

## North Attleborough Response to Comments

**On September 12, 2006, the following comments were received from Woodard and Curran on behalf of the Town of North Attleborough:**

**Comment #1:** The Town is committed to maintaining its Wastewater Treatment Facility (WWTF) in an environmentally responsible manner, as can be seen from the Project Evaluation Report (PER) provided to the United States Environmental Protection Agency (USEPA) dated June 2004 outlining planned voluntary improvements to the process equipment for FY2003 to FY2008. Although not required to do so, the Town budgeted approximately \$1.5M to \$1.9M per year for 6 years funded through sewer user fees for these upgrades. The first four phases of improvements were envisioned to move the treatment process to biological phosphorous removal (BPR) with single point chemical addition at the secondary clarifiers in an effort to obtain the maximum level of phosphorus and nitrogen removal. Currently it is envisioned that the Phase 4 improvements will be completed by early 2007. As indicated in the PER, the upgrades performed to achieve BPR have been designed so that they can be converted to a biological nutrient removal system to also achieve nitrogen removal. Until these upgrades to the facility are designed and installed, the Town's current facility cannot reliably meet a total nitrogen effluent limit.

Although the Town is committed to working with the USEPA and the DEP in designing its upgraded facility so as to achieve the maximum level of environmental protection technologically feasible, the Town is not willing to discuss the issuance of an Administrative Consent Order. The Town is not currently in violation of any established standard or regulation and there is no evidence that the Town's current treatment practices are resulting in any environmental harm. The Town has been proactive in designing and building an upgraded treatment plant that will provide processes that far exceed current treatment standards. The Town has expended significant resources in this regard and should not be penalized through the issuance of an ACO.

**Response #1:** We recognize and commend the Town's proactive commitment to investing the funds necessary to maintain and improve the performance of its wastewater treatment facility (WWTF). As is reflected in the Town's comment above, however, we do not believe that the WWTF will be able to immediately achieve the new effluent limitations for phosphorus and nitrogen. Accordingly, we believe the WWTF will be in violation of these new limits as soon as the permit is effective. The purpose of an administrative compliance order would not be to penalize the Town but to grant it a reasonable schedule to attain compliance with the new effluent limitations.

In this case, EPA cannot include a compliance schedule to meet the total nitrogen limit in the permit. Compliance schedules to meet water quality based effluent limits may be included in permits only when the state's water quality standards clearly authorize such schedules. The total nitrogen limit is based on Rhode Island's water quality standards. Rhode Island's standards, in turn, do not allow for schedules in permits. While a schedule for phosphorus could be included in the permit, there are many overlapping

issues related to the planning, design and construction of the necessary upgrades to meet the limits for phosphorus and nitrogen. In light of these overlapping issues and the fact that EPA cannot include a schedule for nitrogen in the permit itself, EPA intends to include a reasonable compliance schedule to meet both the phosphorus and nitrogen limits in a separate administrative order. Such a schedule would be developed in consultation with the Town.

**Comment #2:** Page 1 of 13 – The authorization should be changed from “Board of Selectmen” to “Board of Public Works.”

Page 1 of 13 – The co-permittee should be changed from “Board of Selectmen 142 South Street P.O. Box 1717” to Board of Sewer Commissioners 171 East Bacon Street.”

**Response #2:** The requested changes have been made.

**Comment #3:** The Town objects to the requirement of monitoring for BOD and Fecal Coliform three times per week, all year round, and requests that such monitoring be reduced to two times per week from May 1 – October 31, and no monitoring during the winter months, November 1 – April 30. The testing frequency set forth in the Draft Permit is arbitrary and capricious and it does not appear that a modification of the Town’s permit is required for any of the reasons stated in 40 C.F.R. §122.62. In the absence of evidence that there is a pattern of increasing discharges of BOD and Fecal Coliform, there is no basis for increasing the testing frequency for such discharges. Moreover, the Town is aware of no evidence to suggest that BOD and coliform are parameters which are in need of tracking in a cold environment. Notwithstanding said objection and without waiving the same, if the Town is required to perform coliform monitoring during the winter months, it requests that such testing be limited to a maximum of one sample per week during that period due to safety issues associated with access to the testing location.

**Response #3:** This action is a permit reissuance following the expiration of a prior NPDES permit. The regulations set forth at 40 C.F.R. §122.62 do not apply as they relate only to modification or revocation/reissuance of permits prior to the expiration date. As detailed in EPA’s regulations at 40 C.F.R. §122.62, permit modifications or revocation/reissuance may be made during the term of the permit but only for cause. Once a NPDES permit has expired, however, EPA revisits all aspects of the permit in evaluating an application for its reissuance, consistent with the goal of the Clean Water Act to restore and maintain the chemical, physical and biological integrity of the nation’s waters.

Effluent monitoring, in both warm weather and cold weather, is necessary to ensure compliance with effluent limits established consistent with water quality standards and criteria. In any event, the permit limits and monitoring frequency for both BOD and fecal coliform are the same as in the previous permit. As documented in the fact sheet, periodic violations of the permit limits do occur and are more prevalent in cold weather. Consistent compliance with the permit limits is made more difficult by the significant

changes in influent flow volumes that have occurred on a daily basis due to the high levels of infiltration and inflow in the sewer system. Therefore, the monitoring requirements of the draft permit have been maintained in the final permit.

**Comment #4:** Total Phosphorous permit limits are proposed to change from average monthly/average weekly/maximum daily of 1 mg/l/1.5 mg/l and 2 mg/l to 0.2 mg/l/--/report and increase testing from twice per week to three times per week for the time period April 1 to October 31 and winter limits from November 1 to March 31 of 1 mg/l - 1.5 mg/l and 2 mg/l to 1 mg/l and report.

