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),

Wrentham Developmental Center

is authorized to discharge from the facility located at

North Street
Wrentham, Massachusetts 02093

to receiving water

an unnamed tributary flowing to the Stop River in the Charles River Watershed

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

This permit shall become effective on **

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

This permit supersedes the permit issued on January 18, 2005.

This permit consists of 15 pages in Part I which includes effluent limitations and monitoring requirements and, Attachment A, Chronic Freshwater Toxicity Test Procedures and Protocols, and 25 pages in NPDES Part II, Standard Conditions, which includes General Conditions and Definitions.

Signed this day of

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

****** This permit will become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will be made effective no sooner than 60 days after signature

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001, into a tributary that flows to the Stop River. Such discharge shall be limited and monitored by the permittee as specified below.

EFFLUENT CHARACTERISTIC		**DISCHARGE LIMITATION**			**MONITORING REQUIREMENT[3]**	
PARAMETERS	**UNITS**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE[3]**
Flow[2]	MGD	0.454	******	Report	Continuous	Recorder
Flow[2]	MGD	Report	******	Report	Continuous[2]	Recorder
BOD_5[4]	mg/l lbs/day	5.0 19.0	Report Report	7.0 27.0	2/Week 2/Week	24 Hour Composite[5] 24 Hour Composite[5]
TSS[4]	mg/l lbs/day	5.0 19.0	Report Report	7.0 27.0	2/Week 2/Week	24 Hour Composite[5] 24 Hour Composite[5]
pH Range[1]	SU	6.5 – 8.3 (See Permit Page 6 of 15, Paragraph I.A.1.b.)			1/Day	Grab
Dissolved Oxygen	mg/l	NOT LESS THAN 6.0			1/Day	Grab
Fecal Coliform[1,6] (April 1st - October 31st)	cfu/100 ml	200	******	400	2/Week	Grab
Escherichia Coli [1,6] (April 1st - October 31st)	cfu/100 ml	126	******	409	2/week	Grab

Part I. A. 1 (CONTINUED FROM PREVIOUS PAGE)

EFFLUENT CHARACTERISTIC		EFFLUENT LIMITS			MONITORING REQUIREMENT[3]	
PARAMETERS	**UNITS**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE[3]**
Ammonia Nitrogen, as N (April 1st - October 31st)	mg/l lbs/day	1.0 4.0	1.0 4.0	2.0 8.0	2/week 2/week	24 Hour Composite[5] 24 Hour Composite[5]
Ammonia Nitrogen, as N (November 1st – March 31st)	mg/l lbs/day	7.0 26.0	14.0 53.0	****** ******	1/week 1/week	24 Hour Composite[5] 24 Hour Composite[5]
Copper, Total[7]	ug/l	6.8	******	10	1/month	24 Hour Composite[5]
Cadmium, Total[8]	ug/l	0.2	******	******	1/month	24 Hour Composite[5]
Lead, Total[8]	ug/l	2.0	******	******	1/month	24 Hour Composite[5]
Zinc, Total	ug/l	******	******	89	1/month	24 Hour Composite[5]
Aluminum, Total	ug/l	87	******	******	1/month	24 Hour Composite[5]
Phosphorus, Total[9, 10] (April 1st - October 31st)	mg/l	0.1	******	******	3/week	24 Hour Composite[5] 24 Hour Composite[5]
Phosphorus, Total[9,] 10 (November 1st – March 31st)	mg/l	0.3	******	******	1/week	24 Hour Composite[5] 24 Hour Composite[5]
LC_{50}, [11,12,14]	%			≥100	4/year	24 Hour Composite[5]
Chronic NOEC [11,13,14]	%			≥100	4/year	24 Hour Composite[5]

Footnotes:

1. Required for State Certification.

2. Report annual average, monthly average and the maximum daily flow. 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. All required effluent samples shall be collected at the point of 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 the 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. Fecal coliform bacteria discharges shall not exceed a monthly geometric mean of 200 colony forming units (cfu) per 100 ml, nor shall they exceed 400 cfu per 100 ml as a daily maximum. *E. coli* discharges shall not exceed a monthly geometric mean of 126 colony forming units (cfu) per 100 ml, nor shall they exceed 409 cfu per 100 ml as a daily maximum. The average monthly limits for fecal coliform bacteria and *E. coli* are expressed as geometric means.

   The fecal coliform bacteria limits and monitoring requirements are in effect only for the duration of the first disinfection period following the effective date of the permit. For example, if the permit becomes effective on September 1, 2011, the fecal coliform limits and monitoring requirements will be in effect for September 1 through October 31.

   The *E. coli* monitoring requirements are in effect upon the effective date of the permit. The limits become effective on April 1 following the end of the period in which the fecal coliform limits are effective. For example, if the permit becomes effective on September 1, 2011, the permittee shall monitor *E.coli* beginning in September 2011 but, the limits will not become effective until April 1, 2012. The monitoring frequency for *E. coli* before the limits go into effect is 1/month. After the limits are in effect, the monitoring frequency is 2/week.

7. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum level (ML) for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). This method or other EPA-approved method with an equivalent or lower ML shall be used for effluent limitations less than 3 ug/l. Compliance/non-compliance will be determined based on the ML. Sampling results of 3ug/l or less shall be reported as zero on the Discharge Monitoring Report.

8. The minimum detection limit (ML) is defined as 0.5 ug/l. This value is the minimum level (ML) for lead and cadmium using the Inductively Coupled Plasma Mass Spectrometry analytical method. This method or another EPA-approved method with an equivalent or lower ML shall be used to analyze the sample.

9. Chemical dosing rates and the location of chemical dosing in the treatment process shall be reported for each day. The data shall be submitted with the monthly discharge monitoring reports.

10. A seasonal (November–March) total phosphorus limit of 0.5 mg/l for the first three years the Permit is in effect has been included in the permit. A seasonal (November–March) total phosphorus limit of 0.3 mg/l shall be in effect at the beginning of the third year of the permit and shall remain in effect until the permit expires.

    A seasonal (April-October) total phosphorus limit of 0.2 mg/l for the first three years the Permit is in effect has been included in the permit. A seasonal (April-October) total phosphorus limit of 0.1 mg/l shall be in effect at the beginning of the third year of the permit and shall remain in effect until the permit expires.

11. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. The permittee shall test the daphnid, *Ceriodaphnia dubia* and the fathead minnow *Pimephales promelas* only. Toxicity test samples shall be collected during the second week of the months of January, April, July and October. The test results shall be submitted by the last day of the month following the completion of the test. The results are due February 28th, May 31st, August 31st and November 30th. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A, Chronic Freshwater Toxicity Test Procedures and Protocols** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
January April July October	February 28th May 31st August 31st November 30th	*Ceriodaphnia dubia* (daphnid) *Pimephales promelas* (fathead minnow) See Attachment A	≥ 100% ≥ 100%	≥ 100% ≥ 100%

12. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

13. 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 at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The " 100 % or greater" limit is defined as a sample which is composed of 100% (or greater) effluent, the remainder being dilution water.

14. River water shall be used as diluent in toxicity tests unless the receiving water is toxic or unreliable. 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 (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**. 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**.

    If alternate dilution water is used for any toxicity tests during the time this permit is in effect, the chemical analysis required as part of the toxicity tests procedure and protocol must be reported for the receiving water as well as diluent used in the test.

Part I.A.1. (continued)

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

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time.

c. The discharge shall not cause objectionable discoloration of the receiving waters, odor or turbidity of the receiving water.

d. The effluent shall not contain a visible oil sheen, foam, or floating solids at any time.

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 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.

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 pollutants; and

b. Any substantial change in the volume or character of pollutants being introduced into the 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.

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

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall(s) listed in Part I A.1.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 instruction for its completion may be found on-line at http://www.mass.gov/dep/water/approvals/surffms.htm#sso.

