

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),

**The Commonwealth of Massachusetts  
Executive Office of Public Safety  
Department of Correction**

is authorized to discharge from the facility located at

**Massachusetts Correctional Institute (MCI)  
965 Elm Street  
Concord, MA 01742-9106**

to receiving water named

**Assabet River**

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

This permit shall become effective sixty (60) days after the date of signature.

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 11, 1978.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements, Attachment A and 35 pages in Part II including General Conditions and Definitions.

Signed this 12<sup>th</sup> day of August, 2005

/S/ SIGNATURE ON FILE

Linda M. Murphy, Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Boston, MA

Director  
Division of Watershed Management  
Department of Environmental Protection  
Commonwealth of Massachusetts  
Boston, MA

PART I

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

EFFLUENT CHARACTERISTIC		EFFLUENT LIMITS				MONITORING REQUIREMENTS	
PARAMETER	AVERAGE MONTHLY	AVERAGE WEEKLY	AVERAGE MONTHLY	AVERAGE WEEKLY	MAXIMUM DAILY	MEASUREMENT FREQUENCY	SAMPLE <sup>2</sup> TYPE
FLOW	*****	*****	0.31 MGD <sup>1</sup>	*****	Report <sup>1</sup> MGD	CONTINUOUS	RECORDER
BOD <sub>5</sub> <sup>3</sup>	20 lbs/Day	34 lbs/Day	15 mg/l	25 mg/l	30 mg/l	1/WEEK	24-HOUR COMPOSITE <sup>4</sup>
TSS <sup>3</sup>	20 lbs/Day	34 lbs/Day	15 mg/l	25 mg/l	30 mg/l	1/WEEK	24-HOUR COMPOSITE <sup>4</sup>
pH RANGE <sup>1</sup>	6.5 - 8.3 SU SEE PERMIT PAGE 5, PARAGRAPH I.A.1.b.					1/DAY	GRAB
TOTAL CHLORINE RESIDUAL <sup>5,6</sup>	*****	*****	0.47 mg/l	*****	0.82 mg/l	3/DAY	GRAB
FECAL COLIFORM <sup>5,7</sup>	*****	*****	200/100 ml	*****	400/100 ml	3/WEEK	GRAB
DISSOLVED OXYGEN (4/1 - 10/31)	NOT LESS THAN 5.0 mg/l					1/DAY	GRAB
WHOLE EFFLUENT TOXICITY <sup>8,9,10</sup>	Acute LC <sub>50</sub> ≥ 100%					4/YEAR	24-HOUR COMPOSITE <sup>4</sup>
AMMONIA-NITROGEN (5/1 - 10/31)	20 lbs/Day	*****	7.8 mg/l	*****	Report mg/l	1/WEEK	24-HOUR COMPOSITE <sup>4</sup>
AMMONIA-NITROGEN (11/1- 4/30)	*****	*****	Report mg/l	*****	Report mg/l	2/MONTH	24-HOUR COMPOSITE <sup>4</sup>
TOTAL PHOSPHORUS (4/1 - 10/31)	Report lbs/Day	*****	0.2 mg/l <sup>11</sup>	*****	Report mg/l	3/WEEK	24-HOUR COMPOSITE <sup>4</sup>
TOTAL PHOSPHORUS (11/1 - 3/31)	Report lbs/Day	*****	1.0 mg/l <sup>12</sup>	*****	Report mg/l	1/WEEK	24-HOUR COMPOSITE <sup>4</sup>
ORTHO PHOSPHORUS (11/1 - 3/31)	Report lbs/Day	*****	Report mg/l	*****	Report mg/l	1/WEEK	24-HOUR COMPOSITE <sup>4</sup>

## Footnotes:

1. For flow, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be the arithmetic mean of the monthly average flow for the first full month ending after the effective date of the permit and that of the eleven previous monthly average flows. Each subsequent month's discharge monitoring report (DMR) will report the annual average flow as the arithmetic mean of that month's value and the values of the previous 11 months.
2. All sampling shall be representative of the effluent that is discharged through Outfall 001 to discharge to the Assabet River. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of every month. Any deviations from this routine sampling program shall be documented in correspondence appended to the applicable (DMR) that is submitted to EPA. Any change from the current sampling location(s) must be reviewed and approved in writing by EPA and MADEP. All samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.
3. Sampling required for influent and effluent.
4. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during a 24 hour period (e.g. 7:00 A.M. Monday to 7:00 A.M. Tuesday). Sampling for the parameters BOD, TSS, phosphorus and ammonia shall be conducted on the same day of the week, whenever feasible.
5. Required for State Certification
6. The minimum level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, Method 4500 CL-E and G, or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine total residual chlorine. Sample results of 20 ug/l or less shall be reported as zero on the discharge monitoring report.

Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection or interruptions or malfunctions of the de-chlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the dates and times of such interruptions or malfunctions, the nature of the problem and the estimated amount of time that the reduced levels of chlorine and de-chlorination chemicals were employed.
7. Fecal coliform monitoring will be conducted year round. This is also a State certification requirement. Fecal coli-form 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. This monitoring shall be conducted concurrently with the TRC sampling described above.
8. The permittee shall conduct acute toxicity tests four times per year. The permittee shall test the daphnid, Ceriodaphnia dubia and the fathead minnow, Pimephales promelas. Toxicity test samples shall be collected during the second week of March, June, September, and December. The test results

shall be submitted by the last day of the month following the completion of the test. The test results are due April 30, July 31, October 31, and February 28, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week	Submit Results By:	Test Species	Acute Limit LC <sub>50</sub>
March June September December	April 30 <sup>th</sup> July 31 <sup>st</sup> October 31 <sup>st</sup> January 31 <sup>st</sup>	<u>Ceriodaphnia dubia</u> (Daphnid) <u>Pimephales promelas</u> (Fathead minnow)	∞ 100%

After submitting **one year** and a **minimum** of four consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

9. The LC<sub>50</sub> 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.

10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in **Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may contact EPA directly using the approach outlined in **Attachment A**.

11. The permittee shall comply with the 0.2 mg/l total phosphorus limit in accordance with the schedule contained in Section E. below. Upon the effective date of the permit, and until the date specified in Section E. below for compliance with the total phosphorus final limit of 0.2 mg/l, an interim limit of 0.5 mg/l shall be met. The 0.2 mg/l total phosphorus limit is a 60 day rolling average limit. Beginning on the 60<sup>th</sup> day after April 1, the 60 day average value for each day in a given month, must be calculated and the highest 60 day average value for that month must be reported on the monthly discharge monitoring report (DMR).

For the months of April and May, the monthly average total phosphorus shall be reported. In addition, the maximum daily value must be reported for each month. The 0.5 mg/l interim limit will be a monthly average, not a 60 day rolling average. For mass loading, the permittee shall report the monthly average only, throughout the year. Consistent with Section B.1 of Part II of the Permit, the Permittee shall properly operate and maintain the phosphorus removal facilities in order to obtain the lowest effluent concentration possible.

12. The permittee shall comply with the 1.0 mg/l monthly average total phosphorus limit in accordance with the schedule contained in Section E. below. Upon the effective date of the permit, and until the date specified in Section E. below for compliance with the total phosphorus final limit of 1.0 mg/l, the permittee shall optimize phosphorus removal with a goal of achieving a discharge total phosphorus concentration of 1.0 mg/l or less, while reporting the monthly average. Within 60 days of the effective date of the permit, the Permittee shall submit a plan for optimizing phosphorus removal to EPA and MADEP and begin its implementation.

Part I.A.1. (Continued)

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
  - b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time, unless these values are exceeded as a result of an approved treatment process.
  - c. The discharge shall not cause objectionable discoloration of the receiving waters.
  - d. The effluent shall contain neither a visible oil sheen, foam, nor 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. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.
  - g. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.
  - h. The results of sampling for any parameter above its required frequency must also be reported.
2. The permittee must provide adequate notice to the Director of the following:
- b. Any new introduction of pollutants into the treatment works from an indirect discharger in a primary industry category discharging process water; and
  - c. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.

- d. For purposes of this paragraph, adequate notice shall include information on:
- (1) the quantity and quality of effluent introduced into the treatment works; and
  - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the treatment works.
3. Prohibitions Concerning Interference and Pass Through:
- a. Pollutants introduced into the treatment works by a non-domestic source (user) shall not pass through the treatment works or interfere with its operation or performance.
  - b. If, within 30 days after notice of an interference or pass through violation has been sent by EPA to the treatment works, and to persons or groups who have requested such notice, the treatment works fails to commence appropriate enforcement action to correct the violation, EPA may take appropriate enforcement action.
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 DEP 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 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 in accordance with Section D.1.e. (1) of the General Requirements (Part II) of this permit (Twenty-four hour reporting).

**C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM**

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

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. 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).

**D. SLUDGE CONDITIONS**

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.
2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503), requirements.
3. The requirements and technical standards of 40 CFR part 503 apply to facilities which perform one or more of the following 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 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements.
- General requirements
  - Pollutant limitations
  - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
  - Management practices
  - Record keeping
  - Monitoring
  - Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year

less than 290	1/ year
290 to less than 1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.
8. The permittee shall submit an annual report containing the information specified in the guidance by February 19. Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by February 19 containing the following information:

- X Name and address of contractor responsible for sludge disposal
- X Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

**E. COMPLIANCE SCHEDULE**

Upon the effective date of the permit, the permittee shall develop a process for determining the lowest effluent phosphorus concentration achievable by the existing facility. The permittee should consider, at a minimum, the use of multiple dosing points for chemical addition, various dosage rates, increased monitoring of influent and effluent phosphorus concentrations, and the minimization of influent phosphorus loading to the treatment facility.

The final phosphorus limits of 0.2 mg/l (April through October) and 1.0 mg/l (November through March) will become effective on April 30, 2009. This date and the ones for the interim steps below are consistent with those that will be required in the compliance schedules of the NPDES permits of the major municipal dischargers to the Assabet River.

In order to comply with the permit limits, the permittee shall take the following actions with regard to total phosphorus:

1. Within twelve (12) months of the issuance date of the permit, the permittee shall submit to EPA and DEP a status report detailing progress towards achieving the final, total phosphorus limits.

2. Within twenty-four (24) months of the issuance date of the permit, the permittee shall complete design of the Facility improvements required to achieve the total phosphorus limits.

3. Within thirty-six (36) months of the issuance date of the permit, the permittee shall submit to EPA and DEP a status report relative to construction of the Facility improvements required to achieve the total phosphorus limits.

4. By June 30, 2008, the permittee shall complete construction and initiate operation of the Facility improvements required to achieve the total phosphorus limits.

5. By April 30, 2009, the permittee shall achieve the final, total phosphorus limits.

## **F. MONITORING AND REPORTING**

### **1. Reporting**

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month.

