UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
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NEW YORK, NY 10007-1866

OCT - 1 2007

Sandra Allen
Director
Division of Water
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-3500

Dear Ms. Allen:

On September 26, 2007, the U.S. Environmental Protection Agency (EPA) received for approval the New York State Department of Environmental Conservation's (NYSDEC) documents, dated September 26, 2007:

- "Total Maximum Daily Load (TMDL) for Phosphorus in Blind Sodus Bay";
- "Total Maximum Daily Load (TMDL) for Phosphorus in Little Sodus Bay"; and
- "Total Maximum Daily Load (TMDL) for Phosphorus in Moon Lake."

These TMDLs address the total phosphorus loadings and impairments and are established at a level sufficient to attain the NYSDEC's water quality guidance value for total phosphorus in the Blind Sodus Bay, Little Sodus Bay, and Moon Lake.

EPA has determined that these TMDLs meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations (40 CFR Part 130) and hereby approves these TMDLs for total phosphorus. Details of these approvals are provided in the enclosure entitled, "Review of Total Maximum Daily Loads (TMDLs) for Total Phosphorus (TP) for Blind Sodus Bay, Little Sodus Bay, and Moon Lake, New York."

Upon EPA's approval, these TMDLs will be incorporated in the New York State Water Quality Management Plan.

Sincerely,

Walter Mugdan, Director
Division of Environmental Planning and Protection

Enclosure

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Review of Total Maximum Daily Loads (TMDLs) for Total Phosphorus (TP) for Blind Sodus Bay, Little Sodus Bay, and Moon Lake, New York

This document is drafted consistent with The United States Environmental Protection Agency's (EPA) "Guidelines for Reviewing TMDLs Under Existing Regulations Issued in 1992." These TMDL review guidelines are not themselves regulations. These guidelines summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any difference found between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations. The following italicized sections describe EPA's statutory and regulatory requirements for approvable TMDLs. The sections in regular type reflect the analysis of New York's compliance with these requirements.

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional 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. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset, and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the National Pollutant Discharge Eliminations System (NPDES) permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This 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 spatial extent of the watershed in which the impaired waterbody is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and
(5) an 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; chlorophyll a and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

A. Identification of Waterbody and Background Information

On September 26, 2007, EPA received for review and approval the New York State Department of Environmental Conservation (NYSDEC) documents, dated September 26, 2007:

- "Total Maximum Daily Load (TMDL) for Phosphorus in Moon Lake, Jefferson County, New York" (Moon Lake TMDL document);
- "Total Maximum Daily Load (TMDL) for Phosphorus in Little Sodus Bay, Cayuga County, New York" (Little Sodus Bay TMDL document); and
- "Total Maximum Daily Load (TMDL) for Phosphorus in Blind Sodus Bay, Wayne County, New York" (Blind Sodus Bay TMDL document);

Along with these three technical documents, a copy of the notice seeking public comment and a companion document responding to public comments were submitted. Collectively these documents are referred to as "the TMDL submittals."

Little Sodus Bay and Blind Sodus Bay have been identified as being impaired by nutrients (phosphorus), while Moon Lake is being impaired by phosphorus, measured as total phosphorus (TP), on New York's 2006 CWA Section 303(d) list.

Moon Lake is situated within the Town of Theresa, Jefferson County, New York. This TMDL covers 230 lake acres and the Moon Lake watershed area includes 893 acres of land.

Blind Sodus Bay is situated in the Town of Wolcott, Wayne County, New York. This TMDL covers 235 lake acres and the Blind Sodus Bay watershed area includes 10,209 acres of land.

Little Sodus Bay is situated within the Town of Fair Haven, Cayuga County, New York. This TMDL covers 728 lake acres and the Little Sodus Bay watershed area includes 2,127 acres of land.

B. Pollutant of Concern

The pollutant of concern for these TMDLs is TP, which is causing accelerated eutrophication of Blind Sodus Bay, Little Sodus Bay, and Moon Lake. Therefore, these TMDLs/Waste Load Allocations (WLAs)/Load Allocations (LAs) were established for TP.