C. SCHEDULE OF COMPLIANCE

The new *E.coli* limits in the permit allow a compliance schedule of one season from the effective date of the permit for the permittee to come into compliance. Therefore for the first disinfection season, the permittee will report only the sampling results for *E.coli* while working towards meeting the limits.

D. 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:

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.

2. Preventative Maintenance Program

   The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Infiltration/Inflow

   The permittee shall continue to eliminate excessive infiltration/inflow to the sewer system. If there have been any unauthorized discharges from the collection system during the previous calendar year which were caused by inadequate sewer system capacity, the permittee shall notify EPA and MassDEP of actions necessary to restore adequate capacity.

4. Alternate Power Source

   In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

E. BEST MANAGEMENT PRACTICES PLAN (BMP)

The permittee shall review, update and implement the Best Management Practices (BMP) plan to conform to the stated objectives and achieve the following requirements:

1. General Conditions

a. General Objectives

The objectives of the BMP plan are to minimize the potential for violations of terms of the permit; to protect designated uses of the surrounding surface water bodies, and to mitigate pollution from material storage areas, in-plant transfer, process and material handling areas, loading and unloading operations, plant site runoff, accidental spills, and industrial work areas. Both wet-weather and dry-weather conditions are to be considered in the BMP plan.

b. Implementation

Implementation of all aspects of the plan shall commence upon the effective date of the permit. The BMP plan shall be available to EPA and the MassDEP upon request.

c. General Requirements

The BMP plan shall:

(1) Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

(2) Establish specific objectives for the control of toxic and hazardous pollutants.

(a) Each facility component or system will be examined for its potential to cause a release of significant amounts of toxic and hazardous pollutants to surface waters due to equipment failure, improper operation, natural phenomena such as precipitation, etc.

(b) Where experience indicates a reasonable potential for equipment failure (e.g. a leakage), natural phenomena (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the plan shall include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged, from the facility as a result of each condition or circumstance.

(3) Establish specific best management practices to meet the objectives identified under Part I.E.1.c (2) of this section, addressing each component of system capable of causing a release of significant amounts of toxic or hazardous pollutants to surface waters. Examples are: specific practices to minimize and/or control the use of bypasses shall be identified, equipment used in industrial work areas such as furniture stripping, metal plating etc.

(4) Include any special conditions established in accordance with Part I.E.2 Specific Conditions

below.

(5) Be reviewed by plant engineering staff and the superintendent.

d. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled a The Guidance Manual for Developing Best Management Practices @ http://www.epa.gov/npdes/pubs/owm0274.pdf and shall consider the following baseline BMPs as a minimum:

(1) BMP Committee
(2) Report BMP Incidents
(3) Risk Identification and Assessment
(4) Employee Training
(5) Inspections and Records
(6) Preventive Maintenance
(7) Good Housekeeping
(8) Material Compatibility
(9) Security

e. Hazardous Water Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1978 (40 U.S.C. 6901 et seq), or amendments thereto. Management practices required under RCRA regulation shall be referenced in the BMP plan.

f. Documentation

The permittee shall maintain the BMP plan at the facility and shall make the plan available to the U.S. EPA and/or the MassDEP upon request.

g. BMP Plan Modification

The permittee shall notify in writing to the Regional Administrator and the Director of an amended BMP plan within 30 days of a change in the physical facility or a change in the operational procedures of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of hazardous or toxic pollutants.

h. Modification for Ineffectiveness

If the BMP proves to be ineffective in achieving the general objective of preventing the release of toxic or hazardous pollutants to surface waters and the specific objectives and requirements under Part I.E.2. herein, the permit and/or the BMP plan shall be subject to modification (40 CFR §122.64 and §122.63) to incorporate revised BMP requirements.

2. Specific Conditions

a. All surface runoff from process or work areas at the facility shall be treated or contained and diverted to the final treatment system. Process or work areas are defined for the permit as all those areas subject to spills and leaks of raw materials or products containing toxic or hazardous substances, i.e. yard areas, industrial work areas etc.

(1) The BMP plan shall specifically address the adequacy of containment of leaks and spills in the storage areas, loading areas, and industrial work areas. Adequate containment must exist at these locations so as to prevent untreated discharges from reaching any surface water.

(2) A schedule for routinely monitoring and cleaning industrial work areas shall be specified in the BMP plan. In addition to Part 1.E.1. General Conditions and Part I.E.2. Specific Conditions during such cleaning or maintenance periods.

(3) The disposal procedures for any rinse waters containing detergents, dispersants, emulsifiers, latex gloves etc. will be addressed in the BMP plan.

3. Implementation Schedule

a. All aspects of the BMP plan shall be implemented upon the effective date of the permit.

4. BMP Reporting Requirements

a. The permittee shall review and update the BMP plan by November 30 of each year. It shall be available for EPA and MassDEP to review upon request. The permittee shall also have on file, and available for EPA and MassDEP upon request, a report that the BMP plan has been reviewed and updated annually. The report shall include a list of any changes implemented during the previous year. This report shall address the adequacy of the BMP plan in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to surface waters and the specific objectives and requirements under Parts I.E.(1)(c), and (d). In addition it shall also include:

(1) A list of fuels, additives and chemicals stored in bulk at the facility.

(2) A list of any changes in activities at the facility such as but not limited to changes in a, storm water collection system, treatment and discharge system, and significant physical facility changes.

F. SLUDGE CONDITIONS

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

2. If both state and federal requirements apply to the permittee’s sludge use and/or disposal

practices, the permittee shall comply with the more stringent of the applicable requirements.

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

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

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

   c. Sewage sludge incineration in a sludge only incinerator

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

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

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

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

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 than1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

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

1 This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

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:

    - Name and address of contractor(s) responsible for sludge preparation, use or disposal
    - 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.

G. PERMIT REOPENER

The permit may be re-opened to modify the copper limits if site-specific copper criteria are approved for the receiving water.

H. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting all DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

    a. Submittal of Reports Using NetDMR

    NetDMR is accessed from: http://www.epa.gov/netdmr. Within one year of the effective date of the permit, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the MassDEP Monthly Operations and Maintenance Report, as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs (including Monthly Operation and Maintenance Reports) to MassDEP until further notice from MassDEP.

b. Submittal of NetDMR Opt Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under the Permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

And

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

c. Submittal of Reports in Hard Copy Form

Hard copy DMR submittals shall be completed and postmarked no later than the 15th day of the month following the completed reporting period. MassDEP Monthly Operation and Maintenance Reports shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports required herein, shall be submitted to the appropriate State addresses and to the EPA address listed below:

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

The State Agency addresses are:

Massachusetts Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Signed and dated Discharge Monitoring Report Forms and toxicity reports required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd floor
Worcester, MA 01887

H. 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 CFR 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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
5 POST OFFICE SQUARE- SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

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

NPDES PERMIT NO.: MA0102113

PUBLIC NOTICE DATE: August 3, 2011 – September 1, 2011

NAME AND ADDRESS OF APPLICANT:

Wrentham Developmental Center (WDC)
P.O. Box 144
Emerald Street
Wrentham, MA 02093

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Wrentham Developmental Center
North Street
Wrentham, Massachusetts 02093

RECEIVING WATER: **unnamed tributary to the Stop River (Segment 72-09)**

CLASSIFICATION: **Class B**

I. Proposed Action, Type of Facility, and Discharge Location

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) reissue its National Pollutant Discharge Elimination System (NPDES) permit to discharge from Outfall 001 into an unnamed tributary that flows to the Stop River.

The existing NPDES permit was issued on January 18, 2005 and expired on March 18, 2010. The applicant filed a complete application for permit reissuance as required by 40 Code of Federal Regulations (CFR) Part 122.6, so the existing permit has been administratively extended and will remain in effect until a renewed permit has been issued. The current permit and the Draft Permit authorize a discharge only from Outfall 001 at the facility. The Draft Permit will be written to reflect the current operations and conditions at the facility.

