

July 21, 2010

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

Re: Approval of the Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed

Dear Commissioner Burt:

Thank you for submitting the Final Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed on July 13, 2010. We appreciate your efforts and involvement with our office to finalize this TMDL. We believe this TMDL combined with the other pathogen watershed TMDLs in various stages of development within the Commonwealth will be a catalyst in the restoration of this and other watersheds.

The U.S. Environmental Protection Agency (EPA) has reviewed the document entitled "Final Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed," July 2010 (Control Number 351.0) and it is my pleasure to approve the seven TMDLs. 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.

Once again, please pass on to your staff in the Division of Watershed Management our appreciation for their excellent work in developing these TMDLs.

Sincerely,

/s/

Stephen S. Perkins, Director  
Office of Ecosystem Protection

Enclosure

cc:  
Glenn Haas, MassDEP  
Rick Dunn, MassDEP  
Kim Groff, MassDEP  
Steve Silva, EPA  
Steven Winnett, EPA  
Mary Garren, EPA

## EPA NEW ENGLAND'S TMDL REVIEW

**TMDL:** Narragansett/Mount Hope Bay Watershed

Runnins River	MA53-01
Warren River Pond	MA53-06
Lee River	MA61-01
Lee River	MA61-02
Cole River	MA61-04
Mount Hope Bay	MA61-06
Mount Hope Bay	MA61-07

**Location:** Towns of Attleboro, Dighton, Rehoboth, Seekonk, Swansea, Westport, and City of Fall River (MA).

**STATUS:** Final

**IMPAIRMENT/POLLUTANT:** These seven water body segments are not meeting criteria for fecal coliform, enterococcus, and e-coli bacteria concentrations and are not supporting the designated uses of shellfishing and primary and secondary contact recreation. Mount Hope Bay segments 06 and 07 are designated class SA and SB, respectively. Warren River Pond, Lee River segment 02 and Cole River are classified SA. Runnins River and Lee River segment 01 are classified Class B. A year-around TMDL submission is presented for fecal coliform bacteria.

**BACKGROUND:** The Massachusetts Department of Environmental Protection (DEP) submitted to EPA New England the final Total Maximum Daily Load Analysis for *Narragansett/Mount Hope Bay Watershed* (the “TMDL,” “submission,” or “Report”) with a transmittal letter dated June 23, 2010, and resubmitted a revised final version on July 13, 2010. EPA commented on earlier drafts of all or parts of the TMDL sent by DEP on January 6, 2010, and responded with comments in emails dated February 17, June 28, and July 2 and 8, 2010. EPA and DEP discussed TMDL issues in phone calls on April 14, 2010 and July 13, 2010. The submission included:

- Final TMDL report for pathogens in Narragansett/Mount Hope Bay Watershed;
- Implementation plan for achieving TMDL reductions, Chapter 8, pp. 52-67;
- References set out in Chapter 11, pp. 75-79;
- Final meeting notes and public comments, Appendix B, pp. 79-102.
- Mitigation Measures to Address Pathogen Pollution in Surface Waters: A TMDL Implementation Guidance Manual for Massachusetts.

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.

**REVIEWERS:** Steven Winnett (617-918-1687) E-mail: [winnett.steven@epa.gov](mailto:winnett.steven@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 Water Body, Pollutant of Concern, Pollutant Sources and Priority Ranking**

*The TMDL analytical document must identify the water body as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the water body. 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.*

Mount Hope Bay is located in the northeast corner of Narragansett Bay, encompassing the towns of Attleboro, Dighton, Fall River, Rehoboth, Seekonk, Swansea, Warren, and Westport, Massachusetts (Mass.). The Report describes the pollutants of concern, fecal coliform, enterococcus, and e-coli bacteria, indicators of pathogen-caused impairment of the designated uses for shellfish consumption (fecal coliform), and primary and secondary contact recreation (TMDL p. 1 & 10). It lists the water bodies as they appear on the State's 2008 303(d) list (TMDL Table ES-1, p. vi). The document also describes the TMDL study area and its land uses (TMDL pp. 7-8).