C. Pollutant Sources

The TMDL submittals identify groundwater; agriculture (hay/pasture and cropland); forest; wetlands; septic systems, point source dischargers and nonpoint source storm water as the primary contributors of TP to the lake.

D. Priority Ranking

The Blind Sodus Bay, Little Sodus Bay, and Moon Lake TP impairments are ranked by NYSDEC as a low priority on its 2006 CWA Section 303(d) list.

EPA finds that these TMDLs meet the requirements for describing the waterbody, the pollutant of concern, pollutant sources, and priority ranking.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

The TMDL submittals identify that TP in waters designated Class B and Class C is addressed under New York's narrative surface water quality standards for nutrients, found at Part 703 of New York State Code, Rules and Regulations (NYSCRR). The narrative criterion for phosphorus and nitrogen found at Part 703.2 is:

> "None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages."

The water quality classification for Little Sodus Bay and Blind Sodus Bay is Class B, which means that the best usages of the bay are primary and secondary contact recreation and fishing. The Bays must also be suitable for fish propagation and survival. The water quality classification for Moon Lake is Class C, which means that the most appropriate usage is fishing.

As part of its Technical and Operational Guidance Series (TOGS 1.1.1 and accompanying fact sheet, NYS, 1993), NYSDEC has suggested that for waters classified as ponded (i.e., bays, reservoirs and ponds, excluding the bays of Lakes Erie, Ontario and Champlain), the epilimnetic summer mean total phosphorus concentration (from June 1 to September 30) shall not exceed 20 µg/L (or 0.02 mg/L). This guidance value, which is based on aesthetic effects for primary and secondary contact recreation, represents NYSDEC's interpretation of its narrative criterion for phosphorus found at 6 NYCRR §703.2. The guidance value of 20 µg/L corresponds to a mesotrophic status. This value represents a transition between a eutrophic to a mesotrophic lake. This guidance value, an epilimnetic summer mean total phosphorus of 20 µg/L, is the TMDL water quality target (TMDL target) for the three lakes.

EPA finds that the TMDL submittals adequately describe the requirements for identifying the applicable water quality standard and numeric water quality target for which these TP TMDLs were established.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the

analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account critical conditions for steam flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable critical conditions and describe their approach to estimating both point and nonpoint source loadings under such critical conditions. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

A. Loading Capacity

The loading capacities for each of the three waterbodies were calculated using an epilimnetic summer mean total phosphorus TMDL target of 20 µg/L and are shown in:

- Table 6 on page 16 of the Blind Sodus Bay TMDL submittal and Table 1 of this document;
- Table 7 on page 16 of the Little Sodus Bay TMDL submittal and Table 2 of this document; and
- Table 6 on page 16 of the Moon Lake TMDL submittal and Table 3 of this document.

The BATHTUB[1] model was used to calculate the maximum concentration of TP that results in compliance with the TMDL target of 20 µg/L phosphorus. The BATHTUB model simulates the fate and transport of nutrients and water quality conditions in response to nutrient loads to a lake. BATHTUB performs steady state water and nutrient balance calculations in a spatially segmented hydraulic network that accounts for advective and diffusive transport and nutrient sedimentation. Physical characteristics of the watershed lake morphology (e.g., surface area, mean depth, length, mixed layer depth) were obtained from the Citizens Statewide Lake Assessment Program (CSLAP) and bathymetric maps were provided by NYSDEC or created by the Cadmus Group, Inc. Each lake is modeled as one segment, this provides predictions of area-weighted mean concentrations and is adequate to support management decisions. BATHTUB predicts eutrophication-related water quality conditions (total phosphorus, total nitrogen, chlorophyll-a, transparency, and hypolimnetic oxygen depletion) using empirical relationships derived from assessments of lake data. This model has been previously applied to north temperate lakes with characteristics similar to those of Blind Sodus Bay, Little Sodus Bay and Moon Lake. Please refer to Appendix B of the TMDL submittals for more detailed information regarding the BATHTUB model.

1 Flux, Profile, and BATHTUB: Simplified Procedures for Eutrophication Assessment and Prediction. January 2004. The United States Army Corps of Engineers, Engineer Research and Development Center. <http://el.erdc.usace.army.mil/elmodels/emiinfo.html>.

