UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

June 28, 2002

Lauren A. Liss, Commissioner
Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Dear Commissioner Liss:

It is my pleasure to approve five Total Maximum Daily Loads (TMDL's) for lakes targeting total phosphorus. These are: Lake Boon, Leesville Pond, Lake Quinsigamond/Flint Pond, Salisbury Pond and Indian Lake.

EPA has determined, as set forth in the enclosed review document, that these phosphorus TMDL's meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations (40 CFR part 130).

I want to congratulate you and the staff of the Division of Watershed Management for the excellent work in developing these TMDL's.

Sincerely,

Linda M. Murphy

Linda Murphy, Director
Office of Ecosystem Protection

cc: Cynthia Giles
Glenn Haas
Rick Dunn
Russ Isaac

enclosures (5)

Lauren – 2 letters in one week! You staff deserve a lot of credit. Linda

TMDL Name: Lake Quinsigamond, Worcester/Shrewsbury, MA (MA51125); and Flint Pond, Grafton/Worcester/Shrewbury, MA (MA51050)
Lead State: Massachusetts
TMDL Status: Approved
Pollutant ID: Total Phosphorus
TMDL end point: 12 ppb Total Phosphorus (TP)
List ID: MA51050; MA51125
Impairment ID: Turbidity (Flint Pond); Noxious aquatic plants (Lake Quinsigamond)
Cycle: 1998
TMDL type: both point source and non-point source
TMDL (final) submittal date: May 30, 2002
Actual establishment date: June, 2002
Notice to public date: Nov., 1999

EPA NEW ENGLAND'S TMDL REVIEW

TMDL: Lake Quinsigamond, Worcester/Shrewsbury, MA (MA51125); and Flint Pond, Grafton/Worcester/Shrewbury, MA (MA51050)

Date: May 30, 2002

STATUS: Final

IMPAIRMENT/POLLUTANT: Turbidity; the TMDLs are proposed for Total Phosphorus (1 for Flint Pond; 1 for Lake Quinsigamond)

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BACKGROUND: The Massachusetts Department of Environmental Protection (MADEP) submitted to EPA New England the *Total Maximum Daily Load of Phosphorus for Flint Pond, Grafton, MA,* dated February 25, 2002. The following is a summary of EPA's review which explains how the TMDL submission satisfies the statutory and regulatory requirements of TMDLs in accordance with Section 303(d) and 40 CFR Part 130. The technical basis for the TMDL is a 1981 report on Lake Quinsigamond by W.W. Walker, Jr. and a 1982 watershed management plan for Lake Quinsigamond and Flint Pond by J.M. McGinn.

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.

Assessment:

The TMDL document adequately describes the waterbody and the cause of impairment as identified on Massachusetts' 1998 303(d) list. Lake Quinsigamond and Flint Ponds are adjacent to each other with Flint being immediately downstream of Lake Quainsigamond. Because of the close connections, the two lakes are managed as one system.

Flint Pond is a multi-basin lake with an area of about 107 Ha (266 acre) with a mean depth of 2.7 m (9 ft) and a maximum depth of 4.5 m (15 ft), located immediately downstream of Lake Quinsigamond. It is situated in an urban area within the borders of the City of Worcester and the towns of Shrewsbury and Grafton, MA, in the Blackstone River basin. Lake Quinsigamond is a 192 hectare (475 acres), lake located in an urban area on the border of the City of Worcester and the town of Shrewsbury, Massachusetts in the Blackstone Basin (see map in Appendix IV). The lake is long and narrow with a maximum depth of 85 feet (mean depth 33 feet) and residence time of about one-half year.

Flint Pond and Lake Quinsigamond were listed on the 1998 303(d) list for turbidity. In developing the TMDL, MADEP determined that the turbidity impairment is caused by excessive algae and rooted aquatic macrophytes. MADEP believes that all causes of impairment (turbidity and excessive growth of algae and rooted macrophytes) are related to high phosphorous loading and has, therefore, identified total phosphorus (TP) as the pollutant of concern for these TMDLs. The overall goal of the TMDLs is to restore uses of the lake and pond by reducing algae and nuisance aquatic-plant growth.

The document identifies the point and nonpoint sources of phosphorus to the lake and pond, including the location and relative magnitude of these sources. Sources identified include surface-water, groundwater, and atmospheric sources. Stormwater is identified as the major source of both dissolved and total phosphorus to both waterbodies. Baseflow inputs (i.e., groundwater discharge) are also considered to be a significant source, while atmospheric inputs are considered to be relatively minor. The location of stormwater loads is given by subwatershed. Nine subwatersheds are identified for the combined Lake Quinsigamond/Flint Pond system; two of these, Bonnie Brook and South Meadow Brook (including drainage areas from O'Hara Brook and Bridle Path Drain) discharge into Flint Pond and, together, contribute almost one-third of the total storm phosphorus load.

