

September 23, 2004

Robert W. Golledge, Jr., Commissioner  
Department of Environmental Protection  
1 Winter Street  
Boston, MA 02108

Dear Commissioner Golledge:

It is my pleasure to approve 14 Total Maximum Daily Loads (TMDLs) for the Assabet River's impaired segments as indicated in Massachusetts' 2002 Integrated Clean Water Act §§ 303(d) and 305(b) list. EPA has determined, as set forth in the enclosed review document, that the six organic enrichment/low dissolved oxygen, seven nutrient and one noxious aquatic plant TMDLs for the Assabet River meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations (40 CFR part 130).

The approval of these TMDLs will be the basis for the issuance of the four major publically owned treatment works (POTWs) National Pollutant Discharge Elimination System (NPDES) permits later this year that will help the restore Assabet River.

Please pass on to your staff in the Division of Watershed Management our congratulations for their excellent work in developing these TMDLs.

Sincerely,

Linda Murphy, Director  
Office of Ecosystem Protection

cc: Cynthia Giles  
Glenn Haas  
Rick Dunn  
Russ Isaac

## EPA NEW ENGLAND'S TMDL REVIEW

**DATE:** September 23, 2004

**TMDL:** Assabet River TMDLs for Total Phosphorous

**STATUS:** Final

**IMPAIRMENT/POLLUTANT:** 14 TMDLs cover 7 segments for nutrients, 6 for organic enrichment /low DO and 1 for noxious plants (See Attachment 1)

**BACKGROUND:** Final Assabet River TMDLs for Total Phosphorous, June 2, 2004

**REVIEWERS:** Mike Hill and Dave Pincumbe

### 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.*

#### *Assessment:*

The Assabet River TMDL for total phosphorous adequately describes the water body segments and the cause of the impairment as identified in the 2002 Clean Water Act (CWA) § 303(d) integrated list. The Assabet River is an effluent dominated stream, receiving treated wastewater discharges from four major municipal publically owned treatment works (POTWs) and three minor facilities. The river segments of concern are impaired primarily for nutrients and organic enrichment/low dissolved oxygen. These pollutants and stressors are indicators of a nutrient

enriched/eutrophied system. In freshwater systems, the nutrient, phosphorous is largely responsible for eutrophication. Therefore, in order to meet state water quality standards a TMDL was developed for the Assabet River which requires decreased loadings of phosphorous from point sources, POTWs and non-point sources – mainly sediment phosphorous flux. This TMDL was developed with special emphasis on reducing the extent of nuisance macrophyte growth, meeting minimum dissolved oxygen criteria, reducing extreme diurnal dissolved oxygen fluctuations and excessive dissolved oxygen supersaturation and reducing ambient total phosphorous concentrations.

Important assumptions made in developing the TMDL are discussed and include relationships among total phosphorous, dissolved phosphorous, nitrogen, dissolved oxygen, aesthetics, sediment phosphorous flux and excessive aquatic weed growth. Pages 12 to 23 of the Final Assabet River TMDL provide a good overview of the description of the water bodies, pollutant of concern pollutant sources and the priority ranking.

EPA believes that the approach used by MA DEP, including the pollutant loading characterization and defining the loading capacity are reasonable and consistent with accepted methods used in establishing nutrient TMDLs. Furthermore, EPA concludes that the TMDL has adequately characterized the Assabet River, the impairment and its causes.

## **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.*

### *Assessment:*

Category 5 of the 2002 Integrated List identifies multiple causes of impairment in different segments of the Assabet River. The two primary causes, nutrients and organic enrichment/low dissolved oxygen, are common to all listed segments and can be addressed through the control of phosphorus. The Assabet River total phosphorus TMDL describes the applicable water quality standards which include narrative criteria as well as designated uses (see TMDL, pages 23 and 24). The Massachusetts water quality standards (314 CMR 4.0) contain numeric criteria for dissolved oxygen, but not for phosphorus or biomass. In the absence of numeric criteria in the state water quality standards, MA DEP uses best professional judgment (BPJ) and a “weight-of-evidence” approach that considers all available information to set site specific permit limits. The weight of evidence approach also considers available guidance – including EPA’s own guidance. The goal of this TMDL is to control eutrophication. The effects of eutrophication include: undesirable or nuisance concentrations of aquatic macrophytes, and in particular for the Assabet

River, excessive growths of floating macrophytes (e.g., duck weed). In addition, the water quality goal is to ensure dissolved oxygen is above the minimum criterion and to maintain protective and reasonable daily variations of dissolved oxygen concentrations so that existing uses are maintained and designated uses are achieved.

