



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
1 Congress Street, Suite 1100
BOSTON, MA 02114-2023

July 18, 2007

Arleen O'Donnell, Commissioner
Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Re: Approval of Great, Green, and Bournes Pond Embayment Systems TMDLs for Total Nitrogen

Dear Commissioner O'Donnell:

Thank you for your submission of the TMDL analysis for Great, Green, and Bournes Pond estuaries. This TMDL is the second of the Massachusetts Estuary Project nutrient TMDLs to be reviewed by EPA. We are pleased with this TMDL and the progress the State has made in developing a comprehensive suite of TMDLs for Massachusetts estuaries.

The U.S. Environmental Protection Agency (EPA) has reviewed the document entitled "Great, Green, and Bournes Pond Embayment Systems Total Maximum Daily Loads for Total Nitrogen" (Report number: MA 96-TMDL-6 and Control number 181.0). It is my pleasure to approve the 5 TMDLs addressed by this submission. EPA has determined, as set forth in the enclosed review document, that these TMDLs meet the requirements of Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 Code of Federal Regulations (CFR) part 130.

We commend your efforts to include waterbodies that were identified as impaired by nutrients but not yet placed on the State's impaired waters list. Early intervention will help restore water quality and help prevent further degradation of Perch Pond, the Coonamesset River, and Israel's Cove.

My staff and I look forward to continued cooperation with the MassDEP in exercising our shared responsibility of implementing the requirements under Section 303(d) of the CWA.

If you have any questions regarding this approval, please contact Steve Silva at (617) 918-1561 or have your staff contact Mary Garren at (617) 918-1322 or Mike Hill at (617) 918-1398.

Sincerely,

Stephen S. Perkins, Director
Office of Ecosystem Protection

Enclosure

cc: Glenn Haas
Rick Dunn
Russ Isaac
Stephen Silva
Mary Garren
Mike Hill

EPA NEW ENGLAND'S TMDL REVIEW

DATE: July 18, 2007

TMDL: Great, Green, and Bourne Pond Embayment Systems TMDLs for Total Nitrogen

STATUS: Final

IMPAIRMENT/POLLUTANT: 5 TMDLs for Total Nitrogen; 3 segments are on the 2002 and 2004 CWA § 303(d) lists; 1 segment is currently listed but not for nutrient impairment; 1 segment is not currently listed; The two segments recently identified as nutrient impaired will be placed on subsequent CWA § 303(d) lists (See Attachment 1)

BACKGROUND:

The Massachusetts Department of Environmental Protection (MassDEP) released a draft TMDL dated February 1, 2006 for public review on February 8, 2006. Key stakeholders received copies of the document in the mail. The draft TMDL was posted on the Department's web site on that date as well. A public meeting was held in the Town of Falmouth on February 28, 2006. The public comment period was extended and comments accepted until March 17, 2006. MassDEP prepared a response to public comment which was submitted along with the final TMDL to EPA. All comments from the public were taken into account in the Response to Comments and the final TMDL submission. The final submission to EPA was sent on June 2, 2006. In addition to the TMDL itself, the submittal included, either directly or by reference, the following additional documents:

- Great, Green, and Bourne Pond Embayment Systems TMDLs for Total Nitrogen, April 6, 2006. (Report # 96-TMDL-6, Control # 181.0)
- Response to Comments, Draft TMDL Report for Great, Green, and Bourne Ponds dated October 19, 2005, MassDEP, June 2, 2006.
- Massachusetts Estuaries Project, Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for Great/Perch Pond, Green Pond and Bourne Pond, Falmouth, Massachusetts. UMASS Dartmouth S Mast and MassDEP, final report, April 2005.
- Massachusetts Estuaries Project Embayment Restoration and Guidance for Implementation Strategies, MassDEP, 2003.
<http://www.mass.gov/dep/water/resources/restore.htm>
- Massachusetts Year 2006 Integrated List of Waters, proposed listing of the condition of Massachusetts' waters pursuant to Sections 303(d) and 305(b) of the Clean Water Act (CN 262.20), April 2006. <http://www.mass.gov/dep/water/resources/tmdls.htm>

The following review explains how the TMDL submission meets the statutory and regulatory requirements of TMDLs in accordance with § 303(d) of the Clean Water Act and EPA's implementing regulations in 40 CFR Part 130.