II. Description of Discharge

A quantitative description of the treatment plant discharge in terms of significant effluent parameters based on recent monitoring data is shown in Table 1. WDC Discharge Monitoring Report (DMR) Data of this fact sheet. Figure 1 of the fact sheet is a map that shows the geographic location of the treatment plant and outfall, and Figure 2 is a flow process diagram of the facility.

III. Limitations and Conditions

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

IV. Permit Basis and Explanation of Effluent Limitation

The wastewater treatment plant for the WDC is a 0.454 million gallons per day (MGD) advanced secondary treatment facility that serves approximately 1,333 people.

Sewage enters the plant through a gravity sewer and flows through a manual bar rack then a double channel for grit removal. A muffin monster grinder is at the end of the channel. (A second manual bar rack is installed in a channel parallel to the grinder and is used as a back-up system). Wastewater is then measured by a weir prior to entering one of two aeration tanks for activated sludge treatment. Wastewater flows into a new 30 foot circular clarifier where the activated sludge settles out and is removed. Treated effluent flows to an automatic backwashing sand filter, and settled sludge is returned to the head of the aeration cycle and/or wasted to the sludge holding tank. The effluent flows through an ultraviolet disinfection unit before it is discharged to the receiving water.

Extensive upgrades in 2010 have been completed at the treatment plant which include a new 30 foot circular clarifier, new turbines for aeration, diffusers in the aeration tank, the fire alarm system and crestoration of the backwash sand filters.

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 is used to implement 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 both 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 Clean Water Act (see 40 CFR 125 Subpart A). For publicly owned treatment works, technology-based requirements are effluent limitations based on secondary treatment as defined in 40 CFR Part 133.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards 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. Massachusetts Surface

Water Quality Standards at 314 CMR 4.03(1)(a), 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.

EPA regulation at 40 CFR 122.44(d)(1)(i), require that the permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, has reasonable potential to cause, or contributes to an excursion above any water quality criterion. An excursion occurs if the projected or actual in-stream concentrations exceed 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.

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirement of the CWA. 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 the relaxation of 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 a relaxation is allowed under the provisions of the law and regulations.

Waterbody Classification and Usage

The WDC treatment plant discharges to an unnamed tributary which flows into Segment MA72-09 of the Stop River, as described in the Charles River Watershed 2002-2006 Water Quality Assessment Report published by MassDEP in April 2008. The effluent is discharged approximately 1.33 miles before it reaches the Stop River.

The receiving water is designated as a Class B water, pursuant to 314 CMR 4.06(4). Other Waters, which states that "unless otherwise designated in 314 CMR 4.06 or unless otherwise listed in the tables to 314 CMR 4.00, other waters are Class B, and presumed High Quality Waters for inland waters." The tributary that receives the effluent flows to the Stop River which is also listed as a Class B water in the Massachusetts Water Quality Standards.

Class B waters are designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment ("Treated Water Supply"). Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.

The objective of the Federal 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 U.S. Environmental Protection Agency (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 a Total Maximum Daily Load.

The MassDEP combines the requirements in Sections 305(b) and 303(d) of the CWA into one report and it is available on the MassDEP website at *http://www.mass.gov/dep/water/resources/08lists2.pdf* as the "*Final Massachusetts Year 2008 Integrated Lists of Water"*.

The Stop River is listed in Category 5 of the State's 2008 Integrated List of Waters. This segment of the river is not in attainment of State Water Quality Standards and requires a TMDL for the following pollutants: dissolved oxygen, ambient bioassays for chronic aquatic toxicity and total phosphorus.

Design Flow of the Treatment Plant

The annual average flow limit in the Draft Permit is the same as in the existing permit. The limit is 0.454 MGD (0.701 cfs), and is based on the design flow of the treatment plant. The annual average effluent flow rate in 2007, 2008 and 2009 was 0.08 MGD.

River Flow and Available Dilution

Water quality-based effluent limits in the Draft Permit are determined using water quality criteria and the available dilution during the lowest mean stream flow for seven consecutive days with ten year recurrence interval commonly known as the 7Q10 flow. For rivers and streams, Title 314 CMR 4.03(3)(a) requires that the 7Q10 low flow be used to represent the critical hydrologic conditions at which the in-stream water quality criteria must be met. The 7Q10 flow at the discharge and the plant's design flow are used to calculate a dilution factor. The dilution factor is used in calculating water quality-based effluent limits in the Draft Permit.

There is no stream gaging data from the United States Geologic Service (USGS) available for the receiving water or the Stop River. The tributary that receives the discharge has minimal stream flow during low flow conditions. A 7Q10 of 0.0 cfs and a dilution factor of 1.0 (no available dilution), the same as existing permit, will be used in the Draft Permit.

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

The BOD_5 average monthly and maximum daily concentration and mass limits in the Draft Permit are the same as in the existing permit. The average monthly BOD_5 limits are 5.0 mg/l and 19 lbs/day and, the maximum daily BOD_5 limits are 7.0 mg/l and 27 lbs/day.

The TSS average monthly and maximum daily concentration and mass limits in the Draft Permit are the same in the existing permit. The average monthly TSS limits are 5.0 mg/l and 19 lbs/day and, the maximum daily TSS limits are 7.0 mg/l and 27 lbs/day.

The BOD_5 and TSS concentration (mg/l) limits in the Draft Permit are based on water quality requirements that are more stringent than the secondary treatment requirements found at 40 CFR Part 133. The limits are based on a wasteload allocation calculated by the MassDEP. See 1976 Water Quality Management Plan for the Charles River published by MassDEP.

There have been several BOD_5 and TSS exceedences since the permit was last issued Table 1 of the fact sheet provides recent discharge monitoring report (DMR) data for these parameters.

The provision of 40 CFR 133.102(3) requires a 30 day average percent removal of BOD_5 and TSS not be less than 85%. These limits are in the existing permit and are included in the Draft Permit.

pH

The Draft Permit has pH limitations that are at least as stringent as pH limitations set forth at 40 CFR 133.102(c) and the Massachusetts Water Quality Standards for Class B waters. The state standards require Class B waters maintain a range of 6.5 through 8.3 standard units with not more than 0.5 standard units outside of the receiving water background range. The water quality standards also require there be no change from background conditions that would impair any use assigned to this class.

There was one pH exceedance reported between January 2007 and April 2010. In January 2008, the maximum pH was reported as 8.4 standard units.

Dissolved Oxygen (DO)

The dissolved oxygen limit in the Draft Permit will remain equal to or greater than 6.0 mg/l in accordance with the existing permit and the wasteload allocation. The treatment facility has reported several DO exceedances since the permit was last issued. Table 1of the fact sheet provides recent DO data.

Fecal coliform bacteria and Escherichia coli (E.coli)

On December 29, 2006, the State revised the bacteria criteria in its water quality standards for Class B waters, changing the criteria from fecal coliform bacteria to Escherichia coli (E. coli). EPA approved this revision on September 19, 2007 and, this change is reflected in the Draft Permit.

The fecal coliform limits, a monthly average geometric mean of 200 colony forming units per (cfu) 100 ml and a daily maximum geometric mean of 400 cfu per 100 ml will be in effect for the duration of the first disinfection season (April-October) following the effective date of the permit. These limits are the same in the existing permit however; the seasonal reporting period has changed and will end October 31 each year. Recreational activity in the receiving water after the end of October is minimal and the need to extend the bacteria sampling period until the end of November is unnecessary. The fecal coliform monitoring requirements and effluent limits will end after the first disinfection period and the E.coli limits will become effective.

The permit provides time for the facility to make adjustments to the operations if needed, for sampling the new bacteria requirement. As described above, the fecal coliform limits will be in effect only the first disinfection season of the permit and will be replaced by E.coli limits when the second disinfection season begins. However, monitoring and reporting of E. coli is required to begin upon the effective date of the permit.

