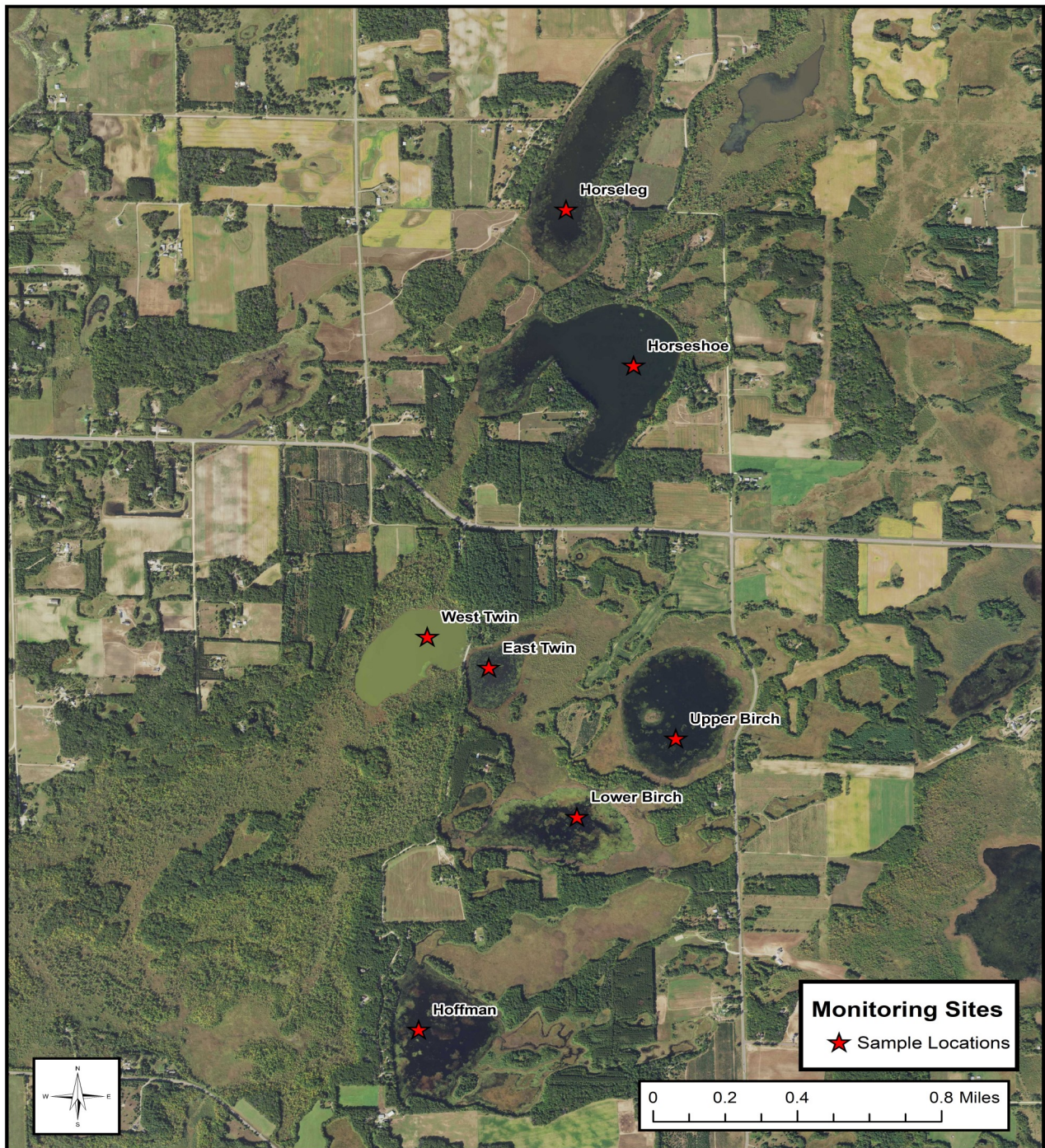


2022 Oxford Township Monitoring Report



Completed By: Thomas Zimmermann, Isanti SWCD

Completed for Oxford Township
By Isanti Soil and Water Conservation District



2022 Oxford Township Monitoring Report

Monitoring

What: Seven lakes were sampled once every month from May to September. Lake samples were tested for total phosphorus (TP) and Chlorophyll-a (Chl-a). Field measurements were recorded for transparency, dissolved oxygen and temperature. 2022 was the sixth year of monitoring on these lakes

Why: The information helps land and water resource management entities such as Isanti County Zoning, Oxford Township, and the Isanti SWCD make informed decisions to keep the lakes healthy. It would be important for lakes with outstanding water quality to focus on management activities that keep the water healthy (it's cheaper than waiting for water to become degraded and then trying to fix it). Actions to keep water healthy include updated shoreline zoning ordinances, low impact development, wetland restorations, soil health practices, and protection of existing healthy lands via land easements (wetlands, forested areas, and intact prairie).