EPA concludes that Massachusetts has properly presented its numeric water quality standards and has made a reasonable and appropriate interpretation of its narrative water quality criteria for the designated uses of the Assabet River.

### **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.*

#### *Assessment:*

MA DEP utilized the HSPF model to relate the water quality variables – dissolved oxygen, total phosphorus concentration and biomass and their response to different phosphorous concentrations discharged from the POTWs as the metric by which reaching water quality goals would be measured.

The model was calibrated and verified, various runs were made to evaluate improvements from reduced phosphorus loads on response variables that included biomass, minimum dissolved oxygen, percent dissolved oxygen saturation (indicator of biomass) and in-stream phosphorus concentrations. The output from the calibrated model for the low flow week of July 1999 was used as the baseline which approximates the 7Q10. For more information, please refer to the TMDL document. The assumption of a 50% reduction in total biomass from July 1999 values to achieve designated uses is reasonable and subject to verification through the phased/adaptive management approach.

1. The general conclusions derived from all of the model runs are as follows: A reduction in POTW discharges of total phosphorus, by itself, is not sufficient to meet the minimum dissolved oxygen concentration standard, does not reduce biomass significantly, does not

reduce the percentage of time of dissolved oxygen supersaturation, and maintains in-stream phosphorus concentrations significantly higher than USEPA guidance.

1. Reductions in sediment phosphorus flux, coupled with reductions in POTW discharges of total phosphorus, are necessary to meet the minimum dissolved oxygen concentration standard, reduce biomass significantly, reduce the percentage of time of supersaturation significantly, and to approach the USEPA guidance for in-stream phosphorus concentrations. No significant difference was observed among the response variables when results were compared using POTW design flows and 1999 POTW flows at equivalent effluent phosphorus concentrations and sediment reductions. (specifically, from Table 4, runs 22 & 23, 8 & 14, and 20 & 21).
2. Biomass reductions of 50% or more over the baseline 1999 conditions are obtained primarily when sediment phosphorus flux is reduced by 90% and POTW total phosphorus effluent concentrations are lower than 0.1 mg/l.
3. A reduction in the Westborough POTW effluent concentration of phosphorous to 0.1 mg/l and all others to 0.2 mg/l with 1999 POTW flows and with a sediment flux reduction of 90% (Run 10) resulted in in-stream concentrations of less than 0.1 mg/l in the free flowing sections of the upper reaches and to less than 0.05 mg/l prior to entering the impoundments at Allen St. (RM 25.5-25.1), Hudson (RM 21.5-18.0), Gleasondale (RM 15.5-14.0), Ben Smith (RM 14.0-8.7), and Powdermill (RM 7.5-6.2). EPA notes that to meet the water quality goals for organic enrichment/low dissolved oxygen, noxious aquatic plants and nutrients, the phosphorous concentration limit during the growing season for the Westborough, Marlborough West, Hudson, and Maynard POTWs is set at 0.10 mg/l.
4. Removal of the Ben Smith dam impoundment without POTW upgrades (run 11) had some benefit on the amount of biomass in the system, specifically reducing the biomass in the Ben Smith impoundment while marginally increasing it in the Powdermill impoundment, but did little to change the dissolved oxygen dynamics or result in any significant changes to in-stream phosphorus concentrations.
5. To achieve the water quality goals of reducing biomass by at least 50% based on 1999 conditions, meeting the minimum criterion for dissolved oxygen of 5.0 mg/l throughout the Assabet River, and reducing the duration of dissolved oxygen super-saturation by approximately 30% require that total phosphorus concentrations in the major POTW effluents be no greater than 0.1 mg/l during the growing season and that the sediment flux be reduced to 10% of its 1999 value.

EPA notes that the while TMDL/waste load allocation is based on permitted flows, evaluations were completed at higher flows. Any consideration of higher flows will require a determination that the increased discharge volumes are consistent with water quality standards uses and criteria, including the duration and frequency components of the criteria.

EPA concludes that the loading capacity has been appropriately set at a level necessary to attain applicable water quality standards. Furthermore, MA DEP has used a reasonable approach to establish the relationship between pollutant loading and water quality.

#### **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.*

*Assessment:*

MA DEP adequately describes and sets forth the load allocations for cultural and natural background sources (see page 40 of the TMDL document). In addition, the TMDL document identifies the necessary load reduction in phosphorus from sediment flux.

