RESPONSE TO PUBLIC COMMENTS

From November 8, 2005 to December 7, 2005, the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) solicited Public Comments on a draft NPDES permit, developed pursuant to an application from the Town of Upton for its wastewater treatment plant, located in Upton, MA. After reviewing the comments received, EPA has made the final decision to issue the permit authorizing the discharge. The following describes and responds to comments, and describes any subsequent changes to the draft permit. A copy of the final permit may be obtained by writing or calling Jeanne Voorhees, United States Environmental Protection Agency, 1 Congress Street, Suite 1100 (CPE), Boston, Massachusetts, 02114-2023; Telephone (617) 918-1686.

A. Comments Received Mr. David C. Formato, P.E., Tata & Howard

Comment A1: The Board of Sewer Commissioners (Board) requests an implementation schedule for the chlorination and dechlorination alarm system. To implement an alarm system would take time and funds appropriation. At this time, the Board is considering converting the disinfection system to an ultraviolet (UV) system in lieu of installing the alarm system and would like to meet with the EPA to discuss an implementation schedule.

Response A1: As described later in its comment letter (see comment number 3 below), the Town of Upton has retained Tata & Howard to perform an alternatives analysis and facility study relative to upgrading the WWTF to "an advanced wastewater treatment system that will enable more consistent metals removal, nitrification, and to possibly eliminate the need for chlorination and dechlorination chemicals". The alternatives analysis and facility study includes an examination of the potential installation of a UV system for disinfection. EPA recognizes that installing an alarm system for the chlorination/dechlorination system would be inefficient if it is later decided that a UV system would be installed. Therefore, we have included a compliance schedule in the permit which allows the Permittee, within a specified period, to evaluate disinfection alternatives and complete the design and installation of the selected alternative. The compliance schedule below appears in Section F of the permit, as follows;

1. Within three (3) months of the effective date of this permit, the Permittee shall evaluate whether an alarm system for the chlorination/dechlorination system or UV system shall be installed at the WWTF.

2. Within six (6) months of the effective date of this permit, the Permittee shall complete a design of the selected alternative.

3. Within eighteen (18) months of the effective date of this permit, the Permittee

shall complete the installation of the selected alternative.

Comment A2: The Board is considering relocating the discharge directly to the West River instead of the unnamed tributary, and requests EPA to determine the permit limits based on the relocation. Also, it is requested that EPA delay the final release of the NPDES permit until the Board has a chance to investigate relocating the outfall to the West River. The Board requests a meeting with EPA to discuss this issue.

Response A2: Below, limits are calculated for those pollutants that would be affected by discharging to the West River. These effluent limits are only estimations based assumptions of the location of outfall, and that water flowing into the treatment plant is not from another watershed. Furthermore, for hardness-dependent metals, the hardness value was calculated using a very limited data set.

Using StreamSTATS, the drainage area at a point of discharge to the West River was estimated to be 14.58 square miles.

Given:

Area
Drainage Area at point of discharge into the West River = 14.58 mi^2

Flows:
West River; West Upton near Pleasant Street (USGS gage 01111150)
Drainage area = 14.7 mi^2
7Q10 = 0.5 cfs.

Calculation:
7Q10 at site point of discharge = 0.5/14.7.0 X 14.58 = 0.4959 cfs, rounded to 0.5 cfs

The new dilution factor based on the adjusted 7Q10 was calculated as follows;

Given:

7Q10 = 0.5 cfs
Plant Design Flow = 0.6188 cfs

$$\text{Dilution Factor} = \frac{7Q10 + \text{Plant Design Flow}}{\text{Plant Design Flow}}$$

$$\text{Dilution Factor} = \frac{0.5 \text{ cfs} + 0.6188 \text{ cfs}}{0.6188 \text{ cfs}} = 1.808, \text{ rounded to } 1.8$$

Hardness-Dependent Metals: Cadmium, Copper, Lead and Zinc

For hardness-dependent metals an instream hardness value for the West River is required. Three hardness values for the West River were found in the *Blackstone River Basin 1998 Water Quality Assessment Report*; 24 mg/l, 32 mg/l and 23 mg/l. Given the limited data set, a conservative approach was taken to develop an instream hardness value by using the lowest hardness value (23 mg/l) in the calculation below.

