**BEFORE THE ENVIRONMENTAL APPEALS BOARD**
**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**WASHINGTON, D.C.**

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| In re: | ) | |
| Town of North Attleborough, Massachusetts<br>Wastewater Treatment Facility | ) | NPDES Appeal No. _____ |
| NPDES Permit MA0101036 | ) | |

## PETITION FOR REVIEW

Now comes the Rhode Island Department of Environmental Management, by and through its attorney, and, pursuant to 40 C.F.R. § 124.19(a), hereby files its Petition for Review of the decision of the Environmental Protection Agency, Region One granting the above-referenced National Pollution Discharge Elimination System (NPDES) Permit Number MA0101036.

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## INTRODUCTION

Pursuant to 40 C.F.R. § 124.19(a), the Rhode Island Department of Environmental Management ("Petitioner" or "RIDEM") petitions for review of the conditions of NPDES Permit Number MA0101036 ("the Permit"), which was jointly issued to the Town of North Attleborough Wastewater Treatment Facility ("Permittee" or "North Attleborough") on January 4, 2007, by the U.S. Environmental Protection Agency, Region One ("Region One" or "the Region") and the Massachusetts Department of Environmental Protection ("MADEP"). The permit at issue in this proceeding authorizes the Board of Public Works to discharge from the facility located at North Attleborough Wastewater Treatment Facility (WWTF) ("the Facility") to the receiving water named Ten Mile River in accordance with effluent limitations, monitoring requirements, and other conditions. Petitioner contends that certain permit conditions are based on clearly erroneous findings of fact and conclusions of law, and/or are based on an exercise of discretion or an important policy consideration which the Environmental Appeals Board ("the Board") should, in its discretion, review. Specifically, Petitioner challenges the following permit conditions:

1) Part I.A. Effluent Limitations and Monitoring Requirements relating to metals and phosphorus.

## THRESHOLD PROCEDURAL REQUIREMENTS

Petitioner satisfies the threshold procedural requirements for filing a petition for review under 40 C.F.R. Part 124, to wit:

1. Petitioner has standing to petition for review of the permit decision because it participated in the public comment period on the Permit. *See* 40 C.F.R. § 124.19(a); *See also* Written Correspondence of RIDEM Containing Comments on Draft Permit MA0101036, dated September 12, 2006 ("RIDEM Comments"), attached hereto as Exhibit C.
2. The issues raised by Petitioner in this petition were raised during the public comment period and therefore were preserved for review. See Exhibits B & C, attached.

## STATUTORY AND FACTUAL BACKGROUND

The NPDES Regulations and the Clean Water Act (CWA) both require that the Region impose permit conditions that will ensure that all applicable water quality requirements of all affected states will be met. 40 C.F.R. §§ 122.4, 122.44; CWA Section 401, 402. The applicable water quality regulations for Massachusetts are found at 314 CMR 4.00 *et seq.*, and for Rhode Island are found at RI Water Quality Regulations, Rule 8. This permit was issued by the Environmental Protection Agency, Region One under 40 C.F.R. 402(a), and by Massachusetts Department of Environmental Protection under MGL Ch. 21, § 43. This appeal is brought with the Environmental Appeals Board under 40 C.F.R. § 124.19(a).

The Facility is a 4.61 million gallons per day ("mgd") wastewater treatment facility located in North Attleborough, Massachusetts, which discharges into Ten Mile River. *See* Fact Sheet for Draft NPDES Permit MA0101036 at 4-6 ("Fact Sheet"), attached hereto as Exhibit A. The Facility is engaged in the collection and treatment of municipal and industrial wastewater, septage, and infiltration/inflow from sewer systems from the towns of North Attleborough and Plainville, Massachusetts. *Id.* Ten Mile River flows south from Plainville through North Attleborough and Attleboro, where it receives additional discharge effluent from the Attleboro Water Pollution Control Facility (WPCF), as well as Seekonk, Massachusetts, before continuing into Rhode Island, through the Ten Mile River Reservation and Slater Memorial Park before entering the Turner Reservoir and eventually discharging into the Seekonk River and Narragansett Bay. *Id.*

Massachusetts has designated the Ten Mile River, from its source to the RI border, as a Class B Warm Water Fishery, meaning that it is designated as habitat for fish, other aquatic life,

and wildlife, and for primary and secondary contact recreation. 314 CMR 4.05(3)(b); Fact Sheet at 5. Massachusetts Class B designated waters are suitable as a source of public water supply with appropriate treatment, and are suitable for irrigation and agricultural uses. *Id.*

Rhode Island has designated Ten Mile River as Class B1 water from the Massachusetts border to the Newman Avenue Dam in East Providence, and as Class B waters from the Newman Avenue Dam to the discharge into the Seekonk River. Rhode Island Class B designated waters are suitable for fish and wildlife habitat and for primary and secondary recreational uses. RI Water Quality Regulations, Rule 8(B)(1)(c). Class B waters are also suitable for compatible industrial process and cooling, hydropower, aquacultural uses, navigation, irrigation, and other agricultural uses. *Id.* Class B1 waters have the same classifications, except for the notation that although all criteria must be met, primary contact recreational uses may be impacted by pathogens from approved wastewater discharges. RI Water Quality Regulations, Rule 8(B)(1)(d). The Seekonk River is a marine water designated by RI as SB{a} water, meaning that it is designated for primary and secondary contact recreation, shellfish harvesting for controlled relay and depuration, and fish and wildlife habitat, and is further suitable for aquacultural uses, navigation and industrial cooling, except that the {a} designation indicates that primary recreation, shellfishing, and fish and wildlife habitat will likely be restricted because the water is likely impacted by combined sewer overflows in accordance with CSO facilities plans. RI Water Quality Regulations, Rule 8(B)(2)(b) and Appendix A.

It is undisputed that the Ten Mile River is impaired and not currently meeting the water quality standards of either Massachusetts or Rhode Island. *See* Fact Sheet at 4-6. The Ten Mile River and some of its impoundments are listed on both states' CWA § 303(d) lists as waters that

loadings into the river in order for it to meet water quality standards; the Seekonk River, where Ten Mile River ultimately discharges is also listed on Rhode Island's CWA § 303(d) list. *Id.* None of these waters currently has a completed TMDL in place, but a restoration plan has been completed for certain pollutants in the Seekonk River which includes recommended total nitrogen effluent limitations for publicly owned treatment works (POTWs) discharging to the Seekonk River, Providence River, and Upper Narragansett Bay. *Id.* Further, it is undisputed that one reason why Ten Mile River is failing to meet water quality standards in both states is due to excessive phosphorus. Exceedance of phosphorus limits alone is not the total extent of the problem; phosphorus exceedances lead to violations of minimal dissolved oxygen criteria, and violations of narrative water quality criteria as evidenced by dense filamentous algal cover in shallow areas, and eutrophic conditions. *See* North Attleborough Response to Comments on Draft NPDES Permit MA0101036 at 4 ("Response to Comments"), attached hereto as Exhibit B, and MADEP Water Quality Assessment Reports for the Ten Mile River for 1997 and 2002. Even when the Facility was meeting the previously set 1.0 mg/l phosphorus limit, MADEP continued to document severe eutrophic conditions in the receiving stream. *See* Response to Comments at 5 and 2002 Water Quality Assessment Report.

## ISSUES PRESENTED FOR REVIEW

1) Whether the Environmental Protection Agency, Region One committed reviewable error in failing to impose permit conditions that will ensure compliance with all applicable water quality standards, as required by the Clean Water Act and the NPDES Regulations.

A) Whether the Environmental Protection Agency, Region One committed reviewable error in assuming background pollutant levels of zero in setting the permit limits for this permit.

B) Whether the Environmental Protection Agency, Region One committed reviewable error in failing to adequately respond to Petitioner's comments on the draft permit, as required by the NPDES Regulations.

C) Whether the Environmental Protection Agency, Region One committed reviewable error in failing to consider the cumulative effects of a downstream Water Pollution Control Facility and non-point sources in setting the permit limits for this permit.

## ARGUMENT

### I. Standard of Review

In proceedings properly brought under 40 C.F.R. Part 124, the Board will generally grant review when the petition for review clearly establishes that the permit condition(s) in question is based on either "a finding of fact or conclusion of law which is clearly erroneous, or an exercise of discretion or an important policy consideration which the Board should, in its discretion, review." 40 C.F.R. § 124.19 (a).

The petitioner bears the burden of proof for demonstrating that review is warranted and for demonstrating that any issues being raised for review before the Board were preserved for review during the public comment period. *Id.*; 40 C.F.R. § 124.13. Issues being raised for review before the Board must have been raised with sufficient specificity during the public comment period, either by the Petitioner or by another commenting party. *Id.* Finally, it falls to the petitioner to "include specific information in support of their allegations. It is not sufficient simply to repeat objections made during the comment period; instead a petitioner 'must demonstrate why the [permit issuer's] response to those objections (the [permit issuer's] basis for its decision) is clearly erroneous or otherwise warrants review.'" *Id.*; *In re Steel Dynamics, Inc.*, 9 E.A.D. 740, 744 (EAB 2001) (quoting *In re LCP Chemis.*, 4 E.A.D. 661, 664 (EAB 1993)).