REVIEWER: Mary Garren, telephone number: (617) 918-1322
Mike Hill, telephone number: (617) 918-1398

REVIEW ELEMENTS OF TMDLS

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. § 130 describe the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

1. Description of Waterbody, Pollutant of Concern, Pollutant Sources and Priority Ranking

*The TMDL analytical document must identify the waterbody as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the waterbody. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and, (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or chlorophyll *a* and phosphorus loadings for excess algae.*

The document for the Great, Green, and Bournes Pond Embayment Systems TMDLs for total nitrogen describes the water body segments, nature and cause or threat of the impairments. Impairments include loss of eelgrass beds, increased algae and algae blooms, low dissolved oxygen levels and reduced benthic animal diversity. The TMDLs identify excess total nitrogen as the cause of the impairments. The document identifies a total of five segments needing a TMDL for nitrogen. Four of the impaired segments for total nitrogen are included on Massachusetts' 2002 and 2004 Clean Water Act (CWA) §303(d) list (List) also known as Category 5 of the 2004 CWA §§303(d) and 305(b) lists (Integrated List). These four impaired segments are Great Pond and Perch Pond, in the Great Pond System, Green Pond, in the Green Pond System, and Bournes Pond, in the Bournes Pond System. While Perch Pond was listed, it was not on the 303(d) list due to an identified nutrient impairment. This impairment came to light during TMDL development. These four waters are also impaired for pathogens. The four ponds will remain on the in Category 5 due to their pathogen impairments. One segment was not included on the Massachusetts' 2004 List. It is Israel's Cove located in the Bournes Pond System. This segment was determined to be impaired for nitrogen during the development of

the nitrogen TMDLs and will be placed on subsequent Lists (See Attachment 1). Israel's Cove has not been identified as impaired for pathogens. MassDEP identifies the Coonamessett River as part of Great Pond for the purposes of this TMDL. Pages 1 to 9 of the Great, Green, and Bourne Pond Embayment Systems TMDL for total nitrogen provide a good overview of the description and priority ranking of the waterbodies, pollutant of concern and pollutant sources.

MassDEP has determined that all nutrient impaired segments in the Commonwealth are a high priority (see Massachusetts Integrated List of Waters at: <http://www.mass.gov/dep/water/priorities/priorities.htm>). Approximately 41% of the Commonwealth's assessed waters are impaired for nutrients and its secondary effects of low dissolved oxygen and noxious aquatic plants.

Assessment:

EPA Region 1 concludes that the TMDL document meets the requirements for describing the TMDL waterbody segment, pollutants of concern, identifying and characterizing sources of impairment, and priority ranking.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribe water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable water quality standard is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

The TMDL document identifies several provisions of the Commonwealth's water quality standards that are relevant to the cultural eutrophication in these waters, including numeric criteria for dissolved oxygen and narrative criteria for aesthetics and nutrients. As stated on pages 9 and 10 of the TMDL document and in EPA guidance, individual estuarine and coastal marine waters tend to have unique characteristics and therefore, individual waterbody criteria are typically required. For example, the loading of nitrogen that a specific waterbody can handle without becoming impaired varies. Factors that influence the effect of nitrogen include: flow velocity, tidal hydraulics, dissolved oxygen, and sediment adsorption and desorption of nitrogen.