Natural background loadings were not distinguished from the total nonpoint-source load. EPA concurs with MADEP's decision not to separate natural background from the nonpoint-source load because of uncertainty concerning the relationship between land use and the sources that contribute to the export of phosphorus from those land-use areas.

MADEP developed a phosphorus model, which was applied to both Lake Quinsigamond and

Flint Pond. A more detailed discussion of the technical approach and assumptions used by MADEP to develop the TMDL is given below under TMDL Review Element #3.

The technical approach entailed using mass-balance equations to estimate the loading capacity and in-lake P concentration of the Lake Quinsigamond/Flint Pond system.
A series of empirical models were then used to model oxygen depletion in the hypolimnion (the water layer just above the lake bottom). The mass-balance approach was chosen because it relies on actual monitoring data of the lake and tributaries, rather than on loading values from the literature. EPA concurs with MADEP's decision to use an approach that relies on actual monitoring data.

MADEP reports that the town of Grafton has an estimated 20-year growth rate of about 24 percent, but does not believe that the resulting increase in P loading will require a modification of this TMDL.

The TMDL has adequately characterized Lake Quinsigamond and Flint Pond, the impairment and its causes. MADEP relied on best available information including a 1981 report by Walker and a 1982 report by J.M. McGinn, as well as information from surveys of Lake Quinsigamond and Flint Pond by MADEP.

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: Lake Quinsigamond and Flint Pond are designated as Massachusetts Class B waters. The TMDL describes the applicable Water Quality Standards (WQSs), which include narrative criteria as well as the designated uses (primary and secondary contact recreation)**.** Applicable WQSs are based on 314CMR 4.04 subsection 5, 4.05 (3) b, 4.05 (5) a (control of eutrophication); and 314CMR 4.40 (3), subsection 6 and 105CMR 445.10 (2b) (color and turbidity). These regulations restrict new or increased point-source discharges of nutrients to lakes and ponds; set standards for dissolved oxygen; prohibit pollutants, color and turbidity in concentrations that are aesthetically objectionable or that impair designated uses; and set Minimum Standards for Bathing Beaches in Massachusetts (requirement that a black disk (such as a Secchi disk) be visible to a depth of at least 4 feet of water).

MADEP has interpreted its narrative criteria for Lake Quinsigamond and Flint Pond by selecting a quantitative water-quality target of 12 ppb 'available' in-lake TP, which includes dissolved

phosphorus and a fraction of particulate phosphorus (10 percent assumed)..

The basis for selecting the numeric target includes in-lake water-quality data and the use of typical TP levels for lakes in the same ecoregion as Lake Quinsigamond and Flint Pond (15-19 ppb TP, based on spring/fall concentrations; 30-50 ppb TP, based on summer concentrations). MADEP notes that selection of 12 ppb is comparable to the ecoregion ranges if the fraction of available particulate P is assumed to be 0.10.

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:

MADEP chose to link the loading capacity of Lake Quinsigamond and Flint Pond (expressed as mass-per-time (i.e., kg/yr) for total phosphorus) to the number of days each year that aerobic conditions are predicted to exist in the hypolimnion**.** Specifically, empirical modeling was done to determine the reduction of annual phosphorus loading needed to extend the oxygen supply in the hypolimnion from the current 140 days to 200 days. Modeling was directed at the deeper basins of Lake Quinsigamond rather than shallower areas of Flint Pond. However, MADEP assumed that results would be protective of Flint Pond water quality as well as Lake Quinsigamond. MADEP notes that Flint Pond has a much faster flushing rate than Lake Quinsigamond and, thus, can tolerate higher concentrations of nutrients.

The modeling approach required a series of empirical models. Models were used, in turn, to estimate (1) lake loading capacity (i.e., target nutrient load), (2) annual average in-lake P concentration, (3) a trophic state index, and (4) areal and volumetric hypolimnetic oxygen-depletion rates, and (5) number of days each year of dissolved oxygen (DO) in the hypolimnion

The target P load was established using estimates of annual water loading rates and annual P loads (from surface-water, groundwater, and atmospheric sources). The critical model input at this stage was 'available phosphorus loading', which was defined as phosphorus available to algae. This was assumed to include dissolved phosphorus and a fraction of particulate phosphorus. This fraction was assumed to be 0.1 (i.e., 10%), but was also modeled at 0.0 and 0.2 to represent a range of possible values.

