

# Fact Sheet

## Lake Champlain Phosphorus TMDL

September 25, 2002

Vermont Department of Environmental Conservation

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### What is a TMDL?

A TMDL (Total Maximum Daily Load) is the maximum amount (load) of a single pollutant from all contributing point and nonpoint sources that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. The Federal Clean Water Act, Section 303, establishes the water quality standards and [TMDL programs](#). **A TMDL is required for Lake Champlain because phosphorus concentrations in many segments of the lake are higher than the levels allowed in the Vermont Water Quality Standards.**

### How does the Lake Champlain Phosphorus TMDL relate to the Lake Champlain Basin Plan *Opportunities for Action*?

The Lake Champlain Basin Program has identified phosphorus reduction as one of the top management priorities for the lake in the basin plan [Opportunities for Action](#). The basin plan defined phosphorus loading targets for each lake segment watershed in Vermont and New York and made preliminary allocations to point and nonpoint sources within each watershed. **The Lake Champlain Phosphorus TMDL is the next step in the refinement of the phosphorus reduction plan for the lake.**

The TMDL is a joint Vermont and New York document, and includes more specific phosphorus allocations for point and nonpoint sources on both sides of the lake. The TMDL implementation plan addresses the full range of specific actions that must be taken to achieve the necessary load reductions.

## What are the water quality standards that apply in Vermont?

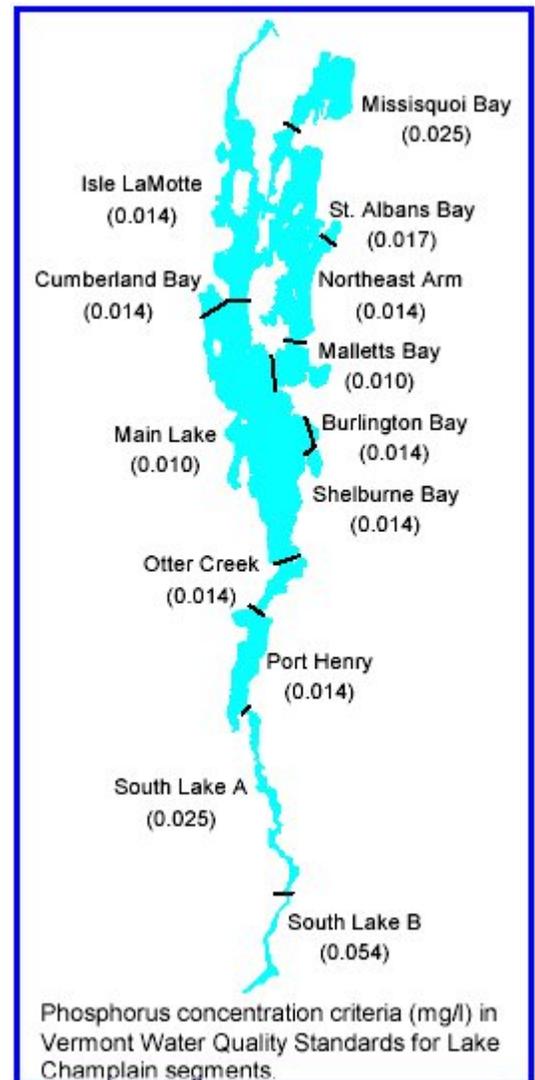
The [Vermont Water Quality Standards](#) include phosphorus concentration criteria for each segment of Lake Champlain. The States of New York and Vermont and the Province of Quebec endorsed these in-lake criteria in a 1993 Water Quality Agreement. **The criteria serve as joint management goals for the lake, and define the water quality endpoints to be achieved by the TMDL.**

## How will the TMDL affect Vermont wastewater discharges?

There are 60 Vermont municipal and industrial wastewater treatment facilities that discharge directly to Lake Champlain or to one of its tributaries. A state law limits effluent phosphorus concentrations to 0.8 mg/l at certain types of treatment plants in the basin, and similar phosphorus limits apply at several other facilities. The TMDL recommends extending the 0.8 mg/l phosphorus limit to five aerated lagoon type municipal treatment plants in Vermont that are now exempt from phosphorus removal requirements. In addition, the TMDL indicates that facilities presently required to meet the 0.8 mg/l limit on a monthly basis should also be required to meet an annual load limit calculated using a 0.6 mg/l effluent concentration. Vermont law was changed in 2003 to implement these recommendations.

These changes will reduce the phosphorus load allocated to Vermont point sources by 22 metric tons per year from currently permitted levels. It is expected that any capital costs for phosphorus removal upgrades required by these alternatives will be covered by state grants. Annual operating costs are borne by the facility operators.

**The TMDL assigns a phosphorus load limit to each treatment plant in the basin.** If an existing facility needs to extend its sewer service to accommodate new development, or if a new discharge must be created, there are two options. More advanced phosphorus removal treatment can be installed at an existing plant to reduce the effluent phosphorus concentration. A second option is to negotiate a trading agreement with another facility in the same watershed to accept a reduced load limit at the other facility. Any such trade and reallocation would need to be approved by the Department of Environmental Conservation.