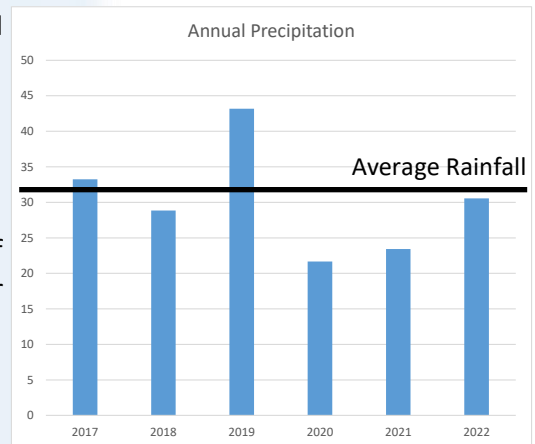
Shallow Lakes

All the lakes monitored as part of this program are classified as “shallow lakes”; most are less than 15 feet deep. Healthy shallow lakes typically support abundant plant life and clear water. Unhealthy shallow lakes typically have limited plant life and turbid water. Healthy shallow lakes have many benefits to the community: they reduce flooding, lower nitrogen, and phosphorus in water before it moves downstream, recharge aquifers for drinking water, and provide habitat for wildlife. In addition, for all of the reasons named, shallow lakes impact the community economically (think hunting, fishing, property values, and clean drinking water).

2022 Rainfall and Temperatures

Rainfall and temperature affect water health.

Warm, dry conditions began in 2020 and continued through much of 2022. However, significant spring and late-summer rainfall and cooler temperatures lessened the dry conditions in Isanti County.



Horseleg Lake

General Definitions

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

2022 Lake Monitoring Results

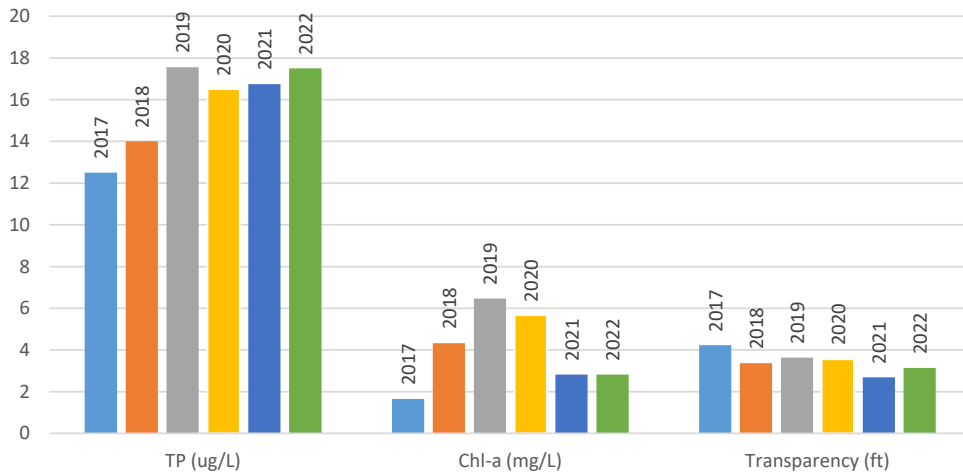
Chlorophyll-A , Total Phosphorus, and Transparency

Horseleg Lake

MN Clean Water Goals for Shallow Lakes

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$ Chlorophyll-a: $\leq 20 \mu\text{g/L}$ Transparency: ≥ 3.28

Horseleg Lake- Growing Season Averages
(June-Sept)



Year	Grade
2017	A
2018	A
2019	A
2020	A
2021	A
2022	A

Horseleg Lake is 75 acres and has a maximum depth of 6 feet.