At the outset, there is no regulatory basis for imposing a more stringent phosphorus discharge standard. Prior to adopting new effluent standards, the USEPA is required to go through the formal process set forth in 40 C.F.R. §§104.1 – 104.16. Such process requires notice and opportunity for public comment, and a detailed statement of the basis and purpose of the standard, including identification of the scientific and technical data and studies supporting the proposed standard. The USEPA did not go through this process with respect to the phosphorus discharge standard. Therefore, as the Town's current phosphorus discharge requirements are consistent with applicable standards, the Town requests that the standard set forth in its original permit remain unchanged.

Moreover, the more stringent phosphorus standard set forth in the Draft Permit is arbitrary and capricious and it does not appear that a modification of the Town's permit is required for any of the reasons stated in 40 C.F.R. §122.62. On Page 5 of the Fact Sheet, the USEPA acknowledges that one or more TMDLs must be prepared to attain water quality standards for the Ten Mile River and that “[n]o TMDL has been completed nor is any underway.” In the absence of a TMDL, the USEPA appears to rely solely upon broad generalizations from “national guidance” that has no relation to the specific environmental impacts of the Town's wastewater discharge.

Although the fact sheet states that “It is clear that the existing limits must be made more stringent to address the documented eutrophication problems in the receiving water,” there is no evidence to support this statement. The EPA itself says in the Fact Sheet page 11 “Phosphorous discharges to the Ten Mile River are expected to be significantly lower during the term of this permit than they were during the 1995 to 1996.” If this is the case, then why have more stringent limits rather than maintain as they have been since there has been improvement. As there is no evidence that the Town's phosphorus standard needs to be more stringent, the Town believes that the new limits are being applied arbitrarily and should not be included in the Final Permit.

Notwithstanding said objections and without waiving the same, the Town requests that the frequency of the sampling remain at twice per week and the Town be given eighteen months from the effective date of this permit to meet the new discharge limits.

**Response #4:** The regulations at 40 C.F.R. §§104.1 – 104.16, which the Town references in its comment above, pertain to public hearings associated with the development of national effluent standards for toxic pollutants by EPA. These

regulations do not pertain to development of an effluent limit for a non-toxic pollutant (such as phosphorus) based on state water quality standards. In addition, 40 C.F.R. §122.62 is not applicable to this permit reissuance (see the response to comment #3 above). The relevant regulations governing development of phosphorus limits in this permit are set forth at 40 C.F.R. § 122.44.

Further, while a TMDL is required for waterbodies that are not achieving water quality standards, a TMDL is not required for EPA to establish water quality-based limits. Where a TMDL has been established, EPA is required to ensure that the effluent limits are “consistent with the assumptions and requirements of any available wasteload allocation” applicable to the discharger. 40 CFR §122.44 (d)(1)(vii)(B). Where a TMDL does not exist, EPA cannot abdicate its responsibility to establish effluent limits necessary to achieve water quality standards and protect existing and designated uses of the receiving water. To the contrary, the relevant regulations require that EPA include an effluent limit for any pollutant which EPA determines “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” 40 CFR 122.44(d)(1)(i).

The Commonwealth’s water quality standards include a narrative criterion which provides that nutrients “shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication.” 314 CMR 4.05(5)(c). Massachusetts’ standards also require that “any existing point source discharges 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.” 314 CMR 4.04.

Evaluations of the receiving stream conducted by MassDEP indicate it is not attaining water quality standards due to phosphorus. The segment of the Ten Mile River from the North Attleborough facility to the MA/RI border is listed on the Massachusetts Year 2004 Integrated List of Waters (which incorporates the CWA §303(d) list) as impaired due to, among other things, nutrients, organic enrichment/low DO and noxious aquatic plants. The impacts associated with the excessive loading of phosphorus are documented in the Ten Mile River Basin 1997 Water Quality Assessment Report published by MassDEP in March 2000. These include violations of the minimum dissolved oxygen criteria, dense filamentous algal cover in some shallow free flowing reaches of the river, and eutrophic conditions in downstream impoundments. In June 2006, MassDEP published a 2002 Water Quality Assessment Report for the Ten Mile River. This report documents the continuation of the severe eutrophic conditions that were noted in the previous assessment conducted in 1997. This includes excessive levels of phosphorus, chlorophyll a, duck weed, and filamentous green algae. In addition, the 2002 report indicates that the biological community is impaired in the river reaches below the North Attleborough and the Attleboro discharges.

Effluent monitoring conducted by the facility for the period 1995 through 2000 reflects excursions of total phosphorus in the facility’s discharge above 1.0 mg/l. Between May

and October 2001, the facility consistently met the 1.0 mg/l limit. In addition, in 2002, total phosphorus concentrations in North Attleboro's discharge ranged between 0.7 mg/l and 0.9 mg/l. Effluent data for the period May 2003 to April 2004 show a range of 0.6 to 1.1 mg/l total phosphorus. Thus, even after the facility began in 2001 to meet the 1.0 mg/l limit in the expired permit very consistently, MassDEP documented ongoing severe eutrophic conditions in the receiving stream. *See* 2002 Water Quality Assessment Report. Thus, the discharge limit of 1.0 mg/l for phosphorus in the expired permit is not stringent enough to prevent the discharge of phosphorus at a level that contributes to cultural eutrophication in contravention of Massachusetts water quality standards.