**II. The Region's Failure to Condition Permit Limits to Ensure Compliance with All Applicable Water Quality Standards was Based on Clearly Erroneous Findings of Fact and Conclusions of Law, was Based on an Inappropriate Exercise of Discretion, and Warrants Review by the Environmental Appeals Board.**

The NPDES regulations prohibit the Region from issuing a permit unless the imposition of its conditions can "ensure compliance with the applicable water quality requirements of all affected states." 40 C.F.R. § 122.4(d). With regard to this Permit, both Massachusetts, where the effluent discharge is taking place, and Rhode Island, where the receiving water flows and ultimately discharges into the Seekonk River and Narragansett Bay, are affected states, and as such, the Region is required to consider the water quality standards of both states in making decisions regarding this Permit. Further, both the NPDES Regulations and the Clean Water Act require the Region to consider the views of a downstream affected state regarding whether a discharge "will affect the quality of its waters so as to violate any of the state's water quality requirements in such state." 40 C.F.R. 122.44(d); CWA § 401(a)(2). If the Region agrees that a discharge would cause or contribute to any such violations, the permit must be conditioned to ensure compliance with those water quality standards. *Id.* Additionally, permit 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 standards. 40 C.F.R. § 122.44(d).

The Petitioner submitted comments during the public comment period for the draft permit. *See* Exhibit C, attached. The Petitioner's comments related to the permit limits contained in the draft permit, and to the fact that the limits, as set out in the draft permit, would result in violations of the Rhode Island water quality standards at the state line.

A. The Region's assumption of background pollutant concentrations of zero in setting the permit limits for the North Attleboro WWTF was clearly erroneous, was an inappropriate exercise of discretion, and warrants review.

In setting the permit limits with regard to phosphorous and metals for this NPDES Permit, the Region erroneously assumed that influent flow to the North Attleborough WWTF was free of pollutants. The Region is required to use actual data in determining permit limits whenever possible, and where it is not possible, should use reasonable estimations in order to ensure compliance with all applicable water quality standards. 40 C.F.R. §§ 122.4, 122.44. This assumption, carried through the length of the Ten Mile River, is not reflective of actual conditions and leads to violations of Rhode Island Water quality standards at the Rhode Island border. The assumption of zero pollutant concentration leads to artificially low pollutant estimations throughout the length of the river and further fails to account for any non-point source discharge also entering the river.

The Region's duty is to consider all relevant factors and set permit limits that will ensure compliance with all applicable water quality standards. *Id.* In this instance both Massachusetts and Rhode Island are affected states, and the standards of both states are applicable; the Region is required to consider all relevant information and set permit limits accordingly. By assuming that upstream pollutant concentrations are zero, the Region failed to account for cumulative effects of additional point source and non-point source discharge along the length of this low-dilution river. *See* Response to Comments at 5.

The Ten Mile River, its impoundments and its discharge waters are currently in violation of the water quality standards of both Massachusetts and Rhode Island. *See* Fact Sheet at 4-6. Clearly, the background pollution concentrations, after subtracting historical WWTF flows,

along the length of the River, both upstream and downstream of the North Attleborough Facility, are not zero, and such an assumption was erroneous and inaccurate on the part of the Region.

B. The Region's response to the Petitioner's comments submitted during the public comment period was insufficient and erroneous, and failed to satisfy the standard set out in the NPDES Regulations and relevant case law.

It is the Region's responsibility to impose conditions that will ensure compliance with the applicable water quality requirements of all affected states. 40 C.F.R. § 122.4(d). Further, it is the permit issuer's duty to "articulate with reasonable clarity the reasons for its conclusions and [to] adequately document its decision making." *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). In the present case, the Region failed to demonstrate how the permit limits will ensure compliance with the RI Water Quality Standards, and also failed to adequately document its decision making or to articulate the reasons for its conclusions in the draft permit. Based on this lack of clarity and documentation, the Petitioner submitted comments on the draft permit. The Region's response to the Petitioner's comments was inadequate and erroneous in its failure to provide further clarity and documentation for the Region's decisions regarding the permit limits.

Specifically, the Petitioner's comments questioned the Region's decision to assume a background concentration of zero pollutants upstream of the North Attleborough WWTF in calculating the permit limits for phosphorus and metals. Petitioner argued that "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 the RI Water Quality Standards." RIDEM Comments at 1. Petitioner went on to provide the Region with calculations showing potential exceedances assuming 100% conservation of pollutants in the water column, along with the

Region's erroneous assumption of background pollutant concentrations of zero, in order to demonstrate the potential violations of RI Water Quality Standards at the state line that could result from the permit limits remaining at the proposed levels (e.g. resulting phosphorus concentrations were seven times higher than the Rhode Island water quality standard).

The Region's response failed to explain or clarify the reasoning behind the decision to assume zero pollutant concentration in the upstream flow in the first instance, and also failed to explain how the permit limits for phosphorus and metals would "ensure compliance with applicable water quality requirements of all affected states." 40 C.F.R. § 122.4(d). Instead, the Region provided a post hoc justification of the decision by explaining that the assumption "has an insignificant effect on the calculations because the receiving water flow is very small compared to the discharge flow." *See* Response to Comments at 16, attached as Exhibit B. The Region went on to provide the absurd explanation that because "phosphorus and metals are not completely retained in the water column[, as RIDEM suggested in its comments], no changes are made to the phosphorus or metals limits in the final permit at this time." *Id.*

Post hoc justifications and projections of responsibility on the commenter to either demonstrate the presence of actual violations or provide scientific data do not satisfy the permit issuer's duty to "articulate with reasonable clarity the reasons for its conclusions and [to] adequately document its decision making," nor do they demonstrate that the permit limits, as set in the final permit, will ensure compliance and conformity with all applicable water quality requirements. *Ash Grove Cement*, 7 E.A.D. at 417-18; 40 C.F.R. §§ 122.4(d), 122.44(d).

Finally, the Region stated that "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." *See* Response to Comments at 16. It is unacceptable, erroneous, and not

permitted by the NPDES regulations that a permit can be issued with an unsupported set of effluent limitations, with the justification that it will be fixed later if a problem should arise. NPDES Regulations expressly prohibit the issuance of a permit "when the imposition of permit conditions cannot *ensure* compliance with the applicable water quality standards." 40 C.F.R. § 122.4(d) (emphasis added). The Region acknowledged that it "do[es] not believe that the WWTF will be able to immediately achieve the new effluent limits for phosphorus and nitrogen," and that it "believe[s] the WWTF will be in violation of these new limits as soon as the permit is effective." Response to Comments at 1. While the Region did provide some response regarding the basis for setting the permit limit for phosphorus (*see* Response to Comments at 5), neither that discussion, nor any other documentation by the Region was sufficient to *ensure* that all applicable water quality standards would be met by the imposition of these permit conditions.

C. The Region's failure to account for the downstream Attleboro WPCF in setting permit limits to ensure that Rhode Island water quality standards will be met was erroneous, and was an inappropriate exercise of discretion warranting review.

The Region cannot make decisions on permit limits by looking at each individual facility as if in a vacuum. The Ten Mile River flows through three (3) more towns in Massachusetts before reaching the Rhode Island Border and the area where the Rhode Island water quality standards must be met, one of which includes the Attleboro WPCF, a NPDES-permitted discharge facility. It is the responsibility of the Region to ensure that all applicable water quality standards are met, including those of downstream affected states. 40 C.F.R. §§ 122.4(d), 122.44(d). In setting the permit limits for the North Attleborough WWTF, then, the Region is required to take into account all other factors which are known to influence the Ten Mile River,

both upstream of the Facility, and especially downstream of the facility up to the Rhode Island border where the Rhode Island standards must be met. *Id.*

It is undisputed that the Ten Mile River and its impoundments and discharge waters (the Seekonk River) are considered impaired waters on both the Massachusetts and Rhode Island § 303(d) lists, due in part to phosphorous and metals discharges, and that permit limits for these pollutants must be made more stringent. Fact Sheet at 4-6; Response to Comments at 4-5. While the Petitioner appreciates that the limits in this Permit are in fact more stringent than in the expired permit, the Region still has not demonstrated that these limits will ensure compliance with water quality standards.

The Region has indicated that, at least with regard to the phosphorus limits in the Permit, it considered two national guidance documents recommending a total in stream phosphorus concentration of 0.1 mg/l and MADEP's interpretation that the highest and best practicable treatment, as the term is used in the MA Water Quality Standards, is an effluent limit of 0.2 mg/l for phosphorus. *See* Response to Comments at 5; *See also* 1986 Quality Criteria of Water (the Gold Book); *See also* Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV. There is no documentation that additional sources of pollutants, such as the Attleboro WPCF, were considered in setting any of the effluent limits in this Permit. Nor is there any documentation that the Region considered the fact that the Rhode Island Water Quality Regulations require that the total phosphorus concentration at the point that Ten Mile River enters the Turner Reservoir may not cause phosphorus levels to exceed 0.025 mg/l.

Despite the acknowledged current conditions in the Ten Mile River and the admitted lack of significant dilution in the downstream flow, the Region nonetheless set the seasonal permit

limit at 0.2 mg/l. *Id.* This limit may be reasonable if the North Attleborough Facility was the only facility or source of pollutants on the Ten Mile River, however that is not the case.[1] The NPDES permit for the Attleboro WPCF is currently in the draft stages, however, that facility is currently operating under a permit issued in September of 1999, and discharge information is available regarding the current and historic discharge into the Ten Mile River from that facility. The Region was required to consider the cumulative effects that the discharge from the Attleboro WPCF would have on the pollutant concentrations in the Ten Mile River in determining the permit limits for the North Attleborough facility in such a way as to ensure compliance with all applicable water quality standards. 40 C.F.R. §§ 122.4, 122.44(d). There is no evidence or documentation in the record that the Region gave any consideration to the effects that discharge from the Attleboro WPCF would have on the pollutant concentrations in the Ten Mile River in determining appropriate effluent limits for the North Attleborough WWTF. Without taking such effects into consideration, there is no way to ensure compliance will all applicable water quality standards, and the "mere possibility of compliance does not 'ensure' compliance." *In re City of Marlborough, Massachusetts Easterly Wastewater Treatment Facility*, Slip op. at 22, 12 E.A.D. ____ (EAB 2006).

