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),

Pine Brook Country Club

is authorized to discharge from the facility located at

42 Newton Street
Weston, MA 02193

to receiving water named

Pine Brook (Charles River Watershed)

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

This permit shall become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will become effective on the first day of the calendar month following sixty (60) days after the date of signature.

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

This permit supersedes the permit issued on September 22, 1999.

This permit consists of 9 pages in Part I including effluent limitations, monitoring requirements, Attachment A, Freshwater Chronic Toxicity Tests Procedures and Protocols and Attachment B, EPA Region 1, NPDES Permit Sludge Compliance Guidance and 25 pages in NPDES Part II Standard Conditions.

Signed this 7TH day of April, 2010

/S/ SIGNATURE ON FILE

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

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

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

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

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirements	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Flow[2] (April 1 – October 31)	MGD	0.008	******	0.009	Continuous	Recorder
Flow[2] (November 1 – March 31)	MGD	0.003	******	Report	Continuous	Recorder
BOD_5[3]	mg/l	5.0	Report	7.0	2/Week	24-Hour Composite[5]
(April 1 – October 31)	lbs/day	0.25	Report	0.53	2/Week	24-Hour Composite[5]
BOD_5[3]	mg/l	5.0	Report	7.0	2/Week	24-Hour Composite[5]
(November 1 – March 31)	lbs/day	0.13	Report	0.18	2/Week	24-Hour Composite[5]
TSS[3]	mg/l	7.0	Report	12.0	2/Week	24-Hour Composite[5]
(April 1 – October 31)	lbs/day	0.35	Report	0.90	2/Week	24-Hour Composite[5]
TSS[3]	mg/l	7.0	Report	12.0	2/Week	24-Hour Composite[5]
(November 1 – March 31)	lbs/day	0.18	Report	0.30	2/Week	24-Hour Composite[5]
pH	S.U.	(See Condition I.A.1.b. on Page 6)			1/Day	Grab
Dissolved Oxygen	mg/l	not less than 5			1/Day	Grab
E. Coli [1,6,7] (March 1 – November 30)	cfu's/100 ml	126	*****	409	2/Week	Grab

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirements	
		Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Oil and Grease	mg/l	Report		Report	1/Week	Grab
Oil and Grease	lbs/day	Report	******	Report	1/Week	Grab
Total Ammonia, Nitrogen	mg/l	1.0		1.5	1/Week	24-Hour Composite[5]
Total Ammonia, Nitrogen	lbs/day	Report	******	Report	1/Week	24-Hour Composite[5]
Copper, Total	ug/l	35	******	55	1/Month	24-Hour Composite[5]
Aluminum[12]	ug/l	140	******	Report	1/Month	24-Hour Composite[5]
Phosphorus, Total	mg/l	0.1			2/Week	24-Hour Composite[5]
(April 1 – October 31)	lbs/day	0.005	******	******	2/Week	24-Hour Composite[5]
Phosphorus, Total	mg/l	0.2			1/Week	24-Hour Composite[5]
(November 1 – March 31)	lbs/day	0.005	******	******	1/Week	24-Hour Composite[5]
LC_{50}[9,11]	%	******	******	≥100	2/Year[8]	24-Hour Composite[5]
Chronic NOEC[10,11]	%	******	******	≥25	2/Year[8]	24-Hour Composite[5]

All sampling shall be representative of the effluent that is discharged through outfall 001 to Pine Brook. 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 the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA.

Footnotes:

1. Required for State Certification

2. Report monthly average and daily maximum flow on preprinted discharge monitoring report. Also record maximum daily rate, minimum daily rate, and total flow for each operating day, and maintain this information in plant operational records.

3. Sampling required for the influent and effluent.

4 All required effluent samples shall be collected at the point of discharge. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136. All samples shall be 24-hour composites unless specified as a grab sample in 40 CFR §136.

5. A 24-hour composite sample will consist of a least eight (8) grab samples taken during a 8-hour period, between 8:00 am to 8:00 pm.

6. *E. coli* discharges shall not exceed a monthly geometric mean of 126 colony forming units (cfu) per 100 ml, nor shall they exceed 409 cfu per 100 ml as a daily maximum.

7. The monitoring and reporting requirements for *E.coli* shall begin upon the first disinfection season (March 1 through October 31) the permit is in effect. The monitoring frequency for *E. coli* is 2/week.

8. The permittee shall conduct chronic (and modified acute) toxicity tests two times per year. The chronic test may be used to calculate the acute LC_{50} at the 48-hour exposure interval. The permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected during the months of July and October. The test results shall be submitted by the last day of the month following the completion of the test. The results are due, August 31[1h] and November 30[th], respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A, Freshwater Chronic Whole Effluent Toxicity Tests Procedures and Protocols** of this permit.

Test Dates Month	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
July October	August 31[th] November 30[th]	*Ceriodaphnia dubia* (daphnid)	≥100%	>25%
		Pimephales promelas (fathead minnow)	≥100%	>25%

After submitting **one year** and a **minimum** of two consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the number of species used in the WET testing requirements. The permittee is required to continue testing as 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_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

10. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "25%" limit is defined as a sample which is composed of 25% effluent. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 4.0.