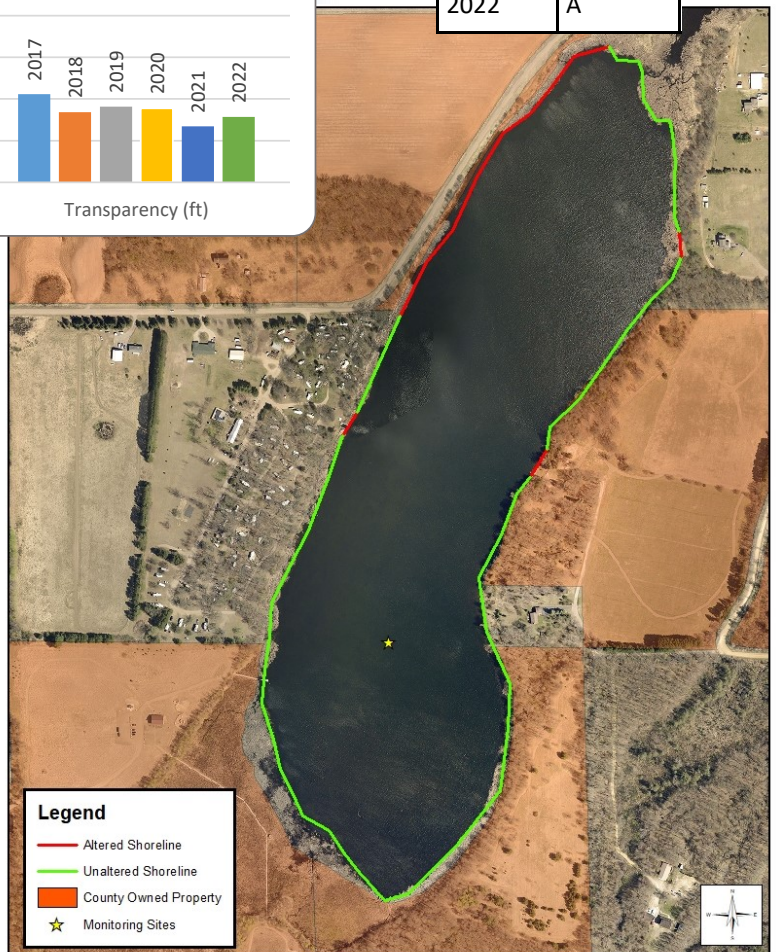
This lake drains north to the North Branch of the Sunrise River.

This is a healthy shallow water lake, data suggests the lake has excellent water quality!

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

A shoreline survey was completed in 2017: 75% of the shoreline was classified as “unaltered” and 25% was altered.

An aquatic plant survey was completed in 2017: the lake supports a healthy and diverse plant community.



Help keep Horseleg Lake Healthy: Because this lake is currently healthy it is important to focus on preservation of current natural lands. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements. Isanti County currently owns a majority of land around the lake!

2022 Lake Monitoring Results

Chlorophyll-A , Total Phosphorus, and Transparency

Horseshoe Lake

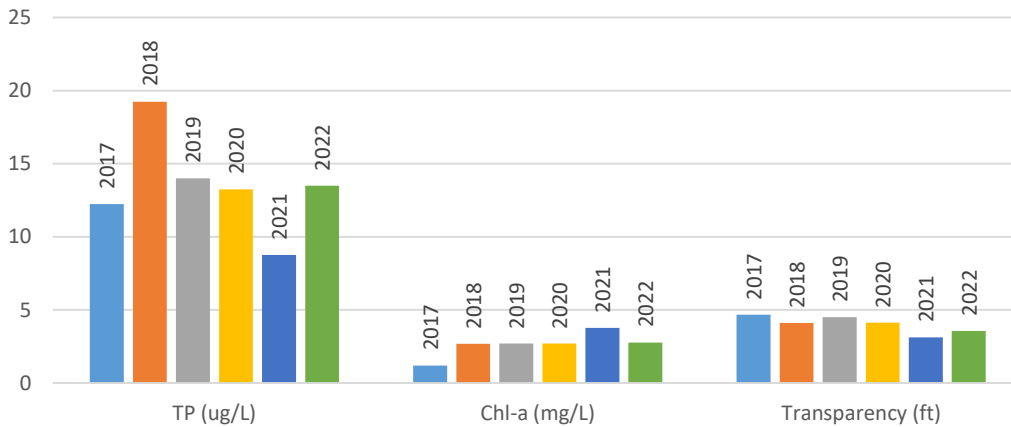
MN Clean Water Goals for Shallow Lakes

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$

Chlorophyll-a: $\leq 20 \mu\text{g/L}$

Transparency: $\geq 3.28 \text{ ft}$

Horseshoe Lake- Growing Season Averages
(June-Sept)



Year	Grade
2017	A
2018	A
2019	A
2020	A
2021	A
2022	A

Horseshoe Lake is 100 acres and has a maximum depth of 5 feet.