[1] The Petitioner does not concede that these permit limits would actually be acceptable if this were the only source of pollutants on the Ten Mile River, as that fact would need to be determined using data on *actual* levels of in stream pollutants up stream of the Facility. Further, it would be impossible to completely discount the effects of non-point sources along the River as well.

## CONCLUSION

For the foregoing reasons, Petitioner requests that the Environmental Appeals Board grant Petitioner's request for review of NPDES Permit MA0101036, or, in the alternative, Petitioner requests that the Permit be remanded for further review by the Regional Administrator, so that the permit limits for the discharge of metals and phosphorous into Ten Mile River can be reviewed and amended to ensure compliance with the Rhode Island water quality standards, as is required by the Clean Water Act and the NPDES Regulations.

Respectfully submitted,
RI Department of Environmental Management,
By its attorney,

Date: February 2, 2007

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## LIST OF EXHIBITS

Exhibit A: Fact Sheet for Draft NPDES Permit MA0101036

Exhibit B: Response to Comments on Draft NPDES Permit MA0101036

Exhibit C: Written correspondence of RI Department of Environmental Management containing comments on Draft NPDES Permit MA0101036, Dated September 12, 2006

**EXHIBIT A**

Fact Sheet for Draft NPDES Permit MA0101036

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 1**
**1 CONGRESS STREET, SUITE 1100**
**BOSTON, MASSACHUSETTS 02114-2023**

# FACT SHEET

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

NPDES PERMIT NO.: **MA0101036**

NAME AND ADDRESS OF APPLICANT:

**Board of Selectmen**
**240 Smith Street**
**North Attleborough, MA 02760**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**North Attleborough WWTF**
**Cedar Road**
**North Attleborough, MA 02760**

NAME AND ADDRESS OF C0-PERMITTEE:

**Board of Selectmen**
**Plainville Town Hall**
**142 South Street, P.O. Box 1717**
**Plainville, MA 02762**

RECEIVING WATER: **Ten Mile River**

CLASSIFICATION: **B, warm water fishery**

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

The above named applicant has requested that the U.S. Environmental Protection Agency reissue its NPDES permit to discharge into the designated receiving waters. The permit application shows that the facility is engaged in collection and treatment of municipal and industrial wastewater from the Town of North Attleborough and the Town of Plainville. The Town of Plainville is included as a co-permittee for Section D (Unauthorized Discharges, Section E (Operation and Maintenance of the Sewer System), and Section F (Alternate Power Source) of the Draft Permit. See Part VI of this fact sheet (Operation and Maintenance) for a further discussion of these requirements.

## II. Description of Discharge.

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in **Attachment A.**

## III. Limitations and Conditions.

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

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

### A. General Statutory and Regulatory Background

EPA is issuing this permit pursuant to Section 402(a) of the Clean Water Act. The Commonwealth of Massachusetts is also issuing this permit, except for certain limitations and conditions discussed below, pursuant to Massachusetts General Laws ch. 21, § 43 (2004).

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

EPA is required to consider technology and water quality-based requirements as well as those requirements and limitations included in the existing permit when developing the renewed permit's effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA. Secondary treatment technology guidelines (i.e. effluent limitations) for POTWs can be found at 40 CFR Part 133.

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 CFR §125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES 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 and where the limits are established to meet a water quality standard that is either newly adopted, revised, or interpreted after July 1, 1977.

Section 301(b)(1)(C) of the CWA requires NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to comply with, among other

things, any applicable state or federal water quality standards. A water quality standard consists of three elements: (1) beneficial designated use or uses for a water body or a segment of a water body; (2) numeric and narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that existing uses and high quality waters are protected and maintained.

EPA's regulation at 40 C.F.R. § 122.4(d) prohibits the issuance of an NPDES permit unless its conditions can "ensure compliance with the applicable water quality requirements of all affected States." As discussed below, both Massachusetts and Rhode Island are "affected states" in the context of this permit issuance, and both states' water quality standards are relevant to the permit limitations. Similarly, 40 C.F.R. § 122.44(d) requires EPA to impose conditions that achieve applicable water quality standards.

The Massachusetts Surface Water Quality Standards (314 CMR 4.00, February, 1996) establish designated uses of the State's waters, criteria to protect those uses, and an antidegradation provision to ensure that existing uses and high quality waters are protected and maintained. They also include requirements for the regulation and control of toxic constituents and specify that EPA's recommended water quality criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criterion is established.

Rhode Island's Water Quality Standards (Regulation EVM 112-88.97-1, June 2000) also establish designated uses of the State's waters, criteria to protect those uses, and an antidegradation provision to ensure that existing uses and high quality waters are protected and maintained.

Section 401(a)(1) of the CWA forbids the issuance of a federal license for a discharge to waters of the United States unless the state where the discharge originates, in this case Massachusetts, either certifies that the discharge will comply with, among other things, state water quality standards, or waives certification. EPA's regulations at 40 CFR § 122.44(d)(3), §124.53 and §124.55 describe the manner in which NPDES permits must conform to conditions contained in state certifications. Section 401(a)(2) of the CWA and 40 CFR § 122.44(d)(4) require EPA to condition NPDES permits in a manner that will ensure compliance with the applicable water quality standards of a "downstream affected state," in this case Rhode Island. The statute directs EPA to consider the views of the downstream state concerning whether a discharge would result in violations of the state's water quality standards. If EPA agrees that a discharge would cause or contribute to such violations, EPA must condition the permit to ensure compliance with the water quality standards. If the downstream affected state believes that the permit fails to include such requirements, then it may appeal the permit (like any other interested person with proper standing).

Section 402(o) of the CWA provides, generally, that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. Unless certain limited exceptions are met, "backsliding" from effluent limitations contained in previously issued permits that were based on CWA §§ 301(b)(1)(C) or 303 is prohibited. EPA has also promulgated anti-backsliding regulations, which are found at 40 CFR § 122.44(l). Unless statutory and regulatory backsliding requirements are met, the limits in the reissued permit must be

at least as stringent as those in the previous permit.

## B. Development of Water Quality-based Limits

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentration. Maximum daily limits are generally derived from the acute aquatic life criteria, and the average monthly limit is generally derived from the chronic aquatic life criteria. Chemical specific limits are established in accordance with 40 CFR §122.44(d) and §122.45(d).

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. An excursion occurs if the projected or actual in stream concentration exceeds the applicable criterion.

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly discharge monitoring reports (DMRs), and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls,* March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with Massachusetts Water Quality Standards [314CMR 4.03(3)], available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10). Rhode Island's Water Quality Standards provide for a similar dilution calculation for freshwaters. See Rule 8.E.(2)(a).

## C. Description of Treatment Facility and Receiving Water

The North Attleborough Wastewater Treatment Facility (WWTF) is a 4.61 MGD advanced wastewater treatment plant which treats municipal and industrial wastewater, septage, and infiltration/inflow from sewer systems serving the Town of North Attleborough and the Town of Plainville. The WWTF's unit operations include influent pumping, flow measurement, screening, grit removal, comminution, flash mixing, flocculation, primary sedimentation, intermediate pumping, two stage activated sludge with nitrification, sand filtration, chlorination, dechlorination, and sludge thickening. According to the permit application this facility serves a population of 26,000 in North Attleborough and 8,000 in Plainville, and also serves13 significant industrial users (SIUs).

The Ten Mile River is an interstate water which has its headwaters in Plainville Massachusetts and flows through North Attleborough, Attleboro, and Seekonk, Massachusetts before entering Rhode Island in Pawtucket, flowing through East Providence, and ultimately discharging to the Seekonk

River.

The Ten Mile River in Massachusetts is designated by the Massachusetts Water Quality Standards as a Class B Warm Water Fishery. Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value. In warm water fisheries the temperature shall not exceed 83°F nor shall the rise in temperature due to a discharge exceed 5°F.

The Ten Mile River is listed on the Massachusetts Year 2004 Integrated List of Waters (which incorporates the CWA § 303(d) list) as a water that is impaired (not meeting water quality standards) and requires one or more Total Maximum Daily Loads (TMDL) to be prepared to reduce pollutant loadings into the River so that it can attain water quality standards. The segment of the Ten Mile River from the North Attleborough WWTP to the MA/RI border is listed as impaired due to unknown toxicity, metals, nutrients, organic enrichment/low DO, pathogens, and noxious aquatic plants. No TMDL has been completed nor is any underway.

The Ten Mile River in Rhode Island is designated by the Rhode Island Water Quality Regulations as a Class B1 water from the MA/RI border to the Newman Avenue Dam in East Providence, and a Class B water from the Newman Avenue Dam to the confluence with the Seekonk River. The Seekonk River is a marine water (seawater) designated as a Class SB{a}water.

Class B waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial process and cooling, hydropower, aquacultural uses, navigation, irrigation and other agricultural uses. These waters shall have good aesthetic value. A Class B1 water has the same designated uses as a Class B water, except that primary contact recreational uses may be impacted due to pathogens from approved wastewater discharges. Class SB waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. An "{a}" partial use restriction indicates a water which is likely to be impacted by combined sewer overflows in accordance with an approved CSO facilities plan; therefore primary contact recreational activities, shellfishing uses, and fish and wildlife habitat will likely be restricted.