The E. coli limitations proposed in the Draft Permit are a monthly average geometric mean of 126 colony forming units per 100 ml (cfu/ml) and a maximum daily value of 409 cfu/100 ml (this is the 90% distribution of the geometric mean of 126 cfu/ml). These limits remain seasonal, and the monitoring season is April 1 - October 31. The monitoring frequency is continued at twice (2) per week.

Metals

Relatively low concentrations of metals in receiving waters can be toxic to resident aquatic life species. 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). Effluent metals data submitted with toxicity tests results and discharge monitoring reports were reviewed to determine if metals in the discharge have the potential to exceed aquatic life criteria in the Stop River.

The EPA-recommended approach to set and measure compliance with water quality standards is to use dissolved metals, because dissolved metals more closely approximates the bioavailable fraction of metal in the water column than does total recoverable metal. Most toxicity to aquatic organisms is by adsorption or uptake across the gills which would require the metal to be in dissolved form.

When toxicity tests were originally conducted to develop EPA's Section 304(a) metals criteria, the concentrations were expressed as total metals. Subsequent testing determined the percent of the total metals that are dissolved in the water column. However, the regulations in 40 CFR 122.45(c) require that the permit limits be based on total recoverable metals. The chemical differences between the effluent and the receiving water may cause changes in the partitioning between dissolved and particulate forms of metals. As the effluent mixes with the receiving water, adsorbed metals from the discharge may dissolve in the water column. Because of this phenomenon, measuring dissolved metals would underestimate the impact on the receiving water, so an additional calculation, using a site specific translator is used to determine total metal criteria.

If site-specific studies for partitioning have not been conducted, EPA's Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA-823-B-96-007), recommends using a translator equivalent to the conversion factor found in EPA's water quality criteria. There is no site specific translator available, so in subsequent calculations, conversion from dissolved metals to total recoverable metals have been done using the conversion factor for the particular metal found in Appendix A of the National Recommended Water Quality Criteria: 2002.

Hardness Dependent Metals

EPA's Office of Water-Office of Science and Water Technology stated in a letter dated July 7, 2000 that: "The hardness of water containing the discharged toxic metal should be used for determining the applicable criterion. Thus the downstream hardness should be used. The theoretical hardness of the unnamed tributary downstream of the treatment plant under 7Q10 receiving water was calculated using the average of the effluent hardness data as shown in Table 2, Estimated Hardness of the Stop River Downstream of the WDC WWTP, below. The hardness data reported as an equivalent concentration of calcium carbonate are data from the chemical analysis sections of the whole effluent toxicity tests conducted during the warm weather months.

Table 2. Estimated Hardness of the Stop River Downstream of the WDC WWTP

WET Test Date	Effluent Hardness, mg/l	WET Test Date	Effluent Hardness, mg/l
07/10/06	67	09/23/09	73
10/09/06	70	09/25/09	88
06/04/07	72	06/07/10	65
07/10/07	79	06/09/10	59
09/21/09	70	06/11/10	60
Average	**70**		

Calculation of hardness in the receiving water:

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

Where:

Q_s = 7Q10 river flow upstream of plant = 0
Q_d = Discharge flow from plant = 0.454 MGD
Q_r = Combined river flow (7Q10 + plant flow) = 0.454 MGD
C_s = Upstream hardness concentration = 0
C_d = Effluent hardness = 70 mg/l
C_r = Receiving water hardness downstream

Calculation:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Qr} = \frac{(0.454 \text{ MGD})(70 \text{ mg/l})}{(0.454 \text{ MGD})} = 70 \text{ mg/l}$$

A hardness value of 70 mg/l was therefore used to calculate water quality criteria for hardness-dependent metals (see equations below):

Chronic criteria (dissolved) = $\exp\{m_c [\ln (\text{hardness})] + b_c\}$ (CF)

Where :
m_C = pollutant-specific coefficient
b_c = pollutant-specific coefficient
h = hardness of the receiving water = 70 mg/l as $CaCO_3$
ln = natural logarithm

CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal

Acute criteria (dissolved) = $\exp\{m_a [\ln (\text{hardness})] + b_a\}$ (CF)

Where:
m_A = pollutant-specific coefficient
b_A = pollutant-specific coefficient
h = hardness of the receiving water = 70 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved

Table 3. Metal Parameters for Calculating Freshwater Dissolved Metals Criteria That are Hardness Dependent

	m_A	b_A	m_C	b_C
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Cadmium	1.0166	-3.924	0.7409	-4.719
Zinc	0.8473	0.884	0.8473	0.884

Lead

The acute and chronic criteria were calculated to determine the need for limits in the Draft Permit using a hardness of 70. The acute and chronic criteria values for are 51.85 ug/l and 2.02 ug/l as shown below.

CMC = Acute lead criteria = exp{1.273[ln (70)] - 1.460} = 51.85 ug/l (total recoverable)
CCC = Chronic lead criteria = exp{1.273 [ln (70)] - 4.705} = 2.02 ug/l (total recoverable)

The lead data provided in the facility's toxicity tests show the data range from non-detect to 3.10 ug/l. See **Attachment C, WDC Toxicity Tests Metals Data** of this fact sheet. Based on the data, there is reasonable potential for the concentration of lead to exceed the chronic criteria and a monthly average limit of 2 ug/l has been included in the Draft Permit.

EPA's Chronic Freshwater Toxicity Test Procedure and Protocol specifies that an approved test method capable of achieving a minimum detection level of 0.0005 mg/l (0.5 ug/l) be used for the lead analysis. The test method used in WDC's toxicity test showed a reporting level was 0.005 mg/l (5.0 ug/l) or 0.001 mg/l (1.0 ug/l) which is less stringent than the minimum detection level required. The monitoring requirement for lead in the Draft Permit requires that the test method used in the lead analysis be capable of achieving the required minimum detection level.

Nickel

The acute and chronic nickel criteria were calculated to determine the need for limits in the Draft Permit using a hardness of 70. The acute and chronic criteria values for nickel are 346.96 ug/l and 38.57 ug/l as shown below.

CMC = Acute nickel criteria (dissolved) = exp{0.8460 [ln(70)] + 2.255} = 346.96 ug/l
CCC = Chronic nickel criteria (dissolved) = exp{0.8460 [ln(70)] + 0.0584} = 38.57 ug/l (total recoverable)

The nickel data provided in the facility's recent toxicity tests show a range in the concentration of nickel from non-detect to 6.00 ug/l. See **Attachment C, WDC Toxicity Tests Metals Data** of this fact sheet. Based on this data, there is not a reasonable potential for the concentration of nickel to cause or contribute to an exceedance of water quality criteria and a limit has not been added in the Draft Permit.

Cadmium

The acute and chronic criteria for cadmium were calculated to determine the need for limits in the Draft Permit using a hardness of 70. The acute and chronic criteria values for cadmium are 1.48 ug/l and 0.207 ug/l as shown below.

CMC = Acute cadmium criteria = exp{1.0166 [ln (70) - 3.924} = 1.48 ug/l (total recoverable)
CCC = Chronic cadmium criteria = exp{0.7409 [ln (70)] - 4.7190} = 0.201 ug/l (total recoverable)

The cadmium data provided in the facility's recent toxicity tests show all non-detects for the concentration of cadmium in the effluent. See in **Attachment C, WDC Toxicity Tests Metals Data** of this fact sheet. However, EPA's Chronic Toxicity Tests Procedure and Protocol specifies that a reporting level of 0.0005 mg/l (0.5 ug/l) be used in the cadmium analysis. The reporting level in the facility's toxicity tests was 0.001 mg/l (1.0 ug/l) which, is less stringent than the reporting level required. The Draft Permit includes an average monthly limit of 0.2 ug/l and requires that the test method used in the lab analysis be capable of achieving the required minimum detection level.

Zinc

The acute and chronic criteria for zinc were calculated to determine the need for limits in the Draft Permit using a hardness of 70. The acute and chronic criteria values for lead are 88.56 ug/l as shown below.