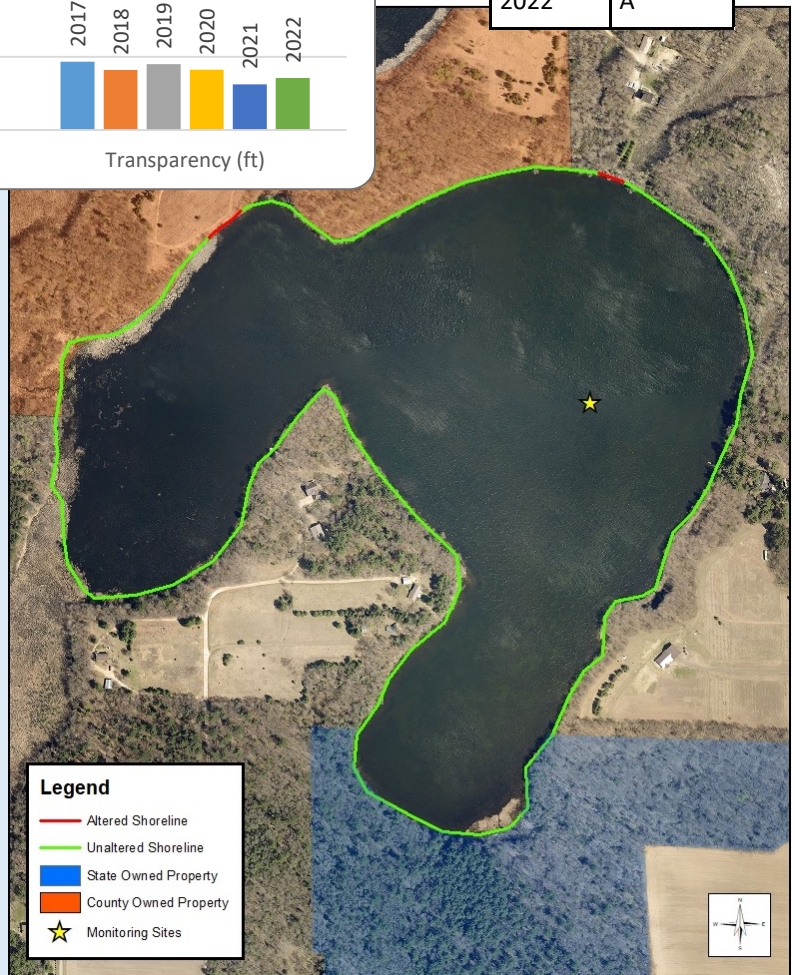
This lake drains north to the North Branch of the Sunrise River.

This is a healthy shallow water lake, data suggests the lake has excellent water quality!

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

A shoreline survey was completed in 2017: 97% of the shoreline was classified as “unaltered” and 3% was altered.

An aquatic plant survey was completed in 2017: the lake supports a healthy and diverse plant community. The MN biological survey indicates the lake has a Rare Plant community type (Lake beach-inland sand subtype).



Help keep Horseshoe Lake Healthy: Because this lake is currently healthy it is important to focus on preservation of current natural lands. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements. Isanti County and the State owns a significant portion of land around the lake!