The free flowing segments of the Ten Mile River in RI are listed on the State's 2004 CWA § 303(d) List of Impaired Waters as waters needing a TMDL for copper, lead, and cadmium. Two impoundments are also listed. Turner Reservoir is listed for copper, lead, low DO, and phosphorus, and Omega Pond is listed for copper, lead and phosphorus.

The Seekonk River is listed on the State's 2004 CWA § 303(d) List of Impaired Waters as a water with a TMDL underway for nutrients, low DO, and excess algal growth/chlorophyll(a). The TMDL has not been completed, but as is discussed in the Total Nitrogen section of this fact sheet, the State

has performed a physical model assessing the impacts of total nitrogen on non- attainment of water quality standards in the Seekonk River, Providence River and Upper Narragansett Bay and has recommended total nitrogen effluent limitations for POTWs discharging to these receiving waters.

## D. Effluent Limits Development

The effluent limits on all of the pollutants discussed below, with the exception of total nitrogen, are established to ensure compliance with technology- based requirements and the Massachusetts Water Quality Standards. Since the applicable water quality criteria for Massachusetts are similar to, and in some cases more stringent than, the applicable water quality criteria for Rhode Island, the effluent limits also ensure compliance with Rhode Island Water Quality Standards. The limits and requirements on total nitrogen are established solely to ensure compliance with the Rhode Island Water Quality Standards. The Town will likely be unable to immediately comply with the limits proposed for nitrogen and phosphorus. EPA will work with the Town and its representatives to develop a schedule for the planning, design and construction of facilities that may be necessary to meet the specified limits. It is EPA's intent to begin this process as soon as possible.

Conventional Pollutants:

The effluent concentration limits for BOD and TSS are the same as those limits found in the previous permit, in accordance with anti-backsliding requirements. These limits were originally established in accordance with a 1975 waste load allocation for the Ten Mile River.

The flow limit has been established as an annual average limit. MassDEP adopted a policy establishing flow limits in POTW permits as an annual average in order to account for seasonal flow variations, particularly those associated with high flow and high groundwater which commonly occur in the spring time. See June 12, 2000, MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits ("Flow Policy"). Consistent with the Flow Policy, the Agencies have imposed mass limits in order to maintain approximate overall pollutant loadings of BOD and TSS in the receiving water.

The numerical limitations for fecal coliform, pH, and dissolved oxygen are based on state certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR §124.53 and §124.55. These limitations are the same as in the existing permit and so are in accordance with antibacksliding requirements.

Phosphorus

The Massachusetts Water Quality Standards do not contain numerical criteria for total phosphorus. The criterion for nutrients is 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." The Massachusetts Water Quality 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). The Massachusetts Department of Environmental Protection (MassDEP) has established that a monthly average total phosphorus limit of 0.2 mg/l represents highest and best practical treatment for POTWs.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water ( the Gold Book) recommends in-stream phosphorus concentrations of no greater than 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within the lake or reservoir.

More recently, EPA has released "Ecoregional Nutrient Criteria," established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters in that ecoregion that are minimally impacted by human activities, and thus representative of water without cultural eutrophication. North Attleborough is within Ecoregion XIV, Eastern Coastal Plains. The total phosphorus criterion for this ecoregion, found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in the December, 2000 is 24 ug/l (0.024 mg/l).

The present permit has a monthly average limit of 1.0 mg/l and a daily maximum limit of 2.0 mg/l from May 1 to October 31. Effluent data from DMRs for the period May 2003 to April 2004 show a range of 0.6 to 1.1 mg/l of total phosphorus.

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, and in the RI 2004 303(d) List of Impaired Waters as discussed above. 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.

The current monthly average limit in the permit of 1.0 mg/l would be expected to significantly exceed the national guidance for in-stream phosphorus concentration due to the absence of any significant dilution under 7Q10 conditions. It is clear that the existing limits must be made more stringent to address the documented eutrophication problems in the receiving water. A monthly average total phosphorus limit of 0.2 mg/l has been established based on the "highest and best" practical treatment as defined by the MAWQS. This limit will be in effect seasonally, from April 1 to October 31. The application of the lower seasonal limit has been extended to the month of April in order to encompass the entire season when aquatic plant growth is active.

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 period limitation on total phosphorus is necessary to ensure that the higher levels of phosphorus discharged in the winter period do not result in the accumulation of phosphorus in the downstream sediments. The limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction and that dissolved phosphorus will pass through the system and not accumulate in the sediments. A dissolved

orthophosphorous monitoring requirement has been included to verify the dissolved fraction. If future evaluations indicate that phosphorus may be accumulating in downstream sediments, the winter period phosphorus limit may be reduced in future permit actions.

If MassDEP adopts numeric nutrient 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 report titled "Project Engineering Report - Supplement To Comprehensive Project Evaluation- North Attleborough Wastewater Treatment Facility", the Town has proposed an upgrade of the wastewater treatment plant which will achieve the proposed limit. The proposed phosphorus removal facilities include biological phosphorus removal followed by chemical-physical phosphorus removal with sand filtration. The estimated completion date for the entire five phase plant upgrade is April 2008; the estimated completion date of all facilities necessary to achieve the phosphorus limit is April 2007 (Phase IV).

Nitrogen

- Ammonia:

The permit limits ammonia-nitrogen in order to control both in-stream oxygen demand and the degree of toxicity associated with the discharge. For the period of May 1 - October 31, the permit limits ammonia nitrogen at the level in the previous permit. The period of November 1 - April 30 has limits to protect against in-stream toxicity to aquatic species and is also limited at the level in the previous permit.

The November through April limits in the previous permit were established in accordance with the EPA guidance document titled 1998 Update of Ambient Water Quality Criteria for Ammonia. This guidance document has been replaced with the 1999 Update of Ambient Water Quality Criteria for Ammonia, which includes less stringent criteria. EPA considered whether less stringent limits based on the 1999 criteria should be allowed. Although the current permit limits are stringent enough to ensure that the discharge does not result in an exceedance of instream ammonia toxicity or dissolved oxygen criteria, there is a concern that the receiving water's current nonattainment for toxicity and dissolved oxygen could be exacerbated by increased discharges of ammonia. Consequently, the current limits, which the permittee has demonstrated the ability to meet, are retained in this permit.

The limits in the draft permit for November through April are:

November - 7.0 mg/l monthly average.

December 1 - April 30 - 10.0 mg/l monthly average.

The limits for May through October are from the current permit. The limits are stringent enough to ensure that the discharge does not result in an exceedance of instream ammonia toxicity or dissolved

oxygen criteria.

The limit in the draft permit for May is 3.0 mg/l monthly average.

The limit in the draft permit for June through October is 1.0 mg/l monthly average.

- Total Nitrogen:

Upper Narragansett Bay, which includes the Providence and Seekonk Rivers, has suffered from severe cultural eutrophication for many years. This cultural eutrophication results in periodic low dissolved oxygen levels and associated fish kills. In addition, historic estimates of eel grass in Narragansett Bay ranged from 8,000 - 16,000 acres and current estimates of eel grass indicate that less than 100 acres remain. No eel grass remains in the upper two thirds of Narragansett Bay. Severe eutrophication is believed to be a significant contributor to the dramatic decline in eel grass (see Rhode Island Department of Environmental Management (DEM), February 1, 2005 report "Plan for Managing Nutrient Loadings to Rhode Island Waters")

Upper Narragansett Bay has a water quality classification of SB1. The designated uses include primary and secondary contact recreational activities and fish and wildlife habitat. Rhode Island Water Quality Standards Rule 8.B.(2)(c). Applicable criteria include the following:

> "At a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that:
>
> i. Adversely affect the composition of fish and wildlife;
> ii. Adversely affect the physical, chemical, or biological integrity of the habitat;
> iii. Interfere with the propagation of fish and wildlife;
> iv. Adversely alter the life cycle functions, uses, processes and activities of fish and wildlife....", Rule 8.D.(1)
>
> The dissolved oxygen shall be "not less than 5 mg/l at any place or time, except as naturally occurs. Normal seasonal and diurnal variations which result in *insitu* concentrations above 5.0 mg/l not associated with cultural eutrophication will be maintained in accordance with the Antidegradation Implementation Policy." Table 2, Rule 8.D.(3)1.
>
> There shall be no nutrients "in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication." Nutrients "shall not exceed site-specific limits if deemed necessary by the Director to prevent or minimize accelerated or cultural eutrophication. Total phosphorus, nitrates and ammonia may be assigned site-specific permit limits based on reasonable Best Available Technologies." Table 2, Rule 8.D.(3)10; see also Rule 8.D.(1)(d).

Additional relevant regulations include Rule 9.A. and B., which prohibit discharges of pollutants

which alone or in combination will likely result in violation of any water quality criterion or interfere with one or more existing or designated uses, and prohibit discharges that will further degrade waters which are already below the applicable water quality standards.

It is clear that eutrophication in Upper Narragansett Bay has reached a level where it is adversely affecting the composition of fish and wildlife; adversely affecting the physical, chemical, or biological integrity of the habitat; interfering with the propagation of fish and wildlife; adversely altering the activities of fish and wildlife; and causing dissolved oxygen to drop well below 5 mg/l. The effects of eutrophication, including algae blooms and fish kills, are also interfering with the designated uses of the water. Eutrophication has, therefore, reached a point where it is causing violations of water quality standards.