Signed and dated originals of these, and all other reports required herein, with the exception of the reports associated with the compliance schedule, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency  
Water Technical Unit (SEW)  
P.O. Box 8127  
Boston, Massachusetts 02114

The State Agency is:

Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Northeast Regional Office  
1 Winter Street  
Boston, MA 02108

Signed and dated Discharge Monitoring Report Forms and toxicity test 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, Massachusetts 01608

All reports required by the compliance schedule in Section E, shall be submitted to:

George Papadopoulos  
Environmental Protection Agency  
Mailcode CIP  
1 Congress Street - Suite 1100  
Boston, MA 02114-2023

## **G. STATE PERMIT CONDITIONS**

This discharge permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap.21, §43.

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 an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

**ATTACHMENT A**  
**FRESHWATER ACUTE**  
**TOXICITY TEST PROCEDURE AND PROTOCOL**

**I. GENERAL REQUIREMENTS**

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

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

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

**II. METHODS**

Methods should follow those recommended by EPA in:

Weber, C.I. et al. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. August 1993, EPA/600/4-90/027F.

Any exceptions are stated herein.

**III. SAMPLE COLLECTION**

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

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

All samples held overnight shall be refrigerated at 4°C.

#### IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

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

Director  
Office of Ecosystem Protection  
U.S. Environmental Protection Agency-New England  
JFK Federal Building (CAA)  
Boston, MA 02203

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

#### V. TEST CONDITIONS

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

**EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS<sup>1</sup>**

1. Test type	Static, non-renewal
2. Temperature (°C)	20 ± 1° C or 25 ± 1°C
3. Light quality	Ambient laboratory illumination
4. Photoperiod	16 hour light, 8 hour dark
5. Test chamber size	Minimum 30 ml
6. Test solution volume	Minimum 25 ml
7. Age of test organisms	1-24 hours (neonates)
8. No. daphnids per test chamber	5
9. No. of replicate test chambers per treatment	4
10. Total no. daphnids per test concentration	20
11. Feeding regime	Feed YCT and <u>Selenastrum</u> while holding organisms prior to initiating test as per manual.
12. Aeration	None
13. Dilution water <sup>2</sup>	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q <sup>R</sup> or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution factor	≥ 0.5

15. Number of dilutions<sup>3</sup> 5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured Mortality-no movement of body or appendages on gentle prodding
17. Test acceptability 90% or greater survival of test organisms in control solution
18. Sampling requirements For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19. Sample volume required Minimum 1 liter
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Footnotes:

1. Adapted from EPA/600/4-90/027F.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE FATHEAD  
MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST<sup>1</sup>**

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|--|---|
| 1. Test Type                                   | Static, non-renewal   |
| 2. Temperature (°C):                           | 20 ± 1 ° C or 25 ± 1°C  |
| 3. Light quality:                              | Ambient laboratory illumination   |
| 4. Photoperiod:                                | 16 hr light, 8 hr dark  |
| 5. Size of test vessels:                       | 250 mL minimum  |
| 6. Volume of test solution:                    | Minimum 200 mL/replicate  |
| 7. Age of fish:                                | 1-14 days old and age within 24 hrs of the others   |
| 8. No. of fish per chamber                     | 10 (not to exceed loading limits)   |
| 9. No. of replicate test vessels per treatment | 4   |
| 10. Total no. organisms per concentration:     | 40  |
| 11. Feeding regime:                            | Light feeding using concentrated brine shrimp nauplii while holding prior to initiating the test as per manual  |
| 12. Aeration:                                  | None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.) |

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|--------------------------------------|--|
| 13. dilution water: <sup>2</sup>     | Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q <sup>R</sup> or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness. |
| 14. Dilution factor                  | ≥ 0.5  |
| 15. Number of dilutions <sup>3</sup> | 5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.  |
| 16. Effect measured                  | Mortality-no movement on gentle prodding   |
| 17. Test acceptability               | 90% or greater survival of test organisms in control solution  |
| 18. Sampling requirements            | For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.  |
| 19. Sample volume required           | Minimum 2 liters   |

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**Footnotes:**

1. Adapted from EPA-600/4-90/027F.
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

## VI. CHEMICAL ANALYSIS

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

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	<u>Minimum Quantification Level(mg/L)</u>
Hardness* <sup>1</sup>	X	X	0.5
Alkalinity	X	X	2.0
pH	X	X	---
Specific Conductance	X	X	---
Total Solids and Suspended Solids	X	X	---
Ammonia	X	X	0.1
Total Organic Carbon	X	X	0.5
Total Residual Chlorine (TRC)* <sup>2</sup>	X	X	0.05
Dissolved Oxygen	X	X	1.0
<u>Total Metals</u>			
Cd	X		0.001
Cr	X		0.005
Pb	X	X	0.005
Cu	X	X	0.0025
Zn	X	X	0.0025
Ni	X	X	0.004
Al	X	X	0.02
Mg, Ca	X	X	0.05

### Superscripts:

\*<sup>1</sup> Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater. 18th Edition.

### \*<sup>2</sup> Total Residual Chlorine

Either of the following methods the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses.

-Method 4500-CL E Low Level Amperometric Titration Method (the preferred method); or

-Method 4500-CL G DPD Colorimetric Method

or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5

## VII. TOXICITY TEST DATA ANALYSIS

### LC50 Median Lethal Concentration (Determined at 48 Hours)

#### Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

See the flow chart in Figure 6 on p. 77 of EPA 600/4-90/027F for appropriate method to use on a given data set.

### No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 94 of EPA 600/4-90/027F.

## VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

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

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

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

2. Permit Actions

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

3. Duty to Provide Information

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

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4. Reopener Clause

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

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

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

5. Oil and Hazardous Substance Liability

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

6. Property Rights

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

7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
  - (1) The name and address of any permit applicant or permittee;
  - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

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8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

### b. Bypass not exceeding limitations

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

### c. Notice

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

### d. Prohibition of bypass

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

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

## 5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

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

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
  - (2) The permitted facility was at the time being properly operated;
  - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
  - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

**PART II. C. MONITORING REQUIREMENTS**

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
  - (1) The date, exact place, and time of sampling or measurements;
  - (2) The individual(s) who performed the sampling or measurements;
  - (3) The date(s) analyses were performed;
  - (4) The individual(s) who performed the analyses;
  - (5) The analytical techniques or methods used; and
  - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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

### 2. Inspection and Entry

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

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

## PART II. D. REPORTING REQUIREMENTS

### 1. Reporting Requirements

- a. **Planned Changes.** The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
  - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
  - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
  - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. **Anticipated noncompliance.** The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. **Transfers.** This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
  - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
  - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
- (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.  
  
A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
  - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
    - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
    - (b) Any upset which exceeds any effluent limitation in the permit.
    - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
  - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
  - g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
  - h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.
2. Signatory Requirement
- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
  - b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.
3. Availability of Reports.

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

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

*Construction Activities* - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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

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

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

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

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

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

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

*Discharge of a pollutant* means:

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

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

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

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

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

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

*EPA* means the United States “Environmental Protection Agency”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

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

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

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

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

*NPDES* means “National Pollutant Discharge Elimination System”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
  - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
  - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
  - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*Waters of the United States* means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
  - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
  - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

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

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

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

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

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

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

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

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

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*Feed crops* are crops produced primarily for consumption by animals.

*Fiber crops* are crops such as flax and cotton.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*Range land* is open land with indigenous vegetation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl <sub>2</sub>	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

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TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M <sup>3</sup> /day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH <sub>3</sub> -N	Ammonia nitrogen as nitrogen
NO <sub>3</sub> -N	Nitrate as nitrogen
NO <sub>2</sub> -N	Nitrite as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION I  
1 CONGRESS STREET - SUITE 1100  
BOSTON, MASSACHUSETTS 02114

**FACT SHEET**

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

NPDES PERMIT NO.: **MA0102245**

NAME AND ADDRESS OF APPLICANT:

**The Commonwealth of Massachusetts  
Executive Office of Public Safety  
Department of Correction**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Massachusetts Correctional Institute (MCI)-Concord  
965 Elm Street  
Concord, MA 01742-9106**

RECEIVING WATER: **Assabet River (Concord Basin)**  
**USGS Hydrologic code: 01070005; State Basin Code: 82**

CLASSIFICATION: **Class B**

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

The above named applicant has applied to the U.S. Environmental Protection Agency ("EPA") for the reissuance of its NPDES permit to discharge into the designated receiving waters. The facility is engaged in the collection and treatment of domestic wastewater. The discharge from this wastewater treatment facility is via Outfall 001 to the Assabet River. See Figure 1 for the facility and discharge location.

## **II. Description of Discharge**

MCI-Concord is a medium security prison facility which operates a 0.31 million gallon per day (MGD) wastewater treatment facility serving the prisoner and staff population, a local public works building and state police barracks. This facility serves a population of about 1600 inmates and staff employees.

The on-site water pollution control facility (WPCF) is an extended aeration activated sludge plant which last underwent a major upgrade in 1993, which increased its design flow from 0.162 MGD to 0.31 MGD. See Figure 2 for a schematic of the facility operations. The headworks receives the influent, which is passed through a shredder and receives lime addition for pH neutralization. This flow is then sent to a grit chamber followed by four parallel extended aeration tanks. Since July 2001, the permittee has been adding alum (aluminum sulfate) at a point prior to the aeration tanks, which reduces phosphorus levels through the treatment process. Following the aeration tanks are four clarifiers which remove solids, followed by chlorination in a contact chamber. In the summer of 2001, the permittee added a portable tank to add sodium bisulfite for dechlorination.

Sludge is removed by belt filtration and is thickened by the addition of polymer. Liquid sludge is picked up twice per week at about 5000 gallons per load and is sent to the East Fitchburg, Massachusetts Publicly Owned Treatment Works (POTW) for incineration.

A quantitative description of the WPCF discharge in terms of significant effluent parameters based on recent monitoring data is shown on Table 1.

## **III. Permit Limitations and Conditions.**

The effluent limitations and the monitoring requirements may be found in the draft NPDES permit.

## **IV. Permit Basis and Explanation of Effluent Limitation Derivation**

### **Technology-Based Requirements**

Consistent with 40 CFR §403.3, this facility is a Publicly Owned Treatment Works (POTW), in this case owned by the State. Under Section 301(b)(1)(B) of the Clean Water Act (CWA), POTWs must have achieved effluent limitations based upon **secondary treatment** by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133, and include biochemical oxygen demand (BOD) and total suspended solids (TSS) monthly average and weekly average limits of 30 mg/l and 45 mg/l respectively, a monthly average limit of 85 percent removal for BOD and TSS, and pH limits of 6- 9 standard units (SU).

## **Water Quality-Based Requirements**

Under Section 301(b)(1)(C) of the CWA and EPA regulations NPDES permits must contain effluent limits more stringent than technology-based limits where such limits are necessary to maintain or achieve state or federal water quality standards or other applicable requirements of State law.

Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards (WQS), found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard. An excursion occurs if, for example, the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential", EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's reissuance application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) known water quality impacts of processes on waste waters; and (5) where appropriate, dilution of the effluent in the receiving water.

