

## RESPONSE TO PUBLIC COMMENTS

From February 15, 2006 to April 12, 2006, the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) solicited Public Comments on a draft National Pollutant Discharge Elimination System (NPDES) permit, developed pursuant to an application from the Town of Wayland for its wastewater treatment plant, located in Wayland, 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 Brian Pitt, United States Environmental Protection Agency, 1 Congress Street, Suite 1100 (CPE), Boston, Massachusetts, 02114-2023; Telephone (617) 918-1875. Copies may also be obtained from <http://www.epa.gov/region1/npdes/index.html>.

### A. Comments Received from Lana Carlsson-Irwin, Town of Wayland Wastewater Management District Commission (WWMDC)

Comment A1: On page 5 of the Fact Sheet there begins a discussion of Effluent Limits Derivation. In the last paragraph on this page the following sentence appears: "This 7Q10 and permitted flow limit of 0.052 MGD is used to calculate the dilution factor..." The Commission has no objection to this wording. However, in the actual calculations which follow, the words "permitted flow limit" have been replaced throughout with the words "plant design flow". The WWMDC objects to this change in wording. The difference is material and significant to the WWMDC. The WWMDC has no objection to the permitted flow limit of 0.052 MGD. However, the WWMDC has used the concept of plant design flow or plant capacity extensively in its granting of sewer use permits. The WWMDC based its calculations and decisions based on the prior permit which included 0.065 MGD as the maximum plant design flow. The plant has not decreased in size and its maximum design flow has not changed.

The WWMDC requests that the words "permitted design flow" should be used as set forth in the last sentence at the bottom of page 5 and should replace the words "plant design flow" throughout the Fact Sheet. The WWMDC believes a great deal of confusion will be eliminated by this consistent use of the term "permitted design flow".

Response A1: The previous permit includes an average monthly flow limit of 0.052 MGD. This limit is also the long-term average design flow of the facility. The previous permit also included a maximum daily flow limit of 0.065 MGD, which is the maximum design flow of the facility.

Permit effluent limitations for wastewater treatment facilities (WWTF) are calculated based on the facility's design flow (see 40 CFR § 122.45(b)(1)). The long term average design flow is typically used to calculate effluent limitations, rather than the

maximum daily design flow We therefore believe that the terminology used in the fact sheet is correct.

The annual average flow limit is a fully enforceable requirement of the permit and the granting of sewer use permits should be consistent with complying with this flow limit. Therefore, the WWMDC should not grant sewer connections that would result in an annual average flow greater than 0.052 MGD.

**B. Comments Received from Mr. Thomas B. Arnold; Sudbury, MA**

**Comment B1:** “The Draft Permit allows an average flow of 52,000 gpd, even though the average daily flows in 2002-2003 were slightly over 10,000 gpd. As far as I can tell, no one knows when, or even if, flows will ever exceed 10,000 gpd. Nor has it been shown what types of commercial, industrial or residential wastes will be discharged to the Wayland WWTP at some unknown time in the future, or the volume of such increased flows. Without knowing the composition and volume of the expected waste flow into the WWTP, it is premature to authorize such an increase, much less to attempt to set effluent limits. Moreover, it is anticipated that the existing WWTP will either be rebuilt or a new one constructed. Until details about the treatment plant are known, it is premature to try to set effluent limits. I would urge EPA to issue a permit for 10,000 gallons at this time, and to defer any action on greater amounts of effluent until more is known about the chemical and biological makeup of the increased flow”.

**Response B1:** Permit effluent limitations for WWTF’s are calculated based on the facility’s design flow pursuant to 40 CFR § 122.45(b)(1). As noted in the response to comment A1, the long term (annual) average design flow was used to develop the limits in the permit.

The numeric flow limit in the reissued permit is the same as the previous permit (dated September 4, 1998), although the averaging period has been lengthened from a monthly average to an annual average. While this increase in the averaging period has the effect of slightly raising the allowable flow in any given month, the actual overall increase will be quite small. Thus, no significant flow increase has been authorized. It is the Permittee’s responsibility to maintain compliance with all conditions of the permit as additional flow is connected to the WWTF.

**Comment B2** “The Draft Permit allows total phosphorus discharges of up to 0.2 mg/l from April-October 31, and 0.5 mg/l from November 1 to March 31. These technology-based limits are not stringent enough to meet water quality standards. As well documented in the EPA Permit Fact Sheet and the MA DEP’s SuAsCo Watershed Concord River TMDL Study Assessment Final Report, the Sudbury and Concord rivers are already eutrophic. Any wastewater discharge that increases the total phosphorus load in the Sudbury and Concord Rivers will increase the severity and duration of eutrophic conditions. EPA regulations require that the Wayland

permit must contain water quality-based total phosphorus limits which will achieve water quality standards.

The EPA-funded Mitchell, Liebman, Ramseyer and Clark (2004) determined that instream TP concentrations of 0.020-0.022 mg/L were necessary to protect designated uses in waters such as the Sudbury and Concord Rivers. From May, 2003 thru November 2004, the average TP concentration in the Sudbury River below the proposed wastewater discharge site was 0.108 mg/L, or five times the levels necessary to protect designated uses. The maximum TP concentration measured at the site during the same period was 0.68 mg/L, or 30 times the recommended levels.