11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs) which is sent to all permittees with their annual set of DMRs and may also be found on the EPA, Region I web site at http://www.epa.gov/region1/enforcementandassistance/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. Any modification or revocation to this guidance will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

12. See compliance schedule in Part I.E.

Part I.A.1. (Continued)

a. The discharge shall not cause an excursion 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.

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

d. The effluent shall contain neither a visible oil sheen, foam, or floating solids at any time.

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

f. The results of sampling for any parameter above its required frequency must also be reported.

2. 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.

3. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

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

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. Alternative 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).

3. 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 systems infrastructure.

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 (e.g. 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. **See Attachment B. EPA Region I, NPDES Permit Sludge Compliance Guidance**. 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 than1500	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 Part 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:

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

E. COMPLIANCE SCHEDULE

1. Aluminum

The permitee shall achieve compliance with the monthly average aluminum limit one year from the effective date of this permit. In the interim, the permittee shall report the monthly average and maximum daily aluminum concentration on the monthly discharge monitoring reports.

F. MONITORING AND REPORTING

Reporting

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

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director at the following addresses:

Environmental Protection Agency
Water Technical Unit (SMR-04)
5 Post Office Square – Square 100
Boston, Massachusetts 02109-3912

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 Permits Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

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 (MassDEP) 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 MassDEP 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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
1 CONGRESS STREET
SUITE 1100
BOSTON, MASSACHUSETTS 02203

FACT SHEET

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

NPDES PERMIT NO.: **MA0032212**

NAME AND ADDRESS OF APPLICANT:

Pine Brook Country Club
42 Newton Street
Weston, MA 02193

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Pine Brook Country Club
42 Newton Street
Weston, MA 02193

RECEIVING WATER: **Pine Brook**
Charles River Watershed

CLASSIFICATION: **Class B**

Proposed Action Type of Facility

The above named applicant has requested that the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) reissue its National Pollutant Discharge Elimination System (NPDES) permit to discharge into Pine Brook.

The existing NPDES permit was issued on September 22, 1999 and expired on September 22, 2004. The applicant filed an application for permit reissuance as required by 40 Code of Federal Regulation (CFR) §122.6. The current permit will remain in effect until a renewed permit has been issued.

Type of Facility and Discharge Location

The facility is engaged in the collection and treatment of sanitary wastewater from a country club in Weston, Massachusetts. The plant serves a club house, dining and member facilities and an eighteen hole golf course.

There are no combined sewer overflows or emergency overflows.

Figure 1 of the fact sheet shows the location of the facility and the outfall. Figure 2 of the fact sheet is a flow process diagram of the facility. The draft permit will be written to reflect the current operations and conditions at the facility.

Description of Treatment Plant and Discharge

Wastewater enters the treatment plant and goes through a bar screen followed by extended aeration activated sludge treatment, clarification, pressure sand filtration, UV disinfection, effluent pumping, and post aeration. Lime is added to the influent to maintain alkalinity necessary to support nitrification and to maintain effluent pH limits. Alum is added to the aeration tank to enhance phosphorus removal.

The facility's discharge outfall is listed below:

Outfall	Description of Discharge	Outfall Location
001	Treated Effluent	Pine Brook

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

Permit Limitations and Conditions

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

Permit Basis and Explanation of Effluent Limitation Derivation

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

Regulatory Basis

EPA is required to consider technology and water quality requirements when developing effluent limits in NPDES permits.

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the CWA (see 40 CFR 125 Subpart A). Federal effluent limitation guidelines for this type of discharge (i.e. a privately owned treatment works treating sanitary sewage) have not been established. However, EPA has determined, using best professional judgment, that the technology-based effluent limitations for publicly owned treatment works (POTWs), found at 40 CFR 133, are appropriate technology-based effluent limitations given the similarity of the wastewater being

treated by the permittee to that treated by POTWs and the similarity of appropriate treatment technologies.

Under Section 301(b)(1)(C) of the CWA, discharges are also subject to effluent limits based on water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site-specific criteria is established. EPA and MassDEP regulations require that permits contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards. An NPDES permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, or has reasonable potential to cause, or contribute to an excursion above any water quality criterion [40 CFR 122.44(d)(1)]. An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the receiving water to toxicity and where appropriate, the dilution of the effluent in the receiving water.

According to 40 CFR 122.41(l), when a permit is reissued, effluent limitations, standards, or conditions must be at least a stringent as effluent limitations in the previous permit unless the circumstances on which the previous permit were based have materially and substantially changed since the time the permit was issued.

Waterbody Classification and Usage

Pine Brook is classified as a Class B warm water by the MassDEP. Class B warm waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. 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. These waters shall have consistently good aesthetic value.

Antidegradation

In accordance with 40 CFR 131.12, the State has developed an anti-degradation policy to ensure that existing in-stream uses and water quality are maintained and protected. Limitations and conditions in the permit must meet the requirements of the policy. MassDEP's anti-degradation policy may be found at 314 CMR 4.04. MassDEP has established anti-degradation review procedures ("Implementation Procedures") in a policy document titled Implementation Procedures for the Anti-degradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 (December 29, 2006).