## **Antibacksliding**

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 requirements of the CWA [see Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. Effluent limits based on BPJ, water quality, and state certification requirements must also meet the antibacksliding provisions found at Section 402(o) and 303(d)(4) of the CWA.

This draft permit is being reissued with allowable discharge limits as stringent or more stringent than the current permit with the exception of the limitations for flow and settleable solids. The flow has been increased due to the expansion described earlier. The rationale for allowing these changes is provided below.

## **Antidegradation**

Federal regulations found at 40 CFR Section 131.12 require states to develop and adopt a statewide antidegradation policy which maintains and protects existing instream water uses and the level of water quality necessary to protect the existing uses, and maintains the quality of waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water. The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04.

EPA anticipates that the MADEP will find that there is no significant degradation as a result of the increase in flow and removal of the settleable solids requirement noted above and that all existing uses of the receiving water shall be protected. The public is invited to participate in the anti-degradation finding through the permit public notice process.

## **Waterbody Classification and Usage**

The Assabet River at the point of discharge is classified as a Class B warm water fishery by the Massachusetts Department of Environmental Protection (MA DEP). Class B waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. These waters shall have consistently good aesthetic value. Where designated, they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The segment of the Assabet River that receives this discharge is not meeting the State's water quality standards as described in the "Nutrients" section below.

The National Park Service has designated this stretch of the Assabet River, as a "Wild and Scenic River." As such, the EPA is obligated to consult with the National Park Service, the "Service", regarding this permit under Section 7B of the Wild & Scenic Rivers Act. In its review, the Service will conclude whether or not this discharge has a direct and adverse impact on the river's free flowing status or the values that are significant along this stretch of the river. If the Service determines an impact, it may recommend changes to the permit in order to alleviate or eliminate the impact.

## **Conventional Pollutants**

### **Flow**

The permittee's effluent flow has ranged from 0.12 to 0.30 MGD for the period of August 2001 to June 2003. This time period is also referenced below for other parameters. Consistent with the upgrade of the plant that was completed in 1993, the current facility design flow is 0.31 MGD. Therefore, this has been established as the permitted flow limit, replacing the previous limit of 0.162 MGD.

This change is allowed under the antibacksliding exception at §122.44(l)(2)(i)(A), which states “Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation. Clearly, the expansion at the plant which allowed for treatment of greater flows can be characterized as a “material and substantial alteration” to the facility. However, in order to ensure that the increased flow limit does not result in degradation of the receiving water, the permitted mass-based loading for any previously permitted pollutants will be held at the 0.162 MGD level. This applies to limits for BOD, TSS and ammonia-nitrogen.

## **BOD and TSS**

The 1978 permit limited BOD and TSS year round to 15 mg/l for a monthly average, 25 mg/l for a weekly average and 30 mg/l for a daily maximum. These limits were more stringent than the secondary treatment requirements, which are 30 mg/l for a monthly average and 45 mg/l for a weekly average. These tighter limits were established since the Assabet River in the area of the discharge is a slow moving, low gradient portion of the river and this plant is an advanced secondary operation. As described later in this fact sheet, the slow moving nature of this river could cause depressed dissolved oxygen levels and increased eutrophication due to the presence of nutrients.

In order to keep the loadings of BOD and TSS equal to those authorized in the existing permit, year round mass limits have been calculated using the flow limit from the current permit (0.162 MGD) and the 15, 25 and 30 mg/l concentrations. These limits were calculated to maintain the load equal to that of the current permit, consistent with the antidegradation regulations discussed earlier. In particular, the BOD loadings must be maintained so that there is no further degradation related to eutrophication-driven DO impairments.

For the same period noted above for flow, the effluent BOD averaged 5.5 mg/l and the TSS averaged 1.7 mg/l, with no violations for either parameter. The frequency of monitoring for BOD and TSS has been increased from once per month to once per week. A mass limit calculation is shown in **Attachment A**. The BOD and TSS removal percentages have both averaged 98% during this period, with no violations of the minimum removal requirement of 85% for either parameter.

## **Settleable Solids**

The settleable solids monitoring requirement has been removed from the draft permit. There were two violations during the period which included many non-detectable readings. Settleable solids were limited in the current permit primarily as a means to optimize facility operations rather than as an indicator of effluent water quality. In this reissued permit, EPA has chosen to use TSS as a more appropriate indicator of sediment water quality in the effluent. The TSS limits ensure that the sediment discharges are no less stringent than those in the current permit.

### Change in 7Q10 flow

To calculate certain permit limits, the 7Q10 flow is required, which represents the statistical 7 day low flow over a 10 year period. The fact sheet for the current permit did not include a 7Q10 flow, since none of the limits were established using a dilution factor. A 7Q10 flow analysis was done based on the most recent 30 year record of the Maynard, MA United States Geological Service (USGS) flow gage. A graphical analysis of these data shown in Figure 3 indicates a 7Q10 of approximately 14 cfs at the Maynard gage. The other figures used in the calculations are from USGS gages and estimated drainage areas in the basin. These calculations yield an estimated 7Q10 flow of 20 cfs at the MCI-Concord effluent location. See **Attachment B** for this estimated 7Q10 derivation. The total residual chlorine (TRC) limits which were derived by using this flow are discussed below.

### Nutrients

It has been documented that most reaches of the Assabet River, including the segment to which the permittee discharges, suffer from eutrophication, a condition characterized by low dissolved oxygen and excessive plant growth which is caused primarily by excessive nutrients entering the river. The Massachusetts Year 2002 Integrated List of Waters lists the segment including the permittee's discharge (Segment ID MA82B-07\_2002) as a water requiring a total maximum daily load (TMDL) for the following pollutants: nutrients, organic enrichment/low dissolved oxygen, and pathogens.

Phosphorus and other nutrients promote the growth of nuisance algae and aquatic plants, and when these plants and algae undergo their decay processes, they generate strong odors and result in lower dissolved oxygen levels in the river. Although some phosphorus is introduced into the river from storm water runoff and released from river sediments, the majority of phosphorus entering the river is effluent from sanitary wastewater treatment facilities, primarily from the communities of Westboro, Marlborough (West), Hudson, and Maynard. Another factor that compounds the eutrophication situation is the relatively high level of treated sanitary wastewater discharged to the Assabet from these facilities during the low flow periods of summer and early fall. There are times when the Assabet River is composed almost entirely of wastewater effluent. The Assabet is a low gradient stream and has several dams. These conditions often trap nutrients in the sediments which may result in the nutrients being slowly released back into the water column over time.

The Massachusetts WQS require that "any existing point source discharge containing nutrients in concentration which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practical treatment to remove such nutrients" (see 314 C.M.R. § 4.04(5)).

MADEP has defined highest and best practical treatment for the discharge of phosphorus from POTWs as treatment process which attain an average effluent concentration of 0.2 mg/l.

DEP has completed an extensive assessment of the upstream segments of the Assabet River impacted by POTW discharges from the above communities and has completed a Total Maximum Daily Load (TMDL) for those segments, which establish maximum allowable phosphorus loadings for those facilities which are expected to result in attainment of water quality standards. EPA and MADEP, using the preliminary results from the TMDL, have proposed to establish water quality-based monthly average permit limits of 0.1 mg/l for these POTWs. The draft permits for those four discharges require the permittees to initiate the operation of phosphorus treatment plant improvements by July 2008, and achieve the phosphorus limit by April of 2009.

### **Phosphorus Limits**

The current permit, which has expired but will remain in effect until a new permit is reissued, has no effluent limits for phosphorus. However, the permittee has been providing seasonal (April-October) phosphorus removal since July of 2001 and the effluent levels have ranged from 0.07 to 4.55 mg/l as shown below. The permittee's phosphorus removal method consists of adding liquid alum prior to the facility's aeration tanks.

	2001	2002	2003	2004
April	3.75	3.5	0.65	2.25
May	4.55	1.01	1.79	3.3
June	2.0	0.52	0.35	0.24
July	0.45	0.12	0.38	0.49
August	0.61	0.25	0.07	0.07
September	0.38	0.9	0.04	0.87
October	0.5	0.07	0.04	NA

Although not included in the water quality modeling used to develop the Assabet River TMDL, it is clear that a stringent phosphorus limit is necessary for this discharge. This decision is based on the severity of the phosphorus driven water quality impairment in the Assabet River, uncertainties related to implementation of the extensive upstream phosphorus reductions required by the TMDL, and the short travel time to the phosphorus impaired Concord River downstream of the MCI discharge.

The final phosphorus limitation in the draft permit of 0.2 mg/l is based on the highest and best practical treatment (HBPT) requirement of the Massachusetts Water Quality Standards (see 314 CMR 4.04(5)). This limit is a 60 day rolling average, as described in the permit. EPA and MADEP do not believe that the limitation needs to be as stringent as the limitations in permits for the upstream POTWs (0.1 mg/l), due to the relatively small size of the discharge and the additional dilution provided between the Maynard POTW and the MCI Concord discharge, as well as the dilution immediately downstream of the MCI Concord discharge provided by the Sudbury River. Section E of this permit contains a compliance schedule for meeting the final, total phosphorus limits. The schedule contains several interim milestones and reporting requirements relative to the steps necessary to complete the design and construction of facilities necessary to meet the final limits. By June 30, 2008, the permittee must complete construction and initiate operation of the facility improvements. Final compliance with the total phosphorus limits must be achieved by April 30, 2009. The permit has established an April through October seasonal, interim total phosphorus limit of 0.5 mg/l that is in effect until the final compliance date noted above. This limit is expressed as a 60 day rolling average, as described in the permit. EPA and MADEP believe that this limit is achievable by the facility based on the effluent phosphorus results obtained by the permittee over the past four years and in anticipation of additional measures that the permittee can take as discussed in the Compliance Schedule found in the draft permit. Such measures include chemical dosing at various points, increasing dosages and minimizing effluent phosphorus loadings, among others. Monitoring frequency has been established at three times per week for this limit, which will be in effect from April 1 through October 31 only.

A final effluent phosphorus limit of 1.0 mg/l has been established for the period of November through March, consistent with the compliance schedule in Permit Section E. In the interim, a once per week monitoring requirement applies and the permittee is required to optimize phosphorus removal with a goal of achieving a discharge total phosphorus concentration of 1.0 mg/l or less.

The winter period limitation on total phosphorus is necessary to ensure that the higher levels of phosphorus discharged in the winter period do not result in the accumulation of phosphorus in the river sediments. The limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction and that dissolved phosphorus will pass through the system given the short detention time of the upstream impoundments on the Concord River and the lack of plant growth during the winter period. A winter ortho-phosphorus monitoring requirement has also been established. This form of phosphorus is the dissolved fraction and subtracting this from the total phosphorus will provide an indication of the particulate fraction of phosphorus that is being discharged. If future evaluations indicate that phosphorus may be accumulating in the impoundments, the winter period phosphorus limit may be reduced in future permit actions. The agencies will pursue the necessary resources in order to conduct the evaluation. If necessary, the permittee may be asked to conduct such analysis through the authority of Section 308 of the CWA.