Consequently, this study, along with other EPA guidance documents and the Sudbury River water quality data, require that the total phosphorus effluent limit in the final permit should not exceed 0.02 mg/l, which is an order of magnitude *lower* than the proposed 0.20 mg/l TP limit. By contrast, the proposed technology-based limits of 0.2 mg/L and 0.5 mg/L in the Draft Permit will contribute to the existing eutrophication problems and use impairments in both the Sudbury and Concord Rivers.”

Response B2: As noted in the Fact Sheet (pages 7-8), EPA has produced guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (“the Gold Book”) recommends that instream phosphorus concentrations not exceed 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within the lake or reservoir. The “Ecoregional Nutrient Criteria”, for Ecoregion XIV, recommends a total phosphorus criterion of 24 ug/l (0.024 mg/l). Finally, a paper by Mitchell, Liebman, Ramseyer, and Card, in conjunction with the New England States, developed potential New England-wide nutrient criterion for instream total phosphorus concentrations of 0.020 - 0.022 mg/l for New England streams.

EPA typically applies the Gold Book criterion (0.1 mg/l) rather than the more stringent eco-region and New England-wide criterion, given that it was developed from an effects-based approach, versus the eco-region and New England-wide criterion that were developed on the basis of reference conditions. The effects-based approach is taken because it is often more directly associated with an impairment to a designated use (i.e. fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e., phosphorus) and a response variable (i.e., chlorophyll *a*) associated with designated use impairments. Reference-based values are statistically derived from a comparison within a population of rivers in the same eco-region class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent minimally impacted conditions.

Given the evidence that the receiving water is eutrophic, EPA included a limitation based on Highest and Best Practical Treatment, which MassDEP has defined as a monthly average limit of 0.2 mg/l total phosphorus. This limit will result in the Wayland discharge making a very small contribution to the phosphorus concentration in the Sudbury River. Using the calculated dilution factor of 78.1, a discharge of 200 ug/l total phosphorus (0.2 mg/l) would result in an instream concentration of only 2.6 ug/l (200 ug/l/ 78.1), assuming zero in the background. If a background concentration of 83 ug/l is assumed (the average upstream concentration, as noted in the fact sheet), the resulting instream concentration downstream of the discharge would be only 84.5 ug/l, as calculated below, an increase of only 1.5 ug/l.

$$Cr = (QdCd + QsCs) / Qr$$

Where,

Cr = instream concentration of pollutant downstream of the discharge

Qd = discharge flow

Cd = concentration of pollutant in discharge

Qs = flow upstream of the discharge

Cs = concentration of pollutant upstream of the discharge

Qr = flow downstream of the discharge

$$\begin{aligned} Cr &= (0.052 \text{ MGD} * 200 \text{ ug/l} + 4.01 \text{ MGD} * 83 \text{ ug/l}) / 4.062 \text{ MGD} \\ &= 84.5 \text{ ug/l} \end{aligned}$$

At a concentration of 0.2 mg/l, the discharge of phosphorus from the facility will not cause an appreciable increase in the instream total phosphorus concentration and will therefore not cause or contribute to exceedances of water quality standards.

We do agree that the background concentrations indicate impairments due to nutrients and would note that the East Marlborough facility, which discharges to a tributary of the Sudbury River upstream of the Wayland facility has not yet attained its effluent limitation of 0.1 mg/l. Once it has attained this limit there should be a reduction in background concentrations. Similarly, upstream communities must implement storm water best management practices (BMPs) as a condition of their storm water NPDES permits, which should also improve background conditions for nutrients.

Comment B3: "The Fact Sheet attempts to justify the proposed TP limits by arguing that because they are more stringent than the existing permit the anti-degradation requirements have been met. It should be obvious that this is not the legal standard for determining limitations on wastewater flows".

Response B3: MassDEP's antidegradation requirements regarding NPDES permits apply chiefly to new or increased discharges. The statement in the fact sheet regarding antidegradation is simply to note that this is not a new or increased discharge, and therefore does not require a detailed antidegradation review.

The total phosphorus limits for the discharge to the Sudbury River were established to achieve the narrative criteria for nutrients found at 314 CMR § 4.05(5)(c), which states that nutrients, "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication". Given the current impairments in the Sudbury River, more stringent total phosphorus limits were calculated and applied (see Response B2).

Comment B4: "I request that EPA and DEP hold a public hearing to address these issues".

Response B4: This request was denied and the requestor was notified by letter January 16, 2007.

C. Comments Received from Linda L. Segal; Wayland, MA

Comment C1: The Record Does Not Support The Proposed Flow Limit.

"From a review of the information contained in the EPA "Fact Sheet", it appears that the proposed Permit discharge limitations and conditions were determined almost entirely on a "quantitative description of the effluent parameters" contained in Discharge Monitoring Reports for the period January 2002 through November 2004. As shown on Table 1 of the "Fact Sheet", although the then permitted monthly average flow was 52,000 GPD, the actual monthly average flow throughout that period was only 10,344 GPD.

Given that the flow throughout this period was only 20% of the allowed monthly average, it does not seem as though EPA and DEP have a sufficient basis for determining that the proposed new flow and effluent limits will, in fact, be protective of surface water quality standards if and when the treatment plant returns to a full capacity.

There are currently only 27 users connected to the Wastewater Treatment Plant. Those users represent approximately 5 households, some existing businesses, and one municipal use (newly constructed after issuance of the 1998 NPDES Permit).