The Massachusetts Estuaries Project analytical method is the Linked Watershed-Embayment Management Model (Linked Model). The Model is discussed on pages 10-17 of the TMDL document. The model links watershed inputs with embayment circulation and nitrogen characteristics, and:

- requires site-specific measurements within each watershed and embayment;
- uses realistic "best-estimates" of N loads from each specific type of land-use;

- spatially distributes the watershed nitrogen loading to the embayment;
- accounts for nitrogen attenuation during transport to the embayment;
- includes a 2D or 3D embayment circulation model depending on embayment structure;
- accounts for basin structure, tidal variations, and dispersion within the embayment;
- includes nitrogen regenerated within the embayment;
- is validated by both independent hydrodynamic, nitrogen concentration, and ecological data; and
- is calibrated and validated with field data prior to generation of additional scenarios.

The target threshold nitrogen concentrations which have been determined to be protective for each embayment system, as measured at the appropriate sentinel stations, are presented in Table 2 (page 13 of the TMDL document). Great Pond, Perch Pond, and the Coonamessett River have a threshold nitrogen concentration of 0.404 mg/L. Green Pond has a threshold nitrogen concentration of 0.421 mg/L. Bournes Pond and Israels Cove have a threshold concentration of 0.454 mg/L. These concentrations, as measure in the water column, will restore or maintain high habitat quality in these embayments.

Assessment:

EPA Region 1 concludes that MassDEP has properly presented its water quality standards, and has made a reasonable interpretation of its water quality standards for the designated uses of Great, Green, and Bournes Pond embayment systems. The use of the Linked Model, the description of the process in the TMDL document and the companion Technical Report to this TMDL document (Report # 96-TMDL-6, Control # 181.0) adequately demonstrate the basis for deriving the target nitrogen loads and demonstrating that the targets will achieve water quality standards. EPA concludes that Massachusetts has properly presented its numeric water quality standards and has made a reasonable and appropriate interpretation of its narrative water quality criteria for the designated uses of the Great, Green, and Bournes Pond embayment systems.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating water quality standards (40 C.F.R. § 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. § 130.2(i)). The TMDL submittal must identify the waterbody’s loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for EPA’s review of the load and wasteload allocations which are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 C.F.R. § 130.7(c)(1)). The critical condition can be thought of as the “worst case” scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the

water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards.

The Linked Model, as stated in the TMDL document, is a robust and fairly complicated model that determines an embayment's nitrogen sensitivity, nitrogen threshold loading levels (TMDL) and response to changes in the loading rate. A key feature of the approach involves the selection of sentinel sub-embayments that have the poorest water quality in the embayment system. If these degraded areas come into compliance with the TMDL, other areas will also achieve water quality standards for nitrogen in the system. This approach captures the critical targets needed to address the impaired segments.

Percent reductions of existing nitrogen loads necessary to meet the target threshold loads range from 55% in Green Pond to 87% in Israel's Cove. These loads represent one scenario using the Linked Model. The TMDL value for each sub-embayment represents the sum of the calculated target threshold load (from controllable watershed sources), atmospheric deposition load, and benthic flux load from sediment sources. TMDLs range from 0.4 kg/day in Israel's Cove to 46.3 kg/day in Green Pond (pages 17-18 and page 23 of the TMDL document).

Assessment:

The TMDL document explains and EPA concurs with the approach for applying the Linked Model to specific embayments for the purpose of developing target nitrogen loading rates and in identifying sources of needed nitrogen load reduction. EPA believes that this approach is reasonable because the factors influencing and controlling nutrient impairment were well justified.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 C.F.R. § 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. § 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable water quality standard, and all nonpoint and background sources will be removed.

Using the Linked Model, MassDEP has identified the portion of the loading capacity allocated to existing and future non-point sources necessary to meet water quality standards. These non-point sources are primarily septic systems, natural background, non-regulated storm water runoff (including nitrogen from fertilizers), waste water treatment facilities that discharge to groundwater, atmospheric deposition and nutrient-rich sediments.

MassDEP adequately describes and sets forth the load allocations for cultural and natural background sources (See pages 15-16 and 19-20, and Appendix B of the TMDL document). EPA concludes that the load allocations are adequately specified for the TMDLs at levels necessary to attain water quality standards.

