UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

April 22, 2013

Alicia Good, Assistant Director of Water Resources
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908

SUBJECT: **Approval of Blackstone River Watershed TMDLs**

Dear Ms. Good:

Thank you for your submission of Rhode Island's Total Maximum Daily Loads (TMDLs) for the five water bodies of the *Blackstone River Watershed*, for cadmium, lead, copper, fecal coliform bacteria, and enterococci bacteria. The five water bodies were included on the State's 2012 303(d) list and were prioritized for TMDL development. The purpose of these TMDLs for Rhode Island waters is to address metals and bacteria-related impairments to aquatic life use and contact recreation use, respectively, from point and nonpoint source pollution.

The U.S. Environmental Protection Agency (EPA) hereby approves Rhode Island's TMDLs for the Blackstone River Watershed, received by EPA on March 26, 2013. EPA has determined that these TMDLs meet the requirements of §303(d) of the Clean Water Act (CWA), and of EPA's implementing regulations (40 CFR Part 130). Attached is a copy of our approval documentation.

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

If you have any questions, please contact Steven Winnett (617-918-1687) of my staff.

Sincerely,

/s/

Ken Moraff, Acting Director
Office of Ecosystem Protection

cc Angelo Liberti, RI DEM
Elizabeth Scott, RI DEM
Skip Viator, RI DEM
Ralph Abele, EPA
Thelma Murphy, EPA
Steven Winnett, EPA

EPA NEW ENGLAND'S TMDL REVIEW

TMDL: **Blackstone River Watershed**

Blackstone River	RI0001003R-01A	Pathogens, Cadmium, Lead
Blackstone River	RI0001003R-01B	Cadmium, Lead
Cherry Brook	RI0001003R-02	Pathogens, Copper
Mill River	RI0001003R-03	Pathogens
Peters River	RI0001003R-04	Pathogens, Copper

Location: Towns of Burrillville, Central Falls, Cumberland, Glocester, Lincoln, North Smithfield, Pawtucket, Smithfield, and Woonsocket, Rhode Island.

STATUS: Final

IMPAIRMENT/POLLUTANT: Two water body segments of the Blackstone River and three of its tributaries are not meeting criteria for enterococcus and fecal coliform bacteria, and copper, lead and cadmium, and are not supporting designated uses of contact recreation and aquatic life use. The major factors are bacteria and metals impairments associated with both dry and wet weather, depending on the segment. A year-around TMDL submission is presented for enterococcus and fecal coliform bacteria, and dissolved metals.

BACKGROUND: The Rhode Island Department of Environmental Management (DEM) submitted to EPA New England the draft Total Maximum Daily Load Analysis for the *Blackstone River* (the "TMDL" or "Report") on October 19, 2012, and EPA replied with comments on the document to DEM on December 6, 2012. Following a public comment period, DEM submitted the final TMDL with a transmittal letter dated February 26, 2013. Following additional comments by EPA, DEM resubmitted a final TMDL document on March 26, 2013. The submission included:

- Final TMDL report for pathogens and metals in the Blackstone River and tributaries;
- Implementation plan for achieving TMDL reductions, Chapter 7, pp. 91-115;
- Water quality data (2005-2011), Appendix B;
- Public comments and response to comments, Appendix D; and
- References set out in Chapter 10, pp. 117-118.

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

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 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 Blackstone River is located in the Towns of Burrillville, Central Falls, Cumberland, Glocester, Lincoln, North Smithfield, Pawtucket, Smithfield, and Woonsocket, Rhode Island. The Report describes the pollutants of concern (enterococcus and fecal coliform bacteria, and copper, lead and cadmium), which impair contact recreation and aquatic life use (TMDL pp. 14-15). It lists the water bodies as they appear on the State's 2012 303(d) lists (TMDL p.12). Segment B of the Blackstone River is also impaired by pathogens, but the cause of the impairment is primarily from combined sewer overflows (CSOs), the abatement for which is currently being implemented. The need for additional actions to reduce pathogens will be assessed once the CSOs are eliminated.

The submission includes a general description of the point and nonpoint sources, including upstream sources in Massachusetts, that contribute to the water quality impairments (TMDL pp. 43-60), as well as in-depth discussions of the water monitoring and data that indicate the condition of the water bodies (TMDL pp. 26-42). Bacteria and metals impairments arise both from wet and dry weather discharges, and bacteria levels in particular increase markedly during wet weather events. Sources of pathogens and dissolved metals include stormwater discharges, NPDES permitted discharges, CSOs, illegal discharges and failing septic systems; Massachusetts sources, animal wastes, sediment resuspension and embankment sloughing; other waste sites, and the Branch River (not included in this set of TMDLs). In addition, the Woonsocket Waste Water Treatment Facility (WWTF) is the most significant source of metals to Blackstone River segment 1A.

