

Ms. Alicia Good, Director
Office of Water Resources
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI 02908-5767

Dear Ms. Good:

Thank you for your final submittal of a fecal coliform bacteria Total Maximum Daily Load (TMDL) for the Runnins River, dated August 2002. The U.S. Environmental Protection Agency (EPA) has determined that this TMDL meets the requirements of Section 303(d) of the federal Clean Water Act (CWA) and EPA's implementing regulations (40 CFR Part 130). With this letter, EPA hereby approves the Runnins River TMDL for fecal coliform bacteria. Enclosed are a copy of EPA's review documentation for this TMDL.

EPA considers the completion of this TMDL a positive first step that will enable the State to move forward with on-the-ground measures to improve water quality in the Runnins and Barrington rivers. I am encouraged that the State intends to collect additional information in the future to evaluate the effectiveness of management actions and to determine whether water quality standards have been attained throughout the waterbody. As noted in the review documentation, EPA believes that additional information that reflects localized impacts will be necessary to make future attainment decisions.

My staff and I look forward to continuing to work with the RIDEM in our shared responsibility to implement the requirements of Section 303(d) of the CWA. Please feel free to contact me or my staff if you have any questions or comments on our review.

Sincerely,

dated and signed 9/30/02

Linda Murphy, Director
Office of Ecosystem Protection

Enclosure

cc: Elizabeth Scott
Angelo Liberti
Chris Turner

TMDL: Runnins River - Warren River Basin
Final Submittal, August 2002

Pollutant of Concern: Fecal Coliform

TMDL Authors: Chris Turner (Rhode Island DEM)

**Principal EPA
Reviewer:** David Turin (Office of Ecosystem Protection)

Date: September 26, 2002

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 Rhode Island Department of Environmental Protection (DEM) has reasonably described the waterbody and watershed setting. The pollutant of concern is identified as fecal coliform and this waterbody has been given a highest priority ranking. Nonpoint sources of bacteria associated with rapid and unplanned growth, including buffer encroachment, destruction and filling of wetlands and potential failures of septic systems are identified. Natural background is

included in the nonpoint source loading because of a lack of site-specific information. Distribution of land uses throughout the watershed are provided, as are specific sources of pollutants.

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 reasonably describes the State's antidegradation policy, applicable water quality standards and numeric criteria, and designated uses for the impaired waters. The TMDL describes the need for water quality in the Class B Runnins River to meet more stringent criteria at its mouth to support Class SA designated uses in the Barrington River, downstream. Class B water quality criteria for bacteria are a geometric mean density of 200 fc per 100 ml and no more than 20% of samples shall exceed 500 fc per 100 ml. Class SA water quality criteria for bacteria are a geometric mean of 14 fc per 100 ml and no more than 10% of samples shall exceed 49 fc per 100 ml. DEM has determined, based on historical data, that if the targets necessary to meet water quality in the Barrington River are attained at the School Street Bridge, 500 meters upstream from the mouth of the Runnins River, locations upstream on the Runnins River will meet its Class B criteria.

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.

Loadings are expressed in the TMDL as mass per unit time (numbers of fecal coliforms per day) and the loading capacity is defined by numeric endpoints necessary to support the downstream designated use for shellfishing in the Class SA waters of the Barrington River, downstream.

This TMDL establishes a water quality target of 14 fc/100 ml (the Class SA water quality criteria) at School Street, 500 meters upstream from where the Runnins River enters the Barrington River. The TMDL also establishes a loading necessary to meet the variability component of the Class SA bacteria criterion for the Barrington River (that less than 10% of samples exceed 49 fc/100ml). The TMDL concludes, based on historical data, that if the SA criteria are met at the School Street Bridge, the Runnins River will meet the applicable Class B criteria.

Extensive field surveys, water quality monitoring, and reviews of septic system design and water use records were used to link pollutant sources and instream concentrations. Supporting documentation is either referenced or included in the TMDL report. Strengths and weaknesses in the analytical process are also presented. The critical condition for this TMDL occurs during the months of July through October, when the violations of the bacteria criteria occur most frequently. The targeted reductions in loading year around are based on the reductions necessary to meet the water quality targets during this critical condition.

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.

Storm water sources are considered along with nonpoint source loadings. This approach is acceptable in this case because of the lack of pipe-specific data and the fact that these storm water discharges are not currently subject to RIPDES regulations. The TMDL specifies that storm water BMPs be investigated and implemented to reduce pollutant loads. It is indicated that actions to achieve the required reductions in storm water loadings can be taken voluntarily or will be required by Phase II storm water discharge permits.