The TMDL states that the load allocations represent one loading alternative, and that other alternatives may be possible that could reduce nitrogen concentrations in both the sentinel systems and sub-embayments. Adjustments to loading scenarios would not require submission to EPA for review and approval of a revised TMDL, provided that such adjustments remain fully protective of all impaired segments, the sum of any adjusted LAs is less than or equal to the approved TMDL, and there is an opportunity for public review and comment. Any reallocations from LAs to WLAs (based on additional assumed reductions in LAs) must be reflected in a revised TMDL, submitted to EPA for review and approval, to ensure that there is a reasonable assurance that the modified LAs could be achieved.

Assessment:

EPA concludes that the TMDL document sufficiently addresses the calculation of the load allocations.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 C.F.R. § 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable water quality standard, and all point sources will be removed.

In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. But it is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the State/Tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

EPA interprets 40 CFR 130.2(h) to require that allocations for NPDES regulated discharges of storm water be included in the waste load component of the TMDL. On Cape Cod the vast majority of storm water percolates into the ground and aquifer and proceeds into the embayment systems through groundwater migration. The Linked Model used in the development of the TMDLs accounts for storm water loadings and groundwater loading in one aggregate load as a non-point source – combining the assessments of wastewater and storm water (including storm water that infiltrates into the soil and direct discharge pipes into water bodies) for the purpose of developing control strategies. Although the vast majority of storm water percolates into the ground in Falmouth, there are some storm water pipes or other conveyances that discharge directly to waterbodies and are subject to the requirements of the Phase II Storm Water NPDES

Program. The Town of Falmouth and adjacent Towns of Sandwich, Mashpee, and Bourne are covered under the Phase II General Permit for Stormwater Discharges from Municipal Separate Storm Water Sewer Systems (MS4s). The loadings allocated to such storm water discharges must be treated as a waste load allocation. Since the majority of the nitrogen loading comes from septic systems, fertilizer and storm water that infiltrates the ground into the groundwater, the allocation of nitrogen for any storm water point sources that discharge directly to any of the embayments is insignificant as compared to the overall groundwater load.

Based on land use, the Linked Model accounts for loading of storm water, but does not explicitly breakout storm water into a load and waste load allocation. Based on the fact that there are some storm water discharge pipes or other conveyances within NPDES Phase II area that discharge directly to embayments or waters that are connected to the embayments, the waste load allocation for these sources was determined for each sub-embayment and ranges from 0.25% to 1.51% (compared to the total nitrogen load to each sub-embayment). The WLA is derived from the percent of impervious surface within 200 feet of the waterbodies and the relative load from this area compared to the overall load within each sub-embayment. Although most storm water infiltrates into the ground on Cape Cod, some impervious areas within approximately 200 feet of the shoreline may discharge storm water via pipes or other conveyances directly to the waterbody. For the purposes of waste load allocation, it was assumed that all impervious surfaces within 200 feet of the shoreline discharge directly to the waterbody whether or not they actually do so. The specific WLA are set forth in Appendix C and on pages 18 and 19 of the TMDL document.

Although the loading contribution from the point source discharges is insignificant (less than 0.74% or 279.25 kg/yr) compared to the non-point sources, the point source discharges are subject to the Phase II Storm Water NPDES Program and their collective load is to be treated as a WLA. In the absence of site specific information on direct discharge sources, EPA believes the approach set out in the TMDL for the WLAs is reasonable.