## **Ammonia Nitrogen**

Ammonia aerobically decomposes in receiving waters, exerting a demand on in-stream dissolved oxygen. The current permit has no limitations for ammonia nitrogen, but EPA and MADEP are concerned that the increased flow from the upgraded treatment plant will contain increased loads of ammonia, thereby decreasing the dissolved oxygen content of the receiving water, violating MADEP's antidegradation policy. In order to ensure that this does not occur, a limitation for ammonia nitrogen has been included in the draft permit, based on an estimate of the load discharged under the current permit. The current load was estimated by using the current flow limitation of 0.162 MGD and an estimated concentration of 15 mg/l, which is the concentration in wastewater typically discharged by secondary treatment facilities which are not required to nitrify. At this flow and concentration, the calculated mass discharge is 20 pounds per day. At the new design flow of 0.31 MGD and a 20 pound per day mass discharge, a new concentration limit of 7.8 mg/l has been calculated (See **Attachment A**). This limit will apply during the warm weather months of May through October. Monitoring is required once per week during this period, and twice per month monitoring is required for the remainder of the year.

## **pH**

The pH range requirement of 6.5 - 8.3 standard units (s.u.) in the current permit has been maintained in the draft permit. The permittee has reported a pH range over the period of August 2001 to June 2003 of 6.4 to 8.7 s.u., with two violations of the permitted range of 6.5 - 8.3 s.u. This pH limit range is based upon State Certification requirements for POTWs under Section 401(d) of the CWA, 40 CFR 124.53 and 124.55, and water quality considerations.

## **Bacteria Limitations**

The Fecal Coliform limits are a geometric mean of no more than 200 colony forming units (cfu) per 100 ml and a daily maximum limit of 400 cfu/100 ml. These limits are consistent with Class B water requirements of the DEP and shall be measured three times per week, which is an increase from the current once per month requirement. The frequency is being increased and these limits are being maintained year round in part because the Town of Billerica withdraws water from the Concord River downstream for its drinking water supply. There have been no violations in the reporting period above. These limits are based upon State Certification requirements for POTWs under Section 401(d) of the CWA, 40 CFR 124.53 and 124.55, and water quality considerations.

## **Total Residual Chlorine (TRC)**

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. Effluent limits are based on water quality criteria for TRC which are specified in the water quality criteria document, often referred to as the EPA Goldbook. The criteria states that the average TRC in the receiving water should not exceed 11 ug/l for protection from chronic toxicity and the maximum TRC should not exceed 19 ug/l to protect fresh water aquatic life from acute toxicity.

The permittee shall monitor TRC concentration prior to dechlorination to assure adequate bacterial control and then sample following dechlorination to assure that discharge concentrations do not exceed permit limits and cause toxic conditions.

The 7Q10 dilution and plant design flow are necessary to calculate the appropriate TRC limits. The 7Q10 dilution multiplied by the chronic and acute fresh water criteria provide the appropriate TRC limits. As shown in **Attachment C**, the calculated limits are 0.47 mg/l and 0.82 mg/l and these are the proposed draft permit limits.

In footnote 6 on Page 3 of the permit, there is a requirement to implement an alarm system for indicating chlorination and dechlorination system interruptions or malfunctions. EPA and MA DEP are establishing this requirement based on the concern that even during short periods of malfunction of these systems could cause significant harm to aquatic life.

### **Whole Effluent Toxicity**

National studies conducted by the Environmental Protection Agency have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents and aromatic hydrocarbons among others. The Region's current policy is to include toxicity testing requirements in all municipal permits, while Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Based on the potential for toxicity resulting from domestic contributions, and in accordance with EPA regulation and policy, the draft permit includes acute 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 Region I has developed a toxicity control policy. The policy requires wastewater treatment facilities to perform toxicity bioassays on their effluents. The Commonwealth of MA DEP requires bioassay toxicity testing for state certification.

Pursuant to EPA Region I's policy, discharges having a dilution of between 20:1 and 100:1 require acute toxicity testing four times per year. 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 analyses; (2) bio-availability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

The draft permit requires that Concord MCI conduct WET testing for the Outfall 001 effluent four times per year and that each test include the use of the daphnid, Ceriodaphnia and the fathead minnow, Pimephales promelas. There has been an LC<sub>50</sub> limit of greater than or equal to 100% established in the draft permit. The LC<sub>50</sub> 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. EPA Region I WETT protocol found in Attachment A of the permit shall be followed while conducting this testing.

#### **V. Sewage Sludge Information and Requirements**

The Concord MCI WPCF generates liquid sludge which is hauled away by a licensed contractor to the East Fitchburg WWTF for incineration. In February 1993, the Environmental Protection Agency (EPA) promulgated standards for the use and disposal of sewage sludge. The regulations were promulgated under the authority of §405(d) of the Clean Water Act (CWA). Section 405(f) of the CWA requires that these regulations be implemented through permits. This permit is intended to implement the requirements set forth in the technical standards for the use and disposal of sewage sludge, commonly referred to as the Part 503 regulations.

Section 405(d) of the CWA requires that sludge conditions be included in all municipal permits. The sludge conditions in the draft permit satisfy this requirement and are taken from EPA's proposed Standards for the Disposal of Sewage Sludge to be codified at 40 CFR Part 503 (February 19, 1993 - Volume 58, pp 9248-9415). These conditions are outlined in the draft permit.

#### **VI. Essential Fish Habitat Determination (EFH):**

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with 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 as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

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. EPA has determined that a formal EFH consultation with NMFS is not required because the proposed discharge will not adversely impact EFH.

#### **VII. State Certification Requirements**

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection certifies or waives its right to certify 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 Massachusetts Department of Environmental Protection 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.

### **VIII. Public Comment Period 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 the U.S. EPA, Office of Ecosystem Protection (SPA), 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. 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.

### **IX. EPA & MA DEP 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 the EPA and DEP contacts below:

George Papadopoulos, Massachusetts Office of Ecosystem Protection  
One Congress Street Suite 1100 - Mailcode CIP  
Boston, MA 02114-2023  
Telephone: (617) 918-1579 FAX: (617) 918-1505

Paul Hogan, Massachusetts Department of Environmental Protection  
Division of Watershed Management, Surface Water Discharge Permit Program  
627 Main Street, 2nd Floor Worcester, Massachusetts 01608  
Telephone: (508) 767-2796 FAX: (508) 791-4131

January 7, 2005  
Date

Linda M. Murphy, Director  
Office of Ecosystem Protection  
U.S. Environmental Protection  
Agency

**TABLE 1**

**OUTFALL 001 CHARACTERISTICS** <sup>1</sup>

<u>Number of Parameter</u>	<u>Range</u>	<u>Violations</u> <sup>2</sup>
Flow, MGD, Range	0.12 - 0.30	20
Settleable Solids, ml/l, Range	ND <sup>3</sup> - 1.5	2
pH Range, S.U.	6.4 - 8.7	2
Fecal Coliform,#/100 ml, Range	<1 - 4	0
Phosphorus, mg/l, Range <sup>4</sup>	0.07 - 4.55	—
Total Residual Chlorine, mg/l, Range	0.01 - 0.49	0
BOD <sub>5</sub> ,mg/l	4 - 11	0
TSS, mg/l	0.4 - 4	0
BOD Removal, %	96 - 99	0
TSS Removal, %	94 - 99	0

1. Data is from monitoring reports for the period of August 2001 to June 2003.
2. These are NPDES effluent limitation violations for the period.
3. ND = not detected
4. Includes 2004 data.

**ATTACHMENT A**  
**POLLUTANT LIMIT CALCULATIONS**

Receiving Water: Assabet River (Class B)

Previous Plant Design Flow: **0.162 MGD**

Parameters: **Total Suspended Solids (TSS)** , **Total Ammonia Nitrogen**

TSS weekly average limit = **25 mg/l**

To convert to a mass limit, multiply by the design flow and a conversion factor.

$$\text{mg/l (0.162 MGD) (8.345) = 34 lbs/day}$$

Conversion factor

This limit will apply year round in order to maintain the TSS (and BOD) loading in this discharge similar to that of the previous permit, consistent with antibacksliding, as explained in the fact sheet.

Total Ammonia Nitrogen monthly average limit = **15 mg/l** (applies to 1978 permit)

To get the corresponding mass limit based on the previously permitted flow:

$$15 \text{ mg/l (0.162 MGD) (8.345) = 20 lbs/day}$$

This limit will apply for the period of May through October, with a monitoring requirement for the remainder of the year with no limit.

The concentration limit has been adjusted as follows to reflect the increase in the design flow:

$$15 \text{ mg/l } \left( \frac{0.162 \text{ MGD}}{0.31 \text{ MGD}} \right) = \mathbf{7.8 \text{ mg/l}}$$

## ATTACHMENT B - 7Q10 FLOW CALCULATION

In order to obtain an estimate of a 7Q10 flow at a point between the two USGS gages listed below, the drainage areas (DA) between them must be calculated and other flows included or excluded as explained below. All drainage area values for the locations below are estimated from USGS topographic maps and the USGS gazetteer of 1984 for the SUASCO (Sudbury-Assabet-Concord) river basin.

Lowell, MA USGS gage, 7Q10 for the period 1971 - 2000: **38 cfs**  
Maynard, MA USGS gage, 7Q10 for the period 1971 - 2000: **14 cfs<sup>1</sup>**

### **Flow factor calculation for main stretch of river between Maynard and Lowell gages:**

$$\begin{array}{rclcl} 400 \text{ square miles} & - & 116 \text{ square miles} & = & 284 \text{ sq. mi.} \\ \text{(Lowell gage DA)} & & \text{(Maynard gage DA)} & & \text{(DA between Maynard to Lowell)} \end{array}$$

### **Low flow attributable to this stretch of river:**

$$\begin{array}{rclcl} 38 \text{ cfs} & - & 14 \text{ cfs} & - & 1.5 \text{ cfs}^2 & = & 22.5 \text{ cfs} \\ \text{(7Q10 @ Lowell)} & & \text{(7Q10 @ Maynard)} & & & & \end{array}$$

### **Flow factor for this stretch of river:**

$$22.5 \text{ cfs} / 284 \text{ square miles} = \mathbf{0.079 \text{ cfs/sq. mile}}$$

$$7\text{Q10 estimate:} \quad (\text{drainage area})(\text{flow factor})$$

### **Estimated 7Q10 flow at Concord MCI:**

$$14 \text{ cfs} + 1.5 \text{ cfs} + (168 \text{ mi}^2 - 116 \text{ mi}^2) 0.079 = \mathbf{20 \text{ cfs}}$$

(DA between Maynard gage  
and Concord MCI discharge)

1. This is the estimated 7Q10 at the Maynard USGS gage. See Attachment D for a graphical estimation of the 7Q10 flow for the period.
2. This is the average effluent flow from the Maynard WWTF for the period of June to Sept of 1989 - 1999, reflecting the low flow season over that period. This flow is subtracted because the Town's water supply is Taylor Brook, which does not contribute to the drainage area of the Assabet River.

