

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

STATEMENT OF BASIS

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
MODIFICATION TO DISCHARGE TO WATERS OF THE UNITED STATES**

NPDES PERMIT NO.: MA0101036

NAME AND ADDRESS OF APPLICANT:

**Michael Stankovich
Director of Public Works
Town of North Attleborough
240 Smith Street
North Attleborough, MA 02760**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

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

RECEIVING WATER: Ten Mile River

CLASSIFICATION: B (Warm Water Fishery)

I. Proposed Action

On January 4, 2007, the U.S. Environmental Protection Agency (“EPA”) and the Massachusetts Department of Environmental Protection (“MassDEP”) jointly issued an NPDES permit to the Town of North Attleborough (“Town”) for discharges from the North Attleborough Wastewater Treatment Facility to the Ten Mile River (“Final Permit”). The Final Permit superseded the prior permit issued on September 30, 1999.

Petitions for review of the Final Permit were timely filed with the U.S. EPA Environmental Appeals Board (“EAB”) by the Rhode Island Department of Environmental Management (“RI-

DEM”) and by the Town on February 5 and 8, 2007, respectively.¹ The EAB directed EPA to file a response to the petitions for review no later than March 26, 2007. The EAB subsequently stayed proceedings in this matter to allow the parties an opportunity to negotiate a settlement to the dispute. On September 26, 2007, the parties informed the EAB that they had reached a settlement under which EPA has agreed to withdraw the contested phosphorus effluent limit of 0.2 mg/l and modify the permit to include a more stringent phosphorus effluent limit of 0.1 mg/l. *See* 40 C.F.R. § 124.19(d) (affording the permit issuer the absolute right to withdraw and modify the permit at any time prior to the EAB rendering a decision to grant or deny review of a permit decision). Upon the effective date of the permit modification, or as soon as possible thereafter, the Town and RI-DEM have agreed to withdraw their respective appeals in their entirety. *See* Joint Status Report and Third Motion to Extend Stay of the Proceedings, dated September 26, 2007. *See also* EAB Third Order Staying Proceedings, dated September 28, 2007.

This Statement of Basis sets forth the record basis for the new total phosphorus limit. Comments outside the scope of the revised total phosphorus limit shall not be considered. *See* 40 C.F.R. § 124.5(c).

II. Permit Basis and Explanation of Effluent Limitation Derivation

Phosphorus:

Massachusetts Water Quality Standards do not contain a numeric criterion for total phosphorus. The narrative criterion for nutrients is found at 314 C.M.R. 4.05(5)(c), which provides, in its entirety, as follows:

Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 C.M.R. 4.00. Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses. Human activities that result in the nonpoint source

¹ These petitions for review have been docketed as appeal number NPDES 07-02 in the case of RI-DEM and NPDES 07-04 in the case of the Town. Under federal regulations governing the NPDES permitting program, the filing of a petition for review stays the entire permit for the duration of proceedings before the EAB except to the extent that EPA issues a notice of uncontested and severable conditions. Such conditions become effective after 30 days notice. Pursuant to 40 C.F.R. §§ 124.16(a) and .60(b), EPA issued a notice identifying the following permit conditions as contested: (i) the monthly average nitrogen limit of 8 mg/l; (ii) the seasonal (April 1-October 31) monthly average phosphorus limit of 0.2 mg/l; and (iii) the metals limits in the permit. *See* Notice of Contested and Uncontested Conditions of NPDES Permit MA0101036 (undated). EPA determined the remaining conditions to be uncontested and severable, and they were placed into effect as of May 1, 2007.

discharge of nutrients to any surface water may be required to be provided with cost effective and reasonable best management practices for nonpoint source control.²

MassDEP construes the “highest and best practical treatment” standard for POTWs as a monthly average total phosphorus limit of 0.2 mg/l.

In the absence of a numeric criterion for phosphorus, EPA looks to nationally recommended criteria, supplemented by other relevant materials, such as EPA technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data. *See* 40 C.F.R. § 122.44(d)(1)(vi)(B). EPA has produced several guidance documents which set forth total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts. These guidance documents present protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. It applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll *a*) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same eco-region class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. While reference conditions, which reflect minimally disturbed conditions, will meet the requirements necessary to support designated uses, they may also exceed the water quality necessary to support such requirements.

The 1986 Quality Criteria of Water (“Gold Book”) follows an effects-based approach. It sets forth maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, 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. A more recent technical guidance manual, the Nutrient Criteria Technical Guidance Manual: Rivers and Streams (EPA 2000) (“Nutrient Criteria Technical Guidance Manual”), cites to a range of ambient concentrations drawn from the peer-reviewed scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth commonly associated with eutrophication). This guidance indicates in-stream phosphorus concentrations between 0.01 mg/l and 0.09 mg/l will be sufficient to control periphyton growth and concentrations between 0.035 mg/l and 0.070 mg/l will be sufficient to control plankton (see Table 4 on page 101).