EPA concludes that the load allocations are adequately specified in the TMDL at levels necessary to attain water quality standards.

#### **5. Wasteload Allocations (WLAs)**

*EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 C.F.R. § 130.2(h) ). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable water quality standard, and all point sources will be removed.*

*In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. But it is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard.*

*The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the State/Tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.*

*Assessment:*

EPA concludes that the waste load allocation for the point sources is adequate. (For a description of the waste load allocations, see the TMDL document, pages 39 to 40.) This TMDL includes adaptive management. Monitoring of the Assabet River's improvement to phosphorus control

will allow a determination of the accuracy of the modeling predictions and attainment of water quality standards. If further control efforts are needed, both implementation of additional sediment remediation and more stringent effluent limits will be evaluated.

However, the minor discharges were not evaluated as part of the HSPF water quality model. EPA understands the analysis included in the TMDL report relative to the minors, but other considerations may result in the establishment of phosphorus permit limits more stringent than the recommended limits of 0.5 mg/l. For Middlesex School, the phosphorus limits will be established as necessary to meet water quality standards in Spencer Brook (Spencer Brook is a tributary to the Assabet River and is the receiving water for the Middlesex School discharge). For MCI Concord, the phosphorus limit may be based on technology requirements in the water quality standards or more stringent water quality based limits that may be necessary in order to minimize the transport of phosphorus downstream to the heavily impaired Concord River system, which has been designated as a Wild and Scenic River.

## **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.*

### *Assessment:*

EPA agrees that a margin of safety exists with respect to meeting the minimum dissolved oxygen criteria in the state water quality standards, in that the model predicts that dissolved oxygen levels would be met even if Marlborough, Hudson, and Maynard were to discharge at loads equivalent to 0.2 mg/l, rather than at the loads equivalent to 0.1 mg/l established in the TMDL (a difference of 6.1#/day). EPA notes that using Run 10 as an upper limit for the margin of safety does not constitute a margin of safety for meeting the narrative criteria for aesthetics and nutrients because not all of the chosen targets predict attainment. However, EPA agrees that the model does predict that the loads in Run 8 (on which the TMDL is based) will achieve better than the 50% target for biomass reduction. This, in conjunction with the margin of safety for dissolved oxygen discussed above, is adequate for this TMDL.

## 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)).*

### *Assessment:*

In the case of eutrophication for systems with relatively short retention times such as small impoundments, the growing season is the critical time. This suggests that nutrient loads to a flowing water system are most relevant during that period. During 1999 and 2000 a number of water quality surveys were conducted to evaluate nutrient loadings to enhance understanding of the nature and extent of nutrient sources to the Assabet River (ENSR, 2001). Total phosphorus loadings were estimated using concurrently measured flows and total phosphorus concentrations from point sources and from tributaries, which represents non-point sources. The evaluation of nutrient loadings during 6 field surveys found that point sources contributed the majority of nutrient loadings to the Assabet River during most surveys. Point sources were found to be the dominant source of biologically available phosphorus (i.e., dissolved phosphorus) during all 6 surveys representing 88% to 98% of the overall biologically available phosphorus load.

Seasonal effluents limits for total phosphorus will be applicable from April 1 through October 31. During the non-growing season, November 1 – March 31, due to concerns that particulate phosphorus may potentially settle in downstream impoundments during this time frame, optimization for particulate phosphorus removal should be required and effluent monitoring for both total and dissolved phosphorus should be required to support future permitting decisions. The study identified that about 90% of the point source loading is in the dissolved form which is not only available for direct uptake by the plant community, but also will likely not settle. As a result, it is assumed that POTW discharges of dissolved phosphorus during the non-growing season and particularly during high flow months will not be retained in the system for use during the growing season.

EPA concludes that MA DEP adequately explains the seasonal variability of this TMDL. However, despite not evaluating, through monitoring or modeling, the water quality impact of winter phosphorus loadings, the TMDL indicates that winter phosphorus removal requirements should be limited to an optimization requirement only. The TMDL report indicates that since approximately 90% of the total phosphorus point source loading is in the dissolved form that it should pass through the system in the winter period. However, the one dry weather survey during the winter period indicates that while the dissolved fraction is 90% or greater for Westborough and Hudson, it is only 78% and 72% respectively for Marlborough and Maynard. In addition, it is not evident that dissolved phosphorus will not attach to inorganic particulate matter in the water column and settle into the impoundments. EPA is approving the summer low flow based TMDL and the winter loading issues will be addressed through the permit issuance process.