The first NPDES permit was issued to this facility in 1990 as a new discharge after an antidegradation review determined that the discharge met the applicable provisions, including 1) socio/economic importance, 2) alternatives analysis, 3) mitigation of the discharge, and 4) compliance with standards.

In its most recent application, the permittee requested an increase in the authorized flow from the facility during certain times of the year. Specifically, the permittee has requested an increase in the monthly average flow limit from 6,000 gallons per day to 8,000 gallons per day for the months of April through October. Such an increase cannot be granted unless authorized under MassDEP's antidegradation policy.

The limits for BOD_5, TSS and, total phosphorus are based upon the effluent load in the existing permit thus there is no increase in loading to Pine Brook. The concentration limits which are based upon the highest technology available for treatment will remain as in the existing permit. The effluent data shown in Table 1 indicate the facility's performance is well above that needed to meet these stringent limits, thus providing additional assurance that the increase in summer flow from 6,000 gpd to 8,000 gpd will not cause water quality violations and will be in conformance with the MassDEP anti-degradation policy. Other limitations such as aluminum, copper and whole effluent toxicity are concentration driven and are not based upon total loading which will also be in keeping with the anti-degradation policy.

Accordingly, MassDEP is hereby notifying the public that it has made a tentative determination to authorize the increased discharge, and is inviting the public comment regarding this determination.

Flow

The current permit includes a monthly average flow limit of 0.006 MGD and a maximum daily flow limit of 0.009 MGD. The permittee has requested an increase in the monthly average flow limit to 0.008 MGD during the months of April through October to reflect the actual flow to the facility. The permittee has indicated that a flow limit of 0.003 MGD is acceptable for the winter months of November through March. A maximum daily limit of 0.009 MGD will remain in the permit from April through October and a reporting requirement is required from November through March.

The permittee has also documented its efforts to reduce flow to the treatment facility (see the February 7, 2005 letter from Camp, Dresser and McKee to EPA[1]), that include identification and repair of numerous collection system defects (open joints and crushed collector pipes), and removal of roof leaders. The permittee does not believe that further flow reductions are technically feasible. The permittee has also worked to reduce the maximum daily flows by adjusting effluent pumping rates and optimizing the equalization capacity of the treatment plant.

The draft permit includes revised flow limits. Effluent limitations for several pollutants have been adjusted to ensure that the increase in flow is consistent with the antidegradation requirements. A description of each adjustment is included in the pollutant-specific sections of the fact sheet.

Available Dilution

A dilution factor of 4.0 is being used to calculate the effluent limits in the draft permit. The 7Q10 flow at the point of discharge is 0.03 cfs, the same as used in the existing permit. It was verified with the USGS

[1] The February 7, 2005 letter from Camp Dresser and McKee is located in the administrative file.

Stream Stats Program.

The dilution factor in the existing permit was based on an average flow of 4500 gpd (0.0069 cfs). The dilution factor in the draft permit has been calculated using the monthly average flow during the warm weather months of 0.008 MGD (0.01 cfs) and the 7Q10 (0.03 cfs). This flow more accurately represents current conditions at the facility.

Dilution Factor

$$\frac{\text{Design Flow of facility + 7Q10}}{\text{Design Flow of facility}} = \frac{\text{0.01 cfs + 0.03 cfs}}{\text{0.01 cfs}} = 4.0$$

BOD_5 and TSS

The average monthly and maximum daily concentration limits for BOD_5 and TSS will remain unchanged from the limits in existing permit. The limits are more stringent than secondary treatment requirements in 40 CFR 133. They were established by MassDEP in 1990 in the first NPDES permit issued to the facility, as a new discharger. As part of the authorization to discharge, MassDEP required BOD_5 and TSS limits in the permit more stringent than secondary treatment standards to ensure maintenance of Class B water quality standards and to minimize degradation of the receiving water.

The mass limits for the monthly average BOD_5 and TSS, have been calculated using the average monthly flow of 0.006 MGD in the existing permit from April through October and 0.003 MGD from November through March.

The mass limits for the maximum daily BOD_5 and TSS, have been calculated using the average monthly flow of 0.009 MGD from the existing permit for April through October and 0.003 MGD for November through March.