In establishing an effluent limit necessary to achieve Massachusetts' water quality standard, EPA considered national guidance documents which recommend total phosphorus criteria for receiving waters. These include the 1986 Quality Criteria of Water (the Gold Book) and EPA's "Ecoregional Nutrient Criteria." These national guidances recommend instream phosphorus concentrations ranging from 0.1 mg/l to 0.24 mg/l. EPA also considered MassDEP's interpretation of the "highest and best practicable treatment" requirement in the Commonwealth's water quality standards. In the context of other permitting decisions where a TMDL has not yet been completed, MassDEP has consistently interpreted this requirement as an effluent limit of 0.2 mg/l for phosphorus. Based on the impairments in the receiving stream and the lack of available dilution, EPA has concluded that, at a minimum, a reduction to no more than 0.2 mg/l for phosphorus is required at the North Attleborough facility in order to achieve water quality standards. There is no significant dilution of North Attleborough's discharge in the Ten Mile River under 7Q10 conditions; rather, the flow is effluent-dominated. (See Att. B to Fact Sheet). If MassDEP adopts numeric criteria, a TMDL is completed, or additional water quality information shows that the phosphorus limits are not stringent enough to meet water quality standards, more stringent limits may be imposed.

In its comment, the Town questions whether restrictions on the discharge of phosphorus are warranted in light of a statement on page 11 of the Fact Sheet that "Phosphorus discharges to the Ten Mile River are expected to be significantly lower during the term of this permit than they were during the 1995-96 period...." This statement in the Fact Sheet refers to the anticipated phosphorus reductions that will result from the reissuance of this permit and the Attleboro permit.

In addition to the seasonal total phosphorus limit of 0.2 mg/l, the permit contains a winter period total phosphorus limit of 1.0 mg/l for November through March. The winter limit is necessary to ensure that phosphorus discharged during the winter period does not accumulate in downstream sediments. The limitation is higher than the seasonal limit of 0.2 mg/l because EPA has assumed, based on experience with other treatment facilities, that achieving a limit of 1.0 mg/l will result in the removal of the majority of the particulate fraction of phosphorus in the discharge. For instance, water quality surveys conducted in the Assabet River indicate that 90% of the total phosphorus in the discharge of four wastewater treatment facilities was in the dissolved form. *See* Assabet River TMDL for Total Phosphorus, Report Number: MA82B-01-2004-01. As a result, EPA

believes the phosphorus discharged will be predominately dissolved and should pass through the system and not accumulate in the sediments.

Frequent monitoring for those pollutants having the most severe impact on water quality is appropriate, especially considering the influent flow variability of this treatment facility and the effect that variable flow can have on treatment efficiency. The monitoring frequency in the final permit remains the same as in the draft permit.

As discussed in response #1 above, EPA will establish a reasonable compliance schedule in an administrative order to enable the Town to achieve the final effluent limits for both phosphorus and nitrogen.

**Comment #5:** Dissolved Ortho Phosphorous is a new parameter required for testing. As stated above, the Town disputes the validity of the Total Phosphorous limit, and therefore, objects to the Dissolved Ortho Phosphorus testing parameter for the same reasons. Notwithstanding said objections and without waiving the same, if this parameter is included in the Final Permit, the Town requests that sampling be conducted at a maximum of once per month.

**Response #5:** With regard to validity and rationale for the total phosphorous limit, see response to comment #4 above. Monitoring of orthophosphorus is critical to ensuring that the winter period phosphorus loads do not include significant quantities of particulate phosphorus. The winter period limitation in the permit assumes that the vast majority of phosphorus discharged will be in the dissolved fraction and will not accumulate in sediments. Monitoring for dissolved orthophosphorus is necessary to verify the dissolved fraction. Accordingly, the monitoring frequency in the final permit remains the same as in the draft permit.

**Comment #6:** Zinc and Cadmium have been changed from reporting maximum daily to limits on average monthly with an increase of testing from 1 per 2 months to 1 per month. The Town objects to this change on the grounds that it is arbitrary and capricious and it does not appear that a modification of the Town's permit is required for any of the reasons stated in 40 C.F.R. §122.62. As you know the North Attleboro WWTF is one of the few which has metals limits based on actual in-situ testing conducted by DEP in the 1980's. The limits of this site-specific testing are incorporated in the current permit and should be carried over to the new permit. There is no evidence of a pattern of increasing presence of these metals since that time and the presence of these metals has not caused a problem at the WWTF over the past nine years. As such, there is no reason to believe that the Town's current testing practices are not sufficient to address any future problems with these metals. Rather than crediting the site-specific information developed for the Town, it appears that the USEPA is basing the reduced limit on the National Recommended Water Quality Standards which are not site specific. Such broad generalizations are wholly inappropriate where site specific information is available. Therefore, as there is no justifiable reason to increase the frequency and limits of these two metals, the Town requests that this provision not be included in the Final Permit. Notwithstanding said

objections and without waiving the same, the Town requests that the testing for these two constituents remain at the current testing frequencies and reporting requirements.

Lead has been changed from reporting once per year to an average monthly limit. The Town objects to this requirement for the reasons set forth above.

Copper has been reduced from 20 mg/l average monthly and maximum daily to 9.9 mg/l and 14.8 mg/l respectively. The Town objects to this requirement for the reasons set forth above. Therefore until further testing is conducted the Town requests that the permit level for Copper remain at 20 mg/l.

Aluminum has been reduced from 140 mg/l average monthly to 92 mg/l average monthly. The Town objects to this requirement for the reasons set forth above.

**Response #6:** Section §122.62 of 40 C.F.R. is not applicable to this permit reissuance. (See response to comment #3 above).

Massachusetts water quality standards provide that limits for metals should be based on recommended limits (i.e., criteria) published by EPA pursuant to Section 304(a) of the CWA, unless site specific criteria are established. See 314 CMR 4.05(5). In those cases where MADEP does develop site specific criteria, MADEP's regulations require that such an effort is documented and subject to full intergovernmental coordination and public participation. Site specific criteria are revisions to the state's water quality standards and as such must be submitted to and approved by EPA in order to be effective for Clean Water Act purposes. See 314 CMR 4.05(5)(e)4. While there were site specific studies conducted in the past, MADEP never revised its water quality standards to include site specific criteria.