## **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.*

### *Assessment:*

In order to assess the progress in and success of obtaining the TMDL's water quality goals, a systematic monitoring plan needs to be established. Data necessary to determine whether water quality goals have been met through the implementation of one or a combination of control mechanisms provided for in the TMDL need to be collected and evaluated.

The actual design of the monitoring program will be developed during the first permit cycle to incorporate the results of the sediment feasibility study that will also be developed during that time.

EPA concludes that monitoring plan and phased approach of achieving the TMDL is acceptable.

## **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.*

### *Assessment:*

The work and modeling conducted to date indicates that both sediment remediation and POTW treatment facility improvements are necessary to achieve water quality goals.

Reduction in phosphorus in the sediments may occur naturally over a long period of time once the phosphorus levels in the effluent from the POTWs are reduced to 0.1 mg/l or lower. The reduction in sediment phosphorus flux can likely be expedited with measures such as dredging, encapsulating and/or dam removal. Given this and the importance of sediment remediation, a phased approach is recommended to allow the communities an opportunity to investigate sediment remediation and/or dam removal options which could result in achieving water quality

standards and designated uses in a more cost effective manner than solely reducing point source phosphorus sources.

As previously noted, this approach requires an initial reduction in POTW effluent total phosphorus concentrations, on a seasonal basis, to 0.1 mg/l of total phosphorus in each discharge to be achieved before or during the next 5 year NPDES permit cycle ending in 2009. Also, by March 2007, the communities, in cooperation with federal and state agencies and other stakeholders, will conduct a detailed feasibility study of the dam removal and sediment control options and provide a recommended plan. The study will include, but not necessarily be limited to, identifying options for sediment remediation, investigation of potential sediment transport issues and downstream impacts, evaluation of legal issues, and recommendations for cost effective solutions to achieve water quality standards.

By the spring of 2008 a determination will be made if sediment remediation is a viable alternative. If so, a new compliance schedule will be negotiated for completion of the selected work. If DEP and USEPA determine that sediment remediation is not a viable alternative, then new permit limits would be developed based on the TMDL and any new information and/or standards available at that time. The new limits will be incorporated into the next permit cycle scheduled for 2009 and would have to be met by 2014.

As previously noted, USEPA guidance documents support adaptive management when dealing with the TMDL process for receiving waters with serious and complex water quality problems such as the Assabet River. Given the uncertainties associated with biomass response and the feasibility of sediment remediation, DEP believes that the adaptive management approach is appropriate.

Based on adaptive management the following implementation actions are proposed:

1. Until POTW upgrades for phosphorus removal are constructed, the POTWs will be required to continue optimization of seasonal removal of total phosphorus to meet the 2000 interim discharge limits for total phosphorus of 0.75 mg/l.
2. In 2004 it is anticipated that the NPDES permits will be reissued to include seasonal total phosphorus limits for all POTWs to achieve concentration based limits, loading based limits or some combination of the two to achieve 0.10 mg/l total phosphorus from April 1 to October 31. The communities would be required to achieve those limits by April 2009.
3. The communities will be allowed to investigate sediment and dam removal options that may be more cost-effective than achieving additional facility reductions. The feasibility study and recommended plan will be provided to the agencies and other stakeholders by March 2007 for additional discussion and decision-making. As previously outlined, by the spring of 2008 the agencies will make a determination if sediment remediation is a viable alternative. If so, a new compliance schedule will be negotiated for completion of the selected work. If the agencies determine that sediment remediation is not a viable alternative, then new permit limits will be developed and based on the TMDL and any

new information and/or standards available at that time. The new limits will be incorporated into the next permit cycle scheduled for 2009 and would have to be met by 2014.

4. During the first permit cycle a monitoring program will be developed and implemented to assess the water quality conditions, the success of remediation efforts, and if water quality goals are being achieved.

EPA concludes that the approach taken by MA DEP is reasonable and will lead to water quality standards attainment.