CMC = Acute zinc criteria (total recoverable) = exp{0.8473 [ln (70)] + 0.884} = 88.56 ug/l
CCC = Chronic zinc criteria (total recoverable) = exp{0.8473 [ln (70)] + 0.8840) = 88.56 ug/l

Next the potential for discharges of zinc from the WDC WWTP to cause or contribute to an excursion above water quality criteria were determined by statistically projecting the maximum and average concentrations of the pollutant in the receiving water downstream from the discharge. Using zinc data reported in the facility's 2006, 2007 and 2010 WET tests, EPA projected the maximum zinc concentration to be 228 ug/l by calculating the 99th percentile measurement of the existing effluent data set, and the average zinc concentration to be 138 ug/l by calculating the 95th percentile measurement of the existing effluent data set.

The existing effluent data set and the analyses are shown in **Attachment D, Zinc Performance Based Limits** of the fact sheet.

The maximum and average projected pollutant levels were then inserted into a mass balance equation to determine if the concentration of zinc could cause or contribute to an excursion from water quality standards under critical conditions. There is a reasonable potential for zinc to exceed water quality criteria and a maximum monthly limit of 89 ug/l has been added to the Draft Permit.

Reasonable Potential Analysis for Zinc

Where

C_r	=Concentration downstream of the outfall	= x ug/l
Q_d	=Discharge flow	= 0.454 MGD
C_d	=Average discharge concentration	= 138 ug/l, 228 ug/l
Q_s	=Upstream flow	= 0.00 MGD
C_s	=Upstream concentration	= 0.00 µg/l
Q_r	=Stream flow below outfall	= 0.454 MGD(effluent + upstream)

Therefore,

$$Cr = \frac{(0.45\ MGD \times 88.56\ \mu g/l)}{0.45\ MGD}$$

= 138 ug/l > 88.56 µg/l (chronic criteria)
= 228 ug/l > 88.56 ug/l (acute criteria)

Therefore, there is a reasonable potential for the discharge to cause or contribute to an excursion from the chronic and acute water quality criteria for zinc.

Aluminum

Aluminum is monitored as part of the chemical analysis in the facility's quarterly toxicity tests requirement aaand a review of the data in the fcaility's whole effluent toxicity tests show effluent values from non-detect to 150 ug/l as shown in **Attachment C, WDC Toxicity Tests Metals Data** of this fact sheet. Based on the data, there is a reasonable potential to cause or contribute to an exceedance in the chronic in-stream criteria. Therefore, a limit is not required for this permit reissuance.

CMC = Acute aluminum criteria = 750 ug/l
Maximum daily effluent limitation: (CMC)(dilution factor) = (750 ug/l)(1.0) = 750 ug/l

CCC = Chronic aluminum criteria = 87 ug/l
Average monthly effluent limitation: (CCC)(dilution factor) = (87 ug/l)(1.0) = 87 ug/l

Copper

The current permit includes monthly average and daily maximum copper limits of 4 ug/l and 5 ug/l. These limits were calculated using the EPA National Recommended Water Quality Criteria: 2002 for copper using a hardness of 35 mg/l as calcium carbonate, $CaCO_3$, and a dilution factor of 1.0.

In December 2006, the Massachusetts Surface Water Quality Standards were revised to include site-specific copper criteria that were developed where national criteria are invalid due to site-specific physical, chemical, or biological considerations, and do not exceed the safe exposure levels determined

by toxicity testing [314 CMR 4.05(5)(e) Table 28]. MassDEP has adopted an acute dissolved copper criterion of 25.7 ug/l and a chronic dissolved criterion of 18.1 ug/l for the Stop River from river mile 0.0 to 4 however, the new site specific copper criteria do not apply to the unnamed tributary that receives the WDC discharge and the site specific criteria have not been used to calculate the copper limits in the Draft Permit. However, the Draft Permit may be reopened to address the copper limits if the site specific copper criteria in the Massachusetts Surface Water Quality Standards are updated to include the unnamed tributary that receives the facility's effluent.

As explained on page 6 of this fact sheet, hardness of the receiving water should be used when determining the applicable criterion for calculating a toxic metal, in this case, the concentration of copper. However the available dilution in the receiving water is zero and there is no upstream hardness data in the WET tests so, the hardness of the effluent has been used to calculate the copper effluent limits.

CCC = Chronic copper criteria (dissolved) = exp{0.85452[ln (70)] -1.702}(0.96) = 6.60 ug/l
Maximum Daily Effluent limitation:(CCC) (dilution factor) = (6.60)(1.0) = 6.60 ug/l (dissolved)

Total recoverable Limit = 6.60 ÷ (0.96) = 6.87 ug/l

CMC = Acute copper criteria (dissolved) = exp{0.9422[ln (70)]-1.7} (0.96) = 9.60 ug/l
Average Monthly Effluent limitation:(CMC) (dilution factor) = (9.60 ug/l)(1.0) = 9.60 ug/l (dissolved)

Total recoverable limit = 9.60 ug/l ÷ (0.96) = 10.00 ug/l

Copper is monitored as part of the facility's monthly discharge monitoring requirement. As shown in **Table 1, WDC Discharge Monitoring Report (DMR) Data** of the fact sheet, the monthly average copper concentration reported on the DMRs for the facility from January 2007 through April 2010 ranged from 0.02 mg/ (20 ug/l) to 0.19 mg/l (190 ug/l). These values exceed the limitation in the current permit as well as the limits calculated above. Therefore, the concentration of copper in the effluent that is discharged to the tributary has the reasonable potential to cause or contribute to an exceedance in the chronic and acute in-stream criteria.

In determining the appropriate effluent limitation EPA must apply the requirements of the revised state standard, as set forth in the MassDEP, " **Protocol for Determination of Site-Specific Copper Criteria for Ambient Waters in Massachusetts**", January 2007 (the "site-specific protocol") and, the requirements of the anti-backsliding provisions of the Clean Water Act §§ 402(o) and 303(d)(4).

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 required to reflect the actual performance that the facility has been able to achieve. 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 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.

Anti-backsliding: The reissuance of a permit with less stringent effluent limits must meet the requirements of the Clean Water Act's anti-backsliding provision, § 402(o), which allows relaxation of water quality based standards only if they comply with CWA § 303(d)(4), and only if the revised limit meets current effluent guidelines and will not cause a violation of water quality standards. The Massachusetts anti-degradation policy is set forth in 314 CMR § 4.04, providing, inter alia, "[i]n all cases existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." The analysis under the site-specific protocol addresses the anti-backsliding

The analysis under the site-specific protocol addresses the anti-backsliding and anti-degradation requirements by relaxing the copper limits to the more stringent of the limits necessary to achieve the revised criteria, or to the limits that have historically been achieved by the facility (unless the facility has historically discharged an effluent concentration lower than the current permit limits, in which case those limits are retained). Because any relaxed limits will result in attainment of the site-specific criteria and not be less stringent than the facility's current performance, the facility will not be able to scale back its efforts to reduce copper concentrations in the effluent. Therefore, the less stringent limits will not have the result of exceeding the revised criteria or worsening water quality in the receiving water, and the anti-degradation requirement will be met.

Determination of Effluent Limitations

As set forth above, the effluent limitations are determined by calculating both (i) the required effluent limits that would meet the 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. The only exception to this procedure is if the actual effluent concentration is lower than the current (non site-specific) limits, then the current limits are retained in the permit

Criteria-based calculation: The criteria-based limits are calculated using a mass-balance equation that incorporates the relevant flows (7Q10 for the receiving water and design flow for the facility) and the background concentration in the receiving water data from the facility WET reports.

The equation is $QrCr = QdCd + QsCs$

Which was rearranged as: $Cd = (QrCr – QsCs)/Qd$

Where:
Qs = receiving water flow upstream of the discharge (7Q10 flow) = 0.0 cfs
Cs = copper concentration upstream of the discharge = 0.0 µg/l (total recoverable)
Qr = receiving water flow downstream from the discharge = Qr = Qd + Qs = 0.454 MGD
Cr = copper concentration downstream from the discharge = Chronic criterion = 6.8 ug/l (total recoverable), Cr = Acute criterion = 10.0 (total recoverable)
Qd = design flow of the facility = 0.454 MGD
Cd = copper concentration in the discharge = x, calculated effluent limit

The anti-backsliding rule also contains a number of exceptions that are not applicable here. See CWA § 402(o)(2); 40 CFR § 122.44(l).