In addition, the metals limits in the previous permit were based on an analysis that is not consistent with current policies and guidance relative to developing site specific metals criteria. EPA's Water Quality Standards Handbook (1994) identifies three methods that are acceptable for determining site specific metals criteria, including: the Recalculation Procedure, the Water Effect Ratio Procedure and the Resident Species Procedure. The methodology used in developing metals limits in the previous permit do not accord with any of these three procedures.

Further, the Ten Mile River below the North Attleborough WWTP to the MA/RI border continues to be listed on the Massachusetts 303(d) list of impaired waters for metals and the dilution calculation appended to the Fact Sheet shows that effluent from the North Attleborough and Attleboro treatment plants represents almost all the flow in the receiving water during low flow conditions. These factors demonstrate that the limits developed for the previous permits are not protective of water quality standards and that the revised limits are warranted.

In the absence of approved site specific limits, EPA calculated metals limits based on the recommended water quality criteria found in the National Recommended Water Quality

Criteria 2002. These limits were used where a reasonable potential analysis demonstrated that limits are necessary and where the calculated limits were more stringent than limits in the expired permit. For copper, aluminum and zinc, the facility's discharge data indicate that the facility has a reasonable potential to cause or contribute to a violation of water quality standards. (DMR data for these metals are appended to the Fact Sheet as Attachment A). With regard to lead, little effluent data are available as the previous permit did not have limits or monitoring requirements for lead. EPA relied on data from the whole effluent toxicity reports conducted during low flow conditions during 2003 and 2004. (The data also are reflected on Attachment A of the Fact Sheet). These data indicated a reasonable potential for the facility to cause or contribute to a violation of water quality standards. With reference to cadmium, the facility's discharge data shows that the discharge was consistently reported below the minimum level (ML) of 1 ug/l under the previous permit. Because the calculated monthly average limit is 0.3 ug/l, EPA cannot be certain there is no reasonable potential for the discharge of cadmium to cause or contribute to a violation of water quality standards. In addition, the new permit requires an ML of 0.5 ug/l for cadmium in light of improvements in analytical procedures.

With regard to monitoring requirements, given the documented impairment and the establishment of more stringent limits on metals being discharged, an increase in the monitoring frequency to once per month is reasonable.

**Comment #7:** Total Nitrogen has been changed from report only on a 1 per month basis to average monthly limit of 8 mg/l with testing three times per week. The Town objects to this change on the grounds that it is arbitrary and capricious and it does not appear that a modification of the Town's permit is required for any of the reasons stated in 40 C.F.R. §122.62. The Town questions the validity of the Water Quality Assessment for the Bay and how it relates to the Ten Mile River POTWs. Your in-stream evaluation is based on a number of assumptions that are not scientifically supported. Although attenuation was taken into consideration you indicate that it was based on the fact that five POTWs in Massachusetts contribute a total nitrogen loading of 38% of the total nitrogen limit in Narragansett Bay. Reference to the total nitrogen loading of the five POTWs overstates the Town's contribution, which makes up only a very small percentage of the total load. Therefore, the Town requests that EPA re-evaluate this limit in light of North Attleborough's actual contribution. Much of the limit identification is based on assumptions and model rather than actual results. As such, the baseline of 15 mg/l is overstated and it is readily apparent that North Attleboro's contribution is less than assumed by EPA (compared to Upper Blackstone and others). Therefore, the Town requests that the permit be stayed on Total Nitrogen until additional studies have been conducted to assess more realistic effects of attenuation from the POTW to the Bay and to assess the impact of the capital project described in the introductory paragraph of this response.

Notwithstanding said objections and without waiving the same, the Town has investigated how meeting new stringent Nitrogen limits could be accommodated. As you know, the Town indicated in their PER of 2005 that nitrogen removal cannot be achieved

at the WWTF without a capital expenditure to do so. As such, if a limit is implemented on Total Nitrogen under this permit, the proposed time frame of immediate compliance upon finalization of the permit does not provide sufficient time for the Town to appropriate necessary funds for the work or to complete a comprehensive assessment of nitrogen loadings and potential pilot testing for removal capabilities that include a field trial program. Given where the Town is in its budget cycle, funds for completion of this work cannot be made available until 180 days after the effective day of this permit. The assessment of nitrogen removal would not be completed until 365 days following the budget appropriation with a report submitted within 120 days of finalization of the report with completion of construction within three years of the effective date of the permit.

**Response #7:** Section 122.62 of 40 C.F.R. is not applicable to this permit reissuance. (See response to comment #3 above).

In establishing the nitrogen limit, EPA used an attenuation rate in the Ten Mile River of 40%. Attenuation accounts for the degree of nitrogen removal due to uptake or denitrification in the river between the discharge and the mouth of the river. The rate is based on actual loadings as the purpose is to estimate actual attenuation in the river. (The Town incorrectly suggests in its comment that the attenuation rate is based on design flow.) Determination of attenuation was based on stream data collected in 1995-1996 and estimated effluent data based on 2000-2002 reported effluent data (see December 2004, RIDEM report – Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers). It was necessary to use the 2000-2002 reported effluent data to estimate 1995-1996 effluent levels since the Attleboro and North Attleborough WWTFs were not monitoring nitrogen in 1995-1996.

In its comment, the Town refers to a calculation which estimates the significance of the combined nitrogen load from the five POTWs in Massachusetts. This calculation is based on all of the POTWs discharging at full design flow. This calculation was not used to determine attenuation, but rather to demonstrate the significance of loadings from Massachusetts sources if they were to discharge at full design flow. The fact that North Attleborough's current discharge level of nitrogen (average = 11 mg/l) is less than the 15 mg/l value assumed in the calculation likely reflects the fact that the WWTF is operating at less than the full design capacity. It is unlikely that the current performance could be maintained if the WWTF were operating at full design capacity.