## **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.”*

### *Assessment:*

As noted above, in a water impaired by both point and non-point sources, where a point source is given a less stringent wasteload allocation based on an assumption that non-point source load reductions will occur, reasonable assurance that the non-point source reductions will happen must be explained in order for the TMDL to be approvable. In the Assabet River TMDL, the WLAs for the POTWs rely on an assumption that 90% reduction in phosphorus sediment flux will occur. As stated on page 79 of the TMDL document, “[t]his is likely to take a long time without some direct action, which is why assessing possible actions to speed and perhaps enhance the process are proposed. The TMDL as written recognizes the significant role sediment plays in water quality when low levels [of] phosphorus from the point sources are achieved. It also recognizes that once the low levels are achieved it may be more practical and cost effective to remove phosphorus from the sediment than to add additional sophisticated technologies to the point sources.” Therefore, if the 90% sediment phosphorus reduction is to be achieved, additional actions such as dam removal or sediment remediation will be necessary. DEP has explained its intent to allow the POTW communities, in conjunction with state and federal agencies, to pursue and conduct a feasibility study of dam removal and sediment control options and to develop a recommended plan for sediment remediation. If sediment remediation and/or dam removal are determined to be viable options, then the communities would be placed on a compliance schedule to implement the remedy. If they are not viable options, then new

more stringent permit limits would be included in the next permit cycle for the POTWs (i.e., 2009).

DEP's intent to allow the communities to pursue a dam removal and sediment remediation feasibility study, and to implement the study's remedy if viable, provides the reasonable assurance for establishing the WLAs in reliance on a 90% reduction in phosphorus sediment flux. If the study is not done, or if sediment remediation or dam removal are not viable or do not occur, then the reasonable assurance will no longer be valid. In that event, more stringent permit limits to meet water quality standards would be necessary.

## **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.*

### *Assessment:*

A public meeting was held on March 25, 2004, for public review and solicitation of comments on the Draft Assabet River Total Maximum Daily Load for Total Phosphorus (Report Number: MA82B-01-2004-01; Control Number CN 201.0). Approximately 36 persons attended. Comments were accepted through April 12, 2004. DEP has done a commendable job involving the public during the development of the TMDLs and has provided ample opportunities for the public to comment. Finally, MA DEP has provided a clear record of the comments received and provided clear responses to those comments. Therefore, EPA concludes that MA DEP has adequately responded to the comments raised during the public participation process.

## **12. Submittal Letter**

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

*Assessment:*

On June 1, 2004, MA DEP submitted a final TMDL for total phosphorous on the Assabet River for EPA approval. The document contained all of the elements necessary to approve the TMDLs.

## Attachment 1: TMDLs Addressed In Document

NAME	SEGMENT ID	DESCRIPTION	SIZE	POLLUTANT NEEDING TMDL
Assabet River (8246775)	MA82B-01_2002	Outlet Flow Augmentation Pond to Westborough WWTP, Westborough. Miles 31.8-30.4	1.4 miles	-Nutrients <sup>1</sup> -Organic enrichment/Low DO <sup>1</sup> -Pathogens
Assabet River (8246775)	MA82B-02_2002	Westborough WWTP, Westborough to Route 20 Dam, Northborough. Miles 30.4-26.7	3.7 miles	-Metals -Nutrients <sup>1</sup> -Organic enrichment/Low DO <sup>1</sup> -Pathogens
Assabet River (8246775)	MA82B-03_2002	Route 20 Dam, Northborough to Marlborough West WWTP, Marlborough. Miles 26.7-24.3	2.4 miles	-Nutrients <sup>1</sup> -Pathogens
Assabet River (8246775)	MA82B-04_2002	Marlborough West WWTP, Marlboro to Hudson WWTP, Hudson. Miles 24.3-16.4	7.9 miles	-Cause Unknown -Metals -Nutrients <sup>1</sup> -Organic enrichment/Low DO <sup>1</sup> -Pathogens
Assabet River (8246775)	MA82B-05_2002	Hudson WWTP Hudson to Routes 27/62 at USGS Gage, Maynard. Miles 16.4-7.6	8.8 miles	-Nutrients <sup>1</sup> -Organic enrichment/Low DO <sup>1</sup> -Pathogens
Assabet River (8246775)	MA82B-06_2002	Routes 27/62 at USGS Gage, Maynard to Powdermill Dam, Acton. Miles 7.6-6.4	1.2 miles	-Priority organics -Metals -Nutrients <sup>1</sup> -Organic enrichment/Low DO <sup>1</sup> -Thermal modifications -Taste, odor and color -Suspended solids -Noxious aquatic plants <sup>1</sup>
Assabet River (8246775)	MA82B-07_2002	Powdermill Dam, Acton to confluence with Sudbury River, Concord. Miles 6.4-0.0	6.4 miles	-Nutrients <sup>1</sup> -Organic enrichment/Low DO <sup>1</sup> -Pathogens

<sup>1</sup> being addressed in this TMDL via Total Phosphorus control