January 25, 2001

Mr. Angelo Liberti, P.E., Chief
Surface Water Protection Section
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI 02908-5767

Dear Mr. Liberti:

Thank you for your final submittal of the Hunt River, Fry Brook, and Scrabbletown Brook Total Maximum Daily Load (TMDL) reports for fecal coliform bacteria. Your staff has done an excellent job in preparing three very comprehensive TMDL reports. The U.S. Environmental Protection Agency (EPA) has determined that all three TMDL's meet the requirements of Section 303(d) of the Clean Water Act (CWA), and of EPA's implementing regulations (40 CFR Part 130). The EPA hereby approves the Hunt River, Fry Brook, and Scrabbletown Brook TMDL's for fecal coliform bacteria, received by EPA on December 22, 2000. Enclosed are copies of EPA's review documents. As part of EPA's review, we have included several editorial comments that should be addressed prior to printing final copies for your files.

My staff and I look forward to continued cooperation with the RIDEM in exercising our shared responsibility of implementing the requirements under 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,

Ron Manfredonia, Associate Director
Water Policy

Enclosure

cc: Jan Reitsma, RI DEM
Alicia Good, RIDEM
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Wayne Jenkins, RIDEM

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TMDL: Hunt River, Rhode Island (Fecal Coliform)

TMDL Authors: Brian Zalewsky (Rhode Island DEM)
Wayne Jenkins (Rhode Island DEM)

Principal EPA Reviewer: Al Basile (Office of Ecosystem Protection)

Date: January 16, 2001

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 chlorophyl *a* and phosphorus loadings for excess algae.

Comment: The RIDEM has adequately addressed and provided the necessary information under this section. The TMDL document identifies the waterbody as it appears on the State's 303(d) list, including the pollutant of concern (page 7) and the priority ranking (page 7). The TMDL document includes a detailed description of the point and nonpoint sources of the pollutant of concern (pages 7-8 and 62-69). EPA concurs that it was not reasonable to separate natural background from the total nonpoint source load because of a lack of site specific data on fecal coliform contributions

from wildlife in the watershed (page 8).

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.

Comment: The RIDEM has adequately addressed and provided the necessary information under this section. The TMDL document provides a description of the State water quality standard (page 8), designated uses (page 8), the numeric water quality target (page 9), and the antidegradation policy (page 9).

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 condition*s 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.

Comment: The TMDL expresses the loading capacity as a concentration set equal to the state water quality standard. As stated in 40 C.F.R. § 130.2(i), the loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure. EPA concurs with the RIDEM, that expressing the loading capacity as a concentration is appropriate and justifiable. Rationale for this approach is provided below:

1) Expressing a bacteria TMDL in terms of concentration provides a direct link between existing water quality and the numeric target;

2) Using concentration in a bacteria TMDL is more relevant and consistent with water quality standards, which apply for a range of flow and environmental conditions;

3) Expressing a bacteria TMDL in terms of daily loads can be confusing to the public and difficult to interpret; and

4) Follow-up monitoring will compare concentrations, not loadings, to water quality standards.

The TMDL document also provides the linkage between pollutant sources and instream concentrations (page 10), and supporting documentation including the basis for assumptions, strengths and weaknesses in the analytical process, and other pertinent information. As documented in the TMDL report (page 11), RIDEM determined that the Critical Condition in this watershed was during the summer season, when fecal coliform concentrations are typically at their highest levels. In addition, past monitoring has shown that fecal coliform levels increase significantly during wet weather and high flow events. Therefore, monitoring conducted in support of this TMDL focused on the Critical summer season and included both dry and wet weather conditions. EPA concurs that this is a very good approach.

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.