Bacteria impairments in these water bodies arise from dry and wet weather events, year round. The most important sources are CSO discharges, but also include other stormwater runoff, vessel discharges, agriculture, animal waste especially from waterfowl, and sanitary waste and septic system failure (pp. iv, and 21-34). CSO discharges from the Cities of Fall River and Taunton, Mass. are the dominate sources of bacteria to the TMDL water bodies.

The submission includes a detailed discussion of the point and nonpoint sources that contribute to the water quality impairments (TMDL pp. 13-34), as well as in-depth discussions of monitoring activities, the data that indicate the sources and what methods were used to acquire them (TMDL pp. 13-26). DEP also identifies holders of NPDES Multi-Sector General Permits (MSGPs) and Municipal General Permits (MS4s) whose stormwater discharges will have to be in compliance with the approved TMDLs

**Assessment:** DEP has adequately identified the water bodies, the pollutant of concern, the magnitude and location of the sources of pollution.

## **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 water body, 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 designations of the seven water body segments are detailed above (also, TMDL Table ES-1 p. vi). The numeric water quality target is set for all waters at or above the appropriate numeric water quality standard for fecal coliform, enterococcus and e-coli bacteria for their classification. DEP explains that they are applying the SA criteria to all class B and SB waters where those waters discharge into class SA segments. The fecal coliform shellfishing criteria for Class SA waters (salt waters) is a geometric mean value of 14 fc/100 ml, with not more than 10% of the samples exceeding a value of 28 fc/100 ml. One water body will maintain its SB classification, using the marine shellfishing criteria, which is a fecal coliform geometric mean value of 88 fc/100 ml, with not more than 10% of the samples exceeding a value of 260 fc/100 ml.

**Assessment:** EPA New England concludes that DEP has properly presented its water quality standards and designated uses when setting a numeric water quality target. It has also presented its rationale for the deviations from that designation and classification system, designed to ensure protection of higher quality waters downstream, and required by the Clean Water Act.

## **3. Loading Capacity - Linking Water Quality and Pollutant Sources**

*As described in EPA guidance, a TMDL identifies the loading capacity of a water body 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 water body'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 water body 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 water body 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.*

DEP sets the numeric water quality targets at the applicable water quality criteria or standard for each of the segments in the TMDL study area, depending on each water segment's classification, as outlined in the TMDL report. DEP has also set more stringent criteria for two segments as discussed above.

DEP describes the rationale for the methods used to establish the cause-and-effect relationship between the numeric targets (WQS) and the identified pollutant sources (TMDL pp. 35-51). DEP sets a reduction goal for each impaired water body segment (as a whole) by comparing current fecal coliform bacteria concentrations to the applicable water quality target, then calculating the percent reduction required to reach that target (TMDL, Table 7.3 p. 45). The water quality standards for fecal coliform specify geometric means and 90<sup>th</sup> percentile criteria. DEP uses the higher percent reduction to set each segment's necessary percent reduction. DEP explains the process for calculating the reduction goals (TMDL pp. 39-41).

DEP has said that it considers the pollutant concentrations and percent reduction targets in these TMDLs to apply daily. The allowable daily load is the criteria concentration times the daily flow in the receiving water.

**Assessment:** EPA New England concludes that the loading capacities, having been set equal to the WQSs, have been appropriately set at levels necessary to attain and maintain applicable water quality standards. The TMDL is based on a reasonable approach for establishing the relationship between pollutant loading and water quality in the bays and estuaries.

EPA New England also concurs with expressing the bacteria TMDLs as concentrations in lieu of mass-per time because these units are the same as the state water quality standards. In addition, concentration is mathematically related to per time loading (concentration multiplied by flow volume per time results in mass per time), so that the daily load is the daily concentration times the flow volume per time.