I mention the new construction only because the State statute that created the Wayland Wastewater Management District Commission (i.e., the Town body that oversees and operates the Wayland Wastewater Treatment Plant), states at Chapter 461 of the 1996 Acts and Resolves of Massachusetts that "the commission shall not provide service to: (2) a new facility's system or for an increase in design flow to an existing facility's system if that new system or increase in design flow could not have been permitted in the absence of this act . . . ." That is, Wayland should not be relying on this NPDES Permit and discharges to the Sudbury River to promote new growth. Rather, all of the regulatory agencies involved should be attempting to curtail new or increased discharges to the River.

The Sudbury River is currently on a State list of water bodies that have water quality impairments and the Sudbury-Assabet-Concord (SuAsCo) watershed is suffering from an over-allocation of nutrients, resulting in serious eutrophic conditions. Therefore, it would seem appropriate and more protective of the environment at this time to issue a Permit for the 15,514 GPD maximum recorded monthly flow”.

**Response C1:** See Responses A1 and B1. There has been no significant increase from the previously permitted flow. The flow limit was established at the long term average design flow, and pollutants are regulated based on meeting standards at the full design flow discharge. It is the permittee’s responsibility to ensure they can meet limits at the full design flow.

Regarding the comment that the statute creating the Wayland Wastewater Management District Commission placed limitations on the services it could provide, this is a matter of state, rather than federal law and EPA looked to the MassDEP certification for any appropriate permit limitations. MassDEP provided no limitations or conditions limiting service connections in its certification.

Regarding the comments that the Sudbury River is impaired and that the SuAsCo watershed is suffering from an over-allocation of nutrients, we agree that the receiving water is impaired and that nutrients in the watershed’s receiving waters are too high. We believe that the limitations in this permit are sufficiently stringent to protect water quality.

**Comment C2:** “Given the current eutrophic conditions in the Sudbury River and the fact that in low flow conditions, the river system is dominated by sanitary wastewater discharges, it is imperative that EPA and DEP impose lower discharge limits on the effluent, similar to the limits imposed in the Hop Brook.

Please be aware that there are currently three large development projects that have been either permitted or are being proposed for the center of Wayland. One is a 48-unit 40B condominium housing project (Wayland Commons, Old Sudbury Road) already approved by the Zoning Board of Appeals. Another is a 372,500 sq. ft. mixed-use development comprised of 205,000 sq.ft. of retail, restaurant, and municipal use; and another 167,500 sq. ft. of residential use consisting of 200 bedrooms. The third is a possible 40B condominium development (Residences at Wayland Center) consisting of 480 bedrooms comprised of mid-rise and town house residences adjacent to the Sudbury River. It appears each of these projects expects to connect to the Wayland Wastewater Treatment Plant and take advantage of the ability to discharge to the Sudbury River.

Once these new developments are added to the wastewater system, it will be difficult, if not impossible, to curtail their flow into the system and the river. That is why it is imperative to take these prospective new users into account now when setting the discharge limits. Each of these new users will have washing machines, dishwashers, and residential bathroom facilities, all of which will add to the phosphorus levels in

the discharge. The amount of phosphorus likely to be contained in their wastewater will far outweigh what would be contained in a typical general office building use”.

Response C2: The reissued effluent limits were developed based on the design flow (0.052 MGD) of the Wayland WWTF. Thus, if new developments are added to the wastewater system, but below the flow capacity of the WWTF, then the permit effluent limits will remain protective of the Sudbury River’s water quality. If, however, the Town of Wayland allowed more flow than is permitted, then the Town would be in non-compliance with the NPDES permit and subject to enforcement. Finally, NPDES permits do not typically dictate the type of wastewater connections to a WWTF, provided that the permittee’s discharge is in compliance with its effluent limitations and conditions. However, pursuant to Part I.A.2., the permittee is required to report changes in the discharges to the POTW. Based on this information, EPA can determine whether the changed discharge is cause for a modification to the permit.

In preparing the response to this comment, EPA noted that the language in Part I.A.2.a. of the draft permit, which was intended to mirror the regulation at 40 CFR Part 122.42(b)(1) regarding notification of the new introduction of pollutants from indirect discharges, does not correctly mirror that regulation. Accordingly, the language in the final permit for Part I.A.2.a. is taken directly from 40 CFR Part 122.42(b)(1). The major difference in the new language is that it requires notification of any new introduction of pollutants from an indirect discharge which would be subject to Section 301 or 306 of the CWA rather than only for indirect discharges from discharges in primary industrial categories discharging process wastes.

Comment C3: “If New Development Is Going To Be Allowed To Discharge To The Treatment Plant, It’s Contribution Should Be Considered In Setting Effluent Limits”.

Response C3: See Response C2.

Comment C4: Page 8 of 14 of the Draft Permit, Footnote No. 7 appears to have an error. The text states that “Toxicity test samples shall be collected during the second week of August, and the results shall be submitted by September 30<sup>th</sup>.” But, the table states that the tests should be conducted during the second week in September and the results should be submitted by October 31<sup>st</sup>.

Response C4: The table has been changed to reflect Footnote No. 7.

Comment C5: Page 10 of 14 of the Draft Permit – Part I.A. (Continued), # 2.b. seems to be missing some words. The sentence probably more correctly should read “2. The permittee must provide adequate notice to the Director of the following: b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at or after the time of issuance of the permit.” (insert underlined words).