Excessive loadings of nitrogen have been identified as the cause of the eutrophication. This link has been clearly demonstrated by water quality data and by various studies and reports issued over the years. One key report, which summarizes and references many of the studies and reports, is titled "Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers" (DEM Report), and was completed by DEM in December 2004. This report analyzes both water quality data and information about major discharges to the Providence and Seekonk Rivers. The report, drawing in part on data developed in earlier studies, divides the rivers into segments and analyzes pollutant loadings and specific water quality impairments in each segment. Much of the data used in the analysis is from a 1995 - 1996 study by DEM Water Resources that consisted of measurements of nitrogen loadings from point source discharges and the five major tributaries to the Providence/Seekonk River system. The report also includes an analysis of data produced by a physical model of the Providence/Seekonk River system. That physical model was operated by the Marine Ecosystems Research Laboratory (MERL), and was part of an experiment to evaluate the impact of various levels of nutrient loading on the rivers and Narragansett Bay.

The Commonwealth of Massachusetts submitted detailed comments (February 11, 2005) on the DEM report, questioning the report's evaluation of the nitrogen issue and the basis for nitrogen reductions. Rhode Island responded to those comments on June 27, 2005.

EPA has reviewed all of the available data, including the comments by Massachusetts on the DEM Report and Rhode Island's responses. EPA has concluded that there is convincing evidence that excessive nitrogen loading is impairing the designated uses of the Seekonk and Providence Rivers and that wastewater facilities in Massachusetts contribute a significant portion of the nitrogen loading.

One key issue raised by Massachusetts is whether the impact of nitrogen discharges from Massachusetts POTW sources is significantly reduced by instream attenuation before the nitrogen reaches impaired portions of Upper Narragansett Bay. The DEM report estimates a 40% attenuation rate for the Ten Mile River. Even assuming this level of attenuation, substantial reductions in nitrogen discharges are needed to meet water quality standards. Moreover, part of this attenuation is due to phosphorus-driven eutrophication in the Ten Mile River (nitrogen attenuation increases as

eutrophication levels increase). 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 considered in the DEM Report, and the resulting decline in phosphorus-driven eutrophication should reduce the attenuation of nitrogen below the 40% level. Significant reductions in nitrogen discharges are, therefore, clearly necessary.

Another issue raised by Massachusetts is that there are inherent uncertainties in the conclusions of the DEM report due to its reliance on a physical model. EPA agrees that the use of the physical model does introduce uncertainty in determining the precise level of nitrogen control which will ultimately be needed in the river. Based on the available evidence, however, including the analysis of loadings included in the DEM report, EPA has concluded that the amount of nitrogen reduction needed to meet water quality standards will be at least as great as required by the proposed limit in this permit (described below). The uncertainties in the physical model may ultimately mean that additional nitrogen reductions are needed, but there is no realistic likelihood that water quality standards could be met with a less stringent nitrogen limit than the one proposed.

The predominate source of the nitrogen loading in Narragansett Bay is municipal wastewater treatment facilities in Rhode Island and in Massachusetts. The State of Rhode Island has recently reissued several Rhode Island Pollutant Discharge Elimination System (RIPDES) permits for POTWs which discharge to Upper Narragansett Bay and its tributaries. These permits include limitations on the discharge of total nitrogen, in order to address the cultural eutrophication in Upper Narragansett Bay. There are five municipal POTWs in Massachusetts which discharge nitrogen into tributaries of the Seekonk and Providence Rivers, including North Attleborough. EPA is responsible for issuing permits to these facilities, which as a group represent approximately 38% of the total nitrogen load to Upper Narragansett Bay, and approximately 73% of the total nitrogen load to the Seekonk River, which is the most severely impaired section of Upper Narragansett Bay. (These values are based on permitted flows and loadings, and an assumed effluent nitrogen concentration of 15 mg/l for POTWs without nitrogen permit limits or nitrogen control facilities.)

EPA recognizes that Upper Narragansett Bay and the rivers that discharge into it comprise a complex system, and, as noted above, that there are uncertainties associated with the physical model used in the MERL experiment. EPA has reviewed the available evidence, including the DEM report, in light of that uncertainty, and has concluded that the nitrogen limit proposed in this permit is necessary to meet Rhode Island Water Quality Standards.

In particular, based on the available evidence, EPA has concluded that, at a minimum, a seasonal reduction to no more than 8.0 mg/l is required at the North Attleborough facility in order to achieve water quality standards. Therefore, pursuant to §§ 301(1)(b)(1)(C) and 401(a)(2) of the CWA and 40 C.F.R. §§ 122.4(d) and122.44(d), EPA has included in the draft permit a total nitrogen limit of 8 mg/l monthly average from May through October. Nitrogen discharged from May through October is believed to be the dominant source of available nitrogen in the Providence and Seekonk Rivers during the critical growing period (see DEM "Response to Comments Received on Proposed Permit Modifications for the Fields Point, Bucklin Point, Woonsocket and East Providence WWTFs"). EPA's draft permit also includes a treatment optimization requirement for November

through April, in order to maximize the nitrogen removal benefits. These nitrogen limits and requirements are contained only in EPA's NPDES permit. Massachusetts is not including these limits in its state-issued permit; the Massachusetts permit establishes limits that are necessary to protect Massachusetts waters only.

DEM has, in partnership with several research and academic institutions in Rhode Island, established an extensive monitoring network in order to provide the data necessary to evaluate compliance with water quality standards upon implementation of the recommended nitrogen reductions (see (DEM), February 1, 2005 report "Plan for Managing Nutrient Loadings to Rhode Island Waters"). It is possible that this monitoring will demonstrate that additional pollutant reductions are ultimately needed to meet water quality standards. EPA therefore strongly recommends that treatment facility upgrades implemented in order to achieve the 8.0 mg/l total nitrogen limit be compatible with alternatives for further reducing the nitrogen level in the discharge.

Toxic Pollutants

- Chlorine

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. The effluent limits for average monthly and maximum daily total residual chlorine (TRC) were developed using the chronic and acute TRC criteria defined the EPA Quality Criteria for Water, 1986 (the "Gold Book"), as adopted by the Massachusetts Department of Environmental Protection (MassDEP) into the state water quality standards.

The criteria state that the average TRC in the receiving water should not exceed 11 ug/l for chronic toxicity protection and 19 ug/l for acute toxicity protection. The effluent limits are set at the criteria due to the lack of dilution in the receiving water. See Attachment B for the dilution factors.

The average monthly and maximum daily TRC limits are below the analytical detection limit for this pollutant. In these situations, EPA, Region I is following guidance set forth in the Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-90-001, March 1991, page 111, which recommends "... that the compliance level be defined in the permit as the minimum level (ML)." EPA has defined the ML as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points." The minimum level for TRC is 0.020 mg/l or 20 ug/l, and is defined as such in the draft permit. Therefore, compliance/non-compliance determinations will be based on the Minimum Level (ML). This ML value of 20 ug/l may be reduced by permit modification as more sensitive test methods are approved by the EPA and the MassDEP.

The permit also includes a requirement that the chlorination and dechlorination systems include alarms for indicating system interruptions or malfunctions and that interruptions or malfunctions be reported with the monthly compliance reports. This requirement is intended to supplement the grab sampling requirements for chlorine and bacteria and is a recognition of the limitations of a grab

sampling program for determining consistent compliance with permit limits. In the future, continuous monitoring of effluent chlorine levels may be required.

- Metals and Cyanide:

The limitations in the current permit are taken from the Ten Mile River Basin 1984 Water Quality Program and NPDES Permit Development Final Report (MADEP). These recommended limits were considered to satisfy water quality concerns based on "Clean Water" or background levels in the receiving water. However, the studies conducted in the mid-1980's are not consistent with current policies and guidance relative to developing site specific metals criteria, and the downstream segments continue to be listed in nonattainment of water quality standards for metals despite attainment of the effluent limitations. Accordingly, limitations were calculated using the EPA recommended water quality criteria found in National Recommended Water Quality Criteria 2002. These limits have been used in the draft permit where a reasonable potential analyses shows that limits are necessary and where these limits are more stringent than the existing limits.

For chromium and nickel, the data indicate that there is no reasonable potential to cause or contribute to a violation of water quality standards since the reported data is well below the effluent limitations that would be necessary to ensure compliance with water quality standards. The routine monitoring requirements have therefore been deleted, although chromium and nickel analyses must continue to be performed in conjunction with whole effluent toxicity testing. This is consistent with the antibacksliding requirements of Clean Water Act sections 402(o) and 303(d)(4)(B).

