

July 20, 2010

Laurie Burt, Commissioner
Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Re: Approval of the White Island Pond Phosphorus TMDL Report

Dear Commissioner Burt:

Thank you for submitting the White Island Pond Phosphorus Total Maximum Daily Load (TMDL) Report. The U.S. Environmental Protection Agency (EPA) has reviewed the document entitled "Final Total Maximum Daily Load of Total Phosphorus for White Island Pond (MA95166-2009-1 CN 330.2), April 29, 2010.

It is my pleasure to approve the TMDL for total phosphorus in White Island Pond. EPA has determined, as set forth in the enclosed review document, that the TMDL for White Island Pond meets 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.

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 Beth Edwards at (617) 918-1840 or Mary Garren at (617) 918-1322.

Sincerely,

/s/

Stephen S. Perkins, Director
Office of Ecosystem Protection

Enclosure

cc: Glenn Haas, MassDEP
Rick Dunn, MassDEP
Kim Groff, MassDEP
Mark Mattson, MassDEP

EPA NEW ENGLAND'S TMDL REVIEW

DATE: July 20, 2010

TMDL: White Island Pond TMDL for Total Phosphorus (Report Number MA95166-2009-1; CN 330.2)

STATUS: Final

IMPAIRMENT/POLLUTANT: 2 TMDLs for Total Phosphorus (see Attachment)

BACKGROUND: Final Total Maximum Daily Load of Total Phosphorus for White Island Pond April 29, 2010, (Report Number MA95166-2009-1; CN 330.2).

REVIEWER: Beth Edwards, telephone number 617.918.1840, e-mail address: edwards.beth@epa.gov

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 TMDL (Total Maximum Daily Load) document for White Island Pond (East Basin MA95166 and West Basin MA95173 in the Buzzards Bay Watershed in Plymouth and Wareham, Massachusetts) describes the water body segments, nature and cause or threat of the impairments due to total phosphorus. The lakes are listed as impaired (category 5), on the "Massachusetts Year 2008 Integrated List of Waters" for nutrients, organic enrichment/low DO and noxious aquatic plants, with the East Basin also listed for turbidity. The document identifies excess total phosphorus as the cause of the impairments. The major source of phosphorus to the

lake during the critical summer period is attributed to sediment recycling. This source of phosphorus is presumably due to historic inputs of phosphorus from anthropogenic sources. The major external sources are the cranberry bogs, followed by septic systems, groundwater and precipitation.

The two basins are similar in size and depth and are bordered by similar density of residential housing. Two major commercial cranberry bogs discharge into the north end of the East Basin, which has consistently higher total phosphorus concentrations, exhibits frequent algal blooms, and does not meet the guideline for transparency (1.2 meters for Secchi disk transparency). The West Basin also has somewhat elevated total phosphorus with less severe algal blooms and currently does meet the transparency guideline. Because these lakes are seepage lakes that are hydraulically connected, they are modeled as one system.

Pages 15 to 18 of the document provide an overview of the description of the waterbodies and pollutants of concern and pollutant sources. As stated in the Integrated List of Waters, the Commonwealth places a high priority on the development of TMDLs to address nutrients, organic enrichment/low DO, and noxious aquatic plants.

Assessment:

EPA concludes that the description, pollutants of concern and the priority ranking of the waterbody provided in the TMDL Report and Integrated List of Waters, as described above, are reasonable and consistent with accepted methods used in establishing nutrient TMDLs.

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 Massachusetts 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 on page 18. The Massachusetts water quality standard for dissolved oxygen in cold water fisheries is not less than 6.0 mg/l and not less than 5.0 mg/l in warm water fisheries unless background conditions are lower. To develop a site specific water quality target from the narrative criteria, MassDEP (Massachusetts Department of Environmental Protection) identified the waterbodies loading capacities and described the cause and effect relationship of phosphorus through various models, land use modeling of nutrient loads for both ponds, mass balance estimates, lake modeling, and best professional judgment based on literature values to establish a water quality target of 147

kg/year (or 147 kg/year divided by 365 days = an average of 0.40 kg/day). Because of the long retention time of the lake (207 days), a yearly representation of the load is more appropriate.