Response C5: The language in the permit, which comes from 40 CFR § 122.42(b)(2), is asking the permittee to report changes in the volume or character of any sources which were discharging into the treatment plant at the time of permit issuance (item Part I.A.2.a is notification for new discharges into the system). Therefore, the "at the time of permit issuance" pertains to the baseline conditions against which "substantial change" is judged, not when the notification occurs. Therefore, the language in Part I.A.2.b will remain unchanged.

D. Comments received from Prescott and Margery Baston; Wayland, MA

Comment D1: We, the signatories of this document, are users of the Wayland Wastewater Management District (WWMD) wastewater treatment plant. We are writing to express our concern that during the re-permitting process for the WWMD treatment plant, the standards for the plant's discharge have been changed. What was considered a river discharge is now being considered a wetlands discharge even though neither the outfall nor the river channel has moved. No allowance has been made for the fact that during the winter and spring the outfall is actually under the flowing river water. Further, no allowance has been made for economic hardship. The cost of the equipment needed to meet these new standards will be borne by the users of the WWMD. I am sure that your department deals with districts that have thousands of users. However, the WWMD has thirty-eight (38) users, of which six (6) are residential users and the rest (except for one) are small businesses.

Over the past five years, each of the users has paid \$17,500.00 for the right to connect to the system. In addition to the \$17,500.00, each of us then had to purchase grinder pumps, have them installed, dig trenches to run our pipes to connect to the system's pipes, and up-grade electrical services. These costs varied by individual user, but each user, to connect to the system, spent an additional \$7,000.00 to \$8,000.00. Therefore, it would be safe to say that each user has spent \$25,000.00 to connect to the system.

All of us were willing to hook up to the system because our residences or places of business are in a Zone II and in an Aquifer Protection District. We also are in the Sudbury River flood plain, and have high ground water. All of us understand the need to protect our groundwater, as Wayland relies on wells to meet the water needs of its residents. We now learn that because of the unexpected reclassification of the standards that govern the WWMD treatment plant, we may need to pay an additional \$6,000.00 to \$18,000.00 per user, for the required up-grades. All of us connected to the system to protect the Town's drinking water. We understood, at the time we connected, that the treatment plant would, from time to time, require maintenance, but we had no idea that the standard for the plant could be changed to require all new equipment. Some of the users have commented that it might be more economical for them to get off the WWMD sewer system and put in a leaching field. This would not be a good development, as it would put wastewater back into the ground within the floodplain.



The fact that the outfall is actually a river discharge when the water levels are up in the winter and spring, is an unusual circumstance. Also, we ask the EPA and DEP to consider the economic hardship presented in this highly unusual situation.

Response D1:

State Water Quality Standards establish the hydrologic condition at which water quality criteria must be applied. For rivers and streams the hydrologic condition is the lowest mean flow for seven consecutive days to be expected once in ten years (7Q10). 314 CMR §4.03(3).

Water quality-based effluent limits are therefore based on a dilution factor calculated using the permitted flow of the treatment facility and the 7Q10 of the receiving water. For the discharge to the wetland, a dilution factor of one was derived, given that the 7Q10 of a wetland is zero (i.e., inconsequential river flow through the wetland during critical summer period).

Regarding consideration of economic hardship, EPA regulations do not allow for consideration of the cost of compliance in establishing water quality-based effluent limitations. However, costs may be considered in establishing a compliance schedule to achieve limits. In determining affordability, EPA uses *Interim Economic Guidance for Water Quality Standards* EPA-823-B-95-002 (March 1995).

E. Comments received from John Davenport and Carol Lee Rawn, Conservation Law Foundation

Comment E1: "Our principal concerns are with the draft permit's summertime (April 1 – October 31) average monthly phosphorus limit of 0.2 mg/l, its flow limit of 52,000 gallons per day, and the lack of conditions imposed for any extension of the WWTP's outfall from the wetland to the Sudbury River itself.

The WWTP discharges its effluent into an unnamed wetland adjacent to the portion of the Sudbury River that has been designated as a Wild and Scenic River. The Sudbury is classified as Class B waters under the Massachusetts Surface Water Quality Standards. As such, it should be capable of providing and supporting habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreations, and have consistently good aesthetic value. However, the Fact Sheet accompanying the draft permit shows that phosphorous levels in the Sudbury River both upstream (0.083 mg/l) and downstream (0.11 mg/l) of the WWTP's discharge far exceed the 0.020 – 0.022 mg/l levels identified in the most recent studies as protective of designated uses for New England rivers and streams (Fact Sheet, pages 7 and 8). The Sudbury River is failing to meet the water quality standards assigned to it by the Commonwealth of Massachusetts, and the WWTP's phosphorous discharge is contributing to this failure as is clearly shown from the increase in the phosphorous levels in the river downstream of the WWTP.