Next, the target P load was used in a simple in-lake model along with surface-water overflow rate and effective settling velocity to estimate average in-lake P concentration. Assumptions used here are typical of such in-lake models (e.g., rate of P deposition to sediments is proportional to total mass of P in the lake; lake and outflow P concentrations are equivalent, etc.) This estimated P concentration was used to estimate a trophic-state index, which, in turn, was used to estimate areal and volumetric hypolimnetic oxygen-depletion rates. Finally, a simple model was used to estimate the total days each year of dissolved oxygen in the hypolimnion. This last model required an assumption of average initial oxygen concentration in the hypolimnion at the start of spring stratification.

The total loading capacity for Flint Pond and Lake Quinsigamond is estimated to be 1195 kg/yr of total phosphorus in order to reduce average in-lake TP concentrations from 16 to 12 ppb of available phosphorus TMDL p. 15). The loading capacity was set to protect water quality and support uses during *critical conditions* which occur during the summer season when environmental conditions (e.g., higher temperatures, increased light intensity, etc.) are most favorable for algal and aquatic-plant growth. Reducing phosphorus loading from the watershed alone will not result in attainment of Water Quality Standards. Attainment will also require in-lake management practices to reduce the amount of rooted macrophytes in targeted areas.

The Flint Pond submittal includes documentation supporting the technical approach and key assumptions used in the analysis. Principal strengths of the technical approach include the use of existing data in conjunction with watershed and lake modeling. Empirical models such as the ones used in this analysis are based on extensive data from lakes with similar characteristics that demonstrate the relationship between pollutant loading and lake water quality. Weaknesses in the approach are the lack of site-specific information about pollution sources, the assumption of what fraction of particulate phosphorus is available for growth of algae, and uncertainty about the relationship between pollutant loadings and aquatic macrophyte growth.

The TMDLs are expressed in terms of annual loadings of total phosphorus rather than daily loadings. As specified in 40 CFR 130.2(i), TMDLs may be expressed in terms of either mass per unit time, toxicity or other appropriate measure. MADEP justifies setting an annual load, as opposed to a daily load, because overall water quality of the waterbodies, including excessive aquatic-plant growth are a function of long-term average pollutant loadings rather than short-term daily loadings.

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: The TMDL sets the total of all load allocations for existing and future nonpoint sources to 579 kg/yr TP. Loads are allocated for baseflow (i.e., groundwater discharge), and atmospheric sources. No reductions in atmospheric or baseflow sources are proposed.

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: The TMDL sets the total of all Wasteload Allocations for existing and future point sources to 556 kg/yr TP. Wasteloads are allocated for stormwater flow. Stormwater is regulated under the EPA NPDES Phase I Stormwater program. This includes two point-source stormwater discharges to Bonnie Brook, a tributary to Flint Pond as well as other stormwater discharges to the waterbodies.

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: The Flint Pond TMDL includes an explicit MOS of 5% (60 kg/yr) which has been set aside as unallocated. MADEP believes that an additional MOS is built into the technical analysis because of the conservative assumptions used. The most important of these is the assumption of a constant value of P loading from groundwater discharge into the lake. As noted by MADEP, baseflow loading of phosphorus will be reduced as areas of watershed with septic systems are connected to the sewer system and as P concentrations decline in septic-tank effluent as a result of state-required reductions in the P content of cleaning agents.

EPA New England concludes that adequate explicit MOS is provided in the TMDL to address the threat of nuisance algal blooms (and associated turbidity) and rooted macrophytes.

EPA New England agrees that MADEP's commitment to conduct post-implementation monitoring to assess the adequacy of the TMDL (and make revisions if necessary) helps to address the uncertainty of the relationship between phosphorus loading and macrophyte growth and provides some level of assurance that water-quality standards will ultimately be met in Lake Quinsigamond and Flint Pond.

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: The TMDLs were developed to be protective of the most environmentally sensitive period (summer season), when conditions are most favorable for plant growth. Therefore, the TMDL will also be protective of water quality during all other seasons. In addition, because of the hydraulic detention time of the watersheds**,** anticipated phosphorus controls are expected to be in place throughout the year or during the season when the source becomes active in order to protect water quality. Thus, source controls will achieve pollutant reductions whenever sources are active and will, therefore, protect water quality throughout the year.

8. Monitoring Plan for TMDLs Developed Under the Phased Approach

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan when a TMDL is developed under the phased approach. The guidance recommends that a TMDL developed under the phased approach also should provide assurances that nonpoint source controls will achieve expected load reductions. The phased approach is appropriate when a TMDL involves both point and nonpoint sources and the point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. EPA's guidance provides that a TMDL developed under the phased approach should include a monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of water quality standards.