L = C x F x 8.34 where:

L = Maximum allowable load in lbs/day.
C = Maximum allowable effluent concentration for reporting period in mg/l.
F = flow of facility in MGD.
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

BOD_5 Average Monthly and Maximum Daily Limits from April through October
(Concentration limit) X (flow) X 8.345 (Conversion Factor)
5.0 X 0.006 MGD X 8.34 = 0.25 lbs/day

(Concentration limit) X (flow) X 8.345 (Conversion Factor)
7.0 X 0.009 MGD X 8.34 (Conversion Factor) = 0.53 lbs/day

TSS Average Monthly and Maximum Daily Limits from April through October
(Concentration limit) X (flow) X 8.345 (Conversion Factor)
7.0 X 0.006 MGD X 8.34 = 0.35 lbs/day

(Concentration limit) X (flow) X 8.345 (Conversion Factor)
12 mg/l X 0.009 MGD X 8.34 = 0.90 lbs/day

BOD_5 Average Monthly and Maximum Daily Limits from November through March

(Concentration limit) X (flow) X 8.345 (Conversion Factor)
5.0 mg/l X 0.003 MGD X 8.34 = 0.13 lbs/day

(Concentration limit) X (flow) X 8.345 (Conversion Factor)
7.0 mg/l X 0.003 MGD X 8.34 (Conversion Factor) = 0.18 lbs/day

TSS Average Monthly and Maximum Daily Limits from November through March

(Concentration limit) X (flow) X 8.345 (Conversion Factor)
7.0 mg/l X 0.003 MGD X 8.34 = 0.18 lbs/day

(Concentration limit) X (flow) X 8.345 (Conversion Factor)
12 mg/l X 0.003 MGD X 8.34 (Conversion Factor) = 0.30 lbs/day

There were no monthly average and maximum daily BOD_5 or TSS exceedances between January 2006 and April 2009.

Bacterial Limitations, **Dissolved Oxygen, and pH**

The numerical limitations for *E.coli*, dissolved oxygen (DO) and pH are based on state certification requirements under Section 401(a) of the CWA, as described in 40 CFR 124.53 and 124.55, and the Massachusetts Surface Water Quality Standards at 314 CMR 4.05(3)(b). The limits for pH and dissolved oxygen, will remain unchanged from the limits in the existing permit.

On September 19, 2007, EPA approved revisions to the Massachusetts Water Quality Standards. For Class B waters, the bacteria indicator changed from fecal coliform bacteria to *E.coli* for non-bathing beaches and other waters. See 314 CMR 4.03(b)(1). Accordingly, the draft permit contains effluent limits for *E.coli*. The proposed limits include a monthly geometric mean of 126 colony forming units (cfu)/100 ml and a daily maximum of 409 cfu/100 ml (the daily maximum value is the 90% distribution of the geometric mean of 126 cfu/100 ml).

The bacteria limits are in effect from March 1 through November 30 each year. The facility reported exceedances of the average monthly and maximum daily fecal coliform in 2006 however, between August 2006 and April 2009 there were no exceedances.

The dissolved oxygen limit in the draft permit will remain equal to or greater than 5.0 mg/l in accordance with Massachusetts Surface Water Quality Standards 314 CMR 4.05 (3)(b) for Class B warm water fisheries. There were no exceedances for dissolved oxygen between January 2006 and April 2009.

There were no pH exceedances between January 2006 and April 2009 2008.

Oil and Grease

There is a potential for oil and grease in the effluent due to wastewater from the kitchen and restaurant. An oil and grease reporting requirement has been added to the draft permit to determine whether or not a limit in a future permit is necessary.

Ammonia

Ammonia can impact dissolved oxygen concentration in the receiving stream and can be toxic at elevated levels. The monthly average and maximum daily ammonia limits of 1 mg/l and 1.5 mg/l are the same as in the existing permit and will remain in the draft permit. These limits are based on attaining dissolved oxygen standards and preventing toxicity to aquatic life and habitat in Pine Brook. In January 2006 and May 2006, exceedances of the maximum daily ammonia limit were reported.

Total Phosphorus (TP)

The current permit includes monthly average and maximum daily phosphorus limits of 0.1 mg/l during the months of April through October, and a maximum daily limit of 1 mg/l during the months of November through March. These limits were established pursuant to the anti-degradation requirements that the discharge be mitigated to the maximum extent feasible, and that the discharge meet water quality standards. (see Part V.2. (c) and (d) of the Anti-degradation Implementation procedures).

The Massachusetts Surface Water Quality Standards (314 CMR 4.00) do not contain numerical criteria for total phosphorus (TP). The Water Quality Standards for nutrients are found at 314 CMR 4.04 and 314 CMR 4.05(5)(c). These regulations state that any existing point source discharge containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients and shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication.

Pine Brook is not listed on the Massachusetts Year 2008 Integrated Lists of Waters, nor was it assessed in MassDEP's most recent Charles River watershed assessment report (Charles River Watershed 1997/1998 Water Quality Assessment Report). MassDEP has listed the segment of the Charles River downstream of the confluence of Pine Brook as impaired for nutrients. Nutrients in Pine Brook, a tributary to the Charles River, have the potential to accelerate eutrophication further downstream in the Charles River.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (Gold Book) recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within the lake or reservoir.

More recently, EPA has released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water in specific areas of the country. The published criteria represent conditions in waters in that ecoregion minimally impacted by human activities, and thus representative of water without cultural eutrophication. The Pine Brook Country Club is within Ecoregion XIV, Eastern Coastal Plains. The total phosphorus criteria for this ecoregion, found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in the December, 2000 is 24

ug/l (0.024 mg/l).

In its application, and in other correspondence to the Agencies (see February 7, 2005 letter from Camp,Dresser and McKee to EPA), the permittee requested that the permit limits for total phosphorus be maintained at 0.1 mg/l for the warm weather months of April through October and be made more stringent during the remainder of the year. The draft permit has a monthly average phosphorus limit of 0.2 mg/l between November and March.

Also, an analysis of the in-stream phosphorus concentrations resulting from the increased flow during the warm weather months was conducted to ensure that the increase would not cause a violation of water quality standards. Based on the existing phosphorus limit and dilution factor (0.1 mg/l and 5.29 respectively), the expected in-stream concentration would be 0.018 mg/l (0.1/5.29). Based on the phosphorus limit and dilution factor in the draft permit (0.1 mg/l and 4 respectively), the expected in-stream concentration would be 0.025 mg/l., which is well below the criteria of 0.1 mg/l for streams not discharging directly to lakes or impoundment given in EPA's 1986 Quality Criteria of Water ("the Gold Book"). This expected in-stream concentration is approximately equal to criteria of 0.024 mg/l recommended by EPA's December 2000, Ecoregional Nutrient Criteria. (This discharge is within Ecoregion XIV, Eastern Coastal Plains; the criteria can be found in the *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV*).

Based on this analysis, we have concluded that the proposed permit limits are protective of water quality standards and provide mitigation of the discharge in accordance with the provisions of the Anti-degradation Review Procedure.

Metals

Relatively low concentrations of trace metals in receiving waters can be toxic to resident aquatic life species. EPA is required to limit any pollutant that is, or may be discharged at a level that caused, or has reasonable potential to cause, or contributes to an excursion above any water quality criterion. See 40 CFR 122.44(d)(1)(vi). Effluent metals data submitted with toxicity tests results were reviewed to determine if metals in the discharge have the potential to exceed aquatic life criteria in Pine Brook.

The criteria for copper is hardness dependent. The criteria becomes less stringent as the concentration of CaCO3 in water increases. EPA's Office of Water - Office of Science and Technology stated in a letter dated July 7, 2000 that: "The hardness of the water containing the discharged toxic metal should be used for determining the applicable criterion." Thus, the downstream hardness should be used. The hardness of Pine Brook downstream of the treatment plant was calculated as shown below. The average ambient and effluent hardness data from the whole effluent toxicity tests for the period of June 2007 to September 2008 are used in the calculation.

{(QWWTP * CWWTP) + (QR * CR)} / (QWWTP + QR) = C
where:

QWWTP = Flow of Pine Brook WWTP = 0.008 mgd = 0.0124 cfs
CWWTP = CaCO3 concentration in the effluent = 279 mg/l
QR = 7Q10 flow of the Pine Brook = 0.03 cfs
CR = In-stream CaCO3 concentration = 57 mg/l
C = Combined CaCO3 concentration

{(0.0124 * 279) + (0.03 * 57)} / (0.0124 + 0.03) cfs = C
{3.46 + 1.71} / 0.0424 = 122 mg/l CaCO3

The EPA recommended approach to set and measure compliance with water quality standards is to use dissolved metals, because dissolved metals more closely approximates the bioavailable fraction of metal in the water column than does total recoverable metal. Most toxicity to aquatic organisms is by adsorption or uptake across the gills which would require the metal to be in dissolved form. When toxicity tests were originally conducted to develop EPA's Section 304(a) metals criteria, the concentrations were expressed as total metals. Subsequent testing determined the percent of the total metals that is dissolved in the water column. The calculations that follow use the freshwater conversion factors to calculate the dissolved acute and chronic water quality criteria for metals from EPA National Recommended Water Quality Criteria: 2002.

However, the regulations in 40 CFR 122.45(c) require that the permit limits be based on total recoverable metals. The chemical differences between the effluent and the receiving water may cause changes in the partitioning between dissolved and particulate forms of metals. As the effluent mixes with the receiving water, adsorbed metals from the discharge may dissolve in the water column. In this case, measuring dissolved metals would underestimate the impact on the receiving water, and an additional calculation, using a site-specific translator would determine total metal criteria. Based on EPA's Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA-823-B-96-007), the conversion factor is equivalent to the translator if site-specific studies for partitioning have not been conducted. The total recoverable effluent limit has been determined by dividing the dissolved criteria by the conversion factor in lieu of a translator.

The following example shows the calculation of the dissolved and total recoverable copper criteria. Copper is a hardness-based criteria and the correction factor for converting from total recoverable to dissolved metals is also hardness-based. The necessary equations and factors are found in EPA National Recommended Water Quality Criteria: 2002. The calculations are shown below.