Where necessary for the attainment of water quality standards, both numeric and narrative, §301(b)(1)(C) of the federal Clean Water Act requires limits more stringent than technology-based limits. Cost and technological considerations may not be considered in establishing water-quality based limitations. In re Westborough and Westborough Treatment Plant Board, 10 E.A.D. 297 at 312 (2002). Further, 40 CFR § 122.4(d) provides that:

*No [NPDES] permit may be issued...[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States (emphasis added).*

The Fact Sheet notes that the Massachusetts water quality standard for nutrients provides that discharges of nutrients, such as phosphorous, encouraging eutrophication are to be provided with “the highest and best practical treatment to remove such nutrients”, and states that “MADEP has established that a monthly average total phosphorous limit of 0.2 mg/l represents the highest and best practical treatment for POTW’s”. This, however, does not override EPA’s independent obligation under §301(b)(1)(C) of the Clean Water Act and 40 CFR §122.4(d) to determine whether or not that 0.2 mg/l limit will “ensure” compliance with the applicable water quality standards. The Environmental Appeals Board in its recent decision, In re City of Marlborough, Massachusetts, Easterly Wastewater Treatment Facility, NPDES Appeal No. 04-13, August 11, 2005 (the “Hop Brook decision”), remanded the permit under appeal in that case, notwithstanding MADEP’s certification under §401(a) of the Clean Water Act, because the record in the case did not establish with the degree of certainty required by 40 CFR §122.4(d) that the permit’s 0.1 mg/l phosphorous limitation, by itself, would meet the State’s water quality standards. “...when the Region reasonably believes that a state water quality standard requires a more stringent limitation than reflected in a state certification, the Region has an independent duty under section 310(b)(1)(C)...to include more stringent limitations.” (Hop Brook decision, footnote 22).

The lack of any analysis of the effect of bottom sediments further undermines any claim that the proposed average monthly phosphorous limit of 0.2 mg/l will result in the attainment of water quality standards. Further, we note that the recent Assabet and Hop Brook permits included a more stringent phosphorous limit of .1 mg/l.

In sum, the draft permit is clearly inadequate under the Clean Water Act and its regulations, and we urge that the draft permit be revised to ensure compliance with water quality standards.”

**Response E1:** Regarding the summertime total phosphorus limit (0.2 mg/l), please see Response B2 for an explanation as to why we believe the phosphorus limits in the permit will ensure compliance with water quality standards. As presented in the permit, and described in the fact sheet, we believe that the limits for both discharge locations will ensure that water quality standards will be achieved. While at the current discharge location, the wetland may be exposed to somewhat higher

concentrations prior to the discharge mixing with the flow in the Sudbury River, we do not expect to see any significant impacts due to the higher capacity of wetland systems for assimilating nutrients. If the discharge does result in any significant alterations of the natural wetlands vegetation, more stringent limits will be imposed.

Regarding the concern for the “lack of conditions imposed for any extension of the WWTP’s outfall from the wetland to the Sudbury River”, it is not clear what the commenter means by that statement. If the point of the statement is that the limits in the permit are not protective of water quality standards at one of the discharge locations, we would direct the commenter to the effluent limitation derivation section in the fact sheet (see section V.B.5), Response B2, and the previous paragraph. We believe that these describe why the effluent limitations developed for each outfall are protective of water quality at their respective discharge locations.

If the point of the comment is that the permit does not establish construction-related requirements for an outfall extension, we would point out that the permit does not specifically require such relocation, but rather requires the Town to evaluate a number of alternatives, select an option, and then design and construct this option. Given that the permittee will be evaluating a number of alternatives, we did not believe it was possible to include detailed schedules for construction-related activities for every possible option. However, the evaluation process and the design and construction of any new facilities will be subject to review and approval by EPA and MassDEP. In order to ensure that EPA and MassDEP are provided detailed information and adequate notice of the permittee’s activities regarding the compliance schedule, the language in Section F of the permit has been modified to include such information and notice.

The commenters did not explain their specific concern(s) regarding the flow limit of 52,000 GPD. Responses to other question regarding the flow limit may be found in Responses A1, B1, C1, and C2.

We recognize that upon the completion and implementation of a TMDL, development of new criteria, or a determination that upstream controls (e.g., Marlborough East WWTF and stormwater) have not adequately reduced instream phosphorus levels, more stringent limits may need to be applied in subsequent permits. The Town of Wayland should carefully consider this in evaluating alternatives to the current surface water discharge.

**F. Comments received from Blair Davies; Wayland Wastewater Management District**

**Comment F1:** The draft permit includes average monthly and maximum daily limits for aluminum; 87 ug/l and 750 ug/l, respectively. The maximum daily limit should be met reliably. However, the average monthly aluminum limit may not be reliably met without changes in the current process because meeting the phosphorus limit will require the use of more alum. A request was made to include an annual poundage limit for aluminum rather than a concentration limit. If this approach is not feasible,

then a request was made to limit aluminum similar to copper and lead, namely, taking dilution into consideration at the point of discharge.

Response F1: The criteria maximum concentration (CMC, or acute criteria) is the highest instream concentration of the pollutant to which an organism can be exposed for a brief period of time without causing an acute effect. The criteria continuous concentration (CCC, or chronic criteria) is the highest instream concentration of a pollutant to which an organism can be exposed indefinitely without causing an unacceptable effect. Acute criteria are typically based on 48 to 96 hour tests, while chronic criteria are based on longer term (often greater than 28-day tests) See EPA's Technical Support Document for Water Quality- Based Toxics Control.

NPDES regulations at 40 CFR §122.45 (d) require that POTW effluent limits generally be expressed as average weekly and average monthly limits. However, EPA recommends that maximum daily limits be used in lieu of weekly average limits for toxic pollutants (see page 112 of U.S. EPA NPDES Permit Writers Manual).

Accordingly, the permit establishes monthly average and maximum daily limitations for aluminum using the EPA-recommended acute and chronic water quality criteria, which are 750 ug/l and 87 ug/l, with the appropriate dilution factors. Mass-only limits are not appropriate because the criteria are expressed in units of concentration, and a mass-only limit, based on receiving water 7Q10 and the treatment plant's design flow, would not ensure attainment of the concentration-based criteria at lower treatment plant flows.