**ATTACHMENT C**

**WATER QUALITY BASED EFFLUENT LIMIT DERIVATION**

Parameter: Chlorine, Total Residual (TRC)

Water Quality Criteria: Fresh water - Chronic, Acute- 0.011 mg/l, 0.019 mg/l

7Q10 flow @ MCI Concord: **20 cfs = 13 MGD**

Plant Design Flow: **0.31 MGD**

Design Flow Dilution:

$$1 \quad \frac{\text{Design flow} + 7\text{Q10 flow}}{\text{Design flow}} = \frac{0.31 + 13}{0.31} = \mathbf{43 :}$$

Effluent Limitations:      Monthly Average:      Daily Maximum:

**mg/l**      43 (0.011 mg/l) = **0.47 mg/l**      43 (0.019 mg/l) = **0.82**

These are the water quality based calculations at MCI -Concord's WWTP design flow. Therefore, the limits in the permit will be established as calculated above.

## Response to Public Comments

From January 14, 2005 to February 12, 2005, the United States Environmental Protection Agency (“EPA”) and the Massachusetts Department of Environmental Protection (“DEP”) (together, the “Agencies”) solicited public comments on a draft NPDES permit developed pursuant to a permit renewal application from the Commonwealth of Massachusetts, Executive Office of Public Safety, Department of Correction (“Permittee”) for the reissuance of a National Pollutant Discharge Elimination System (“NPDES”) permit to discharge treated sanitary wastewater to the Assabet River from outfall 001 of the Massachusetts Correctional Institute in Concord, MA (“MCI-Concord” or “Facility”).

This response to comments briefly describes and responds to the comments received by the Agencies during the public comment period and describes the changes that have been made to this permit from the draft upon consideration of the comments. Copies of the final permit (“Permit”) may be obtained by writing or calling EPA’s NPDES Municipal Permits Branch (CMP), Office of Ecosystem Protection, 1 Congress Street, Suite 1100, Boston, MA 02114-2023; Telephone: (617) 918-1579.

### **A) Comments submitted by the National Park Service of the United States Department of the Interior:**

Comment #1: The last permit for this facility was issued in 1978. At that time the design flow was 0.162 MGD and there was no phosphorus limit. Although permits are to be reissued every 5 years, this permit was not reissued until now, 27 years later. In the interceding years, the design flow was almost doubled to 0.31 MGD, the Assabet was not meeting water quality standards, and yet, the permit was not evaluated and reissued with a phosphorus limit.

Response #1: The commenter correctly observes that the previous permit was issued in 1978 and was administratively continued thereafter (“Previous Permit”). The flow limit in the Previous Permit was 0.162 MGD, calculated as a monthly average, which reflected the facility’s 1978 design flow. Since the completion of a DEP-approved treatment plant upgrade in 1993 to provide advanced secondary treatment and to increase design flow to 0.31 MGD, the Permittee has repeatedly violated its permitted flow limit. Permit violations have been referred to EPA enforcement, which will determine whether enforcement action is warranted.

Since the issuance of the Previous Permit, the Agencies have developed and distributed for public notice two draft permits, most recently in 2002. Rather than issue the 2002 draft permit in final form, the Agencies decided to wait until the then ongoing Assabet River Total Maximum Daily Load for Total Phosphorus (“TMDL”) was completed and substantial progress was made toward reissuing permits to the four major POTWs that discharge into the Assabet River. The Region prioritized the major POTWs because they constitute the overwhelming source of phosphorus loading into the Assabet River. For instance, during 1999 and 2000 summer-time conditions (i.e. low flow), the discharges

from the major POTWs comprised about 97% of the point source phosphorus loading to the river. The TMDL was approved by EPA in September 2004 and draft permits were issued to the four major dischargers in June 2004, each with summer seasonal phosphorus effluent limits of 0.1 mg/l. These permits were issued final on May 27, 2005. With the TMDL completed and the permitting process for the major POTWs in the watershed underway, the Agencies turned their attention in 2005 to the minor Assabet River dischargers, including MCI-Concord, and imposed for the first time a stringent phosphorus limitation of 0.2 mg/l for the period from April 1 through October 31 and 1.0 mg/l from November 1 through March 31.

Comment #2: The proposed phosphorus limit of 0.2 mg/l is not low enough to meet water quality standards in the Assabet River. The Fact Sheet acknowledges severe water quality impairments in the Assabet, as well as the uncertainty of implementing extensive phosphorus reductions upstream. However, instead of proposing a water quality based 0.1 mg/l limit, as is proposed at the upstream municipal plants, a highest and best practical treatment technology-based limit of 0.2 mg/l is proposed. The 0.2 mg/l proposed limit is inappropriate for a number of reasons. The 0.2 mg/l limit is based on highest and best practical technology. Because of documented water quality impairments, this permit as with all of the other permits on the Assabet, should be water quality based.

Response #2: The Agencies believe that a phosphorus limit of 0.2 mg/l is stringent enough to ensure compliance with water quality standards and is, moreover, consistent with the assumptions and conclusions of the TMDL. The TMDL recommended a waste load allocation (“WLA”) of 1.25 lbs per day for MCI-Concord, which is located downstream of the five river impoundments that are the chief nutrient traps and habitats for nuisance plant growth in the system. The recommended WLA for MCI-Concord assumes a phosphorus effluent limitation of 0.5 mg/l based on a design flow of 0.31 MGD. The TMDL justified departing from the more stringent limitations imposed on the major POTWs because of the comparatively small size of the MCI-Concord discharge and the location of the Facility downstream of the impoundments. Placing the limit in the context of the watershed permitting process, the TMDL explained:

With the TMDL based on total phosphorus of 0.1 mg/l in the effluents from the four major POTWs and the 90% reduction in phosphorus from sediment flux fully realized, predicted total phosphorus concentrations in the Assabet River near the points of discharge of these treatment facilities are less than 0.01 mg/l. The incremental difference from the Middlesex School and MCI Concord POTWs would be less than 0.0004 and 0.011 mg/l total phosphorus, respectively. This would result in an in-stream total phosphorus concentration of less than 0.025 mg/l, a concentration that is expected to be lower than that needed to ensure meeting all designated uses affected by nutrients. Because of the above, the Department considers the proposed loads from these sources to be acceptable in terms of water quality in the mainstream Assabet River.

See TMDL at pp. 39-40.

The Agencies concur with the reasoning of the TMDL and do not believe the more stringent 0.1 mg/l limit imposed on the major POTWs needs be applied to MCI-Concord in order to ensure compliance with water quality standards. However, because of the existing severe impairment of the receiving water and significant uncertainty regarding the achievement of load allocation (“LA”) targets, particularly with respect to the feasibility of sediment remediation, the Agencies believe a summer seasonal highest and best practical treatment (HBPT) limit of 0.2 mg/l is required to ensure compliance with 314 C.M.R. § 4.05(5). A limit of 0.2 mg/l is also consistent with 314 C.M.R. § 4.04(5), which requires that discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae be provided with the HBPT to remove such nutrients. The fact that MCI-Concord discharges near the confluence of the Concord River, which is also impaired for nutrients and this downstream stretch of the Assabet River is also designated as a federal Wild and Scenic River, were factors considered by the Agencies. See Letter dated September 23, 2004 from Linda Murphy of EPA to Robert Golledge of DEP approving TMDL (“Approval Letter”) at p. 6. A discharge level of 0.2 mg/l at MCI-Concord would result in a daily phosphorus loading of 0.52 pounds per day from the facility to the Assabet River, as calculated below.

$$\begin{array}{rcccl}
 0.2 \text{ mg/l} & \times & 0.31 \text{ MGD} & \times & 8.345 & = & \mathbf{0.52 \text{ lbs/day}} \\
 \text{Final effluent} & & \text{MCI- Concord} & & \text{Conversion} & & \\
 \text{Phosphorus limit} & & \text{Design Flow} & & \text{factor} & & 
 \end{array}$$

With the dilution to the discharge of 43:1 at the permitted flow (Assabet River 7Q10 flow is 43 times the flow of 0.31 MGD), the incremental increase in concentration to the Assabet River would be about 0.004 mg/l. The TMDL also notes that even at 0.5 mg/l, the resulting instream concentration during 7Q10 conditions would be less than the instream national guidance values used by EPA assuming the TMDL WLAs and LAs are achieved. Id. at 66.

Comment #3: The draft permit argues that the permit limit does not need to be as low as the upstream facilities because the Sudbury (River) will provide adequate dilution to the Assabet River flow. However, the Concord River, which is formed by the confluence of the Assabet and Sudbury Rivers is already impaired due to nutrient enrichment, and upstream nutrient contributions should be minimized. EPA’s approval letter (9/23/2004) for the Assabet TMDL suggests that the phosphorus limit for MCI Concord be set “...in order to minimize the transport of phosphorus downstream to the heavily impaired Concord River system, which has been designated as a Wild and Scenic River.”

Response #3: The Fact Sheet accompanying the Draft Permit notes that the Sudbury River provides dilution to the Assabet River flow downstream of MCI-Concord. The Agencies now conclude that the conclusion in the Fact Sheet was incorrect and that Sudbury River does not provide appreciable dilution. Since the Sudbury River is also impaired for nutrients, including phosphorus, even this minimal dilution offers no

assimilative capacity for phosphorus. The lack of dilution does not compel a lower limit in light of the other factors considered by the Agencies in Response A.2 above. The Agencies note that the TMDL does not assume dilution flow from the Sudbury River in arriving at its WLA and recommended phosphorus effluent limit for MCI-Concord. The Agencies believe that the imposition of a phosphorus limit of 0.2 mg/l—more stringent than the 0.5 mg/l recommended by the TMDL—is sufficiently protective of the receiving water.

Comment #4: The fact sheet acknowledges that there are uncertainties in implementing the upstream phosphorus reductions. Sediment remediation phosphorus reduction, if feasible, will at best be many years off. Acknowledging this uncertainty, the phosphorus limit, even for this minor discharge, should be set as low as possible.