EPA's regulations at 40 C.F.R. §130.7(c)(1) require that TMDLs identify water quality targets that are consistent with all applicable water quality standards. EPA New England has accepted the percent reduction approach for bacteria TMDLs in some water bodies under an assumption that the reductions needed to meet applicable water quality standards (WQS) at ambient stations are representative of the reductions needed to meet the applicable standards throughout the water body.

#### **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.*

Information to support the development of separate allocations for load and wasteload allocations for wet weather discharges does not exist. Consequently, the LA is included in the WLA (TMDL p. 35). Note that this approach does not affect the regulation of storm water that is subject to Phases I or II of EPA's storm water program.

**Assessment:** EPA New England concludes that it is unnecessary to include specific load allocations as the information to support separate load and wasteload allocations does not exist. Consequently, the load allocation is included in the wasteload allocation, below.

## **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 submission contains wasteload allocations that are expressed as the percent reduction of fecal coliform bacteria required to meet the water quality standards (TMDL, pp. 35-51). As mentioned in the LA review (above), because information to support the development of separate allocations for load and wasteload allocations doesn't exist, the LA is included in the WLA for each segment.

The WLA is expressed as the percent reduction required for the water bodies to meet the water quality criteria. Because the fecal coliform criteria contain both a geometric and 90<sup>th</sup> percentile component, DEP compared the current conditions for each of the water bodies to both components. The station data with the largest violation of the criteria were used to set the current conditions for each segment. The higher percent reductions resulting from the comparison of the bacteria data to the 90<sup>th</sup> percentile criteria (the component which required the larger reduction) were then used to set each segment's required reduction.

For the Class SB and B segments which border the Class SA segments, their data were compared to the Class SA criteria to set the reduction, thus ensuring that water quality in the Class SA segments would be met.

Regulated stormwater sources and other permitted effluents are given 100% of the WLA, while other sources such as illicit discharges of wastewater, failing septic systems, leaking sanitary sewer lines, and marine vessel discharges are given a WLA of zero (0) as they are illegal. DEP identifies all NPDES permit holders (TMDL pp. 16-25), including those with NPDES Multi-Sector General Permits (MSGPs) and Municipal General Permits (MS4s) to address their stormwater discharges.

**Assessment:** EPA New England concludes that the WLAs for this submission are acceptable and reasonable, and have sufficiently addressed all sources of pollution in Massachusetts.

## 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.*

MA DEP employs an implicit MOS in these TMDLs using conservative assumptions in the calculation of bacteria loads (TMDL p. 50). Primarily, the state sets its limits at the end of the discharge pipe, which allows for no dilution or mixing in the receiving waters. As there will be mixing and dilution in measured ambient waters, that assumption creates a margin of safety. Second, the TMDL accounts for no bacteria losses due to dieoff, which will take place in ambient waters. Finally, the State sets a percent reduction target based on the highest percent reduction calculated for each segment, evaluating each component of the water quality criteria, geomean or 90<sup>th</sup> percentile value.

**Assessment:** EPA New England concurs that an adequate MOS is provided by the combination of conservative assumptions which embody the implicit MOS for bacteria.

## 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).*

This TMDL addresses seasonal variation through WLAs and LAs set for all known conditions and potential sources independent of season and climate. The sampling data underlying the TMDL calculations spanned wet and dry weather, and different times of the year. The required reductions for bacteria levels are applied year round, and the TMDLs should therefore be protective for all seasons and all weather events.

**Assessment:** EPA New England concludes that seasonal variations have been adequately accounted for in the TMDLs because the TMDLs were developed to be protective year round.

## **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.*

This is not a phased TMDL. The document includes a description of the ongoing and new monitoring that will take place to monitor changes in the water quality of the impaired segments. The State discusses its plans for monitoring as and after the TMDL is implemented (TMDL p. 68).