A hardness value was calculated as follows:

$$\frac{(7Q10)(\text{Hardness West River}) + (\text{Plant Design Flow})(\text{Effluent Hardness})}{(7Q10) + (\text{Plant Design Flow})}$$

Where,

7Q10 = 0.5 cfs
Plant Design Flow = 0.6188 cfs
West River Hardness = 23 mg/l
Effluent Hardness = 58 mg/l

$$\text{Hardness} = \frac{(0.5\ \text{cfs})(23\ \text{mg/l}) + (0.6188\ \text{cfs})(58\ \text{mg/l})}{(0.5\ \text{cfs}) + (0.6188\ \text{cfs})} = 42.35\ \text{mg/l, rounded to 42 mg/l}$$

Substituting the dilution factor (1.8), and as appropriate the hardness value (42 mg/l), in the calculations appearing in the Fact Sheet yields an estimation of the following limits:

Effluent Characteristic	Units	Discharge Limitation	
		Average Monthly	Maximum Daily
Aluminum, Total	ug/l	156.6	1,350
Cadmium, Total	ug/l	0.3	1.6
Chlorine, Total Residual	ug/l	19.8	34.2
Copper, Total	ug/l	8.0	11.1
Lead, Total	ug/l	1.9	Report
Zinc, Total	ug/l	103.4	103.4

If the Board decides to relocate the outfall to the West River, new limits can be developed and put into effect through a permit modification. Thus, delaying the reissuance of the final permit until this decision is made is unnecessary.

Comment A3: The Board has retained Tata & Howard, Inc. to conduct an alternatives analysis and facility study to examine the modification of the current system into an advanced wastewater treatment system that will provide consistent metals removal, nitrification and UV disinfection. This work is being conducted to comply with an EPA Administrative Order. Completing this work will take time and may involve fiscal commitments by the Town. Therefore, the Board requests that a schedule be discussed and included as a part of the final NPDES permit.

Response A3: We recognize that the Board is currently examining measures to upgrade the Upton WWTF, and that consideration is being given to relocating the outfall to the West River. Given that the outcome of the alternatives analysis and facility study are unknown, placing a schedule in the permit is impractical. We anticipate issuing an Administrative Order (AO), which will include a schedule for completing the alternative analysis and facility study and for implementing its recommendations.

Comment A4: Comments A1 and A2 requested a meeting to discuss the conditions of the draft permit.

Response A4: EPA and the MassDEP have discussed the permit conditions with the Town during the public comment period, and we believe that we have addressed the Town's concerns to the extent possible. We would be willing to meet with the Town regarding the final permit conditions and the expected administrative order which will include a schedule for completing the plant upgrade study and implementing its recommendations. Please contact Mrs. Jeanne Voorhees [617.918.1686] to schedule a meeting regarding the permit or Mr. Michael Fedak [617.918.1766] to schedule a meeting regarding the administrative order.

B. Comments received from Cindy Delpapa, Stream Ecologist, MA Riverways Program

Comment B1: "We would like to recommend an addition to the permit that requires the Permittee to maximize phosphorus removal at all times to further strengthen the requirements in the permit. This requirement would challenge the Permittee to try and reduce phosphorus in the discharge to a level lower than required in the permit whenever feasible in order to realize water quality improvements as soon as possible."

Response B1: The permit limits for phosphorus are proposed to attain and maintain compliance with water quality standards. In particular, summer and winter limits are included in the permit, thus, phosphorus removal is required on a year-round basis. Also, Parts II Section A (1), and Section B (1), require the permittee to comply with all conditions of the permit at all times, and to properly operate and maintain the facility at all times, respectively.

Based on a review of Table One in the Fact Sheet, the Upton WWTF has consistently met, or done better than the required limit for total phosphorus. For example, since

October 2003 to April 2005, the Upton WWTF, on average, had an average monthly value of 0.09 mg/l (range 0.03 mg/l - 0.132 mg/l, n= 19) (see Table One). Finally, to meet the average monthly limit, the WWTF must generally do better than, or at a minimum meet, the 0.2 mg/l limit in order to be in compliance. Therefore, EPA does not deem it necessary add language to the permit to maximize phosphorus removal at all times given that the permit conditions inherently accomplish this recommendation.

Comment B2: "The Fact Sheet mentions the short detention time in the downstream impoundment on the West River. Has the detention time been determined for this water body through modeling or experimentation? Has any modeling or testing been undertaken to ascertain if the impoundment serves as a sink for phosphorus - a condition that could potentially impair recreational uses and aesthetics in this water body."

Response B2: Detention time was not determined for the West River Pond, and modeling was not conducted to determine how much phosphorous settles in it. The statement referred to in the Fact Sheet is relative to the cold weather limitation for phosphorous. It is explained that this limitation is necessary to ensure that higher levels of phosphorous discharged during the cold weather months do no result in the accumulation of phosphorous in the sediments, and subsequent release during the warm weather growing season. This limitation, as well as the warm weather limitation, is required to prevent eutrophic conditions in the unnamed stream, the West River, and the West River Pond. This pond is located further downstream of the discharge in Uxbridge, MA on the West River. It is a widely used recreational pond, which has noted impairment caused by noxious plants and non-native plants (MassDEP 2004).

Comment B3: "Table One in the Fact Sheet is a (sic) helpful, providing a concise and clear comparison of recent permit changes and its addition is appreciated. The table, as well as the draft permit, show the permitted maximum loadings for BOD and TSS. A quick calculation of the loading using the adjusted concentration limit, a flow of 0.4 mgd and a conversion factor of 8.345 results in different loadings than appear in the permit and Table One for 3 of the 4 loading limitations, [12*.4*8.345=40), 18*.4*8.345=60), (22*.4*8.345=73), though these are minor differences and this facility has an outstanding compliance record for BOD and TSS, we are merely curious as to how the numbers were calculated."

