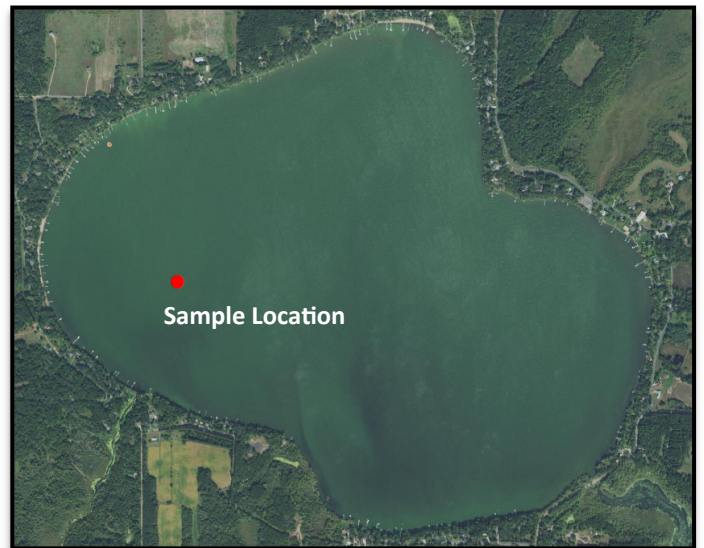


Green Lake Monitoring Report 2023

What: LID volunteers collected Total Phosphorus (TP), Chlorophyll-a, and transparency information every two weeks from late May through early October in Green Lake. SWCD staff provided training and equipment, coordinated lab testing and collected temperature and dissolved oxygen profiles.

Why: Green Lake was added to the MN impaired waters list in 2008 for having high nutrients (too much phosphorus). In 2016, the Green Lake Improvement District and Isanti Soil and Water Conservation District partnered to develop a lake monitoring schedule to collect water samples on Green Lake. The data provides us with an understanding of water quality trends (i.e., is it getting better or worse); furthermore, the data helps us diagnose areas of concern and provides evidence for the need to implement lake improvement projects (great for grant applications). To date, monitoring data has been used to obtain nearly \$500,000 of Federal, State and local grant funding to implement water quality projects around the lake.

	Green Lake
Township	Wyanett
MN Lake ID	330013600
# of Public Boat Access	1
Aquatic Invasive Species	Curly Leaf Pondweed; Eurasian Water Milfoil
Surface Area	822 acres
Maximum Depth	28 ft
Lake Classification	Deep Lake
Lake Health	Impaired



A HUGE THANK YOU to present and past volunteer lake monitors! Volunteers reduce costs and time making lake monitoring feasible. In 2023, Alex and Marissa Dahlin collected lake samples and Dave Dancik and Pam Mortenson gathered periodic transparency readings.

General Definitions

Total Phosphorus (TP): An essential plant nutrient in which an excess can cause severe algae blooms.

Chlorophyll-a (Chl-a): A pigment found in green plants, used to estimate quantity of algae in a lake.

Secchi Transparency: A measure of light penetration in water, an indication to the amount of algae in the water.

Green Lake Monitoring Report 2023

MN Clean Water Goals for Deep Lakes:

Total Phosphorus (TP): $\leq 40 \mu\text{g/L}$

Chlorophyll-a: $\leq 14 \text{mg/L}$

Secchi Depth: $\geq 4.59 \text{ feet}$

2023 Growing season average
(June-September)

28 $\mu\text{g/L}$ (TP)