2022 Lake Monitoring Results

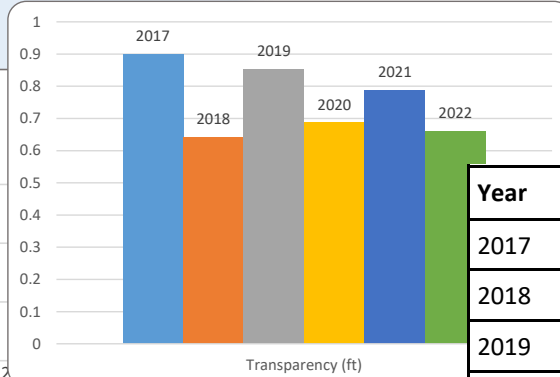
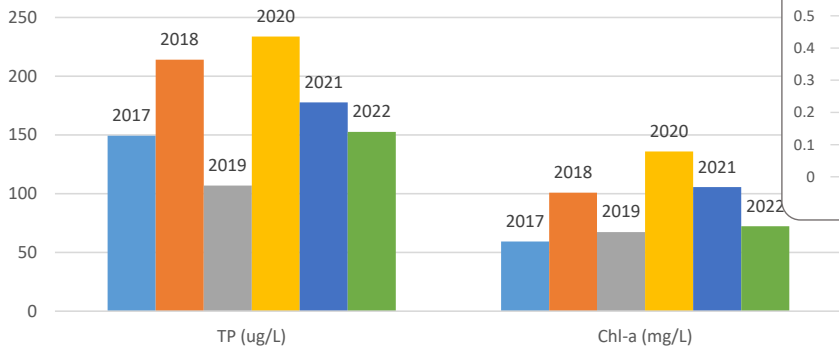
Chlorophyll-A , Total Phosphorus, and Transparency

West Twin Lake

MN Clean Water Goals for Shallow Lakes

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$ Chlorophyll-a: $\leq 20 \mu\text{g/L}$ Transparency: $\geq 3.28 \text{ ft}$

West Twin Lake- Growing Season Averages (June-Sept)



Year	Grade
2017	D
2018	F
2019	D
2020	F
2021	F
2022	F

West Twin Lake is 52 acres, has a maximum depth of 6 feet.

This lake drains south to the West Branch of the Sunrise River.

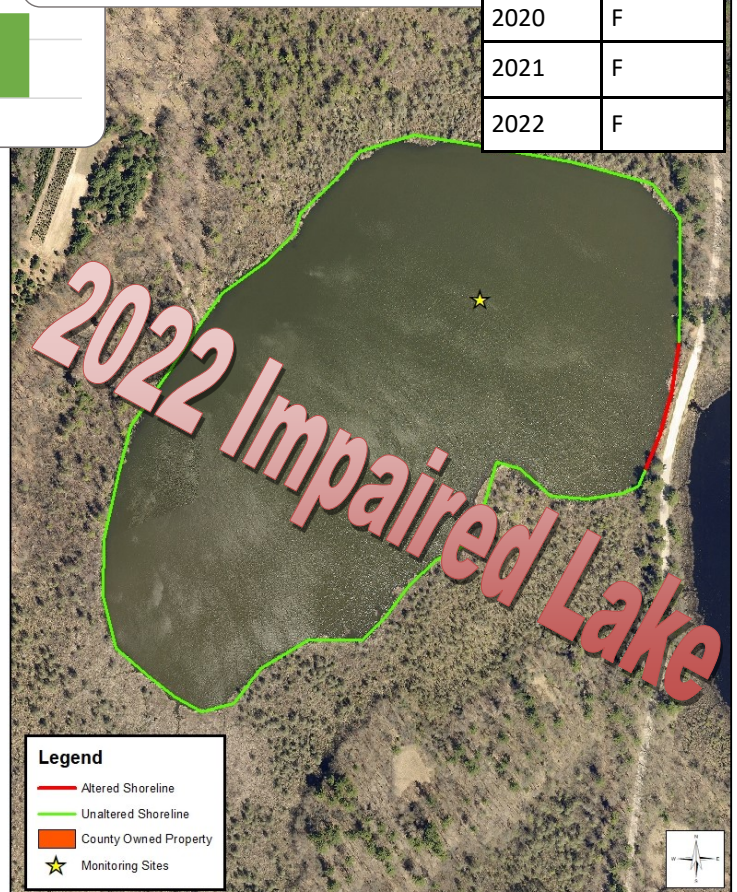
This lake represents a shallow water lake in the “turbid” state, the lake has poor health.

West Twin Lake was listed on the 2022 Impaired Waters list.

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

A shoreline survey was completed in 2017: 93% of the shoreline was classified as “unaltered” and 7% was altered (township road).

An aquatic plant survey was completed in 2017: Even though the lake is not clear it still supports a diverse plant community. A plant species of special concern was found (swamp loosestrife). Also, Otters were spotted on the lake!