Response #4: As noted, the Agencies have already factored a margin of safety into the Permit limit in order to account for the uncertainty of sediment remediation efforts. Please see Comment A.2 above for the basis of the 0.2 mg/l limit. The TMDL's WLA itself contains a margin of safety. See TMDL at page 8. A further reduction of the phosphorus limit is not warranted based merely on the assumption that sediment remediation efforts either will not occur or will potentially take a long period to implement. EPA's approval of the TMDL was based on a reasonable assurance that the contemplated nonpoint source reductions would in fact occur and would in fact be pursued in a timely manner. See Approval Letter. EPA regarded DEP's stated commitment to remediation efforts to constitute the basis of such reasonable assurance. Id. A further indication that load allocation goals will be achieved is that the upstream communities discharging to the Assabet River—Hudson, Maynard, Westborough, Northborough, Shrewsbury and Marlborough—have entered into a binding Memorandum of Understanding (“MOU”) to assure that a feasibility study of remediation alternatives is funded to completion. Expected State and Federal contributions combined with the MOU enhance the likelihood that the remediation study will be completed in a timely manner. A major step in assessing the sediment problem is already underway through a \$200,000 cooperative effort with the United States Geological Survey (USGS) to inventory the amount and quality of the sediment behind the major dams on the Assabet River. In addition, \$500,000 was recently secured through special State legislation for evaluating sediment remediation options. The Agencies do not discount the uncertainties cited by the commenter, but in light of the foregoing, believe that a limit of 0.2 mg/l is appropriate at this time.

Comment #5: The Assabet River is not supporting existing uses. EPA and DEP should undertake an antidegradation review to determine the impact on water quality and instream water uses resulting from this discharge to both the Assabet River and the Concord River into which it flows. [The review should address the increased design flow of the plant and an assessment of impacts from a phosphorus limit of 0.1 mg/l.]

Response #5: DEP's antidegradation review has concluded that MCI-Concord discharges under the Permit would maintain the receiving water consistent with its designated uses and would otherwise meet the requirements of 314 C.M.R. § 4.04. See Antidegradation Evaluation (AE), dated June 29, 2005. The AE addressed the increased design flow and the impacts of a phosphorus limit of 0.2 mg/l (which is appropriate, since 0.2 mg/l rather than 0.1 mg/l is the actual limit in the Permit). The AE noted that, "The final permit will result in maintaining the existing permitted loadings of conventional pollutants to the river, impose new limits for formerly unregulated pollutants and increase effluent monitoring." Specifically, mass limits for BOD, TSS and ammonia-nitrogen have been calculated to ensure that loadings for such pollutants are maintained at levels consistent with the current permitted flow of 0.162 MGD. New, year round phosphorus limits and seasonal ammonia nitrogen concentration limits have been imposed. Increased monitoring frequency is required for BOD, TSS and fecal coliform bacteria. For the reasons stated above, EPA also does not believe that the increased flow limit will result in a net increase of pollutants in the receiving water and concurs therefore with the conclusions of the AE.

Comment #6: The draft permit appears inequitable in setting effluent limits for discharges on the Assabet River. While 4 upstream municipalities are being asked to meet a phosphorus limit of 0.1 mg/l, this small plant, owned and operated by a state agency, is being asked to meet a less stringent 0.2 mg/l limit without reasonable justification.

Response #6: Relative to the major POTW discharges, the MCI-Concord facility discharges a small fraction of the total phosphorus loading to the river, as explained in Response A.1 above. The justification for imposing a limit of 0.2 mg/l rather than 0.1 mg/l is set forth in Response A.2 above.

**B) Comments submitted by Cindy Delpapa of the Riverways Program of the Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement:**

Comment #1: The draft permit indicates this proposed permit will be replacing a 1978 permit, having expired in 1983, has been administratively continued for over 20 years. The facility expanded its treatment capacity in 1993 but it appears this expansion did not trigger a permit reissuance or renewal. Did the permittee submit a request for a permit renewal based on this substantial change? Without a modification in the permit, an increased discharge violates the existing permit's flow requirements. The facility has consistently failed to meet its flow limit as noted in Table 1, (20 violations in 22 months) without action taken by regulators or a true airing and assessment of the flow increase's impact on the receiving water including an antidegradation review.

Response #1: The procedural history of the permit is set forth in part in Response A.1. The Permittee submitted permit renewal applications on February 17, 1982 and on July 20, 1999. Although draft permits were prepared and released for public comment on two separate occasions, final permits were not issued in either instance. The DEP conducted an AE to determine the potential impact of an increased flow limit on October 9, 2002 and finally on June 29, 2005. Please see Response A.5 for a detailed response of the most recent antidegradation evaluation.

The Agencies acknowledge that the Permittee has repeatedly exceeded its' permitted flow limit and note that the matter has been referred to EPA enforcement as discussed in Response A.1. On May 11, 1999, DEP issued an Administrative Consent Order to MCI-Concord for, among other things, not submitting monitoring reports and not meeting certain permit limits.

Comment #2: The expansion at the facility that allows this significant flow increase is a material change in conditions but it is one generated by the permittee and not a change in receiving water or influent characteristics or a correction in factual information that informed the permit. It is these sorts of changes that are more appropriately characterized as material changes under the antidegradation requirements. Also the increase did not under go public review when implemented over a decade ago. It is unfortunate the increase is readily accepted because it exists, has been in use for ten years and the proposed new limit matches the new design flow of the expanded facility. The intent of the NPDES system is to eliminate discharges and restore water quality while the anti degradation clause's intent is to prevent a relaxation in permit limits and backsliding in gains in water quality.

If the flow increase is examined on a need basis some interesting issues arise. Consider the wastewater contribution per person. The Fact Sheet states the treatment facility serves a population of 1600 with no mention of any significant industrial input in to the system. The flow limit in the draft permit, 0.31 mgd, would put the water use per person per day at 194 gallons. This is more than three times the target per capita use the State hopes to achieve, (65 gal/person/day). Even at the current discharge rate of around 0.2 mgd the per capita use is still double the recommendation at 125 gal/person/day. Before the flow increase is granted merely on the basis of plant capacity, the need for this additional flow volume should be examined and the impacts to water quality thoroughly assessed. Has the facility undertaken expansive water conservation measures, I&I elimination, and innovative technologies to reduce water use at the correctional facility? These efforts would have the added bonus of reducing potable water needs and costs in addition to reducing effluent volumes. Before a permitted flow increase is allowed into impaired waters, the need for this doubling should be justified and shown to be the only alternative AND there will be no backsliding in terms of water quality in the Assabet River, an impaired waterway. The flow increase should reflect the wastewater treatment needs of this facility, post water conservation measures, and not simply the design capacity of the plant. MCI Concord is in a unique position where there can be a great deal more direct

management of water and wastewater and this opportunity should be explored and exploited to minimize effluent volumes into this impaired receiving water.

Response #2: According to 310 C.M.R. § 15.203, DEP has set the sewage generation rate per bed for correctional facilities at 200 gpd, which is consistent with the current design flow of the plant based on the current inmate population.

There have been some water conservation and source control (minimizing detergent phosphates) efforts at the Facility in the past and we would encourage the Facility to continue and expand upon these efforts.

With respect to the commenter's antidegradation concerns, please see Response A.5 for an explanation of why the Agencies believe that the flow increase is consistent with the State's antidegradation provisions.

The appropriate backsliding analysis begins with Section 402(o) of the Clean Water Act, which prohibits reissuance of permits with effluent limitations less stringent than comparable limitations in the previous permit, with limited exceptions. One such exception is when a less stringent effluent limitation is justified by material and substantial alternations or additions to a facility that occur after the original permit issuance. CWA § 402(o)(2)(A). In this case, upgrades to modernize the treatment facility and to enable increased flow took place subsequent to the previous permit issuance. The flow increase was necessitated by the overtaxing of pumps, overflows of raw sewage and surcharging of certain treatment units. In order to fall within this exception, however, the less stringent effluent limit must also not result in discharge that would result in a violation of water quality standards. As has been explained in Responses A.1, A.2 and A.5, the Agencies have a reasonable basis to conclude that the new flow limitation will not in fact result in such violations.

Comment #3: Regardless of the final flow limit proposed, the decision to maintain pollutant loads at a 1978 permit level is a sound measure though support for load limits based on 0.162 MGD does not negate the argument for review of and justification for the actual need for increased discharge volumes. Loading limits should keep some pollutants from increasing in the discharge though status quo in an impaired waterway is not as desirable as reductions in pollutant contributions. The concentrations and loads need to be reviewed in relation to water quality goals for the receiving water. This is particularly true for phosphorus. The recently completed Assabet River Phosphorus TMDL calculated a target loading rate for the entire river. The MCI Concord loads must be adjusted along with the other point discharges in the river to attain the target load. Consideration of a phosphorus load, instead of report only, should be added to the permit informed by the TMDL results.

Response #3: As discussed in Responses A.1 and 2, the Agencies believe that the Final Permit limits are consistent with the TMDL and will ensure compliance with water quality standards.

The Agencies do not believe that it is necessary to include mass limits for phosphorus. The primary concern with phosphorus discharges is during low flow periods. During those periods, infiltration and inflow are at their lowest and consequently, wastewater volumes are at their lowest. As a result, effluent flows exceeding the permitted values would be expected to be infrequent and short term.

However, phosphorus loadings during the high flow periods could be a concern if background concentrations of phosphorus are elevated. A requirement to report mass loading values is included in the final permit and, if necessary, mass loading limits will be included in future permits.

Comment #4: Are manufacturing or other activities performed at the correction facility, police barrack or the public works building that may add pollutants such as oil and grease to the effluent? If there is the possibility of other pollutants entering the influent, a report only monitoring requirement should be considered for the pertinent pollutant.

Response #4: There is an on-site vehicle maintenance shop which is staffed by one person. Several years ago, the drains of this building were sealed with concrete.

There are also three small hot water boilers on-site that provide power for the facility. These boilers collectively contribute up to 200 gallons per day of boiler blowdown to the treatment plant. The Permittee uses three different treatment chemicals for its boilers and doses between 2 quarts and one gallon of each one daily, for a total of about 2 gallons per day. These chemicals are distributed by Barclay Water Management and are named RT200, Oxotrol DS and Polytrear TL. Material Safety Data Sheets (MSDS) for these chemicals may be found in the permit file. We do not believe that any amounts of pollutants from this blowdown would be detectable in the effluent or pose any water quality concern since there is substantial dilution available to these flows. Within the boilers, these chemicals are diluted about 100 times, then the blowdown itself is diluted another 1000 times by the effluent flow, which typically is over 200,000 gallons per day.

Comment #5: The Fact Sheet did not expand on the reason(s) why the MCI-Concord discharge was not a part of the TMDL process on the Assabet River. There is no compelling rationale presented to justify a concentration double what is proposed for the other treatment plants in this seriously impaired river. The total phosphorus maximum concentration for MCI-Concord should be 0.1 mg/l as there is no substantive reason to exclude this discharger from the TMDL recommendations. The concentration needs to be water quality based not technology based, a condition imposed on the other dischargers. The dilution argument put forward in the Fact Sheet does not constitute a substantive reason given there are over two river miles before the Sudbury and Assabet Rivers merge so the cited dilution is not immediate. Also the Concord River, formed by the confluence of the Sudbury and Assabet, is itself a nutrient impaired waterway as well as being a federally designated Wild and Scenic River so instead of offering dilution every measure should be undertaken to reduce loads to the Concord. The highest and best practical treatment requirement, while ignoring the water quality based needs, also appears tenuous given the analysis to determine the nutrient removal potential at the facility, a

study that would better characterize the highest and best treatment the facility might be capable of achieving, has not been undertaken and will not be started until a new permit is issued.