In determining the nitrogen limit, EPA did take into account the significance of the North Attleborough nitrogen contribution. EPA recognizes that North Attleborough has a smaller design flow and corresponding nitrogen loading than some of the other facilities discharging to the Providence/Seekonk River system. Also important is the location of the North Attleborough discharge. The Ten Mile River flows into the Seekonk River, which is the most impaired section of the Providence/Seekonk River system. The 2004 DEM study includes evaluation of various combinations of nitrogen reduction from the significant point sources of nitrogen to the system. These include seven Rhode Island and three Massachusetts wastewater treatment facilities, including North Attleborough. (See *Evaluation of Nitrogen Targets and WWTF Load Reductions of the Providence and*

*Seekonk Rivers*, DEM, December 2004). EPA established a nitrogen limit of 8.0 mg/l for the North Attleborough facility based on consideration of both the facility's nitrogen contribution and the location of the discharge. RI DEM has proposed nitrogen limits of 5.0 mg/l for facilities with larger design flows that also discharge to the Providence/Seekonk River system.

With regard to use of modeling to establish effluent limits, EPA considered the results of a physical model operated by the Marine Ecosystems Research Laboratory (MERL) at the University of Rhode Island. This enrichment gradient experiment included a study of the impact of different loadings of nutrients on DO and chlorophyll a. (See *Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers*, RI DEM, December 2004). In establishing the nitrogen limit in this permit, EPA also considered actual measurements of nitrogen loading from point source discharges, including a 1995-96 study by DEM Water Resources.

Both the MERL tank experiments and the data from the Providence/Seekonk River system indicate a clear correlation between nitrogen loadings, chlorophyll a levels, and dissolved oxygen impairment. Low dissolved oxygen levels, as well as supersaturated dissolved oxygen levels, are an indicator of cultural eutrophication. The MERL tank experiments showed a clear correlation between nitrogen loading rates and dissolved oxygen variability. In addition, sampling in the Providence/Seekonk River system documents both extremely low and extremely high dissolved oxygen levels.

A stronger indicator of cultural eutrophication is phytoplankton chlorophyll a levels. The RIDEM data from 1995-96 indicates that phytoplankton chlorophyll a levels in the Seekonk River ranged from 14 ug/l to 28 ug/l with the highest levels in the upper reaches of the river and the lowest levels in the lower reaches of the river. The chlorophyll a levels in the Seekonk River correlate with total nitrogen levels as well as dissolved inorganic nitrogen levels. Again, this response is consistent with the MERL tank experiments that showed a correlation between nitrogen loading rates and chlorophyll a levels. Peak chlorophyll a levels in the Providence/Seekonk River system exceeded 200 ug/l. Coastal areas without high nutrient loads could be expected have chlorophyll a levels in the 1 to 3 ug/l range (Nutrient Criteria Technical Guidance Manual – Estuarine and Coastal Marine Waters, USEPA, October 2001).

EPA recognizes that the MERL tank experiments cannot completely simulate the response of chlorophyll a and dissolved oxygen to nitrogen loadings in a complex, natural setting such as the Upper Narragansett Bay. For instance, low dissolved oxygen levels are not just driven by phytoplankton respiration (as measured by chlorophyll a), but also by phytoplankton that has settled to the bottom and exerts a dissolved oxygen demand as it undergoes the decay process. In this regard, use of a physical model introduces some uncertainty in determining the precise level of nitrogen controls which may ultimately be needed in the River. Both the MERL Tank experiments and the data from the River system, however, indicate a clear correlation between nitrogen loadings, chlorophyll a levels and dissolved oxygen impairment. Accordingly, the MERL tank experiments are an appropriate tool for evaluating the relationship between nitrogen loadings and cultural eutrophication indicators. While the uncertainties in the model may ultimately mean that

additional nitrogen reductions are needed beyond those required by this final permit, it is EPA's judgment that based on the available evidence, water quality standards cannot be met with a less stringent nitrogen limit than 8.0 mg/l.

Please see response to comments #1 and #4 relative to schedules for compliance.

**Comment #8:** Page 3 of 13 – The Town has a routine sampling program which will be summarized and submitted as part of the requirement of the permit. Currently sampling is taken at the same location, time and day of the month when feasible.

**Response #8:** Comment is noted for the record. Please note that the permit requires the Town to document any deviations from the routine sampling program in correspondence to EPA (i.e., the Town should document any instances when it believes routine sampling was not feasible). In addition, please note that the final permit requires monitoring for dissolved oxygen in the early morning; this requirement should be incorporated into the routine sampling plan. (See response to comment # 19 below).

**Comment #9:** Page 4 of 13 – Footnote 1 – provides that the Town shall report flow MGD as a “rolling average.” The Town currently calculates flow as a monthly average. The Town objects to this change on the grounds that it is arbitrary and capricious and it does not appear that a modification of the Town's permit is required for any of the reasons stated in 40 C.F.R. §122.62. The Town's current practice accurately reports flow MGD, and the rolling average does not appear to be an effective tool for operating the Town's process. Therefore, this change should not be included in the Final Permit.

**Response #9:** As discussed previously, the regulations at 40 CFR §122.62 do not apply to this permit reissuance. (See response to comment #3 above).

The proposed change from a monthly average limit to an annual rolling average limit was made in order to be consistent with the basis for the design flow developed in facilities planning and utilized in the design of the treatment facility. Design flow calculations typically incorporate annual average infiltration and inflow rates and not maximum monthly infiltration and inflow rates. However, the requested change has been made in the final permit. In addition, the final permit does not include the corresponding mass limits for BOD, TSS and ammonia; mass limits are necessary with a rolling flow limit in order to maintain approximate overall pollutant loadings in the receiving water. As the rolling flow limit has been deleted, these mass limits are not needed.

