 2015 the ammonia data has been less than the permit limit. The additional data should be used by the permittee to help evaluate and address the frequent exceedances of the previous ammonia-nitrogen limit. The monitoring frequency for ammonia nitrogen in the final permit has been reduced from 3 times per week to twice per week.

COMMENT #5:

The draft permit includes an effluent sampling location immediately after ultraviolet disinfection at the treatment plant. The Town is appreciative that the draft permit is consistent with the U.S. EPA's December 22, 2014 letter to the Town stating the sampling location for bacteria should be collected immediately after disinfection. The bacteria samples previously collected at the Outfall 001 (MH 101) location were not an accurate representation of the bacteria levels in the treated effluent.

RESPONSE TO COMMENT #5

The Agencies approved a change in the fecal coliform sampling location from the outfall pipe to immediately after UV disinfection, in response to a request from the Town in December 2014. Saltwater entering the outfall pipe from the receiving water lead to elevated bacteria levels being reported on the Town's discharge monitoring reports. Bacteria samples collected immediately after ultraviolet disinfection are more representative of the final effluent discharged from the treatment plant.