Response #5: MCI-Concord's discharge *is* included in the TMDL. See TMDL at p. 39. The TMDL explained that an effluent phosphorus limit of 0.5 mg/l for MCI-Concord combined with effluent limits of 0.1 mg/l for the Major POTWs would be sufficient to achieve the requisite phosphorus waste load reductions in the system because the MCI-Concord discharge was (i) comparatively small and (ii) downstream of the major impoundments. *Id.* at 40. As explained in Responses A.1 and 2, the Agencies concur and believe that the final effluent phosphorus limit of 0.2 mg/l is consistent with the TMDL and with applicable water quality standards.

The HBPT requirement is a State requirement that has been defined by DEP based on a number of considerations, including cost, and is not intended to represent the absolute limits of technology.

Please see Response A.3 above with respect to available dilution flow from the Sudbury.

Comment #6: To expand on the nutrient question and the permit requirement to investigate then implement measures to lower the concentration of phosphorus; the investigation and improvements are pending permit requirements. It is counter productive to do less than investigate and strive to find processes that will achieve the TMDL concentration or even lower nutrient levels.

Response #6: The Agencies assume that the commenter is referring to the requirement in Section E of the Permit, which requires the Permittee to "develop a process for determining the lowest effluent phosphorus concentration available by the existing facility." The Agencies do not believe that it is appropriate to impose a limit of 0.2 mg/l and to then require the Facility to optimize phosphorus removal to 0.1 mg/l or less. The purpose of the clause is to ensure efficient operation with respect to phosphorus removal at all times. The intent is to require the Permittee to meet its phosphorus effluent limit by the greatest margin possible without upgrading the Facility.

Comment #7: In some respects, MCI-Concord has a more manageable nutrient reduction undertaking than many of the other Assabet River dischargers. The facility has considerable control on the quality of the influent. The draft permit, admirably, already touches on this possibility in *Section E. Compliance Schedule* with the requirement to investigate reductions in phosphorus in the influent. MCI Concord would serve as a pilot for reducing influent phosphorus loads derived from a variety of action including the use of reduced phosphorus soaps, detergents, and cleaners used at the correctional facility and other innovative measures. The facility should be encouraged to apply for funding or ask for assistance, in piloting nutrient source reduction. The State's Office of Technical Assistance is one potential source of assistance. Aggressive source reduction could also lead to lower costs through reduced treatment system upgrades to achieve target nutrient concentrations.

Response #7: The Agencies concur and encourage the Permittee to pursue the opportunities outlined by the commenter above. As mentioned in Response B.2 above, the Permittee has undertaken such source reduction efforts in the past.

Comment #8: The draft permit presents a detailed schedule to attain final nutrient permit limits. Consideration should be given to modifying the compliance schedule to reflect the probable short term gains associated with source reduction as opposed to a schedule weighted to technological fixes. Part 2 should include a plan for phosphorus reduction in the influent as well as the design of improvements to the treatment facility. This adjustment also offers advantages in the design process, allowing adjustments to the design based on the enhanced source reduction. In turn, this more pro-active approach could prevent over engineering or ineffective designs thus saving resources and potentially time. The schedule could be further refined by adding language to the effect: milestones should be met at the earliest possible date but no longer than X months from issuance of the final permit.

Response #8: The Agencies agree that sustainable source reductions should be taken into account when determining the nature and extent of Facility upgrades. The Compliance Schedule of Section E of the Permit already requires the Permittee to consider the possibility of influent phosphorus reductions and to develop a plan to implement such reductions upon the effective date of the Permit.

The Compliance Schedule was originally established to be consistent with the schedules for the Assabet POTW permits that were issued final on May 27, 2005. The compliance schedules for the Assabet River permits were subsequently extended by six (6) months. Based on the Permittee's efforts to date and the capability of its tertiary treatment plant, the Agencies believe that the effluent phosphorus limit of 0.2 mg/l can be met without any major Facility upgrades. In light of this fact, the Agencies believe that the Compliance Schedule in the MCI-Concord Permit is appropriate and should be retained. It allows the permittee a reasonable time period to assess various approaches to meeting the final phosphorus limits and is still broadly consistent with the schedule that the large POTW dischargers are expected to have in their final permits.

Comment #9: What will happen to the compliance schedule's final implementation dates if the final permit is not promulgated in an expedient manner? Will the June 30, 2008 and April 30, 2009 dates still hold? Will the permit need to be modified?

Response #9: Given the nature of the required upgrades to the Facility, the Agencies continue to regard the implementation dates referenced by the commenter to be reasonable. If necessary, a reasonable adjustment to interim dates in the Compliance Schedule may be accomplished through a minor modification of the Permit at a later date.

Comment #10: The phosphorus reporting will be a 60 day rolling average. The reason for this reporting method was not explained in the Fact Sheet. With the summer seasonal limit starting in April, phosphorus averages will not be reported until June when the

growing season is well advanced. The table on page 7 of the Fact Sheet indicates most of the higher concentrations are in April and May- all full order of magnitude greater than the concentrations recorded in the remainder of the season. These high concentrations would not be noted until well after the fact. The 60 day average may also mask some concentration issues by dampening a run of higher concentrations. The typically lower flow month of August would be averaged with the higher flow month of July which would result in a biased August average and present a skewed nutrient picture during the stressful low flow season when the vast majority of the Assabet River flow is comprised of effluent from upstream discharges. Given the nutrient issues in the Assabet River and its' highly impaired state, a thirty day average is preferable for nutrient reporting. It is not clear if the pounds per day monthly average reporting requirement for TP is intended to be based on the 60 day rolling average nutrient concentration or on the true monthly average. If the loading is to be based on the less than desirable 60 day average, what flow would be used in the calculation? A straight average of the 60 days covered by the phosphorus average? An average of the two monthly flow averages, (which in themselves are annual averages)? The monthly average for the reporting month using the 60 day rolling average concentration figure? Any of these choices would result in a skewed loading and it is important to have accurate representation/reporting of loading numbers for this nutrient impaired waterway.

Response #10: Water quality-based limits that are developed to protect against chronic impacts such as eutrophication are typically established as monthly average limits. The 60 day rolling average limit for phosphorus possesses advantages over monthly averaging because it provides the Permittee with flexibility to deal with occasional, perhaps unavoidable excursions above effluent limits, while at the same time necessitating that such exceedences are short-term and that low levels of effluent discharges are maintained overall. Short-term exceedences of the phosphorus limit are unlikely to result in a significant response in the receiving water relative to aquatic plant growth. Longer term exceedences capable of eliciting a response in plant growth would likely result in a violation of the rolling average limit.

As explained on Footnote 11 on Page 4 of the Permit, the Permittee is required to report the monthly average and daily maximum values for April and May.

The intention for the mass loading of phosphorus is for the Permittee to report the monthly average values for each month throughout the year. This has been clarified in the final Permit, in footnote 11 on Page 4.

Comment #11: The seasonal limits start dates for ammonia-nitrogen differ from the total phosphorus season. Ammonia has a month's delay. Is there a rationale for this difference? Given ammonia's potential toxicity to aquatic life, is a later date protective of environmental health? The ammonia concentration was back-calculated to assure there was no increase of the pollutant associated with the proposed flow increase but was the original concentration, determined nearly 30 years ago, protective of the aquatic ecosystem or still pertinent?

Response #11: The ammonia-nitrogen mass and concentration limits are new and were calculated using conservative parameters. They are consistent with Massachusetts water quality standards, which incorporate by reference EPA's national recommended water quality criteria for toxics. See 314 C.M.R. § 4.05(5)(e); EPA 1998 Update of Water Quality Criteria for Ammonia (August 1998). To prevent degradation of the receiving water, the Agencies calculated mass loadings of ammonia-nitrogen by using an assumed flow of 0.162 MGD and an estimated concentration of 15 mg/l, a typical value for a municipal discharger that is not required to nitrify. See Fact Sheet at pp. 8-9. The Agencies imposed the resultant value of 20 lbs/day as an ammonia mass limit. Given the increase in flow to 0.31 MGD, the new ammonia concentration limit was calculated to be 7.8 mg/l, which is more stringent than the nationally recommended criterion required under the applicable water quality criterion.

The toxicity of ammonia rises proportionately with increasing temperatures. The Agencies believe that river temperatures, which are expected to be in the range of 50 – 60 °F during the month of April, do not represent concerns relative to ammonia toxicity. In addition, river flows are higher in April. The additional dilution will tend to dampen the effects of ammonia in the discharge, even though there is some ammonia present instream, primarily from the Assabet POTW discharges.

Comment #12: Figure 2 in the Fact Sheet is a helpful schematic of the treatment train. The diagram shows three chlorine addition points, are there three separate chlorine additions? The diagram does not show the dechlorination process and where the sodium bisulfate is added. It also does not show the alum addition site. These omissions raise the question, does this diagram depict the older (0.164 mgd) facility or the expanded facility? The diagram also shows two bypasses but the bypasses were not discussed in the Fact Sheet. Are these bypasses emergency only or are they needed periodically? At any time can this facility discharge untreated or nominally treated wastewater?

Response #12: The diagram reflects the current Facility, but does not depict some of the details referred to by the commenter. Dechlorination with sodium bisulfite occurs just before the effluent is discharged from the Facility, after the chlorine contact tanks on the diagram. One bypass listed after the bar screen is a channel to bypass the shredder that is used to grind up larger pieces of debris. If this shredder is out of service for any reason, plant personnel would manually remove such items until the shredder was restored to operation. The other bypass would send wastewater around the sand filters, which would occur if the filter beds were temporarily out of service. In addition to chlorinating the final effluent, chlorine may also be used in the clarifiers for algae control and also in the sand filter beds for "shocking" purposes, similar to the treatment required for swimming pools. Since the year 2000, the Permittee has been adding liquid aluminum hydroxide (alum) to the treatment process just before the aeration tanks. The Permittee will consider additional dosing points for this permit.

The permittee is not allowed to discharge untreated wastewater. It may be possible for the Facility to meet its existing permit limits by, for example, bypassing its sand filters, or limiting residence time in its clarifiers, which the commenter might construe as “nominal treatment.” There could be some circumstances, such as high flow periods, where such adjustments would not necessarily result in permit violations or reduction in effluent quality.

### **C) Comments submitted by Organization for the Assabet River:**

Comment #1: The MCI permit should contain a water quality-based phosphorus limit of 0.1 mg/L, as required in the four Assabet municipal permits. The proposed phosphorus limit of 0.2 mg/L has reasonable potential to cause or contribute to the violation of water quality standards. EPA and DEP have required the four municipal wastewater treatment plants (WWTPs) discharging upstream of MCI to meet a water quality-based phosphorus limit of 0.1 mg/L by 2009. Indeed, the EPA-approved Assabet River Phosphorus TMDL, hereafter “TMDL”, determined that the state’s current technology-based limit of 0.2 mg/L was inadequate to meet water quality standards.