The ArcView Generalized Watershed Loading Function model (AVGWLF)[2] was used to calculate the current nonpoint source loads of TP to these three waters. The maximum concentrations calculated by BATHTUB for each of the three waterbodies were converted into loading rates using simulated flow from AVGWLF. The AVGWLF model was initially calibrated and validated for 22 watersheds throughout New York and New England for the period 1997-2004. The model was fine-tuned by including additional calibration sites in New York to supplement data from the original northeast model calibration and verification sites. Two models were developed based on the Eastern Great Lakes/Hudson Lowlands area and the Northeastern Highlands area and calibrated to better reflect local conditions and ecological and hydrological processes. Information on these sites can be found in Appendix A and Table 7 in each of the TMDL submittals. By calibrating the model at watersheds with data available, the AVGWLF model estimates the dissolved and total nutrient loadings to a stream from complex watersheds, even when tributary water quality data are not available, using a Geographic Information Systems (GIS) software interface.

In order to apply uniform coverage for the entire watershed, the distribution of land use was determined using the National Land Cover Dataset (NLCD) updated by using New York State High Resolution Digital Orthoimagery. The land use classifications which are sources of TP to each of these three watersheds are: agriculture (hay/pasture and cropland); forest; wetlands; and developed land. Malfunctioning septic systems were considered as a separate loading source and thus were not included in the developed land loading. The groundwater phosphorus concentration is estimated in AVGWLF and then allocated to natural, agricultural and developed land sources. Assumptions used to estimate septic system loads and the allocation of groundwater loads are identified in Section 2.1 of the TMDL submittals.

The model provides monthly stream flow, soil erosion, and sediment yield values and includes both surface runoff and groundwater sources as well as nutrient loads from point sources and septic systems. For more detailed information about AVGWLF see Appendix A of the TMDL submittals.

The loading capacities for the lakes are (shown in Table 1of this document):

- 3.5 lbs/day for Blind Sodus Bay;
- 1.6 lbs/day for Little Sodus Bay; and
- 0.31 lbs/day for Moon Lake.

The use of a daily load, based on a time-averaged annual load, is an accepted method for expressing nutrient loading in lakes. This is supported by EPA guidance such as "The Lake Restoration Guidance Manual" (EPA 440/4-90-006, p.71) and "Technical Guidance Manual for Performing Waste Load Allocations, Book IV, Lakes and Impoundments, Chapter 2 Eutrophication" (EPA 440/4-84-019, pp. 3-8).

[2] Haith, D.A. and L.L. Shoemaker, 1987. Generalized Watershed Loading Functions for Stream Flow Nutrients. Water Resources Bulletin, 23(3), pp. 471-478.

EPA concludes that the approach used to develop these TMDLs has been adequately documented and the loading capacities have been properly identified.

B. Cause-and-Effect Relationship between Numeric Target and Pollutant

In lakes, phosphorus is typically the limiting nutrient. Excess inputs of phosphorus result in eutrophication, which is mainly associated with algal blooms and low dissolved oxygen levels in the hypolimnion, along with taste, odor and color problems. By reducing the input of phosphorus, the impacts associated with eutrophication are reduced. The TMDL target of 20 μg/L is applied as an epilimnetic summer mean total phosphorus concentration and directly addresses the pollutant of concern which is total phosphorus.

EPA concludes that the cause-and-effect relationship between the numeric target and the pollutant of concern has been adequately addressed.

C. Critical Condition

The critical condition for these three waterbodies is the summer growing season of June 1 through September 30. AVGWLF takes into account loadings from throughout the year including spring runoff. The BATHTUB model simulations were compared against observed data during the growing season, when the ramifications of nutrient loadings are the most severe. Meeting the TMDL target of 20 μg/L TP during the critical period ensures that standards are achieved throughout the year.