Assessment:

EPA concludes that the TMDL document sufficiently addresses the calculation of the waste load allocations.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)). EPA guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

The implicit margin of safety is set out in the TMDL document on pages 20 to 22. There are several factors that contribute to the margin of safety inherent in the approach used to develop these TMDLs including: 1) the Linked Model was run using conservative data and loading rates;

2) the hydrodynamic and water quality models have been demonstrated to have a high level of accuracy and a high degree of confidence; 3) the selection of the threshold sites and nitrogen concentrations was based on stable eel grass beds or benthic (infaunal) communities, not those starting to show impairment which would have resulted in higher nitrogen concentrations; and 4) the target loads were based on averaged nitrogen concentrations on the outgoing tide. This is the worst case scenario because this is when the nitrogen concentrations are highest. Nitrogen concentrations will be lower on the flood tides, due to dilution from the incoming tide.

Assessment:

EPA concludes that the implicit margin of safety for the TMDL is acceptable.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)).

The TMDLs for the waterbody segments identified in the document are based on achieving the nitrogen loads during the most critical time period, i.e. the summer growing season (see page 22 of the TMDL document).

Assessment:

Since the other seasons are less sensitive to nitrogen loading, EPA concludes that the TMDLs are protective of all seasons throughout the year.

8. Monitoring Plan for TMDLs Developed Under the Phased Approach

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), and EPA's 2006 guidance, Clarification Regarding "Phased" Total Maximum Daily Loads, recommend a monitoring plan when a TMDL is developed using the phased approach. The guidance indicates that a State may use the phased approach for situations where TMDLs need to be developed despite significant data uncertainty and where the State expects that the loading capacity and allocation scheme will be revised in the near future. EPA's guidance provides that a TMDL developed under the phased approach should include, in addition to the other TMDL elements, a monitoring plan that describes the additional data to be collected and a scheduled timeframe for revision of the TMDL.

Because these TMDLs are not "phased" TMDLs, a monitoring plan is not required. Nevertheless, in order to assess the progress in obtaining the TMDLs' water quality goals, MassDEP has recommended that Falmouth establish a detailed post-TMDL monitoring plan as set out on page 25 of the TMDL document. In addition, MassDEP is committed to monitoring the Falmouth estuaries every five years as part of conducting its ongoing water quality assessments in each watershed in Massachusetts.

Assessment:

EPA Region 1 concludes that the anticipated monitoring by and in cooperation with MassDEP

is sufficient to evaluate the adequacy of the TMDL and attainment of water quality standards, although not a required element for TMDL approval.

9. Implementation Plans

On August 8, 1997, Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist States/Tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by EPA, they help establish the basis for EPA's approval of TMDLs.

The implementation plan for these estuarine TMDLs for total nitrogen is described on pages 23 and 24 of the TMDL document. The upper watershed of the embayments includes the Towns of Sandwich, Mashpee, and Bourne. MassDEP advises that implementation planning should include all four towns. EPA concludes that the approach taken by MassDEP is reasonable because of the resources available to the town to address nitrogen, such as the Comprehensive Wastewater Management Plan. The towns have latitude in considering various implementation scenarios such as land use planning and controls, sewerage and treatment for nitrogen control of sewage and septage, and storm water control and treatment.

Assessment:

Addressed, though not required. EPA is taking no action on the implementation plan.

10. Reasonable Assurances

EPA guidance calls for reasonable assurances when TMDLs are developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for EPA to determine that the load and wasteload allocations will achieve water quality standards.

In a water impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, States/Tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in State/Tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

The Commonwealth has statutory and regulatory authority to encourage implementation of these TMDLs, as explained on page 25 of the TMDL document. In addition, Falmouth has demonstrated its commitment to implement these TMDLs through the comprehensive wastewater planning that it initiated well before the generation of these TMDLs. Towns of Sandwich, Mashpee, and Bourne have demonstrated similar commitments to comprehensive wastewater planning. The four towns expect to use the information in these TMDLs to generate

support from its citizens to take the necessary steps to remedy existing problems related to nitrogen loading from septic systems, storm water, and runoff (including fertilizers), and to prevent any future degradation of these valuable resources.