Allocations are presented as the reductions required to go from existing conditions to meet the Class SA water quality standard at the School Street Bridge, 500 meters upstream of the mouth of the Runnins River.

Dry Weather -- A single dry weather source was identified. Increased summer fecal coliform loads are attributed to "natural conditions" such as low flow or stagnant waters, elevated temperatures, and dense growths of Phragmites. A target load of 2.93×10^9 per day (99.1% reduction from the existing load) is set in the TMDL to meet the water quality target during dry weather.

Wet Weather -- For this TMDL, storm water sources are addressed under the load allocation. This approach is acceptable in this case because of the lack of pipe-specific data and the fact that these storm water discharges are not currently subject to RIPDES regulations. The five largest wet weather sources in the Rhode Island portion (below County Street) of the Runnins River contribute approximately 89% of the observed wet weather loading. Contributions from other measured sources in RI contribute approximately 7% of the wet weather loading and sources above County Street in MA account for approximately 4% of the wet weather load. A target load of 6.5×10^9 per day (99.6% reduction from the existing load) is set in the TMDL to meet the water quality target during wet weather.

A 99.6% reduction is established to meet the variability component of the criteria during wet and dry weather.

EPA considers this LA to be a first step that will enable the State to move forward with on-the-ground measures to improve water quality. Additional information should be collected in the future to evaluate the effectiveness of management actions and the attainment of water quality standards throughout the waterbody. EPA believes that additional information that reflects localized water quality conditions will be necessary to make future attainment decisions.

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 only identified point source, a sewage pump station, is assigned a WLA of 0 fc/100ml as overflows from this source are a violation of the applicable RIPDES permit.

As noted above, storm water discharges are addressed under the load allocation. This approach is approvable because site-specific data is not available for storm water outfalls and the TMDL acknowledges that storm water will be controlled as a point source when Phase II of the federal storm water regulations are implemented.

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.

DEM has appropriately incorporated both explicit and implicit margins of safety. These include: 1) Using Class SA criteria that are considerably more stringent than the Class B criteria applicable to the Runnins River; 2) basing annual reduction targets on the reductions needed to meet the water quality targets from July to October, when bacteria levels are significantly higher than other periods; and 3) wet weather reductions that are based on a storm where rainfall exceeded 81% of storms in the area.

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 TMDL addresses seasonal variability by determining the allowable allocation and the percent reductions necessary to meet the target values during the period July to October, when bacterial levels are generally at their highest levels. As such, the TMDL endpoints should be

protective 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), recommends a monitoring plan when a TMDL is developed under the phased approach. The guidance recommends that a TMDL developed under the phased approach also should provide assurances that nonpoint source controls will achieve expected load reductions. The phased approach is appropriate when a TMDL involves both point and nonpoint sources and the point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. EPA's guidance provides that a TMDL developed under the phased approach should include a monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of water quality standards.

The TMDL addresses the need for continuing monitoring of the Barrington, Runnins and Palmer rivers to confirm whether the water quality targets are being met.

DEM has proposed future monitoring by recruited volunteer groups such as the Pokanoket Watershed Alliance for monitoring at specific locations in the Runnins and Barrington rivers, along with existing monitoring under the shellfish monitoring program. The TMDL includes specific recommendations for additional monitoring needs and locations, including an eventual requirement for monitoring at the northernmost shellfish stations in the Barrington River if numeric targets in the Runnins River are met. A detailed monitoring plan was not provided

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.

A number of control measures that are already underway are described in the TMDL. Additional planned BMPs and other initiatives are also described. Phase II storm water requirements are also described.

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.”

No point sources in this TMDL are given less stringent WLAs based on an assumption that nonpoint source load reductions will occur. Therefore, reasonable assurance is not a necessary element of the TMDL approval. The TMDL does include a description of ongoing and planned implementation measures in Section 7.0 Assurance of Implementation.

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.

The TMDL documents a significant level of public participation in the development of the TMDL, including the involvement of Runnins River Steering Committee, established in 1993 and comprised of members of the local municipalities, state agencies, EPA and the Pokanoket Watershed Alliance, a local volunteer monitoring group, whose data is used to validate some of the projections of the WQ model used to develop the reduction targets in the Barrington River. In addition, DEM held public meetings in July 1999, June 2000 and July 2002. There were formal opportunities to comment on draft TMDLs in June/July 2000, and again in July/August 2002 following revisions made in response to EPA comments. The TMDL includes a summary of significant comments and the State response.

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.

Comment:

A submittal letter with appropriate information was included with final submittal.

13. Additional Comments: