



Minnesota
Pollution
Control
Agency

Wirth Lake

Total Maximum Daily Load

Excess Nutrients Project Overview

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Wirth Lake has been placed on the state's list of impaired waters. The lake contains excess levels of nutrients such as phosphorus from stormwater runoff. These excess nutrients can lead to frequent algae overgrowth in the lake, interfering with swimming, fishing, and other aquatic recreation.

Wirth Lake

Wirth Lake and most of its watershed is located in the city of Golden Valley. The remaining portion of the watershed, south of the lake, is in the city of Minneapolis and all of the shoreline around the lake is owned by the Minneapolis Park and Recreation Board. Wirth Lake is surrounded by significant wetland vegetation which provides excellent waterfowl habitat.

The Wirth Lake watershed has a total area of 347 acres, largely consisting of low-density residential and park land uses. Wirth Lake drains into Bassett Creek, which drains into the Mississippi River.

Total Maximum Daily Load background

Based on the federal Clean Water Act, lakes and streams that do not meet water quality standards are "impaired". The Clean Water Act requires states to develop a cleanup plan for each impairment that affects a water body. The cleanup plan and the process used to create it are called a Total Maximum Daily Load (TMDL). A TMDL must identify all sources of the pollutant that cause a water body to violate

standards. The TMDL also determines how much pollutant reduction is needed from each source to ensure the water body meets water quality standards in the future.



Wirth Lake impairment

The Bassett Creek Watershed Management Commission and the Minnesota Pollution Control Agency (MPCA) have prepared a TMDL report on Wirth Lake. The goal of this report is to quantify the pollutant reductions needed for Wirth Lake to meet water quality standards.

For lakes in the North Central Hardwoods Forest ecoregion, summer averages of less than 40 µg/L total phosphorus concentration, less than 14 µg/L chlorophyll-a concentration, and at least 1.4 meters of Secchi depth are considered appropriate. The mean surface water concentrations of total phosphorus in Wirth Lake have ranged from 113 µg/L (1992) to 29 µg/L (2008) over the past 17 years, with a significantly improving trend in water quality.

Pollution sources

Water enters Wirth Lake from watershed runoff, direct precipitation, groundwater, and backflow from Bassett Creek during high discharge events. Internal sources of phosphorus contribute 14 percent of the total phosphorus load to Wirth Lake. Bassett Creek backflow represents 37 percent of the annual total phosphorus load and the contribution from watershed runoff loading from the direct tributary watershed is 45 percent. Atmospheric deposition contributes about 4 percent of the phosphorus load to the lake.

Pollution reductions needed

The TMDL implementation plan focuses on continuing nonstructural practices in the watershed, maintaining existing structural Best Management Practices (BMP) and eliminating Bassett Creek backflow as a source of phosphorus to Wirth Lake. The overall phosphorus load to Wirth Lake will need to be reduced by 55 pounds (45percent) in order to achieve the TMDL load allocation of 99 pounds.

Implementation strategies

Best Management Practices recommended for Wirth Lake include:

- A lake outlet structure will be constructed to prevent backflow from Bassett Creek and minimize additional phosphorus loading to Wirth Lake.
- Consider a policy that would require that all new development and redevelopment to infiltrate the first one inch of rainfall from all impervious surfaces, where feasible.
- Look for opportunities to implement extended detention basins, infiltration basins, biofiltration basins, grit chambers, and other structural BMPs.
- Continue existing program to promote the development of shoreline buffers.

For more information

The Wirth Lake Excess Nutrient TMDL Report was prepared for the MPCA and the Bassett Creek Watershed Management Commission by Barr Engineering.

For more information about the Wirth Lake Excess Nutrient TMDL Report, view the web pages at www.pca.state.mn.us/water/tmdl/project-wirthlake.html or contact the MPCA at 800-657-3864 or 651-296-6300.

For general TMDL information, browse MPCA's Impaired Waters web pages at www.pca.state.mn.us/water/tmdl/.

For more information about water bodies in the Bassett Creek Watershed, go to www.bassettcreekwmo.org.