**Comment #10:** Page 4 of 13 – Footnote 3 – In addition, because current sampling locations for fecal and chlorine are different and therefore sampling is conducted within as close of a time period as is possible for current operations.

**Response #10:** Although the comment references footnote #3, it is clear that the comment is referring to footnote #5. Footnote #5 has been modified to address this concern.

**Comment #11:** Page 7 of 13 – Development of Limitations for Industrial Users paragraph b. The Town requests that the date for submission of a written technical evaluation to the EPA analyzing local limits be changed from 120 days to 180 days. Moreover, if the evaluation reveals the need to change the local limits, the Town will be unable to implement the required changes within the time stated in the Draft Permit. An appropriation for finalization of the limits and implementation for public notice would require appropriation a potential completion date of 395 calendar days from completion and acceptance by the EPA of the written technical evaluation. Therefore, the Town requests that the Final Permit be adjusted accordingly.

**Response #11:** The technical evaluation is a straightforward analysis that should require very little time. The Town simply needs to complete and submit the form appended to the permit as Attachment B. Data required for completing the form should be readily-available to the facility. Accordingly, the 120 day period in the draft permit for completing this evaluation is more than sufficient time and this permit requirement remains unchanged. In its comment above, the Town also requests an extension to the 120 day period to revise local limits in the event revisions are necessary. The 120 day period to revise local limits is the typical time period for such revisions and the Town has not raised unique circumstances in this case requiring additional time. In order to address the Town's concerns that 120 days is insufficient to allow for finalization and public notice of any revisions, however, the final permit provides for a total of 300 days to complete the evaluation process. If specific circumstances arise during the local limits revision process that the Town believes warrant an additional extension, the Town should bring such information to EPA's attention.

**Comment #12:** Page 4 of 13 – Footnote 3 - The Town objects to the requirement of implementing flow-paced sampling of the waste generated at the WWTP, as such a requirement is arbitrary and capricious. The Town has a very consistent effluent from the plant and the current sampling method is adequate to assess the waste generated. There is no evidence that samples collected under the current method are inaccurate or that a modification of the Town's permit is required for any of the reasons stated in 40 C.F.R. §122.62. Therefore, the Town requests that this requirement not be included in the Final Permit. Notwithstanding said objection and without waiving the same, if flow paced testing is required, the Town will need time to set up samplers for flow pacing because the existing equipment is not able to perform this function. As such, if included in the Final Permit, the Town should be given 180 days to come into compliance with this requirement.

**Response #12:** As discussed previously, the regulations at 40 CFR §122.62 do not apply to this permit reissuance. (See response to comment #3 above).

Flow weighted composites were required by the previous permit. (See Part II Section E., definition of composite sample). This requirement is particularly important due to variations in influent flows within any given day. Therefore, the requirement of flow-weighted monitoring is maintained. As this requirement is not new, we do not believe that a schedule in the permit is warranted. We appreciate the Town will need to make

changes to sampling equipment and encourage the Town to do so as expeditiously as possible.

**Comment #13:** Page 9 of 13 – Operation and Maintenance of the Sewer System – Infiltration/Inflow Control Plan. It is requested that the submission date of the plan be changed from within six months of the effective date of this permit to within one year of the effective date of this permit due to budgetary issues and the need for appropriations.

**Response #13:** The requested change has been made to the final permit.

**Comment #14:** Page 9 of 13 – Operation and Maintenance of the Sewer System – Infiltration/Inflow Control Plan Reporting Requirements. It is requested that the yearly report on I/I reduction be submitted by June 1<sup>st</sup> of each year.

**Response #14:** The requested change has been made to the final permit.

**Comment #15:** Page 12 of 13 – Sludge Conditions. Currently the Town operates their sludge process utilizing a calculation of dry tons. They see no reason to change to reporting to metric tons.

**Response #15:** Facilities using sludge disposal methods regulated under 40 CFR Part 503 are required to report sludge quantities in metric tons. Although the Town does not currently utilize a disposal method regulated by Part 503, the agencies prefer to have sludge data reported in the same units of measure by all facilities. The conversion from dry tons to metric tons is very straightforward. A metric dry ton is the equivalent of 1.1 U.S. dry tons.

**Comment #16:** Fact Sheet Page 1– The authorization should be changed from Board of Selectmen to Board of Public Works.

Fact Sheet Page 1 – The co-permittee should be changed from Board of Selectmen 142 South Street P.O. Box 1717 to Board of Sewer Commissioners 171 East Bacon Street.

Fact Sheet Page 13 – Strike “In future continuous chlorine monitoring maybe required”

**Response #16:** Fact sheets are documents that accompany draft permits and are not revised. The comments submitted during the public comment period are part of the administrative record pursuant to 40 CFR §124.18. Responses to these comments are given below.

EPA notes the change from “Board of Selectmen” to “Board of Public Works” and the address changes; appropriate changes will be made to the final permit.

Regarding the statement in the Fact Sheet that future permits may require continuous monitoring of chlorine residual, EPA is moving in this direction based on concerns with the adequacy of grab sampling for determining compliance with residual chlorine limits.

This statement was made so that the permittee would be aware that this condition will likely be in future permits and will take this into consideration when implementing any upgrades to the facility. Such a requirement would only be imposed after public notice and opportunity for the Town and others to comment on it.