Assessment: DEM has adequately identified the water bodies, the pollutant of concern, the magnitude and location of the sources of pollution. The TMDL also includes an adequate description of important assumptions made in developing the TMDL.

2. Description of the Applicable Water Quality Standards (WQSs) 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 numeric water quality target is set for all waters at the appropriate numeric water quality standard for the pollutants. For bacteria, the standard for these waters is a combination of Class B and B1, depending on the segment (TMDL p. 16). Rhode Island's fecal coliform water quality standard for Class B and B1 waters states the bacteria concentrations are not to exceed a geometric mean value of 200 MPN/100 ml, and not more than 10% of the samples can exceed a value of 400 MPN/100 ml. The State's enterococcus water quality standard for Class B and B1 is 54 colonies/100 ml. For dissolved metals, the numeric water quality target is set at the appropriate water quality criteria, which is calculated based on each waters' hardness values (TMDL Table 1.2, p. 17, and below).

Range of Metals Water Quality Criteria for the Blackstone River Watershed

Hardness as $CaCO_3$ (mg/L)	**Cadmium (µg/L)**		**Lead (µg/L)**		**Copper (µg/L)***	
	Acute Criteria	**Chronic Criteria**	**Acute Criteria**	**Chronic Criteria**	**Acute Criteria**	**Chronic Criteria**
5.00	0.11	0.03	1.80	0.07	0.80	0.69
30.00	0.62	0.11	17.0	0.66	4.32	3.20
50.00	1.03	0.15	30.1	1.17	6.99	4.95
70.00	1.42	0.19	43.7	1.70	9.60	6.60
90.00	1.82	0.23	57.6	2.24	12.2	8.18

Reproduced from the RI DEM Blackstone River TMDL, March 2013. * Site specific copper criteria have been adopted for the main stem of the Blackstone River; the criteria presented here are applicable to all other freshwaters in the watershed.

RI DEM established the dissolved metals targets by averaging the hardness values from all stations on each segment, for each sampling day, and calculating the criteria using the averaged hardness for each day and the metals-specific equations from the standards (Table 1.2, page 17). There is therefore a range of water quality target loads (based on hardness and pollutants, Table 6.2, page 76) for each water body, derived from the averaged hardness values measured on different days of sampling.

Assessment: EPA New England concludes that DEM has properly presented and used its water quality standards when setting numeric water quality targets.

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.

DEM describes the rationale for the methods used to establish the cause-and-effect relationship between the numeric targets (WQSs) and the identified pollutant sources. In the bacteria TMDLs, the TMDL targets are the instream concentrations at criteria levels for each bacteria indicator (fecal coliform and enterococcus). DEM also provides percent reductions necessary to achieve the TMDLs as additional information to guide implementation, based on ambient data for each segment.

DEM sets the bacteria reduction goal for each impaired water body segment by comparing current fecal coliform and enterococcus concentrations to the applicable water quality concentration, then calculates the percent reduction required to reach that target (TMDL pp. 64-65, Table 5.1-5.2). For fecal coliform bacteria, the water quality standards specify both geometric mean and 90^{th} percentile criteria and the higher percent reduction is used to set each segment's necessary percent reduction for that indicator.

Rhode Island's water quality criteria for bacteria apply year round at all times. By setting the TMDL targets equal to the bacteria criteria, the TMDLs are applicable at all times and are therefore protective of water quality under all conditions and seasons. The one municipal wastewater treatment plant discharge to the Blackstone River (Woonsocket WWTF) has bacteria TMDL targets set at the criteria concentration at the point of discharge to assure water quality criteria are met in the receiving water (see Section 5 WLA discussion). DEM provides a discussion of the strengths and weakness in the analytical process for linking water quality to sources of pollutants (TMDL p. 68).

Low flow conditions tend to characterize when the highest metals concentrations are found, although that can vary depending on the metal and location. Consequently, DEM examined a range of critical conditions including high flows, base flows, and the lowest, 7Q10 conditions, in setting the TMDL

targets for dissolved metals. Because the identification of metals criteria depend on water hardness values, DEM calculated the acute and chronic criteria for all metals samples using the hardness measures taken at the same time, and averaged the hardness values per day for multiple sampling stations in each water body segment. DEM used the resulting criteria with the measured flow to calculate the allowable loads (the TMDLs).