Comment: The RIDEM has adequately addressed and provided the necessary information under this section (page 11-12). As previously discussed under the loading capacity section, loadings presented in this TMDL are expressed in terms of concentration. Load Allocations are presented by stream segment as the percent reduction in instream concentration required to meet the numeric water quality target. For purposes of this TMDL, storm water pipes, which are technically considered point sources, were included in the Load Allocation because of a lack of detailed site specific information (page 11). It is very difficult and labor intensive to accurately estimate storm loadings of bacteria from individual storm pipes as variability between and within storm events is typically very large. Finally, EPA concurs that it was not reasonable to separate natural background from the total nonpoint source load because of a lack of site specific data on fecal coliform contributions from wildlife in the watershed (page 8).

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.

Comment: As stated in the TMDL document (page 11), the only point sources in the watershed were municipal storm water pipes. For purposes of this TMDL, these pipes were included in the Load Allocation because of a lack of detailed site specific information. In the case of this TMDL, EPA concurs with this approach.

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.

Comment: It is EPA's opinion that the State of Rhode Island has provided adequate MOS in this TMDL through conservative assumptions built into the TMDL development process (page 12-13).

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)).

Comment: It is EPA's opinion that this TMDL is protective of all seasons, since most of the data used to develop the TMDL was collected during the summer season. Water quality monitoring conducted by the RIDEM has repeatedly shown that fecal coliform concentrations in streams and rivers are at their highest levels during the summer months.

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.

Comment: As stated in the TMDL document (page 16), RIDEM, in coordination with the entities responsible for BMP implementation, will monitor water quality at key locations in order to assess the effectiveness of proposed BMPs.

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.

Comment: A detailed implementation plan is provided in the TMDL document. In addition to BMP recommendations and responsible parties, the plan includes a public outreach component to educate watershed residents.

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."

Comment: The RIDEM has chosen to submit a detailed implementation plan which includes BMP recommendations and responsible parties. The RIDEM expects BMPs to be implemented on a voluntary basis. However, if this does not occur, the RIDEM may use its permitting authority, or other enforceable means to require implementation (page 13).

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.

Comment: It is EPA's opinion, that the RIDEM has incorporated a comprehensive public participation process into the development o/ this TMDL. An initial meeting was held prior to TMDL development, which included all interested public, private, and government entities. A second public meeting was held on September 27, 2000 to initiate a 30-day public comment period. RIDEM staff presented the draft TMDL and solicited input, however, no comments were received by the end of the comment period.

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 was included with the TMDL document. The submittal letter specifies that the TMDL is a final submittal. The submittal letter includes the name and location of the waterbody, the pollutant of concern, and the priority ranking.

13. Other Comments:

The following include some minor editorial comments:

Page 9 - under Numeric Water Quality Target section, last sentence should read: "The numeric water quality target for Class B waterbodies is a geometric mean of 200 fc/100mL with not more than 20% of the samples exceeding 500fc/100mL."

Page 16 - under Public Participation section, last sentence of first paragraph should be deleted. It reads: "Once a draft TMDL is ready for public comment, another public meeting will be held."

Page 62 - first sentence reads: "The URI and RIDEM water quality investigations performed in the watershed document that the bacteria impairments in the Hunt River and its tributaries are due to nonpoint sources of pollution." It may be best to revise or delete this statement as point sources in the form of stormwater pipes do contribute to water quality impairments in the Hunt River."

Page 69 - under section entitled "Summary of Known and Potential Sources of Fecal Coliform Bacteria," first sentence reads: "Nonpoint sources of bacteria in the Hunt River watershed include inputs from agricultural areas, untreated stormwater runoff from roads and other impervious areas, and loadings from waterfowl, domestic pets, and other wildlife." As previously mentioned, stormwater pipes and other discrete conveyances are technically considered point sources. It may be more appropriate to eliminate the word "nonpoint" at the beginning of the sentence.

Page 71 - under section entitled "Point Sources," it may be more appropriate to incorporate something similar to the following language: "The only point sources in the Hunt River watershed are municipal stormwater pipes. For purposes of this TMDL, these pipes were included in the Load Allocation due to a lack of detailed site specific information. Therefore, the wasteload allocation for all existing and future point sources is zero."