For cyanide and cadmium, the discharge data submitted by the facility and presented in **Attachment A**, shows that the discharge for these pollutants has been consistently reported below the minimum level. (The ML is defined in EPA's Technical Support Document for Water Quality-Based Toxics Control as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points". The minimum level (ML) for cyanide associated with the method specified in the permit is 20 ug/l and for cadmium is 1 ug/l. However, because the calculated water quality limits for cyanide and cadmium are significantly below the respective MLs, EPA cannot be certain that there is no reasonable potential for the discharge of these pollutants to cause or contribute to a violation of water quality standards. Since the calculated monthly average and maximum daily cyanide limits are higher than the monthly average and maximum daily limits in the current permit, the current permit limits have been maintained in accordance with antibacksliding requirements. An analytical method with a lower ML (10 ug/l) has been specified. Cadmium limits have been established using National Recommended Water Quality Criteria and specifying an analytical method with an ML of 0.5 ug/l. The calculations are as follows:

Cyanide:

Chronic Criteria = 5.2 ug/l
Acute Criteria = 22 ug/l
Dilution Factor (DF) = 1.06 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (5.2 ug/l)(1.06) = 5.5 ug/l

Daily Maximum Limit = (acute criteria)(dilution factor) = (22 ug/l)(1.06) = 23.3 ug/l

Cadmium

Hardness = 100 mg/l
Chronic Criteria = 0.3 ug/l
Acute Criteria = 2.1 ug/l
Dilution Factor (DF) = 1.06 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (0.3 ug/l)(1.06) = 0.3 ug/l
Daily Maximum Limit = (acute criteria)(dilution factor) = (2.1 ug/l)(1.06) = 2.2 ug/l

For copper and aluminum, limitations and monitoring requirements have been retained in the draft permit, and for zinc and lead, limitations and monitoring requirements have been included in the draft permit, because the discharge data indicate that the discharge has a reasonable potential to cause or contribute to a violation of water quality standards for these pollutants. As described above, limits were calculated using National Recommended Water Quality Criteria, as required by the Massachusetts Water Quality Standards, at 314 CMR.§ 4.05(5)(e). If the recalculated value was more stringent than the existing limit, it was used. If the existing limit was more stringent it was used, consistent with the antibacksliding requirements of CWA § 402(o). The receiving water has been identified on the Massachusetts and Rhode Island § 303(d) lists as being in nonattainment for metals, and establishing less stringent limits would not comply with the exception to the antibacksliding prohibition provided by CWA §§ 402(o)(1) and 303(d)(4). Furthermore, none of the other antibacksliding exceptions in § 402(o)(2) applies. The calculated limits are as follows:

Copper

Hardness = 100 mg/l
Chronic Criteria (total recoverable) = 9.3 ug/l
Acute Criteria (total recoverable) = 14.0 ug/l
Dilution Factor = 1.06 (see Attachment B for calculations)

Monthly Average Limit = (chronic criteria)(dilution factor)
= (9.3 ug/l)(1.06) = 9.9 ug/l

Daily Maximum Limit = (acute criteria)(dilution factor)
= (14.0 ug/l)(1.06) = 14.8 ug/l

Aluminum

Chronic Criteria= 87 ug/l
Acute Criteria = 750 ug/l
Dilution Factor (DF)= 1.06 (see Attachment B for dilution calculations)

Monthly Average Limit = (chronic criteria)(dilution factor) = (87 ug/l)(1.06) = 92 ug/l

Daily Maximum Limit = (acute criteria)(dilution factor) = (750 ug/l)(1.06) = 795 ug/l

Since the calculated daily maximum limit is higher then the daily maximum limit in the current permit, the current permit limit has been maintained in accordance with antidegradation requirements.

Zinc

Hardness = 100 mg/l
Chronic Criteria (total recoverable) = 119.8 ug/l
Acute Criteria (total recoverable) = 119.8 ug/l
Dilution Factor = 1.06 (see Attachment B for calculations)

Monthly Average Limit = (chronic criteria)(dilution factor)
= (119.8 ug/l)(1.06) = 127.0 ug/l

Daily Maximum Limit = (acute criteria)(dilution factor)
= (119.8 ug/l)(1.06) = 127.0 ug/l

Lead

Hardness = 100 mg/l
Chronic Criteria (total recoverable) = 3.2 ug/l
Acute Criteria (total recoverable) = 81.6 ug/l
Dilution Factor = 1.06 (see Attachment B for calculations)

Monthly Average Limit = (chronic criteria)(dilution factor)
= (3.2 ug/l)(1.06) = 3.4 ug/l

Daily Maximum Limit = (acute criteria)(dilution factor)
= (81.6 ug/l)(1.06) = 86.5 ug/l

For iron, the reported effluent iron concentrations range from 62 ug/l to 182 ug/l (see Attachment A). The chronic water quality criterion is 1,000 ug/l; there is no acute criterion. Since the reported effluent concentrations are significantly less than the criteria, there is no reasonable potential for the discharge of iron to cause or contribute to a violation of water quality standards, and a limit has not been included in the permit. Effluent monitoring has been dropped from the permit.

While both Massachusetts and Rhode Island water quality criteria for metals are based on dissolved metals, national guidance recommends that permit limits be based on total recoverable metals and not dissolved metals. Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from a dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the inverse of the conversion factor (the conversion

factor converts a criteria based on total metals to a criteria based on dissolved metals) is used in accordance with the EPA Metals Translator Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA-823-B-96-007).

The permit specifies the Furnace Atomic Absorption (AA) method for measuring lead, copper and cadmium. These determinations were made from the minimum levels (MLs) that this method provides for each parameter. EPA's definition of the ML is given here again as "the level at which the entire analytical system shall give recognizable signal and acceptable calibration points". For any of these metals, any effluent value less than its corresponding ML shall be recorded as zero.

- Whole Effluent Toxicity:

Massachusetts' Water Quality Standards contain a narrative toxicity criterion which states that "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife." 314 CMR 4.05(5)(e).

National studies conducted by the EPA have demonstrated that industrial and domestic sources contribute toxic constituents, such as metals, chlorinated solvents, aromatic hydrocarbons, and others to POTWs. The impacts of such complex mixtures are often difficult to assess. Therefore, the toxicity of several constituents in a single effluent can only be accurately examined by whole effluent toxicity (WET) testing. Furthermore, 40 CFR 122.44 (d) requires WET limits in NPDES permits when the permittee has a "reasonable potential" to cause toxicity.

The low dilution factor calculated for the receiving water at the North Attleborough treatment plant's outfall contributes to a "reasonable potential" that the discharge could cause an excursion of the no toxics provision in the State's regulations. Inclusion of the whole effluent toxicity limit in the draft permit will ensure compliance with the State's narrative water quality criterion of "no toxics in toxic amounts". Therefore, based on the potential for toxicity, water quality standards, and available dilution, the draft permit includes chronic and acute whole effluent toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784- July 24, 1985. See also EPA's Technical Support Document for Water Quality-Based Toxics Control, EPA/505/1-90-001.) Attachment B contains the calculation for chronic whole effluent toxicity, which is based on available dilution.

The Chronic No Observed Effect Concentration (C-NOEC) limitation in the draft permit prohibits chronic adverse effects (e.g., on survival, growth, and reproduction) when aquatic organisms are exposed to the POTW discharges at the calculated available dilution. The LC50 limitations prohibits acute effects (lethality), to more than 50% of the test organisms when exposed to undiluted POTW effluent for 48 hours.

The draft permit calls for modified acute and chronic toxicity tests using one specie, the Ceriodaphnia dubia. These tests shall be conducted four times per year. Toxicity tests will be conducted on the second Tuesday of the months of February, May, August, and November. See the Toxicity Testing Protocol in Attachment A of the draft permit for a more complete description of the testing requirements. The test results shall be submitted by the last day of the month following

the test.

## E. Other Monitoring Requirements.

The effluent monitoring requirements have been specified in accordance with 40 CFR 122.41(j), 122.44 (i) and 122.48 to yield data representative of the discharge.

## V. Pretreatment Program.

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR Section 122.44 (j), 40 CFR Section 403 and Section 307 of the Act. The Town of North Attleborough's pretreatment program received EPA approval on September 30, 1985 and, as a result, appropriate pretreatment program requirements were incorporated into the current permit which were consistent with that approval and federal pretreatment regulations in effect when the permit was issued.

In the reissued permit, activities that the permittee must address if applicable include, but are not limited to, the following: (1) implement and enforce specific effluent limits (technically-based local limits); (2) revise the local sewer-user ordinance or regulation to be consistent with federal regulations; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of and track significant industrial users.

These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices. Lastly, the permittee must continue to submit, annually by March 1st, a pretreatment report detailing the

## VI. Operation and Maintenance

Regulations regarding proper operation and maintenance are found at 40 CFR § 122.41(e). These regulations require, "that the permittee shall at all times operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The treatment plant and collection system are included in the definition "facilities and systems of treatment and control"and are therefore subject to proper operation and maintenance requirements.

Similarly, permittees have a "duty to mitigate" pursuant to 40 CFR §122.41(d). This requires the permittees to "take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment."

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.D, I.E, and I.F of the Draft Permit. These requirements include: reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, developing and maintaining an inflow and infiltration (I/I) control program , and maintaining alternate power

where necessary.

Because Plainville owns and operates a collection system that discharges to North Attleborough's treatment plant, this municipality has been included as a co-permittee for the specific permit requirements discussed in the paragraph above.

The MassDEP has stated that inclusion of the I/I conditions in the draft permit shall be a standard State Certification requirement under Section 401 of the Clean Water Act and 40 CFR §124.55(b).

## VII. Sludge Conditions

Section 405(d) of the CWA requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator are subject to Part 503 technical standards. Part 503 regulations have a self implementing provision, however, the CWA requires implementation through permits. Domestic sludge which is disposed of in a municipal solid waste landfill is in compliance with Part 503 regulations provided that the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 C.F.R. Part 258.

The draft permit requires that sewage sludge use and disposal practices meet Section 405(d) Technical Standards of the CWA. In addition, the EPA Region I – NPDES Permit Sludge Compliance Guidance document dated November 4, 1999 is available for use by the permittee in determining its appropriate sludge conditions for its chosen method of sludge disposal.

The North Attleborough facility generates sludge consisting of municipal and industrial waste and sends it out for disposal. The draft permit requires that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA New England has included with the draft permit a 72-page *Sludge Compliance Guidance* document for use by the permittee in determining their appropriate sludge conditions for their chosen method of sludge disposal.