Assessment: MADEP states that water-quality monitoring of the lake and pond will continue on a regular basis according to the five-year watershed cycle, and that surveys should include Secchi disk readings, nutrient analyses, temperature and oxygen profiles, and aquatic vegetation maps Results of these monitoring and survey activities will be used to assess the adequacy of the TMDLs. MADEP will also encourage additional monitoring by volunteer groups.

EPA New England concludes that the proposed monitoring by MADEP, together with the on-going annual volunteer monitoring, will be sufficient to evaluate the adequacy of the TMDLs during the next 10 to 15 years. Collection of in-lake water-quality data by the Lake Quinsigamond Watershed Association and other volunteer groups that are of acceptable quality to MADEP will greatly facilitate MA's ability to evaluate the effectiveness of controls and the adequacy of the TMDLs.

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 TMDL implementation plan is described on pages 17-21. The major implementation effort will occur during year 2005 as part of the rotating 5-year basin cycle, but will also continue in the 'off years'. Major components of the plan focus on stormwater controls within the city of Worcester and Town of Shrewsbury, which control runoff from the western and eastern shores of Lake Quinsigamond, respectively. Additional nutrient and erosion control will focus on enforcement of the Wetlands Protection Act by the local Conservation Commission and various Best Management Practices (BMPs) supported by the National Resource Conservation Service (NRCS). In addition, MADEP recommends aquatic-plant management

within the lake, such as using mechanical harvesters to cut boating channels in the southern basin and hydroraking to open up swimming areas along the shoreline. Currently, MADEP is assessing the feasibility of drawdown as a macrophyte-management technique; preliminary studies show that a drawdown of 2.8 ft is possible in Flint Pond. In-lake management practices are considered a necessary component of a restoration plan to attain water-quality standards because of the extensive shallow-water areas in Flint Pond that are ideal for rooted macrophyte growth.

MADEP recommends that a locally organized watershed survey be done to obtain more information about sources of nutrients within the watershed. MADEP outlines a process for collecting information to identify phosphorus sources, provide watershed residents with nonpoint-source pollution and lake water-quality education, and give guidance for grant and loan funding to control sources (e.g., Section 319 funds, State Revolving Fund, and DEM's Lakes and Pond Grant Program). Tasks and responsible parties are identified on Table 2 in the TMDL document.

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: Reasonable assurances that the TMDLs will be implemented are provided through current regulations, availability of financial incentives and the existence of various local, state, and federal pollution-control programs. Table 2 in the TMDL document lists the posed implementation tasks and responsible groups. Many of the implementation tasks related to phosphorus reduction are the responsibility of either MADEP or the watershed team which is led by the MA Executive Office of Environmental Affairs (EOEA). EPA New England has the opportunity through the Performance Partnership Agreement (PPA) process to work with MADEP to provide reasonable assurances for implementing these TMDLs. The responsible groups for tasks related primarily to outreach programs and developing funding proposals include the Lake Quinsigamond Watershed Association, the Blackstone Watershed Association, and Lake Quinsigamond Commission, all of which have demonstrated a strong commitment to addressing water-quality issues.

Currently, the City of Worcester is implementing several programs to reduce phosphorus inputs

to Flint Pond, including programs to (1) sweep streets, (2) a catch-basin program, (3) a program to locate and remove illicit connections to storm sewers, and (4) a sewage/stormdrain dual manhole modification program to reduce cross-flow between stormwater and sewage-transport systems.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. § 130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. § 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

The public participation process for the Lake Quinsigamond and Flint Pond TMDL is described on page 22 of the final document. MADEP held a preliminary public meeting on November 10, 1999 with state and local government representatives and local environmental groups including the Lake Quainsigamond Commission at the DEP office in Worcester to discuss an earlier draft of the TMDL document (see Appendix VI).

The final public meeting was held on October 18, 2001, to discuss the findings of the TMDLs. MADEP has provided, in the final submittal, a clear record of comments received and MADEPs responses to those comments. (See TMDL, pps. 22-23). Appendix III of the submittal provides a list of the Public meeting attendees..

EPA-New England concludes that MADEP has done an adequate job involving the public during the development of the TMDLs, and has provided adequate opportunities for the public to comment on the TMDLs. Additionally, MADEP has provided, in the final submittal, a clear record of comments received and MADEP's responses to those comments. EPA-New England concludes that MADEP has adequately responded to all 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.