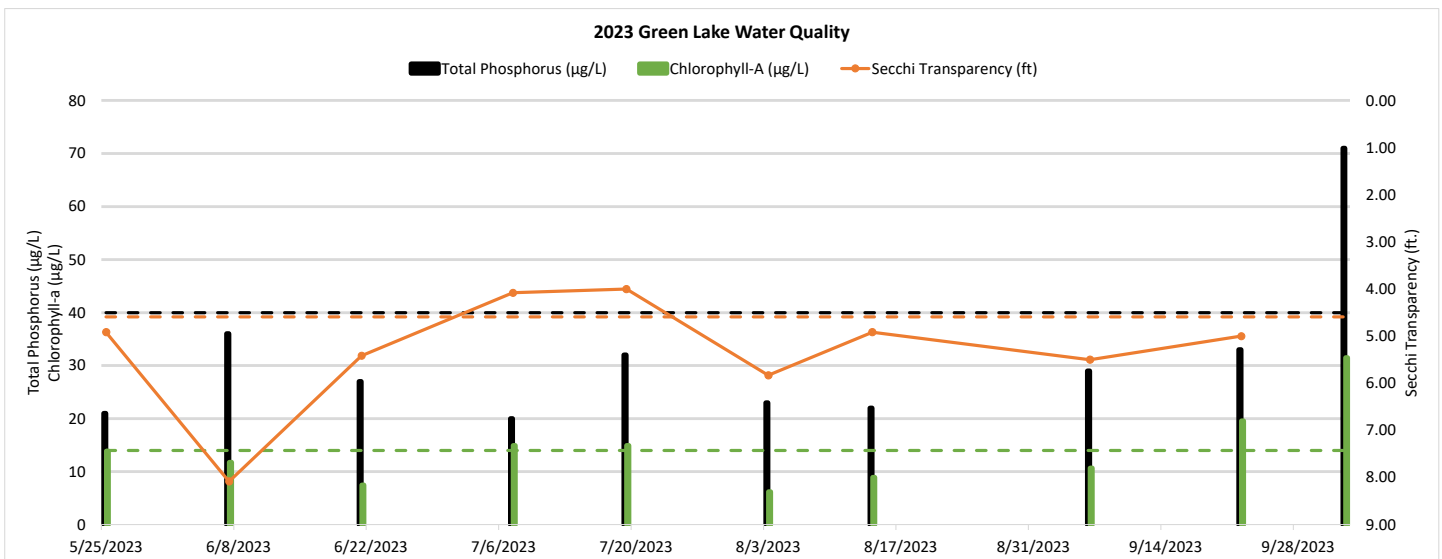
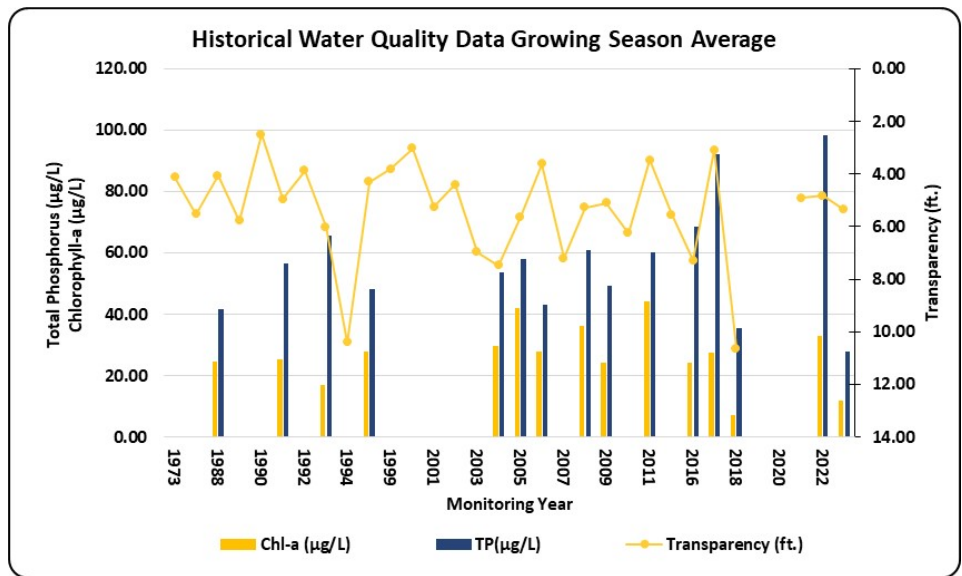
12 mg/L (Chl-a)

5.35 ft. (Secchi)

Data Summary:

- Grades are based on the Metropolitan Council lake grading system, which creates an easy to understand way to communicate lake health.
- The physical appearance of the lake was rated as “low-algae” throughout nearly the entire season. The appearance was rated as “clear” early in the season; this differs from previous years where the lake was rates as having “medium or high algae”.
- The recreational suitability of the lake was rated as “very good” through mid-July and then “good” following that. Previous years were rated between “good” and “fair.”
- Sampler notes indicated there were five inches of rain in the weeks preceding the final sample of the season. The combination of rains carrying nutrients into the lake and lake turnover likely caused the phosphorus spike.
- All parameters monitored in 2023 met standards set for deep lakes!
- Compared to all previous years monitored, lake health improved in 2023.

Year	Grade
2016	C
2017	D
2018	B
2022	C
2023	B



Green Lake Monitoring Report 2023

Water Health Improvement Projects:

Over the last several years, the SWCD has been working towards installing lake health improvement projects identified in the Green Lake Subwatershed Assessment Study, County Ditch 16 and 23 Multi-purpose Drainage Management Plans and other studies. The studies above identify water quality project locations and types and rank them based on how cost-effective they are at removing phosphorus. The table below summarizes work completed to date by the SWCD. The SWCD continues to seek willing landowners to install projects. If you are interested in improving the lakes health contact us today!

Project	TP (lb/yr)
Shoreline restorations and stormwater reduction projects on private property (27)	27
Cover Crops	13
Curlyleaf Pondweed management	10
Wetland Restorations (2)- this will be installed winter 2023 if weather allows	75
TOTAL	125
GOAL* (based on goal set in the 2019 diagnostic study for the watershed only)	617

2024 Monitoring:

Conduct lake sampling as planned in the Memorandum of Agreement. No dissolved oxygen or temperature profiles are called for.

Keep up the great work team!

For more information contact: **Isanti SWCD 763-689-3271**

Tiffany Determan, District Manager, TDeterman@isantiswcd.org