The permittee is also required to submit to EPA an annual report containing the information specified in the *Sludge Compliance Guidance* document for the permittee's chosen method of sludge disposal.

## VIII. State Certification Requirements.

The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the State pursuant to CWA § 401(a)(1) and 40 CFR § 124.53 and expects that the draft permit will be certified. EPA also expects that Rhode Island will be commenting on the permit pursuant to its authorities under CWA § 401(a)(2).

## IX. Public Comment Period, Public Hearing, and Procedures for Final Decision.

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full before the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection "CMP", Region 1, 1 Congress Street, Suite 1100, Boston, MA 02114-2023. Any person, prior to such date, may submit a request in writing to EPA and the state agency for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing.

A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office. Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

## X. EPA Contact.

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

David Pincumbe
Municipal Permits Branch (CMP)
Office Of Ecosystem Protection
US Environmental Protection Agency
Congress Street, Suite 1100
Boston, MA 02114-2023
Tele: (617) 918-1695

Paul Hogan, Chief
Surface Water Permit Program
Division of Watershed Management
Department of Environmental Protection
627 Main Street, Second Floor
Worcester, MA 01608
Tele: (508) 767-2796

June , 2006
Date

Linda M. Murphy, Director
Office of Ecosystem Protection

Attachment A
Effluent Data

| Month | Flow (MGD) | BOD (mg/l) | | TSS (mg/l) | | Ammonia (mg/l) | | Total Nitrogen (mg/l) | Phosphorus (mg/l) | | Fecal Coliform (CFU/100ml) | | DO (mg/l) | WET ceriodaphnia (% effluent) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ave | ave | max | ave | max | ave | max | max | ave | max | ave | max | ave | LC50 | NOEC |
| Jan 03 | 5.14 | 29.3 | 82.4 | 20.1 | 39.9 | 5 | | 9 | | 1.80 | 4 | 33 | 6.6 | | |
| Feb 03 | 4.13 | 19.0 | 30.2 | 10.9 | 40.4 | 7 | | 19 | | 1.20 | 5 | 115 | 6.1 | 100 | 100 |
| Mar 03 | 3.07 | 13.3 | 14.8 | 6.0 | 11.0 | 4 | | 12 | | 2.50 | 11 | 178 | 6.1 | | |
| Apr 03 | 4.85 | 12.8 | 30.8 | 6.7 | 13.2 | 2 | | 7 | | 1.10 | 2 | 100 | 6.3 | | |
| May 03 | 6.13 | 4.4 | 9.8 | 5.1 | 10.2 | 0 | | 17.2 | 1.0 | 1.2 | 1 | 5 | 7.9 | >100 | 100 |
| June 03 | 4.36 | 5.0 | 9.1 | 4.8 | 12.9 | 0.3 | 0.6 | 9 | 0.7 | 0.8 | 1 | 7 | 6.2 | | |
| July 03 | 3.90 | 5.3 | 8.0 | 5.2 | 11.6 | 0.5 | 1.5 | 8.4 | 0.7 | 1.0 | 3 | 3 | 6.2 | | |
| Aug 03 | 3.96 | 4.5 | 7.5 | 4.1 | 5.8 | 0.3 | 1.7 | 10 | 0.6 | 0.0 | 2 | 29 | 6.6 | 100 | 100 |
| Sept 03 | 3.52 | 4.2 | 7.7 | 4.7 | 14.5 | 0.2 | 0.4 | 11 | 0.9 | 1.0 | 1 | 4 | 6.0 | | |
| Oct 03 | 3.60 | 4.3 | 7.8 | 6.5 | 11.8 | | | 16 | 0.8 | 1.0 | 3 | 53 | 7.0 | | |
| Nov 03 | 3.92 | 7.8 | 12.6 | 8.2 | 14.4 | 1 | | 8 | | 2.1 | 7 | 105 | 7.0 | >100 | 100 |
| Dec 03 | 5.79 | 21.5 | 86.2 | 17.3 | 86.8 | 4 | | 13 | | 1.9 | 10 | 11200 | 4.4 | | |
| Jan 04 | 4.41 | 10.7 | 14.5 | 5.1 | 10.4 | 6 | | 10 | | 1.9 | 2 | 88 | 5.8 | | |
| Feb 04 | 3.51 | 9.1 | 10.8 | 2.9 | 4.8 | 8 | | 16 | | 2.1 | 2 | 73 | 6.4 | 100 | 100 |
| Mar 04 | 3.47 | 8.2 | 11.4 | 2.4 | 3.7 | 8 | | 19 | | 2.0 | 1 | 0? | 6.2 | | |
| Apr 04 | 6.55 | 15.6 | 57.6 | 19.5 | 139.7 | 1 | | 6 | | 1.0 | 5 | 5200 | 5.2 | | |
| May 04 | 4.19 | 9.1 | 29.5 | 11.0 | 106.0 | 0 | | 6 | 1.10 | 1.3 | 2 | 18 | 6.8 | >100 | 100 |

Effluent Data

| Month | Flow (MGD) | BOD (mg/l) | | TSS (mg/l) | | Ammonia (mg/l) | | Total Nitrogen (mg/l) | Phosphorus (mg/l) | | Fecal Coliform (CFU/100ml) | | DO (mg/l) | WET ceriodaphnia (% effluent) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ave | ave | max | ave | max | ave | max | max | ave | max | ave | max | ave | LC50 | NOEC |
| June 04 | 3.11 | 4.9 | 8.7 | 5.8 | 15.0 | 0.2 | 0.6 | 9 | 0.9 | 1.1 | 1 | 4 | 6.9 | | |
| July 04 | 2.80 | 3.2 | 4.3 | 3.1 | 5.0 | 0.1 | 0.3 | 9.6 | 0.9 | 1.1 | 2 | 3 | 6.8 | | |
| Aug 04 | 3.05 | 3.8 | 4.6 | 3.0 | 6.6 | 0.0 | 0.1 | 10 | 0.8 | 1.0 | 1 | 5 | 6.4 | 100 | 100 |
| Sept 04 | 3.09 | 3.5 | 4.6 | 3.3 | 5.3 | 0.0 | 0.0 | 10 | 0.8 | 1.1 | 4 | 25 | 6.5 | | |
| Oct 04 | 3.12 | 2.5 | 3.6 | 1.7 | 2.5 | | | 8.4 | 0.7 | 0.7 | 2 | 3 | 6.4 | | |
| Nov 04 | 3.11 | 2.9 | 4..8 | 2.2 | 6.0 | 0.2 | | 8 | | 0.7 | 2 | 6 | 6.6 | 100 | 100 |
| Dec 04 | 4.69 | 4.2 | 6.9 | 2.8 | 3.9 | 0.4 | | 2 | | 1.4 | 9 | 43 | 7.9 | | |
| | | | | | | | | | | | | | | | |
| Limits | | | | | | | | | | | | | | | |
| 5/1-5/31 | 4.61 | 5.0 | 15.0 | 7.0 | 15.0 | 3 | --- | --- | 1 | 2 | 200 | 400 | 6.0 | 100 | 94 |
| 6/1-10/31 | 4.61 | 5.0 | 15.0 | 7.0 | 15.0 | 1 | 2 | --- | 1 | 2 | 200 | 400 | 6.0 | 100 | 94 |
| 11/1-11/30 | 4.61 | 15.0 | 30.0 | 15.0 | 30.0 | 7 | --- | --- | --- | --- | 200 | 400 | 6.0 | 100 | 94 |
| 12/1-4/30 | 4.61 | 15.0 | 30.0 | 15.0 | 30.0 | 10 | --- | --- | --- | --- | 200 | 400 | 6.0 | 100 | 94 |

Effluent Data

| Month | Al (ug/l) | | Cu (ug/l) | | CN (ug/l) | | Ni (ug/l) | Zn (ug/l) | Cr (ug/l) | Cd (ug/l) |
|---|---|---|---|---|---|---|---|---|---|---|
| | ave | max | ave | max | ave | max | max | max | max | max |
| Feb 03 | 614 | 614 | 104 | 104 | 0 | 0 | | | | |
| Mar 03 | 83 | 83 | 25 | 25 | 0 | 0 | 0 | 23 | 0 | 0 |
| Apr 03 | 179 | 179 | 17 | 17 | 0 | 0 | | | | |
| May 03 | 101 | 101 | 82 | 82 | 0 | 0 | 0 | 25 | 0 | 0 |
| June 03 | 398 | 398 | 34 | 34 | 0 | 0 | | | | |
| July 03 | 332 | 332 | 60 | 60 | 0 | 0 | 0 | 48 | 0 | 0 |
| Aug 03 | 111 | 111 | 28 | 28 | 0 | 0 | | | | |
| Sept 03 | 99 | 99 | 47 | 47 | 0 | 0 | 0 | 31 | 0 | 0 |
| Oct 03 | 293 | 293 | 29 | 29 | 0 | 0 | | | | |
| Nov 03 | 205 | 205 | 33 | 33 | 0 | 0 | 0 | 35 | 0 | 0 |
| Dec 03 | 92 | 92 | 20 | 20 | 0 | 0 | | | | |
| Jan 04 | 36 | 72 | 23 | 23 | 0 | 0 | 0 | 31 | 0 | 0 |
| Feb 04 | 65 | 65 | 0 | 0 | 0 | 0 | | | | |
| Mar 04 | 0 | 0 | 6 | 12 | 0 | 0 | 0 | 40 | 0 | 0 |
| Apr 04 | 85 | 85 | 19 | 19 | 0 | 0 | | | | |
| May 04 | 115 | 115 | 32 | 32 | 0 | 0 | 0 | 42 | 0 | 0 |
| June 04 | 524 | 524 | 48 | 48 | 0 | 0 | | | | |
| July 04 | 80 | 80 | 38 | 38 | 0 | 0 | 0 | 41 | 0 | 0 |
| Aug 04 | 84 | 84 | 21 | 21 | 0 | 0 | | | | |
| Sept 04 | 83 | 83 | 27 | 27 | 0 | 0 | 0 | 36 | 0 | 0 |
| Oct 04 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Nov 04 | 128 | 128 | 18 | 18 | 0 | 0 | 0 | 67 | 0 | 0 |
| Dec 04 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Ave | 149 | | 30 | | 0 | | | | | |
| Limits | 140 | 140 | 20 | 20 | 5 | 22 | --- | --- | --- | --- |