Assessment:

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 White Island Pond.

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.

MassDEP identified the waterbody's loading capacities and described the cause and effect relationship between the numeric target and impairment through 1) landuse modeling of nutrient loads for both ponds; 2) estimation of phosphorus mass balance using a product of water inputs (flow) and total phosphorus concentrations of each source combined with best professional judgment based on literature values for other sources including septic systems and internal sources; and 3) lake modeling of nutrient loads for the lake. The target load of 147 kg/year (or 0.40 kg/day) was determined from a suite of lake models calibrated to achieve an average in-lake total phosphorus concentration of 0.019 mg/l (19 ppb). The most sensitive time of the year for White Island Pond occurs during the summer, when the frequency and occurrence of nuisance algae blooms and macrophyte growth are the greatest. The annual loadings account for seasonal variation because the loads are protective of the most sensitive time of the year. The major source of phosphorus to the lake during the critical summer period is attributed to sediment recycling. This source of phosphorus is presumably due to historic inputs of phosphorus from anthropogenic sources. The major external sources are the cranberry bogs, followed by septic systems, groundwater and precipitation. This target of 19 ppb requires 85% reduction of phosphorus loads from the cranberry industry and 50% reduction in loads from home septic systems.

Assessment:

The TMDL document explains (see pages 35 - 37 of the TMDL report), and EPA concurs with, the approach used to develop the target total phosphorus loading rates and in identifying sources of needed total phosphorus load reduction.

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.

The current total phosphorus loadings and target phosphorus load allocations for several source categories are listed in the table below and in Table 5 on page 37 of the TMDL document.

White Island Pond TMDL Load Allocation

Source	Current Total Phosphorus Loading (kg/year)	Target Total Phosphorus Load Allocation (kg/year) (and percent reduction)
Groundwater	50	50 (0%)
Precipitation	35	35 (0%)
Home Septic Systems	56	28 (50%)
Internal Sediment	267	13 (95%)
Makepeace Bogs	62	9 (85%)
Federal Furnace Bogs	69	10 (86%)
Additional Margin of Safety	0	2 (NA)
Total	539	147 (73%)

One of the major sources of phosphorus is the load allocations attributed to the commercial cranberry bogs which discharge phosphorus directly into the lake. The new allocations are based on the bogs achieving an overall loading rate of 0.5 kg/ha/year achieved by the best performing bogs in the DeMoranville and Howes (2005) study. Multiplying the 0.5 kg/ha/year by the respective areas of the bogs gives a target allocation of 9 kg/year for Makepeace bogs and 10 kg/year for the Federal Furnace bogs.

Private septic systems are another anthropogenic source that can be targeted for reductions. Assuming some of the homes have older style septic systems, a reasonable level of reduction is 50 percent, provided this reduction is implemented incrementally over a period of years as areas are sewered or properties are gradually upgraded to Title 5 systems and any non-conforming

septic systems are required by the Board of Health to be upgraded. Therefore, the target allocation for septic systems is set at 28 kg/year.

Internal sources of phosphorus increase as a result of anoxia associated with anthropogenic eutrophication, and therefore it can be assumed that internal sources will decline proportionately as external loading of phosphorus decreases. Because the source is a major portion of the summer budget, an alum treatment or other sediment phosphorus control is likely to be needed. Assuming a 95% reduction in this source can be achieved with an approved sediment treatment, the target for sediment sources is 13 kg/year.

Assessment:

MassDEP adequately describes and sets forth the load allocations for cultural and natural background sources. EPA concludes that the load allocations are adequately specified for the TMDLs at levels necessary to attain water quality standards.

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.