EPA concludes that the critical condition has been appropriately described and applied in the data and modeling analyses for the development of these TMDLs.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

LAs are provided for the following land uses or loads: forest, wetland, stream bank, and natural background; developed land; and agricultural land. In addition to the land use-based loads, malfunctioning septic systems have been given LAs (see Section 4.2 of each TMDL document). Table 6 of the Blind Sodus Bay and Moon Lake documents and Table 7 of the Little Sodus Bay document identify and express each of these LAs as annually integrated loads, as pounds per year of TP. The LAs as daily equivalent loads, as pounds per day of TP, are in Appendix C of the TMDL submittals and Tables 1, 2 and 3 of this document.

EPA concludes that these TMDLs have adequately identified load allocations for nonpoint sources of TP.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h) and (i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permitees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

There are no point source dischargers and no Municipal Separate Storm Sewer Systems (MS4s) in the Moon Lake and Blind Sodus Bay basins.

There are no MS4s point source discharges in the Little Sodus Bay basin. The following two point sources currently discharge to the Little Sodus Bay Basin:

1. Fair Haven Beach State Park, Facilities #1 and #10 (NY0069311); and
2. Washtub Laundromat (NY0095753).

The Fair Haven Beach State Park facility only discharges during the months of May through October and consists of two slow sand filter sewage plants with their own discharge points. The Washtub Laundromat discharges year-round to Little Sodus Bay, but the phosphorus load from this source is negligible. Both point sources will be eliminated when the Village of Fair Haven installs sanitary sewers by 2012.

Based on the above, the WLAs in all three TMDLs are zero.

EPA concludes that these TMDLs have established WLAs that will ensure that water quality standards are achieved.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include an MOS 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's 1991"Guidance for Water Quality-based Decisions: The TMDL Process" (EPA's 1991 TMDL 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.

These TMDLs incorporate an explicit margin of safety (MOS) of 10% of the loading capacities for Blind Sodus Bay and Moon Lake. The 10% MOS applied to Blind Sodus Bay and Moon Lake is considered appropriate to address the uncertainty in these TMDLs based on the generally good agreement between the AVGWLF loading model and the observed loading and flow data and the good agreement between the BATHUB water quality model and the observed water quality data for these two lakes.

A 51% MOS has been proposed for Little Sodus Bay. The MOS is the difference between the loading capacity (TMDL) and the remaining LAs once septic system and point-source discharges are diverted via a newly installed sewer system to a wastewater treatment plant outside of the watershed.

EPA concludes that each of theses TMDLs incorporate an adequate MOS.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

In this analysis, total phosphorus loads were evaluated during the summer growing season (June 1 to September 30) when conditions are optimal for the available phosphorus to produce algal growth. This is supported in EPA guidance (EPA 440/4-90-006, p. 71, 73), specifically, "Eutrophication models are geared to predicting average water quality conditions over a growing season or year" (p.73). The documents also state that since lakes store nutrients in their water columns and bottom sediments, water quality responses are related to the total nutrient loading that occurs over a year or growing season.

Seasonal variation in nutrient load and response is captured within the models used for this TMDL by using the TMDL target of 20 µg/L TP as the critical growing season average summer total phosphorus concentration.

EPA concludes that these TMDLs adequately considered seasonal variation to ensure that water quality standards are achieved throughout the year.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a NPDES permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 guidance memorandum "New Policies for Establishing and Implementing TMDLs" also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

As explained above in Section 5 of this document, the two point source discharges currently discharging to Little Sodus Bay will be eliminated by 2012. There are no point source discharges to Blind Sodus Bay and Moon Lake. The WLAs for these three TMDLs are zero.

As shown in Table 6 of the Blind Sodus Bay and Moon Lake TMDL documents and Table 7 of the Little Sodus Bay TMDL document, existing loads must be reduced by 48%, 39%, and 72% in Blind Sodus Bay, Moon Lake, and Little Sodus Bay, respectively, in order to achieve the TP target. These TMDLs include reductions in nonpoint sources and the elimination of point source loads of TP discharging into Little Sodus Bay. Reductions have been distributed between nonpoint source loadings from the variety of land uses specific to these three watersheds. As described in the Implementation Section below, measures to address loadings of phosphorus from agricultural, urban stormwater and septic systems, along with other protection measures such as zoning, will ensure that nonpoint source loading reductions are implemented. The Plan will also provide that nonpoint source load reductions be tracked.

