



Minnesota  
Pollution  
Control  
Agency

# Carver Creek Lakes

## Draft Total Maximum Daily Load: Excess Nutrients (Phosphorus)

Water Quality/Impaired Water #7.25a • June 2010

Located in a mostly-rural area of Carver County, three of the Carver Creek Lakes, Goose, Hydes and Miller, were placed on the Minnesota Pollution Control Agency's (MPCA) impaired waters list in 2002. A fourth, Winkler, was added in 2004. All exceed the state's water quality standard for nutrients (phosphorus) which reduces their beneficial use for aquatic recreation.

Of the 55,076-acre watershed, agriculture accounts for 54 percent of the land use and about ten percent is developed. Phosphorus is a common nutrient and has been linked to the lakes' impairment.

### Addressing water quality concerns

Monitoring data from the Carver Creek Lakes indicates the lakes' water quality is considered poor. All have high levels of nutrients and frequent algal blooms. While phosphorus is an essential nutrient for algae and plants, it is considered a pollutant when it stimulates excessive algae growth.

Carver County conducted a Total Maximum Daily Load (TMDL) study for the four waterbodies. A TMDL sets the maximum quantity, or load, of a given pollutant a waterbody can receive and continue to meet state water quality standards.

### Primary phosphorus sources

Agriculture is the watershed's primary land use and runoff from those areas is the major external phosphorus contributor to the four lakes. Urban stormwater runoff and the permitted facility, Bongards'



A Miller Lake canoeist's entry point.

Creamery (discharging into Winkler Lake), and failing septic systems are also contributors to external phosphorus loading. Internal loading sources include rough fish (e.g., carp), curlyleaf pondweed, wind mixing and/or boat propeller disturbance of sediments, and sediment release.

### Proposed phosphorus reductions

Total phosphorus water quality goals will be set at 60 micrograms per liter ( $\mu\text{g/L}$ ) for the shallow lakes, Goose, Miller and Winkler, and at 40  $\mu\text{g/L}$  for the deeper Hydes Lake. These goals reflect Minnesota's phosphorus standards for shallow and deep lakes in the North Central Hardwood Forest Ecoregion.

To achieve the TMDL's water quality goals, phosphorus contributions to and within the Carver Creek Lakes must be reduced by 58 to 97 percent.

## Implementation strategies

To reach the reduction goals, Carver County and its partners will focus on implementing best management practices to limit runoff from rural and urban lands. Various in-lake management strategies will be evaluated and implemented to reduce internal lake loading.

Within a year of the TMDL report's approval by the U.S. Environmental Protection Agency, a final implementation plan that allocates watershed loads will be developed.

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

### For more information

To contact the MPCA project manager for this TMDL, visit the project Web page at <http://www.pca.state.mn.us/water/tmdl/index.html>

Alternatively, you may call the MPCA at 651-296-6300 or 800-657-3864 and ask for the Metro and St. Croix Unit (in the Watershed Section).

General information on TMDLs can also be found on the Web at: <http://www.pca.state.mn.us/water/tmdl/index.html> and <http://www.epa.gov/owow/tmdl/>