The criteria-based limits are: Monthly average (chronic):
Cd = [(0.454 MGD)(6.8 µg/l) - 0.0) /0.454 MGD

Cd = 6.8 µg/l(total recoverable)

Maximum daily (acute):
Cd = [(0.454 MGD)(10.0 µg/l) - 0.0] /0.454 MGD
Cd = 10.0 µg/l(total recoverable)

Performance-based calculation: The level of copper removal routinely achieved by the facility (i.e., the past demonstrated performance of the facility) is determined by a statistical analysis of discharge data submitted by the facility over the period from January 2007 through April 2010, using the methodology set forth in the **Technical Support Document for Water Quality based Toxics Control, EPA/505/2-90-001 (March 1991)**. The average monthly and maximum daily limits are based on the 95th and 99th percentile of a lognormal distribution, based on the facility's monthly average effluent data as shown in **Attachment B** of the fact sheet. These calculations indicate that limits based solely on past performance would result in a monthly average limit of 232 µg/l and a maximum daily limit of 351 µg/l.

Effluent limitation as noted above, pursuant to the site-specific protocol, will be relaxed only to the more stringent of the criteria-based or performance-based limits. In this case the criteria-based limits are more stringent, so these effluent limits have been included in the draft permit, which are as follows:

Monthly average: 6.8 µg/l, total recoverable
Maximum daily: 10 µg/l, total recoverable

Ammonia

Ammonia can impact the receiving stream's dissolved oxygen concentration and can be toxic at elevated levels. The effluent limitations for ammonia-nitrogen in the Draft Permit are the same as in the existing permit. From April 1 through October 31, the monthly average and maximum daily ammonia limits of 1 mg/l and 2 mg/l have been carried over from the existing permit. These limits are based on attaining dissolved oxygen standards.

From November 1 through March 31, the average monthly and average weekly ammonia limits of 7 mg/l and 14 mg/l have been carried over from the existing permit. These limits reduce aquatic life toxicity in the Stop River. Table 1 of the fact sheet provides recent ammonia data submitted by the permittee on their DMRs.

Total Phosphorus

Phosphorus is an essential nutrient for plant growth but, excessive amounts of phosphorus in a water body has the potential to accelerate stream eutrophication, characterized by excessive plant growth, low dissolved oxygen, and large diurnal swings in dissolved oxygen in a surface water.

The "Charles River Basin 2002-2006 Water Quality Assessment Report", published in April 2008 by MassDEP provides water quality data and information for the Stop River in the Charles River Watershed. The report documents that the unnamed tributary that receives the treatment plant's effluent flows into segment MA72-09 of the Stop River. The report also document that this segment of the Stop River is impaired by nutrient and organic enrichment and low dissolved oxygen. See page 50 of the "Charles River Basin 2002-2006 Water Quality Assessment Report".

Similarly, the "Massachusetts Year 2008 Integrated Lists of Waters" lists this segment as impaired, and

requiring a TMDL for dissolved oxygen, and total phosphorus.

The existing permit has a 0.2 mg/l monthly average limit for total phosphorus from April 1 through October 31, which is based on Highest and Best Practical Treatment (HBPT) pursuant to 314 CMR 4.05(5)(c) of the Massachusetts Water Quality Standards, and a 1.0 mg/l monthly average limit from November 1 through March 31. The monthly average phosphorus data from the facility's DMRs was n the range of 0.6 mg/l to 5.8 mg/l during the months of January 2007 through January 2009.

Regulatory Background

Massachusetts Water Quality Standards do not include numeric criteria for phosphorus. The Standards do include narrative criteria, including, in 314 CMR 4.05(5)(c) that states "unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00. Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural euthrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and Best Available Technology (BAT) for non POTWs, to remove such nutrients to ensure protection of existing and designated uses."

In the absence of numeric criteria or a TMDL, EPA would interpret the narrative criteria using the procedures found at 40 CFR Part 122.44(d)(1)(vi), including the use of available guidance and other relevant information. This information would include EPA-published national guidance documents which contain recommended total phosphorus criteria and other indicators of eutrophication. The "Quality Criteria for Water 1986" document, http://www.epa.gov/waterscience/criteria/library/goldbook.pdf commonly known as the "Gold Book", follows an effects-based approach and, recommends maximum threshold concentrations designed to prevent or control adverse nutrient-related impacts from occurring in-stream. The "Quality Criteria for Water 1986" document recommends that in-stream phosphorus concentrations not exceed 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly into lakes or impoundments, and 0.025 mg/l within a lake or reservoir.

More recently, EPA has released recommended Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters within ecoregions that are minimally impacted by human activities, and thus free from the effects of cultural eutrophication. Wrentham is located within Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criterion for this ecoregion, found in "Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV" http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/2007_09_27_criteria_nutrient_ecoregions_rivers_rivers_14.pdf published by EPA in December 2000 is 24 ug/l (0.024 mg/l).

The Total Maximum Daily Load (TMDL) for Nutrients in the Upper/Middle Charles River report was finalized in June 2011 and approved by EPA on June 10, 2011. The TMDL recommends a phosphorus waste load allocation for the Wrentham Developmental Center treatment plant of 0.1 mg/l during the warm weather months and 0.3 mg/l for the remainder of the year. The limits in the Draft Permit, a monthly average total phosphorus limit of 0.1 mg/l from April through October and a monthly average total phosphorus limit of 0.3 mg/l from November through March are based on the recommendations in the final TMDL. A copy of the document can be reviewed at

http://www.mass.gov/dep/water/resources/tmdls.htm.

A review of phosphorus data submitted on the Town's DMRs from January 2008 through February 2011 indicates that the facility's effluent phosphorus concentrations are greater than the proposed permit limits, indicating that upgrades to the facility may be necessary to achieve both the April to October limits and the November through March limits. See **Table 1, WDC Discharge Monitoring Report (DMR) Data**. The State Implementation Guidance for the TMDL suggests an interim winter limit of 0.50 mg/l for treatment plants that cannot achieve the winter limit of 0.30 mg/l without significant plant upgrades.

Therefore, a three year schedule of compliance has been included in the Draft Permit for attaining the proposed phosphorus limits. See Footnote 10 of the Draft Permit. The schedule includes one year for planning, one year for design, and one year for construction of necessary facilities. EPA believes this is a reasonable schedule of compliance, but invites comments from the permittee and other interested parties regarding the length of this schedule. The Draft Permit also includes an interim monthly average limit of 0.2 mg/l for the months of April through October, (the limit from the existing permit) and an interim monthly average limit of 0.5 mg/l for the months of November through March (based on the TMDL recommendation and also determined to be attainable based on a review of past effluent data).

Whole Effluent Toxicity Test

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The State Surface Water Quality Standards (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. For pollutants not otherwise listed in 314 CMR 4.00, the National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002 published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher. Where the Department determines that naturally occurring background concentrations are higher, those concentrations shall be the allowable receiving water concentrations. The Department shall use the water quality criteria for the protection of aquatic life expressed in terms of the dissolved fraction of metals when EPA's 304(a) recommended criteria provide for use of the dissolved fraction. The EPA recommended criteria based on total recoverable metals shall be converted to dissolved metals using EPA's published conversion factors. Permit limits will be written in terms of total recoverable metals. Translation from dissolved metals criteria to total recoverable metals permit limits will be based on EPA's conversion factors or other methods approved by the Department. The Department may establish site specific criteria for toxic pollutants based on site specific considerations. 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 others to POTWs. 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 permittee has a reasonable potential to cause toxicity.