Response #1: The commenter does not accurately capture the conclusions of the TMDL. The TMDL concluded that an effluent phosphorus limit of 0.2 mg/l for the Major Assabet POTWs would not meet water quality standards. However, a phosphorus effluent limit of 0.1 mg/l on the major dischargers, a limit of 0.5 mg/l on the minor dischargers (including MCI-Concord) and 90% reduction in the sediment flux rate *would* meet standards. The permit limit here is consistent with that analysis. See Responses A.1 and A.2.

Comment #2: The TMDL analysis did not include the MCI discharge, yet the agencies argue in the fact sheet that the small size of MCI’s discharge and the increased dilution in the lower Assabet and Concord Rivers warrant loosening of phosphorus limits for dischargers downstream. We vigorously reject this argument. The water quality-based phosphorus limit of 0.1 mg/L should also apply to MCI for the following reasons:

Contrary to the assertions made by EPA and DEP in the MCI permit fact sheet (p. 7), under critical low flow conditions, there is very little dilution of MCI’s discharge.

Meanwhile baseflows in the tributaries streams are projected to decline up to 10% on an annual average basis and up to 98% under average September conditions. As a result of increasing wastewater discharges and decreasing tributary baseflows, the river will be almost 100% wastewater effluent at the MCI discharge under future 7Q10 low-flow conditions. In addition, there are only two significant tributaries, Second Division Brook and Nashoba Brook that enter the Assabet between the Maynard municipal plant and MCI. Currently, they contribute only 12% (2.4 cfs or 1.5 mgd) of 7Q10 flow (20 cfs or 13 mgd) in the river at MCI’s discharge location. In the future, the increased upstream wastewater flows will overwhelm these small tributary contributions, reducing MCI’s already marginal dilution to almost zero.

In addition, we are unaware that the state-funded studies of the Sudbury River and Concord River conducted by ENSR during the past five years showed that the Sudbury River diluted the Assabet such that water quality in the Concord River was improved. Do these studies really support the agencies' contention that the Sudbury River provides sufficient dilution to improve water quality in the Concord River? The permit fact sheet fails to provide any specific information to support this assertion.

Response #2: Please see Responses A.1 and A.2 (regarding the justification for a 0.2 mg/l rather than 0.1 mg/l limit) and A.3 (regarding the lack of dilution).

Comment #3: The 0.1 mg/L limit will not meet standards until 90% of the phosphorus currently contributed by the sediments is removed from the river system. This is equivalent to 25 pounds of phosphorus per day. While this reduction may be achieved through sediment remediation, the feasibility and cost-effectiveness of this option are highly uncertain. If sediment remediation cannot accomplish the remaining load reduction, then phosphorus limits at the Assabet municipal plants will be considerably lower than 0.1 mg/L. In other words, the water quality-based 0.1 mg/L limit represents the upper bound of point source phosphorus limits on the Assabet. Anything less than 0.1 mg/L at MCI will undermine investments made by the upstream municipalities to meet the 0.1 mg/L limit at their respective plants.

A phosphorus limit at MCI of 0.2 instead of 0.1 mg/L would allow the prison to discharge twice as much phosphorus per gallon of wastewater as the four upstream municipal plants, making it harder to reduce total point source loadings to the Assabet River from the current estimated 48 lbs/day to the TMDL point source allocation of 12.5 lbs/day. On a per pound basis, assuming the new, higher flow of 310,000 gpd at MCI, this represents an additional quarter pound of phosphorus per day or almost 2 additional pounds per week of phosphorus discharged to the Assabet during growing season.

Response #3: See Responses A.1 and A.2 with respect to the 0.2 mg/l effluent phosphorus limit. Regarding the uncertainty of the sediment remediation, particularly with respect to the margin of safety, see Response A.4.

Comment #4: The Concord River is severely impaired by nutrients and the travel time from MCIs discharge to the Concord River is short. In its letter to MADEP approving the Assabet TMDL, EPA wrote, "For MCI Concord, the phosphorus limit may be based on technology requirements in the water quality standards or more stringent water quality based limits that may be necessary in order to minimize the transport of phosphorus downstream to the heavily impaired Concord River system, which has been designated as a Wild and Scenic River." A water quality-based limit of 0.1 mg/L is clearly warranted to minimize the transport of phosphorus to the Concord River system.

Response #4: The commenter should note that EPA in its comment on the TMDL argued that an effluent phosphorus limit of 0.5 mg/l or less may be necessary to ensure compliance with water quality standards. EPA was not arguing for the imposition of a 0.1 mg/l limit for phosphorus. The short transport time to the Concord River is one factor militating in favor of a phosphorus limit that is more rather than less stringent, but does

not alone justify the imposition of a water quality-based limit of 0.1 mg/l. As discussed in Responses A.1 and A.2 above, other significant factors indicate that an effluent phosphorus limit of 0.2 mg/l would be sufficiently protective of the receiving waters.

Comment #5: The MCI draft permit sets a dangerous precedent, leaving the door open to increased wastewater discharges and phosphorus loads to the lower Assabet River. Currently, the entire Assabet River does not support or fully support existing uses such as boating, fishing, swimming and aquatic life because of dense stands and/or mats of nuisance aquatic vegetation, odors from decaying vegetation, low dissolved oxygen (DO) levels (below 5 mg/L), unnaturally large swings in diurnal DO concentrations, and unnaturally high concentrations of DO, i.e. DO supersaturation. This problem is caused by historic and ongoing discharges of phosphorus from four municipal wastewater plants, the Acton Powdermill Plaza plant and the state-owned MCI plant. The Assabet's assimilative capacity for phosphorus was exceeded long ago. Allowing increased wastewater flows to the river, which increases phosphorus loads to the river, should therefore be prohibited.

Nevertheless, by making exceptions for the MCI permit and treating it as a special case outside the bounds of the TMDL, the agencies are undermining the integrity of the TMDL and ultimately, the river's water quality. For this reason, EPA and DEP need to address the broader implications of sanctioning both the 90% flow increase and the inadequate and unsupported technology-based phosphorus of 0.2 mg/L in MCI's permit. The best way to do this is to consider the situation in the Town of Acton.

The Town of Acton is apparently still interested in discharging all or a portion of their wastewater directly to the Assabet River. The flow limit in Acton's groundwater discharge permit is currently 250,000 gallons per day, even less than MCI's proposed 310,000 gpd, and their existing phosphorus limit is 0.2 mg/L. In advancing the case that Acton should be allowed to discharge some or all of its wastewater effluent *below* the Powdermill dam, the town could use arguments identical to those the agencies have used to support MCI's 90% flow increase and 0.2 mg/L phosphorus limit: "EPA and DEP do not believe that the limitation needs to be as stringent as the limitation in permits for the upstream POTWs (0.1 mg/L), due to the relatively small size of the discharge and the additional dilution provided between the Maynard POTW and the MCI Concord discharge, as well as the dilution immediately downstream of the MCI Concord discharge provided by the Sudbury River.

Response #5: Please see Response A.5 above for a discussion of the antidegradation implications of the flow increase.

The minor POTWs are in fact included in the TMDL and have been assigned waste load allocations. As explained in Responses A.1 and A.2 above, the Agencies believe that the permit limits for MCI-Concord are consistent with the assumptions and conclusions of the TMDL. The TMDL does not recommend the uniform imposition of 0.1 mg/l effluent phosphorus limits on all the Assabet River dischargers. Rather, it recommends the more stringent limit be applied to the Major POTWs, while a 0.5 mg/l effluent phosphorus

limit be applied to MCI-Concord. The recommended limit, furthermore, assumes the increase in design flow to 0.31 MGD.

The Agencies appreciate that arguments made during the permitting process might be employed in related contexts by other regulated entities. Those arguments, however, are not persuasive in themselves, but only to the extent that they justify an outcome that is consistent with the Clean Water Act and ensure compliance with State water quality standards.

Comment #6: State facilities such as MCI should have to meet the same standards as municipalities. As stated at the beginning of this comment letter, the MCI draft permit and fact sheet give the impression that state facilities are subject to different regulations and lower standards than municipalities under the state and federal Clean Water Act. They are not. Indeed, state facilities should lead by example. We look forward to a revised permit that demonstrates that MCI is ready to do its share in restoring the health of the Assabet

Response #6: The fact that the Facility is owned by the State does not impact the development of permit limits. The Agencies determine permit limits by evaluating available water quality data, considering public comments and applying the requirements of applicable Federal and State environmental laws.

#### **D) Comments submitted by Stephen Calabro of Dufresne-Henry, Inc.:**

Comment #1: The Town of Maynard along with five other communities of the Assabet Consortium have been working since 1998, with EPA, DEP and OAR to arrive at a phosphorus treatment limit which has measurable water quality benefits, is reliable, is implementable and fair to the users of the Assabet River. The MCI Concord draft phosphorus permit limit of 0.2 mg/l does not meet these goals and appears to be inconsistent with the 0.1 mg/l limit proposed for the other communities' treatment facilities. It appears that the Assabet Consortium members are being held to a higher standard with a 0.1 mg/l limit than the MCI Concord WWTP at a 0.2 mg/l limit. While it is recognized that the MCI Concord WWTP is the farthest down the Assabet, it appears that water quality issues alone have been used to determine the 0.2 mg/l limit.

Such an approach should also be applied to Maynard and the other consortium members.

Response #1: The rationale for imposing a limit of 0.1 mg/l rather than 0.2 mg/l on the Major POTWs is discussed (i) in the TMDL, (ii) in the fact sheets accompanying the draft permits issued to the Major POTWs and (iii) in the final permits issued to the Major POTWs. For the reasons stated therein and as detailed above, the Agencies believe that an effluent phosphorus limit of 0.2 mg/l for the Facility is sufficiently stringent to ensure compliance with water quality standards. See e.g. Responses A.1 and A.2.

**E) Comments submitted by George Gustafson of Gustafson Environmental, LLC:**

Comment #1: The Assabet Consortium believes that there are serious inequities in this draft permit. Our concerns relate to the proposed phosphorus limit of 0.2 mg/l. We have no objection and in fact agree with the application of the “highest and best practical treatment“ standard which has been applied to MCI Concord in order to arrive at a discharge limit of 0.2 mg/l. However, we feel strongly that the same standard, and the same limit, should be applied to the Assabet communities. It is unfair and grossly inconsistent to discriminate against local communities by applying a different and less restrictive standard and discharge limit to state facilities.

Response #1: As mentioned earlier, the fact that MCI Concord is a State Facility is irrelevant with respect to establishing permit limits. Please see Response A.1 and A.2 above for the Agencies’ rationale for imposing more stringent permit limitations on the major dischargers.

August 9, 2005