For the Blackstone River segments, DEM then matched the allowable metals loads to the various measured flows across the entire flow range to derive load duration curves, which are the expression of the TMDLs for those water bodies (TMDL pp. 74-80, Table 6.2 and Figs. 6.2-6.7). The load duration curves show the allowable load at any flow rate. For the Peters River and Cherry Brook there were not enough data to derive load duration curves so DEM expressed the TMDLs as ranges derived from the samples that were available, using the measured flows and hardness to calculate the criteria and the allowable loads (TMDL p.76, Table 6.2). For the Blackstone River segments, the chronic criteria were used to set the allowable loads as it results in more stringent targets. For the Peters and Cherry segments, the range of loads includes those derived from both acute and chronic criteria, depending on the flow conditions and which criteria is more stringent, which in association with an explicit 10% margin of safety, is sufficiently protective.

For the Woonsocket WWTF, the metals waste load allocation (WLA) is derived from a 7Q10 analysis, which is required to ensure that the WLA and resulting permit limits are sufficiently protective during the lowest flow conditions when the treatment plant is the most significant source of metals to the water body segment (TMDL pp. 86-87). DEM set the allocations for the WWTF equal during dry or wet weather, consistent with EPA policy.

DEM set reduction goals for each metal-impaired segment by comparing the observed metals loads to the allowable loads, then calculated the percent reduction required to reach that target (TMDL pp. 76-79, Tables 6.3-6.5). DEM explains the process for calculating the reduction goals and provides a discussion of the strengths and weakness in the analytical process for linking water quality to sources of pollutants (TMDL p. 90).

DEM has said that it considers the pollutant concentrations and loads in these TMDLs to apply daily. For bacteria, 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 have been appropriately set at levels necessary to attain and maintain applicable water quality standards. The TMDLs are based on a reasonable approach for establishing the relationship between pollutant loading and water quality in the river and its tributaries.

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. There is nothing in EPA's regulations that forbids expression of a TMDL in terms of multiple TMDL targets. TMDLs can be expressed in various ways, including in terms of toxicity, which is a characteristic of one or more pollutants, or by some "other

appropriate measure" (40 C.F.R. § 130.2(i)). The target loading capacities expressed in the TMDL document are set at levels which assure WQS will be met (criteria at point of discharge and meeting ambient water quality criteria). The bacteria concentration loading capacity for the Woonsocket WWTF is based on the concentration criteria for the water body. If a source of pathogens is at or below the water quality criteria then it follows that the receiving water will meet the WQS for bacteria. The metals loading capacity for the WWTF is set to be protective at the 7Q10 flow, which is most critical for metals.

RI DEM states that the daily maximum load may be calculated by multiplying the concentration criterion by stream flow to calculate a daily mass loading. The loading capacity expressed in this way is mathematically derived to assure that the sum of the loads to the receiving water diluted by the stream flow will result in an ambient concentration at the water quality standard.

All of the above loading capacity targets are directly linked to the State's WQS' bacteria and metals criteria and the pollutant levels that must be reduced to achieve full primary contact recreation use and/or aquatic life use of the water bodies covered by these TMDLs.

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.

Because information to support the development of separate allocations for load and wasteload allocations for wet weather discharges do not exist, the LA is included in the WLA for each segment.

Assessment*:* EPA New England concludes that it is unnecessary to include a specific load allocation, 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 for each segment, and for the flows entering the State from Massachusetts (upstream) for the Blackstone, Mill, and Peters Rivers, that are expressed as the criteria concentration for bacteria and mass loads for metals required to meet the water quality standards. DEM is not proposing WLAs for any specific sources in Massachusetts. As mentioned in the LA review (section 4 above) because information to support the development of separate allocations for load and wasteload allocations do not exist, the LA is included in the WLA for each segment.

DEM gives the Woonsocket WWTF (RIPDES permit RI0100111) a TMDL WLA that consists of mass limits for lead and cadmium and criteria concentration for bacteria at the point of discharge for segment 01A of the Blackstone River, into which its effluent flows (TMDL p. 87, Table 6.7). The proposed WLA is set at the 2008 permit limits for metals, and the bacteria limits will be set to the State's enterococcus criteria (54 col/100 ml) at the point of discharge when the permit is revised in 2013. The facility's discharge currently meets water quality standards for both bacteria and metals. Aside from permitted stormwater discharges from the MS4 communities in the watershed, no other permitted discharges in Rhode Island (such multi-sector general permitted facilities or permitted industrial stormwater dischargers) are significant sources of these TMDL pollutants and DEM has proposed no individual WLAs for them in these TMDLs. As noted in the implementation section, (below and TMDL pp. 109-111), some of these dischargers will have implementation obligations stemming from the TMDLs.