Chronic criteria (dissolved) = exp{mc[ln(hardness)] + bc}* CF
Where: mc = 0.8545
hardness = 122 mg/l
bc = -1.702
CF = 0.96
= exp{0.8545[ln(122)] – 1.702}*0.96
Chronic criteria = 10.61 ug/l

Acute criteria (dissolved) = exp{ma[ln(hardness)] + ba}* CF
Where: ma = 0.9442
hardness = 122 mg/l
ba = -1.7
CF = 0.96
= exp{0.9442[ln(122)] -1.7}*0.96
Acute criteria (dissolved) = 16.36 ug/l

As discussed above, in the absence of a site-specific translator, the correction factors found in Appendix

A of EPA National Recommended Water Quality Criteria:2002 are used to convert from dissolved to total recoverable metals. Accordingly, the copper criteria expressed in total recoverable metals are as follows:

Chronic criteria (total recoverable) = Chronic Criteria (dissolved) ÷ CF
= 10.61 ug/l ÷ 0.96
= 11.05 ug/l

Acute criteria (total recoverable) = Acute Criteria (dissolved) ÷ CF
= 16.36 ug/l ÷ 0.96
= 17.04 ug/l

These criteria are then applied to the combined river flow and discharge flow and, accounting for in-stream concentrations of the metal, a limit for the treatment facility discharge is calculated as shown below.

The chemical analyses performed on the receiving stream during WET testing provided data on the background metals concentrations. The calculation below uses the acute and chronic criteria and calculates maximum daily and monthly average permit limits for copper.

{(QR + QWWTP) * CWQC – (QR * CR)} / QWWTP = CWWTP where:

QR = 7Q10 flow of the Pine Brook = 0.03 cfs
QWWTP = Flow from Pine Brook WWTP = 0.008 mgd = 0.0124 cfs
CWQC = Acute in-stream water quality criteria = 17.04 ug/l
CR = Background copper concentration = 1.2 ug/l
CWWTPC = Chronic copper concentration limit for Pine Brook WWTP
{((0.03 cfs + 0.0124 cfs) * 17.04 ug/l) – (0.03 cfs *1.2) ug/l} / 0.0124 cfs =
{0.722 – 0.036} / 0.0124 = 55.3 ug/l

QR = 7Q10 flow of the Pine Brook = 0.03 cfs
QWWTP = Flow from Pine Brook WWTP = 0.008 mgd = 0.0124 cfs
CWQC = Chronic in-stream water quality criteria = 11.05 ug/l
CR = Background copper concentration = 1.2 ug/l
CWWTPC = Chronic copper concentration limit for Pine Brook WWTP
{((0.03 cfs + 0.0124 cfs) * 11.05 ug/l) – (0.03 cfs *1.2) ug/l} / 0.0124 cfs =
{0.468 – 0.036} / 0.0124 = 34.8 ug/l

Copper

Site specific copper criteria have been recently developed by the State and approved by EPA for certain waterbodies, but Pine Brook is not one of those waterbodies. Consequently, the criteria developed above in accordance with the EPA National Recommended Water Quality Criteria: 2002 methodology is used in the development of the permit copper limits. The draft permit includes the calculated monthly average limit of 35 ug/l and maximum daily limit of 55 ug/l.

Aluminum

Data reported in eight WET tests from June 2007 through September 2008 showed an average in-stream aluminum concentration of 65 ug/l and a maximum aluminum concentration of 139 ug/l upstream of the treatment plant discharge. Aluminum concentration in the effluent averaged 175 ug/l with a maximum concentration of 660 ug/l. This data indicates there is a reasonable potential to cause or contribute to an exceedance of water quality criteria for aluminum. A calculated monthly average limit is 140 ug/l and a reporting requirement for the maximum daily limit has been included in the draft permit.

Pine Brook Toxicity Tests Data

Date	Aluminum in Pine Brook
9/07	0.139 mg/l
8/07	0.055 mg/l
7/07	0.029 mg/l
6/07	0.023 mg/l
9/08	0.050 mg/l
8/08	0.037 mg/l
7/08	0.058 mg/l
6/08	0.130 mg/l
Average	0.065 mg/l or 65 ug/l

Date	Aluminum Effluent
9/07	0.136 mg/l
8/07	0.193 mg/l
7/07	0.056 mg/l
6/07	0.107 mg/l
9/08	0.085 mg/l
8/08	0.137 mg/l
7/08	0.022 mg/l
6/08	0.660 mg/l
Average	0.1745 mg/l or 174.5 ug/l

{(QR + QWWTP) * CWQC – (QR * CR)} / QWWTP = CWWTP where:

QR = 7Q10 flow of the Pine Brook = 0.03 cfs
QWWTP = Flow from Pine Brook WWTP = 0.008 mgd = 0.0124 cfs
CWQC = Acute in-stream water quality criteria = 750 ug/l
CR = Background AL concentration = 139 ug/l (9/07 highest AL concentration in recorded Pine Brook from toxicity tests)

CWWTPC = Acute AL concentration limit for Pine Brook WWTP
{((0.03 cfs + 0.0124 cfs) * 750 ug/l) – (0.03 cfs * 139) ug/l} / 0.0124 cfs = 2228 ug/l

QR = 7Q10 flow of the Pine Brook = 0.03 cfs
QWWTP = Flow from Pine Brook WWTP = 0.008 mgd = 0.0124 cfs
CWQC = Chronic in-stream water quality criteria = 87 ug/l
CR = Background AL concentration = 65 ug/l (average concentration of AL in Pine Brook based on toxicity tests for two years)