² This language reflects Massachusetts Water Quality Standards as approved by EPA on September 19, 2007. Although the newly approved standards consolidates the provision formerly located at 314 C.M.R. 4.04(5) (“Cultural Eutrophication”) with 314 C.M.R. 4.05(5)(c) (“Nutrients”) and makes certain clarifying revisions to the newly consolidated nutrient criterion, the substantive nutrient-related requirements remain materially unchanged since issuance of the final permit.

EPA has also released recommended 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 free from cultural eutrophication. North Attleborough is within Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criterion for this ecoregion, found in the Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (2000), is 0.024 mg/l.

Unlike Massachusetts, Rhode Island Water Quality Regulations (“RI Regulations”) establish a numeric criterion for nutrients for certain bodies of water:

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. Rule 8.D.(2).

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, the Massachusetts Year 2006 Integrated List of Waters and the Rhode Island 2006 303(d) List of Impaired Waters. The Ten Mile River is listed on the Massachusetts Year 2006 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 (TMDLs) 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 Massachusetts/Rhode Island border, which includes the discharge from the Attleboro treatment plant, is listed as impaired due to unknown toxicity, metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, and noxious aquatic plants. No TMDL has been completed nor is any underway. The free flowing segments of the Ten Mile River in Rhode Island are listed on the State’s 2006 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 dissolved oxygen, and phosphorus.³ Omega Pond is listed for copper, lead and phosphorus.

³ Under Rule 7 of the RI Regulations, a “lake, pond or reservoir” is defined as “any body of water, whether naturally occurring or created in whole or in part, excluding sedimentation control or stormwater retention/detention basins, unless constructed in waters of the State.” The RI-DEM has informed EPA that it interprets its regulations to include the Turner Reservoir and Omega Pond within this broad regulatory definition. *See also* Rule 4 of the RI Regulations (“Liberal Application”) (“The terms and provisions of these rules and regulations shall be liberally construed to allow the Department to effectuate the purposes of state law.”). EPA also notes that RI-DEM characterized the Turner Reservoir and Omega Pond as lakes for the purposes of its 2006 303(d) List of Impaired Waters and its Plan for Managing Nutrient Loading to Rhode Island Waters (February 1, 2005).

Due to the absence of any significant dilution under 7Q10 conditions in the receiving water, the monthly average limit of 0.2 mg/l in the current permit would be expected to exceed the protective values contained in EPA's national technical guidance and the available scientific literature in the record, as well as the EPA recommended criterion. Within this range of concentrations (*e.g.*, 0.01 mg/l to 0.1 mg/l), eutrophication is expected to be controlled. To effectively address the documented eutrophication in the Ten Mile River and downstream impoundments, ambient phosphorus concentrations must be brought within this protective range. In order to do so, the permittee's existing phosphorus effluent limits must be made more stringent.

A monthly average total phosphorus effluent limit of 0.1 mg/l has been established from April 1 to October 31 to ensure that the Gold Book recommended value of 0.1 mg/l will not be exceeded in the Massachusetts reaches of the river below the discharge. In addition to being consistent with the Gold Book, 0.1 mg/l limit also falls within the range of effects-based values cited in the Nutrient Criteria Technical Guidance Manual and in the peer-reviewed scientific literature after adjustments are made to account for the differing flow assumptions used to determine those values (*i.e.*, 7Q10 versus 2 or 3-month summer seasonal flows). *See, e.g., Developing Nutrient Targets to Control Benthic Chlorophyll Levels in Streams: A Case Study of the Clark Fork River* (Dodds *et al.*, 1997) at p. 1739 (citing use of flows from June 21 to September 21 to calculate recommended values); *Suggested Classification of Stream Trophic States: Distributions of Temperate Stream Types by Chlorophyll, Total Nitrogen, and Phosphorus* (Dodds *et al.*, 1998) (citing use of 2-3 month seasonal means).

EPA also believes that the limit of 0.1 mg/l will ensure attainment of Rhode Island water quality criteria of 0.025 mg/l, which applies to Turner Reservoir downstream of the state line. The Ten Mile River below the discharge receives the discharge from the Attleboro waste water treatment facility and then flows into an impoundment at the Massachusetts/Rhode Island border and then, from the outlet of this impoundment, flows approximately one mile before entering Turner Reservoir. A total phosphorus limit of 0.1 mg/l is also being proposed for the Attleboro waste water treatment facility. The additional drainage area between the Attleboro discharge and Turner Reservoir of approximately 18 square miles adds approximately 3 cfs of additional dilution under 7Q10 flow conditions. Additionally, there will be some natural uptake of phosphorus by the aquatic plant biomass, as would occur in even a high quality receiving water.

III. State Certification Requirements

The staff of the Massachusetts Department of Environmental Protection has reviewed this draft permit modification. EPA has requested permit certification by the State pursuant to CWA § 401(a)(1) and 40 C.F.R. § 124.53 and expects that the draft permit modification will be certified.

IV. Public Comment Period, Public Hearing, and Procedures for Final Decision

All persons, including applicants, who believe the seasonal phosphorus limit of the draft permit modification is inappropriate must raise all issues and submit all reasonably 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 revised seasonal phosphorus limit of the draft permit modification. 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 C.F.R. § 124.19.

V. EPA and MassDEP Contacts

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:

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