The TMDL process requires that loads be allocated to point sources (wasteload allocations) and non-point sources (load allocations). Wasteload allocations from point sources generally include sewage treatment plants, urban stormwater, and agricultural discharges from pipes or ditches. However, pipe discharges from agricultural irrigation return water are not regulated as point sources. Thus, all sources to White Island Pond are considered to be non-point sources, and the wasteload allocation should be expressed as zero.

Assessment:

EPA concludes that the wasteload allocations are adequately specified in the TMDL (zero), at a level sufficient to attain and maintain water quality standards (when combined with the load allocation).

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 explicit margin of safety is described on page 37. The margin of safety was set by establishing a target that is below that expected to remove algal blooms and meet the visibility target of 4 feet for swimming, and below the concentration levels needed to maintain designated uses. An additional margin of safety can be added as an explicit loading term. Based on allocations to point and the nonpoint sources, a load of 2 kg/year remains unallocated and this amount was added as an additional margin of safety.

Assessment:

EPA concludes that the explicit 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)).

For most lakes, it is appropriate and justifiable to express a nutrient TMDL in terms of allowable annual loadings. The annual load should inherently account for seasonal variation if it is protective of the most sensitive time of year. The TMDL for White Island Pond is based on achieving the phosphorus loads during the most environmentally sensitive time of year (i.e., the summer season when the frequency and occurrence of nuisance algal blooms and macrophyte growth are typically greatest). Because this TMDL was established to be protective of the most environmentally sensitive period, it will also be protective of water quality during all other seasons. Additionally, the targeted reduction in the annual phosphorus load to lakes will result in the application of phosphorus controls that also address seasonal variation. For example, certain control practices such as stabilizing eroding drainage ways or maintaining septic systems will be in place throughout the year while others will be in effect during the times the sources are active (e.g., application of lawn fertilizer).

Assessment:

Since the other seasons are less sensitive to phosphorus loading, EPA concludes that the TMDL is protective of all seasons throughout the year.

8. Monitoring Plan for TMDLs

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.

The TMDL for White Island Pond is not a "phased" TMDL, but the document includes a description of monitoring that will take place to measure attainment of water quality standards. Continued monitoring of the lake will be performed by the local lake association to document changes in transparency and frequency of blue-green algal blooms. The UMass Cranberry Station will monitor BMPs in the bogs using funding from a 319 grant. MassDEP will continue to monitor cyanobacteria numbers and provide additional lake surveys in future years. Local volunteer groups will be encouraged to perform additional monitoring for total phosphorus concentrations and transparency when possible.

Assessment:

EPA concludes that the anticipated monitoring by and in cooperation with MassDEP is sufficient to evaluate the adequacy of progress toward attainment of Massachusetts water quality standards, although it is not a required element of EPA's TMDL approval process.

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.

MassDEP presents a plan for how the TMDL for White Island Pond will be effectively implemented (pages 37 – 43 of the TMDL document). Implementation of the TMDL will focus on the largest sources including the sediment recycling of phosphorus during the summer, and the cranberry bog discharges. Additional implementation will include upgrading failed Title 5 septic systems as required by law or by sewerage areas as development increases. Groundwater is already at background concentrations and is not likely to be improved. There are no reasonable BMPs available to significantly reduce atmospheric precipitation and dryfall inputs. Responsibility for remediation of each identified source will vary depending on land ownership, regulatory jurisdiction, and the requirements of the Clean Water Act.

Assessment:

MassDEP has addressed the implementation plan, although it is 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 of Massachusetts has statutory and regulatory authority to require implementation of this TMDL. The TMDL will be implemented through enforcement of current laws and regulations, availability of financial incentives, and the various local, state and federal programs for pollution control. MassDEP states that active cooperation of the cranberry growers and the Cape Cod Cranberry Growers Association, homeowners, the towns of Plymouth and Wareham, USEPA, NRCS and the UMass Cranberry Station is necessary for this TMDL to be effective in returning the lake to an unimpaired status.