CWWTPC = Chronic AL concentration limit for Pine Brook WWTP

{((0.03 cfs + 0.0124 cfs) * 87 ug/l) – (0.03 cfs * 65 ug/l} / 0.0124 cfs = 140 ug/l

Whole Effluent Toxicity Testing

National studies conducted by the EPA have demonstrated that industrial and domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Based on the potential for toxicity from domestic and industrial contributions, the state water quality criterion, the level of dilution at the discharge location and in accordance with EPA national and regional policy and 40 CFR 122.44(d), the draft permit includes a whole effluent acute and chronic toxicity limitations (LC_{50} and C-NOEC) and monitoring requirements. The LC_{50} is the point estimate of effluent that is lethal to 50% of the test organisms and the C-NOEC (chronic-no observed effects concentration) is the highest tested concentration of an effluent at which no adverse effects are observed on an organism. (See "Policy for the Development of Water Quality Based Permit Limitations for Toxic Pollutants", 50 Federal Register 30748, July 24,1985, and "EPA' s Technical Support Document for Water Quality Based Toxics Control", September, 1985, and the "Implementation Policy for the Control of Toxic Pollutants on Surface Waters", February 23, 1990.)

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) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

The results of the whole effluent toxicity tests have been included in Table 2 of this fact sheet. The draft permit reflects a reduction in the number of whole effluent toxicity tests the permittee must conduct each year. The results of past tests support the reduction. (See Table 2 of this fact sheet to see the results of past tests.) The draft permit includes a limit of 25% based on the inverse of the dilution factor for the C- NOEC parameter of the toxicity tests.

C-NOEC

1/dilution factor *100 = C-NOEC
Dilution Factor = 4.0
1/4.0 * 100 = 25%.

Two species, the Ceriodaphnia dubia, and the Pimephales promelas shall be used in each of the two tests required annually.

Sludge

The permit prohibits any discharge of sludge. Section 405(d) of the Clean Water Act (CWA) requires that sludge conditions be included in all POTW permits. Technical sludge standards required by Section 405 of the CWA were finalized on November 25, 1992 and published on February 19, 1993. The regulations went into effect on March 21, 1993.

Currently, Pine Brook Country Club generates approximately 5000 gallons of sludge per month. It is transported off-site by a private contractor, for final processing, incineration and disposal in Woonsocket, Rhode Island.

State Certification Requirements

EPA may not issue a permit unless the MassDEP with jurisdiction over the receiving waters 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 MassDEP has reviewed the permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State and expects that the permit will be certified.

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, Massachusetts Office of Ecosystem Protection (CMP), One 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.

EPA and MassDEP Contacts

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

Betsy Davis
US Environmental Protection Agency
1 Congress Street

or

Paul Hogan
Massachusetts Department of
Environmental Protection

Suite 1100
Boston, MA 02114-2023
Telephone (617) 918-1576

Division of Watershed Management
627 Main Street
Worcester, MA 01608
Telephone: (508) 767-2796

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

Date

RESPONSE TO PUBLIC COMMENTS

From August 25, 2009 to September 23, 2009, the United States Environmental Protection Agency Region 1 (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) solicited Public Comments on a draft NPDES permit for the Pine Brook Country Club. The draft permit was developed pursuant to a reapplication from Mr. Ronald Passaggio, General Manager of the Pine Brook Country Club for reissuance of its NPDES permit to discharge wastewater to Pine Brook, a tributary of the Charles River. Upon considering the comments received, EPA has made a final decision to re-issue the permit authorizing the discharge. The following response to comments briefly describes and responds to the comments and describes the changes made to the permit. A copy of the final permit may be obtained from the permit writer, whose contact information is as follows:

Betsy Davis
United States Environmental Protection Agency
5 Post Office Square-Suite 100
Mailcode: OEP06-1
Boston, Massachusetts 02109-3912
Tel: (617) 918-1576.
Email: davis.betsy@epa.gov

Comments submitted by Don Freeman, Associate, Camp, Dresser and McKee, Inc. New Hampshire, dated September 22, 2009.

Comment #1: Fact Sheet, Page 2 – Description of Facility – Facility also provides post equalization.

Response: This document will serve as notification that post equalization is part of the treatment process at Pine Brook Country Club and will be added to the Facility's administrative file.

The fact sheet, issued with the draft permit, provides supporting documentation when it is placed on public notice. It briefly sets forth the principle facts and significant factual and legal, methodological, and policy questions considered in preparing the draft permit. Once the draft permit and fact sheet are placed on public notice both documents become part of a facility's NPDES administrative record and neither are changed.

Comment #2: (a). Permit, Page 2 of 9 – BOD loading – An average monthly BOD loading of 0.25 lbs/day has been proposed. This value is based on the original 6,000 gallons per day (gpd) maximum-day flow times the 5.0 mg/l effluent BOD concentration times a conversion factor of 8.34. Meeting this effluent loading at the proposed 8,000 gpd maximum day flow will require that the effluent quality meet an average BOD concentration of 3.7 mg/l. This is 26% less than the allowed concentration of 5.0 mg/l and will be extremely difficult to achieve consistently in July and August. We understand that the permit must meet DEP's anti-degradation policy; however, we believe this policy can also be met if this 0.25 lbs/day loading was made a 7-month average (April 1st – October 31st) rather than a monthly average.