Annual limits for toxics are not recommended by the Permit Writer's Guide and would not be protective of water quality, particularly for acute conditions, given the much shorter exposure period used to develop the criteria.

Comment F2: The Sudbury River floods the adjacent wetlands during 3-5 months each year, and therefore there is substantially more dilution available than calculations by EPA consider.

Response F2: See Response D1.

Comment F3: Request for an annual poundage limit for copper and lead, which also accounts for winter wetland flooding and groundwater flow.

Response F3: See Responses F1 and D1.

Comment F4: A request is made that the permit include language which provides the option of a "cooperative design and approval process in which we and you (EPA and DEP) can propose and evaluate a wider range of technical alternatives" than the two being proposed.

Response F4: Please see Section F of the permit (Compliance Schedule). Section F.1.(b) offers language which does not limit the alternatives. In particular, it states

that the permittee shall evaluate and select options for; extending the outfall to the Sudbury River, and/or upgrading the facility, *including, but not limited to*, evaluating groundwater discharge and water conservation measures. (emphasis added)

We would expect that EPA and MassDEP will be involved in the development of any alternative.

Comment F5: There is an opportunity to participate in a full-scale evaluation of a new treatment process, Biomag. A request is made to include in the permit an option to operate a Biomag trial for a specified period of time. Also, a request is made to grant forbearance of permit violations during this trial period.

Response F5: The permittee currently has the ability to explore this option. See Section F of the permit and Response F4. EPA will work with Wayland in its evaluation of treatment processes and will address any special concerns that might arise from a full-scale evaluation.

G. Comments received from Jamie Fosburgh, Director, River Program, US Department of the Interior, National Park Service, Northeast Region

Comment G1: Recent water quality data confirms that the Sudbury River both upstream and downstream of this discharge currently violates water quality standards. In fact, as reported in the Permit Fact Sheet, results of instream monitoring of total phosphorus, chlorophyll a and dissolved oxygen indicate the existence of eutrophic conditions. For this reason, the final permit should include a water quality based limit for phosphorus which will eventually enable the river to meet water quality standards. The Sudbury River water quality data, along with EPA's most current nutrient guidance documents, clearly show that the 0.2 mg/L technology-based total phosphorus limit will not meet state water quality standards and has reasonable potential to contribute to the Sudbury and Concord Rivers' existing cultural eutrophication problems.

Because Massachusetts does not yet have a numeric criteria for phosphorus, regulators should depend on current relevant studies which suggest appropriate phosphorus limits for effluent discharges. All guidance documents produced by EPA and discussed in the fact sheet suggest numeric phosphorus criteria for this ecoregion and this type of slow moving river system, ranging from 0.1mg/l to 0.02 mg/l. However, the most recent EPA funded analysis, done by Mitchell, Liebman, Ramseyer and Clark (2004) utilizing the most current data and having been subjected to quality assurance measures suggests the need for even more conservative concentrations (0.020 -0.022 mg/l). In light of this growing body of information, a total phosphorus limit of 0.02 mg/L, which is an order of magnitude lower than the proposed 0.2 mg/L limit, is required to protect and restore water quality in the Sudbury and Concord Rivers.

Response G1: See Response B2.

Comment G2: Wastewater treatment technologies are commercially available that can achieve a phosphorus limit of 0.02 mg/L. EPA and DEP should make information on these technologies available to Wayland.

Response G2: We concur that there are treatment technologies that can achieve more stringent effluent limitations than those in the permit. We believe that the permit limitations are sufficiently stringent to achieve water quality standards.

Comment G3: Utilizing the growing body of information, including the recent work by EPA (2004), MA DEP should expedite the development of numeric phosphorus criteria that will better protect water quality. Excessive nutrient enrichment poses a serious water quality threat to many of the rivers in this watershed and through out the State. It would be very helpful if DEP presented a timeframe within which these criteria would be adopted.

Response G3: Comment noted for the record. MassDEP submitted a proposal to EPA in 2007 for developing numeric criteria. Discussions between the two agencies are ongoing.

Comment G4: Additional important questions must be answered before it is decided where the discharge outfall should be placed. Before the pipe is extended to discharge into the river, an evaluation of potential impacts must occur. Much of the river bottom sediments are laden with mercury from an upstream Superfund site. It is imperative to know whether the laying of the pipe, or the use of a diffuser or sparger as part of the discharge, will disturb these sediments.

Response G4: We agree that the WWMDC would need to assess the environmental impacts of the outfall relocation prior to initiating construction.

Comment G5: In addition, the State should immediately list this segment of the Sudbury River as impaired by nutrients on the 303(d) list and, as soon as possible, conduct a nutrient TMDL for the Sudbury and Concord Rivers, as requested by the SuAsCo Watershed Team over 4 years ago. Before a decision is made to place the discharge in the river, a load allocation should be established.

Response G5: As noted by the commenter, the Sudbury River is not listed on the 2006 303(d) list for nutrients. Whether or not the water segment is included on the 303(d) list for a particular pollutant, effluent limitations must be included for that pollutant if it is shown to have the reasonable potential to cause or contribute to exceedances of water quality standards. EPA and MassDEP have included more stringent limitations for phosphorus in this permit based on such a determination.