Section 10 of this document outlines the actions in the Implementation Plan designed to achieve the necessary TP reductions.

EPA concludes that these TMDLs provide reasonable assurance that point and nonpoint source load reductions will be achieved.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 TMDL Guidance recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

Monitoring programs have been included in each of these TMDL submittals (see Section 5.2 of the TMDL submittals). The purpose of the monitoring program is to track effectiveness of the implementation plan controls and to develop baseline and trend information for these lakes. Moon Lake, Blind Sodus Bay and Little Sodus Bay will be sampled in 2008 at their deepest location during the warmer part of the year (June through September) on 8 sampling dates. Sampling will be repeated at a regular interval, initially set at 5 years but may be modified.

Lake sampling will include:

- Dissolved oxygen and temperature profiles at 1 meter intervals at the "deep hole;"
- Grab samples collected at 1.5 meter and in the hypolimnion, if thermal stratification is present, analyzed for the phosphorus series (total phosphorus, total soluble phosphorus, and soluble reactive phosphorus), the nitrogen series (nitrate, ammonia and total nitrogen), and chloride;
- Epilimnetic samples to be analyzed for chlorophyll *a;*
- Measuring the Secchi disk depth; and
- A simple macrophyte survey to be conducted one time during mid summer.

The results of the monitoring programs may be used to revise the phosphorus target used and allocations established by these TMDLs.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Although implementation plans are not a requirement for EPA TMDL approval, the TMDL submittals identify several actions designed to achieve water quality standards.

Septic systems could be addressed through a variety of measures. For Moon Lake, the TMDL includes a study to be undertaken to evaluate alternatives, such as clustered treatment and on-site upgrades, to outline the most cost-effective plan. Because septic systems are the primary source of phosphorus to the Little Sodus Bay watershed, a systematic approach, such as the formation of a sewer district, is essential to achieving the load reductions specified above. The Village of Fair Haven is under a consent order to develop a comprehensive plan to sewer this community. Furthermore, the Wayne County Water and Sewer Authority is conducting a study to determine sewer needs for Blind Sodus Bay, Little Sodus Bay, and adjacent impaired bays. Sewage from these areas, including the existing point source discharges, will be treated at a regional facility that discharges outside of the watersheds. Meanwhile, the implementation plan states that the ongoing septic system testing program will be expanded, failing systems will be upgraded in accordance with the State Sanitary Code, and in particular, property owners will be educated on proper maintenance of their septic systems and encouraged to make preventative repairs.

Agricultural reductions will be addressed through the New York State Agricultural Environmental Management (AEM) Program. AEM uses a voluntary approach to meet water quality objectives and serves as the umbrella for integrating and coordinating all local, state and federal agricultural programs. AEM provides a locally-led, coordinated and confidential planning and assessment method that addresses watershed needs. The AEM relies on a five-tiered process which includes: survey of current activities and future plans; documentation of current land stewardship and identification of areas of concern; development of a conservation plan; implementing the plan using available financial, educational and technical assistance; and conducting evaluations to ensure the protection of the environment and farm viability.

These TMDLs require reductions in urban non-point source storm water runoff. Since none of the watersheds include urbanized areas with municipal separate stormwater sewer systems (MS4s), stormwater is considered a non-point source and will be addressed through the State's Nonpoint Source Management Program. Measures in the program include public education regarding lawn care, pet waste, and waterfowl management; construction site and post construction runoff control ordinance, along with inspection and enforcement programs; and pollution prevention practices for ditch and road maintenance.

The implementation plans consider in-lake measures that need to be taken to supplement the nutrient reduction measures required by these TMDLs. Because of macrophyte density or location, biological controls of macrophytes or other long-term maintenance measures will be implemented, as needed, in certain areas of the lakes to facilitate boating.

Measures to further protect water quality and limit growth of phosphorus loads that would otherwise offset load reduction efforts will be considered. The basic protections afforded by local zoning ordinances may be enhanced to limit non-compatible development and preserve natural vegetation along shorelines, and in particular, wildlife habitats, sensitive environmental areas, and key open spaces within the shoreline, through conservation easements or other voluntary controls. In addition, the 1999 Moon Lake Management Plan specifically identified zoning ordinances and the preservation or protection of sensitive environmental areas through conservation easements or other voluntary controls.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/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)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If 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.