## How will the TMDL affect Vermont nonpoint sources?

The TMDL subdivides the nonpoint source load according to the three major land use categories of forest, agriculture, and developed land. **The TMDL requires an overall load reduction of 80 metric tons per year (27%) from nonpoint sources in Vermont, relative to the levels measured in 1991.**

The allowable phosphorus load from forest land (which includes some natural background sources) will be held constant at 1991 levels. Adherence to *Accepted Management Practices (AMPs) for Maintaining Water Quality on Logging Jobs in Vermont* published by the Vermont Department of Forests, Parks, and Recreation is expected to be sufficient to comply with the forest load allocation of the TMDL. Nonpoint source loads from agricultural and developed land in each watershed will be reduced by equal proportions relative to 1991 levels as necessary to achieve the allowable loads.

The TMDL implementation plan discusses specific actions that must be taken to achieve the nonpoint source load allocation. These action items cover phosphorus sources derived from agriculture, stormwater discharges, construction sites, backroads, and unstable streams.

Farmers have a responsibility in the TMDL to reduce manure and fertilizer runoff and to control erosion. State and federal cost-share programs that help farmers implement agricultural best management practices (BMPs) will need to be sustained and enhanced. Other practices such as protection of streamside buffer areas will need to be applied much more extensively using financial incentive programs.



The Department of Environmental Conservation's [Stormwater Management Program](#) has been enhanced by publishing technical support documents and by establishing stronger stormwater discharge permitting review criteria for developments. Restoration of 14 small Lake Champlain Basin watersheds impaired by urban runoff will reduce loads of phosphorus and other pollutants under a Watershed Improvement Permit Program.

Landowners and contractors have a responsibility in the TMDL to control erosion from construction sites. A State General Permit for Stormwater Runoff from Construction Sites will establish stricter standards, and will extend erosion control requirements to all sites disturbing more than one acre of soil.





Municipalities have a responsibility in the TMDL to reduce sediment erosion from backroads. Increased technical assistance and grant funding from the Vermont Local Roads Program and the [Vermont Better Backroads Program](#) will be needed. Local municipalities also have the opportunity to prevent phosphorus loading to Lake Champlain by passing ordinances to control erosion from small construction sites not regulated by the state, protect riparian buffer areas, and minimize the creation of new impervious areas.

Steambank and stream channel erosion in unstable rivers represent a potentially enormous source of phosphorus loading to Lake Champlain. The problem occurs with all types of land uses, including forests, agricultural land, and developed land. Attainment of the phosphorus load allocation in the TMDL will require major attention to the problem of unstable streams through a comprehensive [river management program](#).



### What is the cost of implementing the TMDL in Vermont?

**The cost of implementing all the necessary actions to reduce phosphorus loading and attain our water quality standards for Lake Champlain was estimated to be \$139 million in Vermont.** However, many of the nonpoint source control actions identified in the TMDL have economic benefits that justify their implementation, regardless of their environmental benefits. Agricultural best management practices such as proper manure storage, barnyard runoff improvements, and field nutrient management provide economic benefits to the farm operation. Protection and restoration of stream stability can prevent devastating property loss and damage to infrastructure during flood events. Better backroads practices can reduce recurring maintenance costs to municipalities caused by improper road drainage. The TMDL identifies additional funding needs over the period of 2003-2016 in the following categories:

River Basin Planning	7,350,000
Point Sources	5,444,000
Agricultural Sources	76,445,000
Erosion Control at Construction Sites	3,525,000
Better Backroads	1,672,000
Local Municipal Actions	1,050,000
Stream Stability	20,370,000
Wetland Protection and Restoration	4,630,000
St. Albans Bay	625,000
Monitoring	17,003,000
Program Administration	1,050,000
<b>TOTAL</b>	<b>\$139,164,000</b>

## How are New York and Quebec involved in the TMDL?

The Lake Champlain Phosphorus TMDL was prepared jointly by Vermont and New York. Phosphorus allocations and an implementation plan for point and nonpoint sources in the New York portion of the Lake Champlain Basin are included in the TMDL.

The Province of Quebec does not participate in the U.S. TMDL program. However, a division of responsibility for phosphorus reduction in the Missisquoi Bay watershed (shared by Vermont and Quebec) was proposed in a June 2000 report by the [Missisquoi Bay Phosphorus Reduction Task Force](#). The Task Force recommended that the allowable phosphorus load to Missisquoi Bay be divided on a 60/40% basis between Vermont and Quebec, respectively, and this division is incorporated into the TMDL. **An agreement between Vermont and Quebec adopting the allocations for Missisquoi Bay was signed in August, 2002.**

## How do I obtain additional information about the Lake Champlain Phosphorus TMDL, and what are the next steps?

The Lake Champlain Phosphorus TMDL was submitted by Vermont and New York to the U.S. Environmental Protection Agency for review and approval on September 25, 2002. The TMDL received final approval from the U.S. Environmental Protection Agency on November 4, 2002. The next step is to implement all the necessary action items identified in the TMDL. The Agency of Natural Resources will investigate all possible sources of funding, with the expectation that major federal assistance will be necessary. **Active public support for the implementation effort will be essential to its success.**

Additional information about the Lake Champlain Phosphorus TMDL is available at the Water Quality Division website ([www.vtwaterquality.org](http://www.vtwaterquality.org)). Questions about the TMDL and requests for printed copies should be directed to:

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