The principal advantages of biological techniques 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 connection with pollutant-specific control procedures to control the discharge of toxic pollutants.

Therefore, the Draft Permit includes modified acute and chronic whole effluent toxicity limitations and monitoring requirements. (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 LC_{50} limitation prohibits acute effects (lethality), to more that 50% of the test organisms when exposed to POTW undiluted effluent for 48 hours. The chronic-no observed effect concentration (C-NOEC) limitation in the Draft Permit prohibits chronic adverse effects (e.g., on survival, growth, and reproduction) when aquatic organisms are exposed to the POTW discharges at the calculated available dilution.

The LC_{50} limitation in the Draft Permit is 100%, consistent with MassDEP's "Implementation Policy for the Control of Toxic Pollutants in Surface Waters", February 23, 1990, that requires an effluent limitation of 1 toxic unit (LC_{50} = 100%) for discharges with dilution factors less than 100.

The Chronic - No Observed Effect Concentration (C-NOEC) limitation in the Draft Permit prohibits chronic adverse effects (e.g., on 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.

C-NOEC = 1/dilution factor = 1/1.00 = 1.00 or 100%.

Four toxicity tests per year for the daphnid (Ceriodaphnia dubia) are required in the Draft Permit. The most recent toxicity tests have not included water quality data for the receiving water. The Draft Permit specifies upstream water quality data is submitted with all toxicity tests. The permittee should use the receiving water as diluent rather that synthetic lab water unless the receiving water is documented to be toxic or unreliable. If the receiving water is toxic the Region's Self –Implementing Alternate Dilution Water Guide should be followed but, chemistry data for the river site control must also be submitted with each toxicity test. Tests are to be conducted in January, April, July and October. The WET tests shall be conducted using 40 CFR Part 136 methods, and also be consistent with specific requirements in **Attachment A**, **Chronic Freshwater Toxicity Test Procedures and Protocols** of the Draft Permit.

The June 2006 whole effluent toxicity test failed to meet the permit limit of 100% for the chronic portion of the test. The results for all other toxicity tests between January 2007 and December 2009 met the permit limit of 100% for both the acute and chronic limits.

VI. Sludge

The permit prohibits any discharge of sludge. Section 405(d) of the CWA requires that sludge conditions are in all POTW permits. Technical sludge standards required by Section 405 of the CWA were finalized on November 25, 1992 and published on February 19, 1993. The regulations went into effect on March 21, 1993. The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The facility generates approximately 3.20 dry metric tons of sludge per year. Sludge is transported off-site by a private contractor, Synagro, for final processing, incineration and disposal in Woonsocket, Rhode Island.

VII. Essential Fish Habitat Determination (EFH)

Under the 1996 Amendments (PL104-267) to the Magnusun-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," (16 U.S.C. § 1855(b)). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," (16 U.S.C. §1802(10)). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH (50 CFR § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. § 1855(b)(1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The Stop River is not covered by the EFH designation for riverine systems and thus EPA and MassDEP have determined that a formal EFH consultation with NMFS is not required.

VIII. Endangered Species Act (ESA)

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended (the "Act"), grants authority to and imposes requirements upon Federal agencies regarding threatened or endangered species of fish, wildlife, or plants ("listed species") and habitat of such species that have been designated as critical ("critical habitat").

Section 7(a)(2) of the Act requires every Federal agency in consultation with and with the assistance of the Secretary of the Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species.

EPA and the MassDEP have determined that an ESA consultation is not required for this discharge, since no listed species or critical habitats are located in an area that could be affected by the facility's discharge.

The permittee should contact the State regarding a Massachusetts Natural Heritage and Endangered Species Program (NHESP) review.

IX. Monitoring and Reporting

The Draft Permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit discharge monitoring reports (DMRs) electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR 122.41 and 403.12. NetDMR is accessed from the following url: http://www.epa.gov/netdmr Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

The Draft Permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The Draft Permit also includes an "opt out" requests process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt out request 60 days prior to expiration of its opt out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format.

X. State Certification Requirements

EPA may not issue a permit unless the state water pollution control agency 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 State Water Quality Standards. 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 pursuant to 40 CFR 124.53 and expects that the Draft Permit will be certified.

XI. Public Comment Period, Public Hearing, 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, Mail code 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 State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the Draft Permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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

XII. 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
United States Environmental Protection Agency
5 Post Office Square – Suite 100
Mail code: OEP06-1
Boston, MA 02114-2023
TEL. (617) 918-1576
FAX: (617) 918-0576
email: Davis.Betsy@epa.gov

Kathleen Keohane
Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, MA 01608
TEL: (508) 767-2856
FAX: (508) 791-4131
Kathleen.Keohane@state.ma.us

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

DATE

Attachment A of the Fact Sheet
Wrentham Developmental Center Wastewater Treatment Facility
Summary of NPDES Permit Reporting Requirements Dates

Permit Page	Requirement and Dates	Submit to:
5	Whole Effluent Toxicity Tests results are due February 28th, May 31st, August 31st, and November 30th of each year.	EPA/MassDEP
8	The permittee shall continue to eliminate excessive I/I to the sewer system. The plan shall be available to EPA and submitted to MassDEP six months of the effective date of the permit.	EPA/MassDEP
13	The permittee shall submit an annual report containing the information specified in the sludge section of the permit by February 19.	EPA/MassDEP
13	Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the effective date of the permit.	EPA/MassDEP

Table 1 - WDC Discharge Monitoring Report Data						
MA0102113						
	Fecal Coliform, cfu/100 ml	Fecal Coliform, cfu/100 ml	D.O., mg/l	Phosphorus, mg/l	Copper, mg/l	Copper, mg/l
	Monthly Geometric Mean	Maximum Daily	Maximum Daily	Monthly Average	Monthly Average	Maximum Daily
1/31/2007			5.94	0.67	0.19	0.32
2/28/2007			6.14	0.8	0.15	0.19
3/31/2007	171	247	6.16	0.6	0.14	0.18
4/30/2007	124	164	5.89	1.5	0.09	0.11
5/31/2007	113	184	5.6	2	0.15	0.21
6/30/2007			5.04	2.8	0.12	0.29
7/31/2007	86	143	5.2	2.3	0.12	0.19
8/31/2007	114	184	4.4	2.1	0.15	0.55
9/30/2007	123	204	4.6	2.4	0.14	0.21
10/31/2007	152	216	4.6	2.5	0.17	0.25
11/30/2007	114	124	5.63	1.8	0.19	0.22
12/31/2007			6.38	1.79	0.15	0.18
1/31/2008			5.44	2.3	0.15	0.21
2/29/2008			6.42	1.9	0.16	0.17
3/31/2008	131	235	5.85	2.8	0.07	0.13
4/30/2008	139	266	4.9	5.6	0.13	0.15
5/31/2008	152	172	4.92	3.49	0.06	0.08
6/30/2008	211	265	5.4	1.35	0.12	0.19
7/31/2008	186	224	5.62	5.8	0.15	0.18
8/31/2008	53	64	5.16	4.18	0.15	0.18
9/30/2008	92	127	5.9	5.7	0.18	0.23
11/30/2008			6.04	1.5	0.08	0.12
12/31/2008			6.14	1.9		
1/31/2009			6.11	0.65	0.3	0.5
2/28/2009			6.16	1.7	0.04	0.05
3/31/2009	132	172	6.08	1.98	0.02	0.04
4/30/2009	99	141	5.7	2.2	0.03	0.05
5/31/2009	175	253	5.88	2.4	0.05	0.07
6/30/2009	152	170	5.4	1.35	0.05	0.06
7/31/2009	182	273	4.9	0.69	0.05	0.08