Response B3: As explained in the Fact Sheet on page 6, the cold weather (November 1- April 30), The current permit limits were made more stringent than the previous (September 1995) permit limits in order to maintain the same mass loading of BOD and TSS at the increased flow limit of 0.4 MGD. Specifically, the authorized mass loadings at the previous design flow of 0.3 were calculated, and then lower concentration limits were back- calculated using the increased design flow of 0.4 MGD. The mass limits are the same as in the current permit and were calculated using the concentration limits and the flow limit of 0.4 MGD.

The warm weather (May 1 - October 31) concentration limits are the same as in the current permit. Similar to the cold weather limits, the water quality- based warm weather concentration limits were made more stringent in the current permit than in the previous permit in order to maintain the same mass loading of BOD and TSS at the increased flow limit of 0.4 MGD. The mass limits are the same as in the current permit and were calculated using the concentration limits and the flow limit of 0.4 MGD.

Calculations:

BOD and TSS Limits: (Summer limit = S, and Winter limit = W)

Average Monthly Mass Limit $^{(S)}$ = (0.3 MGD x 15 mg/l x 8.345) = 37.55 lbs/day = 38 lbs/day
Average Weekly Mass Limit $^{(S)}$ = (0.3 MGD x 25 mg/l x 8.345) = 62.58 lbs/day = 63 lbs/day
Average Monthly Concentration Limit $^{(S)}$ = (38 lbs/day /(0.4 MGD x 8.345)) = 12 mg/l
Average Weekly Concentration Limit $^{(S)}$ = (1.7 x 12 mg/l) = 20 mg/l

Average Monthly Mass Limit $^{(W)}$ = (0.3 MGD x 30 mg/l x 8.345) = 75 lbs/day
Average Weekly Mass Limit $^{(W)}$ = (0.3 MGD x 45 mg/l x 8.345) = 113 lbs/day
Average Monthly Concentration Limit $^{(W)}$ = (75 lbs/day /(0.4 MGD x 8.345)) = 22.46 mg/l = 22 mg/l
Average Weekly Concentration Limit $^{(W)}$ = (113 lbs/day /(0.4 MGD x 8.345)) = 33.7 mg/l = 34 mg/l
(Note: The winter seasonal BOD limitations are based on anti-degradation.)

Upon review of the calculations above, however, it has been recognized that an error was made in the draft permit for the average weekly concentration limits for BOD_5 and TSS. The draft permit has 18 mg/l as the average weekly concentration limit for BOD_5 and TSS, instead of the calculated limit of 20 mg/l. Thus, the final permit has been changed to appropriately reflect the average weekly concentrations of 20 mg/l for both BOD_5 and TSS.

Comment B4: "We would like to suggest the Permittee be required to undertake additional monitoring whenever the TRC concentration in the effluent exceeds acute permit limitations until the concentration returns to an acceptable level. This additional information would help managers and concerned entities understand the length of time the discharge released elevated TRC. This would data would help determine the impacts of potentially acute concentrations into the receiving waters in relation to a specific incident and in situ conditions."

Response B4: The permit requires that within three months of the effective date of this permit, the Permittee will evaluate whether an alarm system for the chlorination/dechlorination

system or UV system will be installed at the WWTF. Also, the Permittee is required to complete the installation of the selected disinfection alternative within eighteen months of the effective date of this permit. Therefore, considering that the Permittee will either install an alarm system resulting in an immediate corrective response, or replace the current disinfection system with a UV system, EPA does not deem it necessary to require the Permittee to conduct the suggested additional monitoring.

Comment B5: "More frequent monitoring of copper may be warranted until the facility is able to consistently meet permit limitations. We would also urge toxicity identification measures be considered if the Whole Effluent Toxicity tests continue to be problematic, (note the facility failed to meet permit limits in the first two quarterly tests in 2005 though Table 3 indicates copper was non detect) when copper concentrations are brought into compliance."

Response B5: The Permittee is currently under an Administrative Order to address copper reduction to meet its permitted limits. As noted above, the Board has retained Tata & Howard, Inc. to upgrade the facility so that it complies with its permitted pollutant concentrations, including copper. The draft permit requires copper monitoring twice per month, and four times per year as a part of the Whole Effluent Toxicity (WET) tests. EPA considers these monitoring requirements are adequate, and that any additional monitoring will likely reflect very similar results of the required monitoring. Therefore, additional monitoring would provide superfluous data, especially considering that copper violations have already been documented.

The EPA enforcement program will consider requiring a Toxicity Identification Evaluation (TIE) if copper limits continue to be violated and WET tests are failed after the upgrade.

OTHER

It is noted for the record that page 11 of the Fact Sheet, paragraph two, incorrectly listed the monthly average total phosphorous range as 0.03 mg/l - 3.3 mg/l. The range should be 0.03 mg/l -0.33 mg/l.