



Minnesota
Pollution
Control
Agency

Reitz Lake

Draft Total Maximum Daily Load: Excess Nutrients (Phosphorus)

Water Quality/Impaired Waters #7.10a • July 2010

Reitz Lake is a 90-acre lake located east of Waconia in Carver County, Minnesota (about 25 miles southwest of Minneapolis). Agriculture is currently the dominant land use in the lake's 3,529-acre watershed, with increasing transition to urban use. Part of the city of Waconia lies within the Reitz Lake watershed.

Water quality concerns

Reitz Lake has been identified for impairment of aquatic recreation (swimming) due to excess nutrients, primarily phosphorus. As a result, it has been placed on Minnesota's list of impaired waters. Because of the exceedance, Carver County conducted a Total Maximum Daily Load (TMDL) study. A TMDL is defined as the maximum quantity of a pollutant that a water body can receive and continue to meet water quality standards for designated beneficial uses.



The problem

While phosphorus is an essential nutrient for algae and plants, it is considered a pollutant when it stimulates excessive growth of algae. This can significantly affect recreational use, aesthetics and wildlife.

Impaired by: Excess nutrients (phosphorus)

Reitz Lake 2004 summer average phosphorus concentration: 90 ug/l (nine samples)

Standard: 40 µg/l phosphorus (North Central Hardwood Forest deep lake standard)

Lake area: 90 acres

Mean/maximum depth: 13 ft./36 ft.

Watershed Area: 3,529 acres (excluding lake)

Population of watershed: 532

Sources

Internal: Rough fish (e.g., carp and black bullheads); invasive aquatic plants (e.g., curlyleaf pondweed); wind mixing and/or boat propeller disturbance of sediments

External: Runoff from agricultural lands, feedlots, lawns and other urban surfaces; failing septic systems

The process

1. Collect information on the condition of the watershed, including water chemistry, biology and land use.
2. Use this information to assess whether water quality is impaired.
3. For this impaired watershed, conduct water quality monitoring, investigative studies, and computer modeling of the lake system. Develop a TMDL study report.
4. Utilize studies to develop an implementation plan to meet water quality goals based on public input and watershed modeling.
5. Implement the management practices identified in the implementation plan.
6. Conduct a monitoring program to verify that water quality goals are being met.

Reductions

The water quality goal will be set at 40 micrograms per liter ($\mu\text{g/l}$) for the mean total phosphorus concentration during the summer growing season (June 1 through September 30). Forty micrograms per liter is the state phosphorus standard for deep lakes in the North Central Hardwood Forest Ecoregion.

Results indicate that phosphorus loading into and within Reitz Lake must be reduced by approximately 73 percent to achieve the water quality goal of 40 $\mu\text{g/l}$.

Implementation strategies

To reach the reduction goals, Carver County will rely largely on its current Water Management Plan, which identifies the Carver Soil and Water Conservation District as the local agency for implementing best management practices.

Implementation goals not covered in the Water Management Plan will be identified and added to the implementation plan. A final implementation plan will be developed within a year of the final approval of the TMDL report by the U.S. Environmental Protection Agency.

Because of the uncertainties involved in the development of the TMDL and the success of management strategies used to reduce pollution, it is necessary to use an “adaptive management” approach to implementation. This approach involves continual evaluation and monitoring of implementation actions taken to reduce pollution over a period of

For more information

For more information, review the Reitz Lake Excess Nutrients TMDL Draft report on the Carver County Land and Water Services Web site at www.co.carver.mn.us/departments/LWS/tmdls.asp.

On the Minnesota Pollution Control Agency (MPCA) Web site at www.pca.state.mn.us/water/tmdl/tmdl-draft.html.

General information on TMDLs can be found on the MPCA Web site at www.pca.state.mn.us/water/tmdl.