MassDEP is responsible for the implementation and enforcement of the laws related to discharges of pollution, including any nonpoint sources. Enforcement of regulations may include USEPA enforcement of the permit conditions in Stormwater Phase II permits under NPDES. The Commonwealth of Massachusetts also oversees the implementation of the Title 5 regulations for onsite septic systems by the local Board of Health.

Financial incentives include Federal monies available under the 319(h) NPS program and the 604(b) and 104(b) programs, which are provided as part of the Performance Partnership Agreement between MassDEP and the USEPA. Additional financial incentives include state income tax credits for Title 5 upgrades, low interest loans for Title 5 septic system upgrades, Clean Water Act State Revolving Fund loans, and cost sharing for agricultural BMP's under the Federal NRCS program.

The recently signed Memorandum of Agreement (MOA) signed by MassDEP and other stakeholder organizations also provides reasonable assurance of meeting the TMDL in a timely manner. MassDEP states that if the MOA fails to meet the TMDL, then additional steps will be taken.

Assessment:

Although not required because White Island Pond is impaired solely by nonpoint sources, EPA concludes that MassDEP has provided reasonable assurance that Massachusetts 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 publicly announced the development of the draft TMDL for public review and solicitation of comments on April 14, 2009. In addition to meeting with the Cape Cod Cranberry Growers Association, the UMass Cranberry Station, representatives of commercial cranberry growers, and the White Island Pond Conservation Alliance, MassDEP held a public meeting on May 7, 2009 at the Plymouth Town Hall. The public comment period closed on May 22, 2009. MassDEP has provided adequate opportunity for the public to comment. MassDEP has provided a comprehensive record of the comments received and provided clear responses to those comments.

Assessment:

EPA concludes that MassDEP has done a sufficient job of involving the public in the development of the TMDL, provided adequate opportunities for the public to comment, and has fully addressed the comments received as set forth in the response to comment section of the TMDL document.

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.

Assessment:

On September 2, 2009, MassDEP submitted a final TMDL for total phosphorus in White Island Pond and subsequently asked to revise the document to account for late comments. On April 20 and 29, 2010, EPA received resubmissions of the final TMDL. The changes reflected recent data showing a larger sediment phosphorus source and a smaller contribution from commercial cranberry bogs. The final target and allocations did not change. The document contained all of the elements necessary to approve the TMDL.

Attachment

2 Total Phosphorus TMDLs

Sub-Embayment	Description	TMDL (kg/day)
White Island Pond (East Basin) Segment MA95166_2008	Determined to be impaired for nutrients, organic enrichment/low DO, noxious aquatic plants, and turbidity	0.40
White Island Pond (West Basin) Segment MA95173_2008	Determined to be impaired for nutrients, organic enrichment/low DO, and noxious aquatic plants	0.40

Data for entry in EPA's National TMDL Tracking System							
TMDL Name *		White Island Pond (2 segments)					
Number of TMDLs*		2					
Type of TMDLs*		Nutrients					
Number of listed causes (from 303(d) list)		7					
Information/prevention TMDLs, Y/N? (#)		No					
Lead State		Massachusetts					
TMDL Status		Final					
Individual TMDLs listed below							
TMDL sub-embayments systems and segment names	TMDL Segment ID #	TMDL Pollutant ID# & name	TMDL Impairment Cause(s)	Pollutant endpoint	Unlisted?	NPDES Point Source & ID#	Listed for something else?
White Island Pond (East Basin)	MA95166_2008	515 (total phosphorus)	- nutrients -organic enrichment/low DO - noxious aquatic plants - turbidity	0.019 mg/l Total Phosphorus (whole lake average)	No		
White Island Pond (West Basin)	MA95173_2008	515 (total phosphorus)	-nutrients - organic enrichment/low DO - noxious aquatic plants	0.019 mg/l Total Phosphorus (whole lake average)	No		
TMDL Type		Nonpoint Source					
Establishment Date (approval)*		Jul 20, 2010					
EPA Developed		No					
Towns affected*		Plymouth and Wareham					

* these data fields used in webpage entries