Regarding the relocation of the discharge from the wetland adjacent to the river to the main channel of the river, we would note that the discharge to the wetland travels only a short distance (about 300 feet) before it joins the main channel. Even if some reduction in phosphorus concentration were achieved as the discharge traveled to the

main channel, the calculations in Response B2 show that the discharge directly to the main channel will have minimal effect on instream concentration.

Establishing TMDLs for phosphorus have proven to be very difficult and complex, and MassDEP has very limited resources for conducting TMDLs. We believe that an equally constructive approach is to aggressively address phosphorus through NPDES permit reductions and stormwater requirements.

Comment G6: Impacts of a pipe discharge into the river should also be evaluated for effects on the recreational and scenic values of the river. These are two resource values for which the Sudbury River was designated a Wild and Scenic River.

Similarly, there is little information available on impacts to the wetland of continuing the discharge there. Impacts to flora and fauna from the effluent should be assessed, and made available, before deciding where to place the discharge pipe. The discharge point is adjacent to wetlands which have recently been restored as part of the Raytheon remediation. New native species have been planted and are now being monitored to ensure their survival. This monitoring should continue to ensure that the wastewater discharge does not contribute to any compromise of the wetland.

Response G6: We agree that the WWMDC should carefully consider this issue when evaluating alternatives to the current surface water discharge. Construction methods which minimize impacts to the wetland must be utilized.

Comment G7: DEP and EPA are to be commended for imposing a phosphorus limit in the winter months. Monitoring requirements to determine the amount of particulate phosphorus will also be very helpful. Ultimately, only 10% of the phosphorus discharge should be in particulate form during the winter. These limits should apply whether the discharge is into the wetland or the river.

Response G7: It is our intent to ensure that the particulate fraction is minimal. We expect it to be less than 10%. We concur that limits should apply whether the discharge is into the wetland or the river.

Comment G8: In the recently circulated revisions to the surface water quality standards (314 CMR 4.00) DEP has added new wording to protect 'special resource waters' defined as 'those waters of exceptional significance, such as waters in national or state parks and wildlife refuges'. This portion of the Sudbury River has not only been designated by Congress as a Wild and Scenic River, because of its outstanding resources, it also flows through the U.S. Fish and Wildlife Service's Great Meadows National Wildlife Refuge. Maintaining the highest possible level of water quality in the River is necessary in order to achieve the goals of the national wildlife refuge system and the wild and scenic river system including conserving, managing and restoring wildlife, fish and plant resources and their habitats. Any discharge must be evaluated to ensure that "... no new or increased discharge ...that

would result in lower water quality in the Special Resource Water may be allowed...” (proposed section 4:04(4) of MA Water Quality Standards revisions).

Based on the convincing data presented in the Permit Fact Sheet regarding the over-allocation of nutrients in the watershed and the existing eutrophic conditions in the river, there should not be an increase in flow from this discharge to the river which exacerbates water quality problems. Alternatives such as water conservation, low impact development, groundwater discharge and/or treated wastewater irrigation should be seriously evaluated as ways to accommodate more flow without increasing a discharge to the river.

Response G8: As noted previously, the permit does not authorize an increased discharge, compared to the authorization in the previous permit, and we believe that the limits are sufficiently stringent to achieve water quality standards.

H. Comments received from Mrs. Sarah R. Newbury; Wayland, Massachusetts

Comment H1: Concern is expressed for the addition of increased pollutants, including phosphorous, to the Sudbury River and adjacent wetland by stormwater runoff generated from proposed commercial and residential developments that will be served by the Wayland WWTF.

Response H1: While storm events can deliver substantial amounts of total phosphorus, much of it is in particulate form, which is less biologically-available for uptake by aquatic plant growth as the dissolved form discharged by WWTFs. The EPA and MassDEP do agree that storm water has the potential to elevate available phosphorus somewhat. To address the problem, the Town of Wayland is required to implement storm water controls pursuant to the requirements of its storm water Phase II general permit. Specifically, Part I.C.1 of the general permit requires the Permittee to determine whether storm water discharges from any part of the municipal system contribute directly or indirectly to an impaired waterbody. Part I.C.2 requires that the storm water management plan identify control measures and best management practices that will control the discharge of the pollutant(s) of concern.

Comment H2: Has a more stringent phosphorus level been considered as a way of decelerating cultural eutrophication in this section of the Wild and Scenic Sudbury?

Response H2: The phosphorus limit, as proposed (0.2 mg/l), represents a more stringent limit than the 0.5 mg/l limit contained in the permit which was issued in September 1998. This reduction, in addition to stringent phosphorus limits for other point sources (Marlborough East WWTF) and Phase II permits to address nonpoint sources, should serve to decelerate cultural eutrophication in the Sudbury River.

Comment H3: The “measuring stick” for antidegradation determination in relation to phosphorous appears to be whether or not the proposed limits are “more stringent” than those of the current (1999) permit. The Fact Sheet shows clearly that even in



this reach of the Sudbury River, phosphorus levels are already excessive. It would seem that in permits such as this NPDES permit should anticipate – and try to counteract – increases in pollutant loadings and cultural eutrophication that will inevitably occur after development of a riverside site.

Response H3: See Responses B3 and H1.