**On September 12, 2006, the following comments were received from the Rhode Island Department of Environmental Protection:**

**Comment #17:** The Rhode Island Department of Environmental Management (DEM) has reviewed the permit limits contained in the draft permits referenced above and determined that many of these limits will result in violations of Rhode Island Water Quality Standards in RI waters. The Environmental Protection Agency (EPA) established all water quality-based permit limits using background concentration of zero and by allocating 100% of the criteria. As a result, the limits for the Attleboro facility were based on the assumption that the entire pollutant load from the North Attleborough facility was eliminated from the water column before reaching the Attleboro facility. This assumption is not reflective of actual conditions and when coupled with allocation of the entire criteria, results in permit limits that cause violations of RI Water Quality Standards. In addition, EPA has utilized an instream hardness value of 100 mg/l to compute the water quality criteria for metals. This value is significantly higher than values typically observed in RI waters and results in higher water quality criteria than DEM would anticipate. Please provide information to support the use of this hardness value.

The table below, compares the instream concentrations at the MA/RI state line that result from the draft permit limits, to the RI Water Quality Standards (please note that for the sake of this analysis the hardness of 100 mg/l was utilized based on the assumption that EPA will provide justification for using this value). The concentrations that will result at the state line were computed from a mass balance using a 7Q10 flow at the state line of 14.4 cfs (or 2.71 cfs, based on flow data collected from USGS gauge # 01109403 after subtracting out historical WWTF flows), the WWTF flows and pollutant concentration limits contained in the draft permits and are artificially low as the EPA assumption of pollution concentrations of zero upstream of the North Attleborough WWTF was also used. Attached is a spreadsheet that contains the details of this analysis.

	Ten Mile River Concentration at the RI Border <sup>1</sup>	RI Water Quality Standard	% Exceedance of RI Water Quality Standards
Phosphorus	0.177 mg/l	0.025 mg/l <sup>2</sup>	606 %
Copper	10.5 ug/l	9.3 ug/l	12.9%
Lead	3.6 ug/l	3.2 ug/l	14.3%
Aluminum	98.5 ug/l	87 ug/l	13.2%
Zinc	135.5 ug/l	120 ug/l	13.1%
Cadmium	0.32 ug/l	0.27 ug/l	19.0%
Cyanide	5.2 ug/l	5.2 ug/l	0%

<sup>1</sup>As noted above predicted concentrations are artificially low since the EPA assumption of pollutant concentrations of zero upstream of the North Attleborough WWTF was utilized.

<sup>2</sup>Rule 8.D.(2) of the Rhode Island Water Quality Regulations establishes the following criteria for Nutrients:

*“Average Total Phosphorus shall not exceed 0.025 mg/l in any lake, pond, kettlehole or reservoir, and average Total P in tributaries at the point where they enter such bodies of water shall not cause exceedance of this phosphorus criteria, except as naturally occurs, unless the Director determines, on a site-specific basis, that a different value for phosphorus is necessary to prevent cultural eutrophication.”*

Determination of whether the water quality criterion of 25 ug/l is applicable to the Ten Mile River requires an evaluation of whether it flows into a lake, pond or reservoir (including whether run of the river impoundments constitute a lake, pond or reservoir). For the development of nutrient criteria, the EPA document titled *Nutrient Criteria Technical Guidance Manual: Lakes and Reservoirs: First Edition* has defined lakes as natural and artificial impoundments if they have a surface area greater than 10 acres and a minimum mean water residence time of 14 days. The Turner Reservoir on the Ten Mile Rivers meets both criteria and receives most of its flow from the Ten Mile River; therefore, the criterion of 25 ug/l must be met in the Ten Mile River at the point where it enters Turner Reservoir.

The table below is excerpt from the Final 2004 and the draft 2006 Rhode Island List of Impaired Waters (“303(d) list”) and lists several waterbody segments that are impaired due to excessive metals and Phosphorus concentrations. As noted above the limits proposed by EPA would result in continued violation of many of these criteria even under the assumption that no other pollutant sources are present.

Waterbody ID	Waterbody Name	Cause
<b>TEN MILE RIVER BASIN</b>		
RI0004009L-01A	Turner Reservoir	LOW DO, Phosphorus, Lead (Pb), Copper (Cu) PATHOGENS
RI0004009L-01B	Turner Reservoir	LOW DO, Phosphorus, Lead (Pb), Copper (Cu) PATHOGENS
RI0004009L-02	Slater Park Pond	EXCESS ALGAL GROWTH/CHL-A, Phosphorus, PATHOGENS
RI0004009L-03	Omega Pond	Phosphorus, Lead (Pb), Copper (Cu)
RI0004009R-01A	Ten Mile River	Lead (Pb), Copper (Cu), Cadmium (Cd)
RI0004009R-01B	Ten Mile River	BIODIVERSITY IMPACTS, Copper (Cu), Lead (Pb)

As you know, pursuant to the NPDES regulations at 40 CFR 122.44(d) and 33USC Sec.1341(a)(2), NPDES limits must achieve compliance with water quality standards and limits must be included in permits where pollutants will cause, have reasonable potential to cause, or contribute to an exceedance of the State’s water quality. As noted above the

limits contained in the draft permit will result in violations of RI water quality standards and therefore, the limits must be revised using a Waste Load Allocation (WLA) strategy that includes an appropriate margin of safety to account for any lack of knowledge concerning the relationship between effluent limits and water quality, ensures an equitable distribution of pollutant loads and that at a minimum meets all Rhode Island water quality criteria at the state line.

**Response #17:** Hardness data from the City of Attleboro quarterly toxicity tests conducted during the summer low flow period indicate that the average instream hardness above the North Attleborough discharge (Attleboro takes its dilution water from the Ten Mile River above the North Attleborough discharge) was 162 mg/l for 2002 – 2004 with a range of 100 mg/l – 253 mg/l. Using 100 mg/l for calculating the numeric criteria ensures that the criteria will be protective of instream uses. Assuming pollution concentrations of zero above the North Attleborough discharge has an insignificant effect on the calculations because the receiving water flow is very small compared to the discharge flow. At 7Q10, the upstream flow represents only 6% of the total flow in the river below the North Attleborough discharge. (See dilution calculation appended as Attachment B to Fact Sheet).