The permit as written would allow 0.25 lbs/day of BOD to be discharged to the river for a total of 214 days, or a total of 53.5 lbs of BOD. However, Pine Brook actually discharges much less than this amount over the 7-month period because the flows are much lower than the permitted amount for 5 of the 7 months. By making the BOD loading limit a 7-month average rather than a monthly average, no additional BOD load would be discharged to the river over this time period (and in fact the total load would be much less than that allowed) and it would allow the facility more flexibility to handle and treat the flows during the peak July and August months.

(b). Page 2 of 9 – TSS loading – An average monthly TSS loading of 0.35 lbs/day has been proposed. As with the proposed BOD loading discussed above, this value is based on the original 6,000 gallons per day (gpd) maximum- day flow times the 7.0 mg/l effluent TSS concentration times a conversion factor of 8.34. Meeting this effluent loading at the proposed 8,000 gpd maximum-day flow will require that the effluent quality meet an average TSS concentration of 5.2 mg/l. This is 26% less than the allowed concentration of 7.0 mg/l and will be extremely difficult to achieve consistently in July and August. We understand that the permit must meet DEP's anti-degradation policy; however, we believe this policy can also be met if this 0.35 lbs/day loading was made a 7-month average (April 1st – October 31st) rather than a monthly average.

The permit as written would allow 0.35 lbs/day of TSS to be discharged to the river for a total of 214 days, or a total of 74.9 lbs of TSS. However, Pine Brook actually discharges much less than this amount over the 7- month period because the flows are much lower than the permitted amount for 5 of the 7 months. By making the TSS loading limit a 7-month average rather than a monthly average, no additional TSS load would be discharged to the river over this time period (and in fact the total load would be much less than that allowed) and it would allow the facility more flexibility to handle and treat the flows during the peak July and August months.

Response: Calculating the BOD_5 and TSS limits based on a seven month average rather than a monthly average would fail to meet antidegradation requirements. A seven month average would allow loads in excess of currently permitted loads to be discharged to the receiving water during any given month, which would result in poorer in-stream water quality, especially if the increased loads were discharged during low flow periods in late summer.

The Agencies are required to establish permit limits that satisfy the technology and water quality requirements of the Clean Water Act. If the effluent limitations in the final permit can not be achieved by the existing treatment facilities, the permittee may contact EPA or MassDEP enforcement offices to discuss a compliance schedule.

Comment #3: Permit, Pages 2 and 3 of 9 - The frequency of sampling of BOD, TSS, bacteria, and phosphorus (during summer months) has doubled from the existing permit to 2 times per week. The frequency of sampling for dissolved oxygen and pH has increased by 5 times to daily. Due to the outstanding performance that the plant has demonstrated over the past 3 years, we see no rationale for increasing the

sampling frequency for these parameters and request that these frequencies be returned to those under the existing permit.

Response: EPA believes due to the flow increase the additional monitoring requirements are necessary to provide a better characterization of the quality of the effluent and to ensure the limits for these parameters are consistently being met.

Comment #4: Permit, Page 2 of 9 – The maximum-day flow for November to March is "Report only" which implies that on some days it will be greater than the average-month flow of 0.003 mgd. This is acceptable; however, the maximum-day loads for BOD and TSS were calculated by multiplying the average-monthly flow times the maximum-day concentration. We request that the maximum-day loads be "Report Only" to be consistent with the maximum-day flow.

Response: The Agencies believe changing the maximum daily load to a reporting requirement does not support the antidegradation determination issued by the MassDEP. The antidegradation section of the fact sheet states that, "The limits for BOD_5, TSS and, total phosphorus are based upon the effluent load in the existing permit thus there is no increase in loading to Pine Brook." See pages 3 and 4 in the fact sheet.

Comment #5: Permit, Page 3 of 9, Total Copper – The average-monthly and maximum-daily value should be consistent, given a measurement frequency of once per month. Please delete the average-monthly value, and retain the maximum-daily value of 0.55 ug/l.

Response: Page 3 in the final permit establishes a sampling frequency for copper of once per month. This is the minimum number of samples required each month. The sampling frequency was established because there is little variability in the effluent data, but if only one sample is collected, that must be used to determine whether the discharge was in compliance with the monthly average (chronic) limit and the maximum day (acute) limit. The permittee may choose to collect more than one sample per month, in which case the monthly average and daily maximum discharge values submitted on the monthly discharge monitoring report will be different (unless the two samples measure the same discharge concentration.)

If more than one sample is collected during a given month, the permittee is required to calculate a monthly average value based on the total number of samples collected during the month.

Comment #6: Permit, Page 3 of 9, Aluminum – The average-monthly and maximum-daily value should be consistent, given a measurement frequency of once per month. Please delete the average - monthly value, and replace it with a maximum-daily value of 140 ug/l.

Response: As described in the previous response, the permittee may choose to sample more than once per month. The permit has not been changed.