**Assessment:** EPA concludes that the anticipated monitoring by DEP is sufficient to evaluate the adequacy of progress toward attainment of WQS, although 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.*

An implementation plan is provided in the submission (TMDL pp. 52-67), which includes discussion of water quality improvement activities going on within the Narragansett/Mt. Hope Bay watershed. DEP describes an implementation program which includes the abatement of CSO discharges, management of stormwater from municipal and industrial activities, eliminating illicit discharges from sanitary systems, reducing wastewater from leaking sewers and septic systems, and minimizing contamination from domestic and farm animals.

The TMDL discusses CSO activities in both the cities of Fall River and Taunton.

In the plan, DEP discusses the Stormwater Phase II requirements that will likely be part of its implementation plan, including required amendments to municipal stormwater management

program plans (SWMPs), the six minimum measures, site-specific structural BMP requirements, and MS4-specific requirements. The plan discusses specific stormwater abatement activities in the eight towns and cities of the watershed.

**Assessment:** Addressed, though not required.

## 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 body 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.”*

Reasonable assurance is not required because point sources are not given less stringent wasteload allocations based on the assumption of future nonpoint source load reductions. However, DEP addresses reasonable assurances (Chapter 10, pp. 69-74) that pollution reductions will occur by providing information about its programs and policies, and the tools it has to combat the various pollution types and sources. The report offers recommendations for future work needed in its implementation section (TMDL pp. 52-67).

**Assessment:** Addressed, though not required.

## 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.*

DEP held public meetings on January 21 and 27, 2010 to present the draft TMDL to stakeholders and the public. DEP provided a comment period from January 6, 2010 to February 26, 2010. Notice of the public meeting and the comment period were sent by email to key stakeholders in the affected communities, and through public notices posted in prominent public places. The

draft TMDL was posted on DEP's website. DEP has provided EPA with copies of all submitted comments and the Department's responses as an attachment to the final TMDL submission.

**Assessment:** EPA New England has reviewed all comments and DEP's responses to comments. EPA concludes that DEP involved the public during the development of the TMDL for *Narragansett/Mount Hope Bay Watershed* has provided adequate opportunities for the public to comment on the TMDL, and has provided reasonable responses to the comments received.

## **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 water body, the pollutant(s) of concern, and the priority ranking of the water body.*

**Comment:** A letter with appropriate information was included with the final submission.

APPENDIX: (Table 7.3, Estimated Reductions Needed to Meet WQS, reprinted from the submitted TMDL by permission of MA DEP)

Seg. ID	Segment Name, (Class)	Applicable Criteria	Water Quality Monitoring Data <sup>a,b</sup>		Calculation of Percent Reduction	
			Geometric Mean Source, Station(s), year, No. Sample	90 <sup>th</sup> Percentile	Percent Reduction to Meet Geometric Mean Criterion	Percent Reduction or 90 <sup>th</sup> percentile Criterion
MA53-01	Runnins River, (B)	Apply SA Shellfish as adjoining downstream RI segment is designated as Special Resource Protection Water (SRPW) and Class SA shellfishing	298  Rayner Data, school street, 1998, n=15	3,728	95.3	<u>99.2</u>
MA53-06	Warren River Pond, (SA)	Apply SA Shellfish criteria	412  MA DMF , 3,4,5,6,7,8, 1997, n=6 <sup>c</sup>	755	<u>96.6</u>	96.3
MA61-01	Lee River, (B)	Apply SA Shellfish criteria because of SA segment down stream	1060  MassDEP, LR07, 07A, 08, 1999, n=5 <sup>d</sup>	2,300	98.7	<u>98.8</u>
MA61-02	Lee River, (SA)	Apply SA Shellfish criteria	108  RI DEM, MHB 3-4, 2006,n=5	312	87.1	<u>91.0</u>
MA61-04	Cole River, (SA)	Apply SA Shellfish criteria	980  MassDEP Data, CO01,CO3A, CO04, 1999, n=5	3300	98.6	<u>99.2</u>
MA61-06	Mount Hope Bay, (SB, CSO)	Apply SB Shellfish criteria	271  RI DEM, MHB2-4, 2006, n=5	1,624	67.5	<u>84.0**</u>
MA61-07	Mount Hope Bay, (SA)	Apply SA Shellfish criteria	158  RI DEM, MHB 4-1, 2006, n= 5	1,084	91.2	<u>97.4</u>