The Narragansett Bay Commission (NBC) has CSOs which discharge to segment RI0001003R-01B. Construction on CSO abatement is ongoing and it is too early to determine what, if any, bacteria reductions in that segment may be necessary once that is completed. Consequently, DEM has not proposed bacteria TMDLs for that segment at this time.

Assessment*:* RI DEM established concentration-based bacteria WLAs and load-based metal WLAs for the Woonsocket WWTF. Aggregate WLAs were established by segment for all other sources because it is impossible to determine with any precision or certainty the actual and projected loadings for individual discharges or groups of discharges. EPA's November 22, 2002 TMDL guidance suggests that it is acceptable in such cases to allocate storm water by gross allotments.

EPA New England concludes that the WLAs for this submission are acceptable and reasonable, and have sufficiently addressed both permitted and unpermitted sources of pollution.

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 margin of safety (MOS) accounts for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality. The Rhode Island bacteria TMDLs are expressed as concentrations that set the TMDL wasteload allocation and load allocation at the applicable instream water quality criteria, so there is no uncertainty between the water quality standard and its translation to a wasteload allocation and/or load. DEM provided an estimate of the percent reduction necessary to achieve the TMDL target as guidance but not as an approvable wasteload allocation or load allocation. DEM chose to add a 10% explicit margin of safety to this estimate (TMDL pp. 61-62). However, this percent reduction is only included for information purposes.

DEM has provided an explicit margin of safety of 10% for the copper TMDLs for the Peters River and Cherry Brook, which is entirely sufficient (TMDL p.71). For metals in the Blackstone River segments, DEM identifies two conservative assumptions as providing an implicit margin of safety. The allowable metals loads are based on the chronic criteria, which are more stringent than the acute criteria. In addition, the chronic criteria were applied on a daily basis which is a more conservative application since the chronic criteria are normally applied as a four day average, which adds to the implicit margin of safety.

Assessment: EPA concludes that the approach used in developing the concentration-based bacteria TMDLs provides for an adequate MOS. There is not a lack of knowledge concerning the relationship between allocations and water quality in this case, where the TMDL applies the criteria as allocations for each source. EPA also concurs that an adequate MOS is provided by the conservative assumptions made in setting the Blackstone River metals TMDL targets, and by providing an explicit 10% MOS for the other metals TMDLs.

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)).

DEM is establishing year-round bacteria TMDLs based on the observation that elevated bacteria levels occur in all seasons and all flow regimes, although standards violations tend to be greater and occur with greater frequency during wet weather. The TMDL analysis contains reduction targets for all seasons and weather conditions, and therefore, seasonality is not an issue. For metals, critical conditions occur during both dry and wet weather and in all seasons, although there can be exceedances of both chronic and acute standards during both high and low flow conditions, depending on the metal. The year-round allocations for metals account for all seasonality concerns because they are based on the more stringent of wet or dry weather calculated targets.

Assessment: EPA New England concludes that seasonal variations are not a concern as flow regime and weather, rather than seasonality, are the important conditions, and have been adequately accounted for in the TMDLs. In addition, pollutant controls are expected to be in place through the year so that these controls will reduce pollution whenever sources are active.

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 monitoring to ensure that plans for implementing water quality improvement activities are adjusted as monitoring indicates changes in the water quality of the impaired segments. The State discusses its plans for monitoring after the TMDL is implemented (TMDL pp. 116-117).

Assessment: EPA concludes that the anticipated monitoring by and in cooperation with RI DEM 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.

A detailed implementation plan is provided in the submission (TMDL pp. 91-115) which specifically addresses the major identified sources of pollution. The plan discusses MS4 stormwater management in detail, and measures to reduce stormwater runoff to the area from identifiable (regulated) point and nonpoint sources, and the control of other nonpoint source runoff, especially that from farms, onsite waste water management systems, and wildlife, waterfowl, and pets.

It also discusses the CSO plans, specific MS4 projects and needs in the towns and cities (TMDL pp. 101-108), and the obligations faced by other permitted multi-sector general facilities and industrial

sources of runoff, and the RI Department of Transportation (DOT) under their permits stemming from the approval of these TMDLs (TMDL pp. 109-111).

Assessment: RI DEM has included an outline of implementation plans, priorities and authorities, although not a required element of the TMDL approval. 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."

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, DEM addresses reasonable assurances that storm water runoff reductions will occur by providing a detailed implementation plan, which demonstrates a strong commitment, and existing investment, in improving water quality in the river (TMDL pp. 91-115).