July 03, Fe=182 ug/l, Pb= 13 ug/l
July 04, Fe= 62 ug/l, Pb= 3 ug/l

ATTACHMENT - B
NPDES Permit No. MA0101036
North Attleborough, Massachusetts

Dilution calculations:

Design flow of the plant : 4.61 mgd = 7.14 cfs

Drainage Area Considered: 10.76 square miles

7Q10 flow factor : 0.043 cfs/square miles

Calculated 7Q10 : 0.463 cfs

Dilution Factor: $\frac{Qr + Qe}{Qe}$

Qr = Receiving water flow = 7Q10 = 0.463 cfs

Qe = Effluent flow = design flow = 7.14 cfs

dilution Factor = 1.06

LC50≥100%

1/Dilution factor X 100 = 94% (Receiving Water Concentration)

NOEC ≥ RWC

NOEC ≥ 94%

30Q10 flow factor = 7Q10 x 2.37 (based upon US Geological Survey flow gage records)

Ratio = 30Q10/7Q10 = 3.06/1.29 = 2.37 (for period of November-May)

30Q10 flow = 1.1 cfs

**EXHIBIT B**

Response to Comments on Draft NPDES Permit MA0101036

## 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 planed 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.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 photoplankton 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 1st 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[1] | RI Water Quality Standard | % Exceedance of RI Water Quality Standards |
|---|---|---|---|
| Phosphorus | 0.177 mg/l | 0.025 mg/l[2] | 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% |

[1]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.

[2]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 |
|---|---|---|
| **TEN MILE RIVER BASIN** | | |
| RI0004009L-01A | Turner Reservoir | LOW DO, Phosphorus, Lead (Pb), Copper (Cu)<br>PATHOGENS |
| RI0004009L-01B | Turner Reservoir | LOW DO, Phosphorus, Lead (Pb), Copper (Cu)<br>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.

**EXHIBIT C**

Written correspondence of RI Department of Environmental Management containing comments on Draft NPDES Permit MA0101036, Dated September 12, 2006

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

September 12, 2006

David Pincumbe
Municipal Permits Branch (CMP)
Office Of Ecosystem Protection
US Environmental Protection Agency
Congress Street, Suite 1100
Boston, MA 02114-2023

**Re: Draft NPDES Permit for the North Attleborough WWTF No. MA0101036 and Attleboro Water Pollution Control Facility, NPDES Permit No. MA0100595**

Dear Mr. Pincumbe:

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[1] | RI Water Quality Standard | % Exceedance of RI Water Quality Standards |
|---|---|---|---|
| Phosphorus | 0.177 mg/l | 0.025 mg/l[2] | 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% |

[1]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.

[2]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 |
|---|---|---|
| **TEN MILE RIVER BASIN** | | |
| 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.

Sincerely,

Angelo Liberti
Chief of Surface Water Protection

enclosure

cc: Paul Hogan, MADEP

***Evaluation of the Impact of the Draft North Attleborough WWTF and Attleboro WPCF NPDES Permits of Water Quality at the MA/RI State Line***

## Determine 7Q10 Flow at the MA/RI State Line

Data from USGS Gauge 01109403 on the Ten Mile River

| | | | |
|---|---|---|---|
| Drainage Area: | 53.1 | miles^2 | From USGS Gauge Data |
| Annual 7Q10 Flow: | 15.56 | cfs | Based on Data from 1988-1993 |
| 7Q10 Flow w/o WWTF Flow: | 2.93648 | cfs | |
| Flow/Area: | 0.055301 | cfs/mile^2 | |
| Ten Mile River Drainage Area in MA: | 49 | miles^2 | From USGS Website |
| Ten Mile River 7Q10 at State Line: | 2.709746 | cfs | |

## Perform Mass Balance for Pollutant Concentrations at the State Line

| | | | |
|---|---|---|---|
| Ten Mile River 7Q10 at State Line: | 2.709746 | cfs | |
| North Attleborough WWTF Design Flow: | 4.61 | MGD | From Draft Permit |
| | 7.13167 | cfs | |
| North Attleborough WWTF Average Flow: | 3.79 | MGD | From 5/01 - 3/06 DMR Data |
| | 5.86313 | cfs | |
| Attleboro WPCF Design Flow: | 8.6 | MGD | From Draft Permit |
| | 13.3042 | cfs | |
| Attleboro WPCF Average Flow: | 4.37 | MGD | From 5/01 - 3/06 DMR Data |
| | 6.76039 | cfs | |

$$\text{Pollutant Concentration at State Line} = \frac{\text{River 7Q10*Upstream Conc.} + \text{NA Design Flow} * \text{NA Conc.} + \text{A Design Flow} * \text{A Conc.}}{\text{River 7Q10} + \text{NA Design Flow} + \text{A Design Flow}}$$

$$= \frac{2.709746 * \text{Upstream Conc.} + 7.13167 * \text{NA Conc.} + 13.3042 * \text{A Conc.}}{23.14561614}$$

## Solve Mass Balance for Various Pollutants:

***Note predicted concentrations for all pollutants are artificially low since the EPA assumption of pollutant concentrations of zero upstream of the North Attleborough WWTF were utilized.***

### Phosphorus:

| | | | |
|---|---|---|---|
| Upstream Concentration: | 0 | mg/l | |
| North Attleborough WWTF Concentration: | 0.2 | mg/l | From Draft Permit |
| Attleboro WPCF Concentration: | 0.2 | mg/l | From Draft Permit |
| Pollutant Concentration at State Line: | 0.176585 | mg/l | |
| Criteria: | 0.025 | mg/l | From RI Water Quality Regs |
| | 606.3409 | % over | |

## Solve Mass Balance for Various Pollutants:

### Copper:

| | | |
|---|---|---|
| Upstream Concentration: | 0 ug/l | |
| North Attleborough WWTF Concentration: | 9.9 ug/l | From Draft Permit |
| Attleboro WPCF Concentration: | 13 ug/l | From Draft Permit |
| Pollutant Concentration at State Line: | 10.52286 ug/l | |
| Criteria: | 9.32 ug/l | From Rhode Island Water Quality Regulation Appendix B at a Hardness of 100 mg/l |
| | 12.90625 % over | |

### Lead:

| | | |
|---|---|---|
| Upstream Concentration: | 0 ug/l | |
| North Attleborough WWTF Concentration: | 3.4 ug/l | From Draft Permit |
| Attleboro WPCF Concentration: | 4.5 ug/l | From Draft Permit |
| Pollutant Concentration at State Line: | 3.634234 ug/l | |
| Criteria: | 3.18 ug/l | From Rhode Island Water Quality Regulation Appendix B at a Hardness of 100 mg/l |
| | 14.28408 % over | |

### Aluminum:

| | | |
|---|---|---|
| Upstream Concentration: | 0 ug/l | |
| North Attleborough WWTF Concentration: | 92 ug/l | From Draft Permit |
| Attleboro WPCF Concentration: | 122 ug/l | From Draft Permit |
| Pollutant Concentration at State Line: | 98.47334 ug/l | |
| Criteria: | 87 ug/l | From Rhode Island Water Quality Regulation Appendix B |
| | 13.18774 % over | |

### Zinc:

| | | |
|---|---|---|
| Upstream Concentration: | 0 ug/l | |
| North Attleborough WWTF Concentration: | 127 ug/l | From Draft Permit |
| Attleboro WPCF Concentration: | 167.7 ug/l | From Draft Permit |
| Pollutant Concentration at State Line: | 135.5262 ug/l | |
| Criteria: | 119.82 ug/l | From Rhode Island Water Quality Regulation Appendix B at a Hardness of 100 mg/l |
| | 13.10813 % over | |

### Cadmium:

| | | |
|---|---|---|
| Upstream Concentration: | 0 ug/l | |
| North Attleborough WWTF Concentration: | 0.3 ug/l | From Draft Permit |
| Attleboro WPCF Concentration: | 0.4 ug/l | From Draft Permit |
| Pollutant Concentration at State Line: | 0.322358 ug/l | |
| Criteria: | 0.271 ug/l | From Rhode Island Water Quality Regulation Appendix B at a Hardness of 100 mg/l |
| | 18.95139 % over | |

### Cyanide:

| | | |
|---|---|---|
| Upstream Concentration: | 0 ug/l | |
| North Attleborough WWTF Concentration: | 5 ug/l | From Draft Permit |
| Attleboro WPCF Concentration: | 6.3 ug/l | From Draft Permit |
| Pollutant Concentration at State Line: | 5.161876 ug/l | |
| Criteria: | 5.2 ug/l | From Rhode Island Water Quality Regulation Appendix B |
| | -0.733146 % over | |