Attachment B- Copper Performanced Based Limits

WDC WWTP

no ND, >10 samples, Lognormal distribution

Date	Cu (ug/L)	Yi ln cu (ug/l)	$(y_i - u_y)^2$
1/31/2007	190.	5.2470	0.653042
2/28/2007	150.	5.0106	0.326865
3/31/2007	140.	4.9416	0.252736
4/30/2007	90.	4.4998	0.003708
5/31/2007	150.	5.0106	0.326865
6/30/2007	120.	4.7875	0.121506
7/31/2007	120.	4.7875	0.121506
8/31/2007	150.	5.0106	0.326865
9/30/2007	140.	4.9416	0.252736
10/31/2007	170.	5.1358	0.485648
11/30/2007	190.	5.2470	0.653042
12/31/2007	150.	5.0106	0.326865
1/31/2008	150.	5.0106	0.326865
2/29/2008	160.	5.0752	0.404826
3/31/2008	70.	4.2485	0.036259
4/30/2008	130.	4.8675	0.183715
5/31/2008	60.	4.0943	0.118728
6/30/2008	50.	3.9120	0.277614
7/31/2008	150.	5.0106	0.326865
8/31/2008	150.	5.0106	0.326865
9/30/2008	180.	5.1930	0.56858
10/31/2008	100.	4.6052	0.027641
11/30/2008	80.	4.3820	0.003236
12/31/2008	40.	3.6889	0.562552
1/31/2009	30.	3.4012	1.076856
2/28/2009	40.	3.6889	0.562552

Copper - CRPCD (Lognormal distribution, no ND)

Daily Maximum Limit Derivation

u_y = Avg of Nat. Log o of daily dis	4.43891
σ_y = Std Dev. of Nat Log of daily di	0.61169
$\Sigma (y_i - u_y)^2$ =	14.59264
k = number of daily samples =	40
σ_y^2 = estimated variance = ($\Sigma[(y_i$ -	0.37417

Daily Max Limit = exp (u_y + 2.326*σ_y)

Daily Max Limit = 351.33 ug/L

(Lognormal distribution, 99th percentile)

Average Monthly Limit Derivation

Number of samples per month, n =	1
E(x) = Daily Avg = exp(u_y + 0.5 σ_y^2	102.10474
V(x) = Daily Variance = exp(2u_y + (	########
σ_n^2 = Monthly Average variance =	0.37417
σ_n = Monthly Average standard de	0.61169
u_n = n-day monthly average = ln(l	4.43891

3/31/2009	20.	2.9957	2.082774
4/30/2009	30.	3.4012	1.076856
5/31/2009	50.	3.9120	0.277614
6/30/2009	50.	3.9120	0.277614
7/31/2009	50.	3.9120	0.277614
8/31/2009	70.	4.2485	0.036259
9/30/2009	95.	4.5539	0.013216
10/31/2009	60.	4.0943	0.118728
11/30/2009	40.	3.6889	0.562552
12/31/2009	50.	3.9120	0.277614
1/31/2010	140.	4.9416	0.252736
2/28/2010	80.	4.3820	0.003236
3/31/2010	40.	3.6889	0.562552
4/30/2010	60.	4.0943	0.118728

Monthly Average Limit = exp (u_n + 1.645*σ_n)

Monthly Avg Limit* = 231.63 ug/L

(Lognormal distribution, 95th percentile of average monthly values)

*Based on sampling frequency of 1 time per month

Attachment C - Wrentham Developmental Center WWTP
WDC Metals Data from WET Tests

Effluent data, ug/l

	Copper	Cadmium	Chromium	Nickel	Lead	Zinc	Aluminum
Dec-10	47.00	nd	nd	nd	nd	350.00	70.00
Jun-10	22.00	nd	nd	nd	nd	20.00	75.00
Feb-10	74.00	nd	nd	6.00	nd	37.00	150.00
Jan-07	45.00	nd	nd	2.10	1.30	38.00	19.00
Apr-07	72.00	nd	1.00	2.60	3.10	38.00	32.00
Jul-07	62.00	nd	nd	2.70	1.60	34.00	22.00
Oct-07	30.00	nd	nd	2.60	nd	34.00	7.60
Jan-06	27.00	nd	nd	nd	nd	27.00	nd
Apr-06	49.00	nd	nd	2.60	nd	38.00	19.00
Jul-06	42.00	nd	nd	2.70	nd	37.00	16.00
Oct-06	28.00	nd	nd	1.80	nd	33.00	18.00
Average	45.27					62.36	

Hardness Data

7/10/2006	67
10/9/2006	70
6/4/2007	72
7/10/2007	79
9/21/2009	70
9/23/2009	73
9/25/2009	88
6/7/2010	65
6/9/2010	59
6/11/2010	60
Average	70.3

*, minimum detection level

Attachment D - Zinc Performanced Based Limits

Wrentham Developmental Center

no ND, >10 samples, Lognormal distribution

Date	Zn (ug/L)	*Yi* ln AL (ug/l)	$(y_i - u_y)^2$
Dec-10	350	**5.8579**	**4.6045**
Jun-10	20	**2.9957**	**0.5132**
Feb-10	37	**3.6109**	**0.0102**
Jan-07	38	**3.6376**	**0.0056**
Apr-07	38	**3.6376**	**0.0056**
Jul-07	34	**3.5264**	**0.0345**
Oct-07	34	**3.5264**	**0.0345**
Jan-06	27	**3.2958**	**0.1733**
Apr-06	38	**3.6376**	**0.0056**
Jul-06	37	**3.6109**	**0.0102**
Oct-06	33	**3.4965**	**0.0465**

Zinc - WDC (Lognormal distribution, no ND)

Daily Maximum Limit Derivation

u_y = Avg of Nat. Log c of daily dis	3.71212
σ_y = Std Dev. of Nat Log of daily d	0.73781
$\Sigma (y_i - u_y)^2$ =	5.44367
k = number of daily samples =	11
σ_y^2 = estimated variance = ($\Sigma[(y_i$ -	0.54437

Daily Max Limit = exp (u_y + 2.326*σ_y)

Daily Max Limit = 227.76 ug/L

(Lognormal distribution, 99th percentile)

Average Monthly Limit Derivation

Number of samples per month, n	1
E(x) = Daily Avg = exp(u_y + 0.5 σ_y	53.74786
V(x) = Daily Variance = exp(2u_y +	########
σ_n^2 = Monthly Average variance =	0.54437
σ_n = Monthly Average standard de	0.73781
u_n = n-day monthly average = ln(	3.71212

Monthly Average Limit = exp (u_n + 1.645*σ_n)

Monthly Avg Limit* = 137.80 ug/L

(Lognormal distribution, 95th percentile of average monthly values)

*Based on sampling frequency of 1 time per month

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
1 WINTER STREET
PROTECTION
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ECOSYSTEM
REGION I
BOSTON, MASSACHUSETTS 02109

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT, AS AMENDED, AND UNDER SECTIONS 27 AND 43 OF THE MASSACHUSETTS CLEAN WATERS ACT, AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CLEAN WATER ACT.

DATE OF NOTICE: August 3, 2011

PERMIT NUMBER: MA0102113

PUBLIC NOTICE NUMBER: MA-026-11

NAME AND MAILING ADDRESS OF APPLICANT:

Nicholas D'Aluisio, Facility Director
Wrentham Developmental Center
P.O. Box 144
Wrentham, Massachusetts, 02903

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Wrentham Developmental Center
Wastewater Treatment Facility
131 Emerald Street
Wrentham, Massachusetts, 02903

RECEIVING WATER: unnamed tributary to the Stop River

RECEIVING WATER CLASSIFICATION: Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency, (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify this draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:
A fact sheet or a statement of basis (describing the types of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) may be obtained at no cost by writing or calling EPA's contact person named below:

Betsy Davis
United States Environmental Agency
5 Post Office Square – Suite 100
Mailcode: OEP06-1
Boston, MA 02109-3912
Telephone: (617) 918-1576

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

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **September 1, 2011**, to the Unites States Environmental Protection Agency, 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 to EPA and the State Agency for a public hearing to consider this draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION AND APPEALS:

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

David Ferris, Director
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

Stephen S. Perkins, Director
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION AGENCY