Assessment:

Reasonable assurance is not necessary for these TMDLs to be approvable, since the point sources are not given less stringent wasteload allocations based on projected nonpoint source load reductions. MassDEP has provided reasonable assurance that water quality standards will be met.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. § 130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. § 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

MassDEP released an early draft TMDL dated October 15, 2005 for comment by stakeholders. The Commonwealth then formally announced the revised draft TMDL was available for public and stakeholder review on February 8, 2006. A public meeting was held on February 28, 2006 to provide information and solicit comments. The public comment period closed on March 17, 2006. MassDEP submitted a Response to Comments to EPA along with the final TMDL submission on June 2, 2006.

Assessment:

EPA concludes that MassDEP has involved the public during the development of the TMDL, has provided adequate opportunities for the public to comment on the TMDL, and has provided reasonable responses to the public comments.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document, and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody, the pollutant(s) of concern, and the priority ranking of the waterbody.

On June 2, 2006, DEP submitted a final TMDL for total nitrogen on the Great, Green, and Bourne Pond embayment systems for EPA approval.

Assessment:

MassDEP's letter of June 2, 2006 states that the TMDL is being formally submitted for EPA review and approval.

Attachment 1

5 Total Nitrogen TMDLs

EMBAYMENT SYSTEMS AND SUB-EMBAYMENTS	SEGMENT ID	COMMENTS	TMDL Kg/Day (See Table 5 on Page 23 of TMDL Document)
Great Pond System			
Great Pond	MA96-54_2002	From the inlet of Coonamessett River to Vineyard Sound (including the Coonamessett River and excluding Perch Pond), Falmouth	22.50
Perch Pond	MA96-53_2002	Connects to northwest end of Great Pond, west of Keechipam Way, Falmouth	0.59
<u>Great Pond Systems Total</u>			<u>23.09</u>
Green Pond System			
Green Pond	MA96-55_2002	East of Acapesket Road, outlet to Vineyard Sound, Falmouth	46.26
<u>Green Pond System Total</u>			<u>42.26</u>
Bournes Pond System			
Bournes Pond	MA96-57_2002	West of Central Avenue, to Vineyard Sound, Falmouth	24.17
Israels Cove	to be 303(d) listed		0.39
<u>Bournes Pond System Total</u>			<u>24.56</u>

Data for entry in EPA's National TMDL Tracking System						
TMDL Name		Great, Green, and Bournes Pond Embayment Systems TMDLs for Total Nitrogen (5 segments)*				
Number of TMDLs*		5				
Type of TMDLs*		Total Nitrogen				
Number of listed causes (from 303(d) list)		3				
Lead State		Massachusetts				
TMDL Status		Final				
Individual TMDLs listed below						
TMDL segment name	TMDL Segment ID #	TMDL Pollutant ID# & name	TMDL Impairment Cause(s)	Pollutant endpoint	Unlisted?	NPDES Point Source & ID#
Great Pond	MA96-54_2002	511 (Total Nitrogen)	Nutrients	22.50 kg/day TN (includes the Coonamesset River)	No, listed	
Green Pond	MA96-55_2002	511 (Total Nitrogen)	Nutrients	46.26 kg/day TN	No, listed	
Bournes Pond	MA96-57_2002	511 (Total Nitrogen)	Nutrients	24.17 kg/day TN	No, listed	
2 waterbody segments with TMDL completed. Perch Pond is on the current 303(d) list but not for nutrient impairment. Israel's Cove is not on the current 303(d) list (use unlisted water code.) These two segments were identified as impaired for nutrients during the development of the TMDLs.						
Perch Pond	MA96-53_2002	511 (Total Nitrogen)		0.59 kg/day TN	Yes, but not listed for nutrients	
Israels Cove	unassigned	511 (Total Nitrogen)		0.39 kg/day TN	Unlisted	
TMDL Type		Nonpoint & MS4 Point Source				
Establishment Date (approval)*		July 18, 2007				
EPA Developed		No				
Towns affected*		Falmouth, Sandwich, Mashpee, and Bourne, MA				