Comment H4: “I am puzzled by the cold-month limit of 0.5 mg/l since I deduce that the release of phosphorus bound up in sediments has not been studied for rivers with characteristics similar to those of the slow-flowing Sudbury. If I am correct, would it not be prudent to set a more protective limit for winter months? Again I point out that the development proposed for the site will mean year round pollution-e.g. snow from parking lots. It is good that there are monitoring requirements for orthophosphorus during these months and I suppose that the proposed 0.5 mg/l phosphorus limit can be changed eventually if there is evidence of harm done by phosphorus accumulated during the cold-water months. But will the River have to wait until someone has financed a study to find out? Also, in my experience, flooding of the Sudbury can occur in any month except July or August. Does this have an effect on phosphorus bound up in sediment?”

Response H4: Based on current science, it is anticipated that phosphorus in slow moving river systems like the Sudbury River will, to some degree, accumulate in the sediments during the winter and recycle into the water column during the summer. The permit limit is intended to minimize this potential by ensuring that treatment required to achieve the winter limit will remove the vast majority of the particulate fraction of phosphorus. Since the dissolved fraction is unlikely to accumulate in the system, we believe that the winter limit is protective of water quality. Based on our experience with other treatment facilities, we expect the dissolved fraction to be less than 10% of the total phosphorus.

Studies continue to be conducted throughout the United States on phosphorus and its impacts on water quality as part of the current national effort to develop numeric nutrient criteria. If the science indicates that more stringent winter limits are necessary in order to ensure that phosphorus discharged during the winter does not pose a problem with settling and resuspension in the summer, then a lower limit can be established in the future.

Comment H5: “With respect to the option of direct discharge to the Sudbury, it is troubling that (as I understand it) there would be no wetlands buffer when there are upsets or other excursions of water quality standards. Even if the WWTF operated perfectly during the term of the permit, these incidents must be expected to occur over time. It seems to me that the natural eutrophication process will only be enhanced by direct discharge to the River. As a practical matter, would not the recreational values of the River be affected by a direct discharge outfall pipe? (This would be true particularly in summer months when the River shrinks to a narrow

stream). If this option is selected, should not EPA and the Department explicitly reserve the right to require a reversion to the wetlands outfall option?"

Response H5: It needs to be remembered that wetlands are considered waters of the United States, and are, therefore, afforded equal protection as other surface waters. Thus, the use of natural wetlands to treat WWTF "upsets or other excursions of water quality standards", as suggested by the commenter, is unacceptable.

USEPA (2002) notes that under conditions of excessive nutrient loadings to wetlands, ecosystem processes, such as plant productivity and nutrient cycling, are altered in measurable ways. Furthermore, it has been demonstrated that a threshold, known as the "assimilative capacity," exists for nutrient inputs to wetlands beyond which significant alteration in wetland function and structure can occur. When the assimilative capacity of a wetland is exceeded, there can be a shift in plant species composition. Changes in community composition and ecosystem processes compromise wetland ecological integrity by altering energy flow, nutrient cycling, and niche/habitat characteristics that in turn affect fauna assemblages (USEPA 2002, Carpenter et al. 1998 in USEPA 2002; Chiang, Craft, Rogers and Richardson 2000).

McCormick, O'Dell, Shuford, Backus, and Kennedy (2001) conducted a field experiment to determine the effects of increased phosphorus loading on periphyton abundance, productivity, and taxonomic composition in an oligotrophic (nutrient poor) Everglades slough characterized by abundant metaphyton and epiphyton. They found that periphyton changes induced by phosphorus enrichment could affect wetland function by reducing periphyton dominance, the food quality of the periphyton for herbivores and nutrient storage capacity of the wetland. They note that many of these changes have been documented in other wetlands, thereby implicating phosphorus as the principal factor affecting wetland periphyton structure and function.

Lemly and King (2002) conducted field and laboratory investigations to evaluate the use of bacterial growth on aquatic insects as a measure for determining the existence of nutrient impacts on wetlands. Results demonstrated that elevated concentrations of nitrate and phosphate in wetlands were associated with the growth of filamentous bacteria on insect body surfaces. Few insects with bacterial infestation of 25 percent body coverage (and above) survived. Lemly and King (2002) also noted significantly fewer mayflies in nutrient-enriched wetlands.

The commenter's concern that "...the natural eutrophication process will only be enhanced by direct discharge to the River", is addressed given that the phosphorus limits in the permit have been lowered to provide additional protection of the Sudbury River's water quality. Finally, it is assumed that the commenter is concerned with the recreational values of the River during low flow months when the discharge pipe may be exposed. This concern can be addressed by the proper construction and location of the outfall pipe to ensure that it is below the Sudbury River's water surface.

### Other Changes to Permit

1. *E. coli* effluent limits and monitoring: The permit includes as a state certification requirement the inclusion of *E. coli* effluent limits and monitoring. The limits reflect recent changes in the Massachusetts Surface Water Quality Standards (December 29, 2006; approved by EPA in 2007) which adopted *E. coli* or enterococci as the fresh water bacteria standard. The *E. coli* limits will go into effect one year from the effective date of the permit. The one year period will provide the permittee an opportunity to test for *E. coli* and to determine if the current treatment system is capable of achieving the new effluent limitations.

2. Footnote No.12 on page 5 was modified to reflect the most recent EPA-approved analytical methods for lead (see Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; National Primary Drinking Water Regulations; Analysis and Sampling Procedures, March 12, 2007), and was also modified to allow use of EPA- approved methods other than the single method listed in the draft permit, providing it is a method that achieves an equal or lower ML.

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