In its comment, Rhode Island calculates potential exceedances of Rhode Island water quality criteria for metals and phosphorus. (For metals, the criteria would apply at the state line; with regard to phosphorus, the Rhode Island criteria of 25 ug/l applies over a mile from the state line where the river enters Turner Reservoir.) Rhode Island's analysis, however, is based on an assumption that metals and phosphorus are 100% conservative in the water column. As phosphorus and metals are not completely retained in the water column, no changes are made to the phosphorus or metals limits in the final permit at this time. If, in the future, in stream data indicate that the Rhode Island criteria for metals and/or phosphorus are not being met, the permit limits will be made more stringent.

**On September 12, 2006, the following comments were received from the Massachusetts Riverways Program:**

**Comment #18:** Staff at the Riverways Programs, MA Department of Fish and Game, have reviewed the draft NPDES permit for the North Attleborough Wastewater Treatment Facility discharging into the Ten Mile River. We appreciate the opportunity to review and comment on the draft NPDES permit. Protecting the health of the state's rivers, near coastal waters and estuaries is the driving force behind the Riverways Programs' work. The potential for point source pollution discharges to negatively impact our waterways heightens the role of NPDES permits in resource protection efforts.

The Fact Sheet in this draft permit packet presents an ample picture of water quality issues in the receiving water for this discharge and the probable or potential impact the discharge poses to interstate waters and important resource areas. We are pleased to see permit limits instituting limitations below secondary treatment standards and are especially pleased to see daily maximum limits for several of the pollutants. It is clear

water quality based limits are needed if the Ten Mile River is to ever achieve water quality standards and the permit limits in this draft permit are a needed step.

Stricter limits on nutrients are especially welcome. With the negligible dilution available for this discharge and the known water quality issues, reductions in nutrient loads can not come quickly enough. The proposed limits are a positive step forward in reducing water quality impacts and we concur that the limits in this draft permit may prove inadequate and further reductions in loads may be required. We recognize the challenge nutrient reduction poses but the reductions called for in this permit are crucial to protecting the health and viability of the Ten Mile River and downstream waters in both Massachusetts and Rhode Island. Footnotes #8 and #10, asking the permittee to maximize treatment during the winter when less rigorous nutrient limits are in place, is another excellent addition to this permit and reflects the degraded conditions found in the receiving waters and the need to implement water quality based limitations.

**Response #18:** The comments are noted for the record.

**Comment #19:** The Ten Mile River is a severely impaired waterway. One of the water quality problems contributing to impairment is associated with low dissolved oxygen. The draft permit requires daily sampling of the effluent and a minimum concentration of 6.0 mg/l. Given the existing conditions in the river, this is a vital measure of the effluent quality. The permit does not provide guidance on when the dissolved oxygen daily grab sample should be taken. Should the dissolved oxygen concentration in the effluent naturally fluctuate, sampling during depressed DO times or matching the monitoring of the effluent with the typical low DO periods in the receiving water, (early morning) might provide more information on how the effluent could impact, either enhance or exacerbate, oxygen levels in the Ten Mile River. If the concentrations are quite static than explicit requirements on the timing of the sampling is not appropriate.

**Response #19:** We concur that the dissolved oxygen effluent sampling should be conducted in the early morning. Monitoring of effluent indicates that DO fluctuates. Monitoring of DO in the early morning, accordingly, is more likely to provide information related to the impact of DO in effluent on the River. Accordingly, the final permit includes a requirement that DO be measured in the early morning.

**Comment #20:** The waterway is also listed as impaired for unknown toxicity. This impairment is troubling as it indicates serious aquatic health concerns. The Whole Effluent Toxicity test data for this facility appears to indicate regular compliance with permit limits suggesting the effluent is not a source of the unknown toxicity. We wonder if testing with one species is sufficient to fully capture the possible toxicity of the effluent in the receiving water. Generally *Ceriodaphnia dubia* is the more sensitive of WET test species but since all discharges are unique, we wonder if testing has been done on other species to ascertain which is the most sensitive species in this instance? If no other species have been used in prior test, (or if testing with other species was done many years ago and the quantity and/or characteristics of the effluent have changed) than we would

advocate some additional testing with other species given the unknown toxicity impairment in the Ten Mile River and the extremely low dilution afforded the effluent.

**Response #20:** Testing was conducted for several years (1992 – 1999) using both ceriodaphnia dubia and fathead minnows. This data indicated that ceriodaphnia dubia is the more sensitive specie and as such we believe that testing with one specie only is sufficient to ensure that the aggregate discharge is not toxic.

**On September 19, 2006, following comments were received from Save the Bay:**

**Comment #21:** Save The Bay strongly supports the Draft NPDES Permits referenced above and applauds this first step by EPA and the Commonwealth of Massachusetts to join the effort to improve the water quality in Narragansett Bay.

As the fact sheets for these draft permits note, upper Narragansett Bay, including the Providence and Seekonk Rivers has suffered from severe cultural eutrophication for many years. While it is true that other factors such as increasing water temperatures, heavy rain events, and other natural factors play a role, there is no doubt that nutrient pollution from wastewater is a prime culprit in the fish and clam die-offs that have occurred over the last several years. Pursuant to new laws and policies calling for a 50% reduction in nitrogen loading to the Bay from Rhode Island treatment plants by 2008, several facilities have already switched or have committed to implement advanced practices of nitrogen removal. However, since 60% of the Narragansett Bay watershed is within the Commonwealth, both Rhode Island and Massachusetts must enforce strict nitrogen limits in order to achieve water quality goals for Narragansett Bay.

**Response #21:** The comments are noted for the record.