On July 11, 2007, NYSDEC provided a 30-day public notice period of the draft TMDLs in the State's Environmental Notice Bulletin. These TMDLs were also made available through the State's website at: http://www.dec.state.ny.us/website/dow/tmdl.html. NYSDEC received no comments during this period.

EPA has concluded that the State provided adequate public participation and has responded to comments.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a technical review or final review and approval. Each final TMDL submitted to EPA should 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's/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 review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

The TMDL submittals arrived at EPA Region 2's offices on September 26, 2007 and were accompanied by a letter dated September 26, 2007 from Ms. Sandra Allen, Director, Division of Water, NYSDEC, requesting EPA's review and approval of the Little Sodus Bay, Blind Sodus Bay and Moon Lake TP TMDLs.

13. Administrative Record

While not a necessary part of the submittal to EPA, the State/Tribe should also prepare an administrative record containing documents that support the establishment of and calculations/allocations in the TMDL. Components of the record should include all materials relied upon by the State/Tribe to develop and support the calculations/allocations in the TMDL, including any data, analyses, or scientific/technical references that were used, records of correspondence with stakeholders and EPA, responses to public comments, and other supporting materials. This record is needed to facilitate public and/or EPA review of the TMDL.

NYSDEC has prepared an administrative record to support these TMDLs; it is available at NYSDEC's offices in Albany, New York.

Table 1
TMDL/WLAs/LAs Approved for Blind Sodus Bay

Source	Total Phosphorus Load (lbs/d)		% Reduction
	Current	TMDL Allocations	
Agriculture*	4.25	2.04	52%
Developed Land*	0.49	0.39	20%
Septic Systems	0.63	0.0	100%
Forest, Wetland, Stream Bank, and Natural Background	0.70	0.70	0%
LOAD ALLOCATION (subtotal)	**6.07**	**3.13**	**48%**
Point Sources	0	0	0%
WASTELOAD ALLOCATION (subtotal)	**0**	**0**	**0%**
LA + WLA	**6.07**	**3.13**	**48%**
Margin of Safety (10%)	---	0.35	---
TOTAL	**6.07**	**3.48**	---

* Includes phosphorus transported through surface runoff and subsurface (groundwater)

Table 2
TMDL/WLAs/LAs Approved for Little Sodus Bay

Source	Total Phosphorus Load (lbs/d)		% Reduction
	Current	TMDL Allocations	
Agriculture*	0.332	0.332	0%
Developed Land*	0.277	0.277	0%
Septic Systems	1.937	0.0	100%
Forest, Wetland, Stream Bank, and Natural Background	0.159	0.159	0%
LOAD ALLOCATION (subtotal)	**2.704**	**0.767**	**72%**
Point Sources	0.233	0	100%
WASTELOAD ALLOCATION (subtotal)	**0.233**	**0**	**100%**
LA + WLA	**2.937**	**0.767**	**74%**
Margin of Safety (51%)	---	0.786	---
TOTAL	**2.937**	**1.553**	---

* Includes phosphorus transported through surface runoff and subsurface (groundwater)

Table 3
TMDL/WLAs/LAs Approved for Moon Lake

Source	Total Phosphorus Load (lbs/d)		% Reduction
	Current	TMDL Allocations	
Agriculture*	0.082	0.066	20%
Developed Land*	0.044	0.036	19%
Septic Systems	0.274	0.115	58%
Forest, Wetland, Stream Bank, and Natural Background	0.066	0.066	0%
LOAD ALLOCATION (subtotal)	**0.466**	**0.282**	**39%**
Point Sources	0	0	0%
WASTELOAD ALLOCATION (subtotal)	**0**	**0**	**0%**
LA + WLA	**0.466**	**0.282**	**39%**
Margin of Safety (10%)	---	0.030	---
TOTAL	**0.466**	**0.312**	---

* Includes phosphorus transported through surface runoff and subsurface (groundwater)