<sup>a</sup> Fecal Coliform is the indicator  
<sup>b</sup> For the Station (s) with most recent highest measures value, Seasonal Data, for Wet Weather (except as indicated)  
<sup>c</sup> Mixed wet and dry weather samples collected  
<sup>d</sup> Dry weather data  
**\*\* 90<sup>th</sup> percentile shellfishing criteria more stringent than RI Class SB Primary Contact Recreation Criteria.**

<b>Data for entry in EPA's National TMDL Tracking System</b>								
TMDL Name		<b>Narragansett/Mt. Hope Bay Watershed (7 segments)</b>						
Number of TMDLs*		7						
Type of TMDLs*		Bacteria^						
Number of listed causes (from 303(d) list)		7						
Lead State		Massachusetts (MA)						
TMDL Status		Final						
<b>Individual TMDLs listed below</b>								
TMDL name	Segment	TMDL Segment ID #	TMDL Pollutant ID# & name	TMDL Impairment Cause(s)	Pollutant endpoint	Unlisted?	RIPDES Point Source & ID#	Listed for anything else?
Runnins River		MA53-01	259 (Fecal coliform bacteria)	Pathogens (41)	SA: 14 fc /100 ml; 28 fc /100 ml		Seekonk MS4 stormwater permit MAR041156	Cause unknown, metals, nutrients, organic enrichment/low DO, oil & grease
Warren River Pond		MA53-06	259 (Fecal coliform bacteria)	Pathogens (41)	SA: 14 fc /100 ml; 28 fc /100 ml		Swansea MS4 stormwater permit MAR041163	no
Lee River		MA61-01	259 (Fecal coliform bacteria)	Pathogens (41)	SA: 14 fc /100 ml; 28 fc /100 ml		Swansea MS4 stormwater permit MAR041163	Nutrients, organic enrichment/low DO
Lee River		MA61-02	259 (Fecal coliform bacteria)	Pathogens (41)	SA: 14 fc /100 ml; 28 fc /100 ml		Swansea MS4 permit MAR041163 Somerset MS4 permit MAR041159 Dominion Energy NPDES permit MAR0003654	Noxious aquatic plants, taste/color/odor
Cole River		MA61-04	259 (Fecal coliform bacteria)	Pathogens (41)	SA: 14 fc /100 ml; 28 fc /100 ml		Swansea MS4 permit MAR041163; Swansea Plant Complex Multi-Sector Gen. permit MAR05C096	Nutrients, organic enrichment/low DO

Mount Hope Bay	MA61-06	259 (Fecal coliform bacteria)	Pathogens (41)	SB: 88 fc /100 ml; 260 fc /100 ml		<u>NPDES WWTP permits:</u> Fall River MA0100382; Taunton MA0100897; <u>NPDES permit:</u> Dominion Energy MAR0003654; <u>MSGP permits:</u> Tillotson Complex MAR05C009; Duro Plant 2 MAR05B947; Duro Textile Printeres MAR05B946; Duro Finishing MAR05B945; <u>MS4 stormwater permits:</u> Fall River MAR041113 Somerset MAR041159	Unknown toxicity, Nutrients, organic enrichment/low DO, thermal modifications
Mount Hope Bay	MA61-07	259 (Fecal coliform bacteria)	Pathogens (41)	SA: 14 fc /100 ml; 28 fc /100 ml		Swansea MS4 stormwater permit MAR041163	Unknown toxicity, Nutrients, organic enrichment/low DO, thermal modifications
TMDL Type		Point & Nonpoint Sources					
Establishment Date (approval)*		Jul 21, 2010					
EPA Developed		No					
Towns affected*		Attleboro, Dighton, Rehoboth, Seekonk, Swansea, Westport, and City of Fall River, MA					