Assessment: Although not required because RI DEM did not increase WLAs based on expected LA reductions, RI DEM has provided reasonable assurance that WQS 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.

DEM provided a comment period from November 7, 2012 to December 7, 2012. Notice of this comment period and a public meeting on November 7, 2012 was sent via email to the affected communities, key stakeholders, and others (TMDL p. 116). DEM also publicized the meeting by posting its notice in public facilities and on its web site. The public meeting was attended by 11 individuals, not counting

DEM staff, and DEM received several comments during the comment period. DEM has provided EPA with copies of all submitted comments and the Department's responses as an attachment to the final TMDL submission (TMDL App. D, pp. 149-170).

Assessment: EPA New England concludes that DEM involved the public during the development of the TMDL for the *Blackstone River*, has provided adequate opportunities for the public to comment on the TMDL, and has provided reasonable responses to the public comments.

12. Submittal Letter

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

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

Data for entry in EPA's National TMDL Tracking System	
TMDL Name	**Blackstone River Watershed (5 segments)**
Number of TMDLs*	14
Type of TMDLs*	Bacteria, Cd, Cu, Pb^{+}
Number of listed causes (from 303(d) list)	14
Lead State	Rhode Island (RI)
TMDL Status	Final

Individual TMDLs listed below

TMDL Segment name	TMDL Segment ID #	TMDL Pollutant ID# & name	TMDL Impairment Cause(s)	Pollutant endpoint	Unlisted?	RIPDES Point Source & ID#	Listed for anything else?
Blackstone River	RI0001003R-01A	500 (Fecal coliform bacteria)	500 (Fecal coliform bacteria)	B: 200 MPN /100 ml; 400 MPN /100 ml		RIPDES permit RI0100111 (Woonsocket WWTF); RIPDES Stormwater permit RIR040013 (N. Smithfield), RIR040016 (Woonsocket), RIR040035 (Cumberland), RIR040021 (Lincoln), Multi-Sector Gen. permit RIR500000	Benthic Macroinvert Bioassessments, Dissolved oxygen, Phosphorus, Mercury in fish, PCB in fish
		466 (Enterococci bacteria)	466 (Enterococci bacteria)	B: 54 colonies/100 ml, geomean			
		239 (Cadmium)	239 (Cadmium)	Load duration curve			
		663 (Lead)	663 (Lead)	Load duration curve			
Blackstone River	RI0001003R-01B	239 (Cadmium)	239 (Cadmium)	Load duration curve		RIPDES Stormwater permit RIR040041 (Central Falls) & RIR040024 (Pawtucket) Multi-Sector Gen. permit RIR500000	Benthic Macroinvert Bioassessments, Dissolved oxygen, Phosphorus, Mercury in fish, PCB in fish, bacteria
		663 (Lead)	663 (Lead)	Load duration curve			
Cherry Brook	RI0001003R-02	500 (Fecal coliform bacteria)	500 (Fecal coliform bacteria)	B: 200 MPN /100 ml; 400 MPN /100 ml		RIPDES Stormwater permit RIR040013(N. Smithfield) & RIR040016 (Woonsocket) Multi-Sector Gen. permit RIR500000	
		466 (Enterococci bacteria)	466 (Enterococci bacteria)	B: 54 colonies/100 ml, geomean			
		345 (Copper)	345 (Copper)				

Mill River	RI0001003R-03	500 (Fecal coliform bacteria)	500 (Fecal coliform bacteria)	B: 200 MPN /100 ml; 400 MPN /100 ml		RIPDES Stormwater permit RIR040016 (Woonsocket) & Multi-Sector Gen. permit RIR500000	
		466 (Enterococci bacteria)	466 (Enterococci bacteria)	B: 54 colonies/100 ml, geomean			
Peters River	RI0001003R-04	500 (Fecal coliform bacteria)	500 (Fecal coliform bacteria)	B: 200 MPN /100 ml; 400 MPN /100 ml		RIPDES Stormwater permit RIR040016 (Woonsocket) & Multi-Sector Gen. permit RIR500000	
		466 (Enterococci bacteria)	466 (Enterococci bacteria)	B: 54 colonies/100 ml, geomean			
		345 (Copper)	345 (Copper)				

TMDL Type	Point & Nonpoint Sources
Establishment Date (approval)*	April 22, 2013
EPA Developed	No
Towns affected*	Burrillville, Central Falls, Cumberland, Glocester, Lincoln, North Smithfield, Pawtucket, Smithfield, and Woonsocket, Rhode Island