Help keep West Twin Lake Healthy: While West Twin Lake does not meet water health standards, the area surrounding the lake including the plant species found within it are healthy. As such, we suggest focusing on preservation of current natural lands around the lake. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements.

2022 Lake Monitoring Results

Chlorophyll-A , Total Phosphorus, and Transparency

East Twin Lake

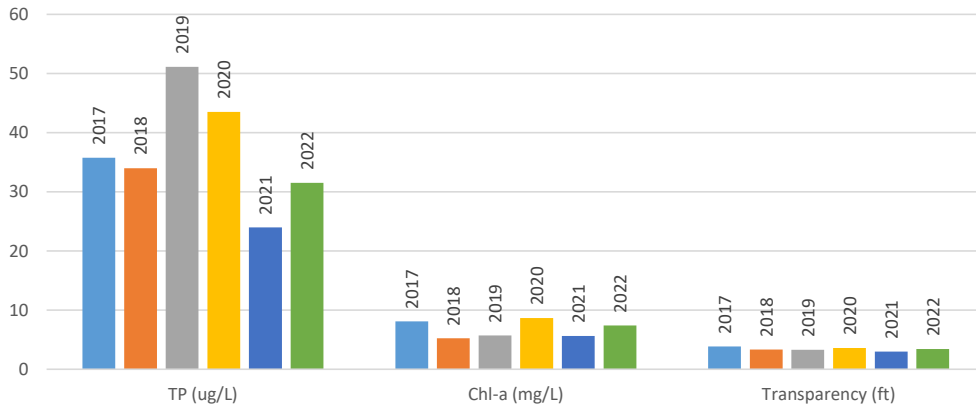
MN Clean Water Goals for Shallow Lakes

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$

Chlorophyll-a: $\leq 20 \mu\text{g/L}$

Transparency: ≥ 3.28

East Twin Lake- Growing Season Averages
(June-Sept)



Year	Grade
2017	B
2018	B
2019	B
2020	B
2021	A
2022	A

East Twin Lake is 17.5 acres and has a maximum depth of 5 feet.

This lake drains to West Twin and then south to the West Branch of the Sunrise River.

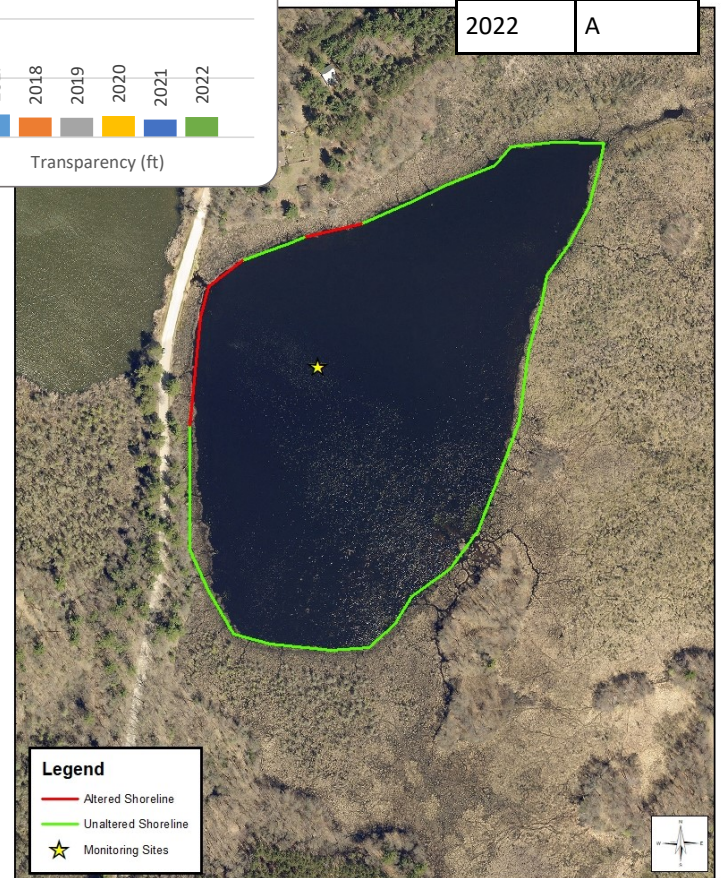
This is a healthy shallow water lake, data suggests the lake has good water quality!

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

During high water years West Twin lake could backflow into the lake and impact it. The perched or blocked culvert between West and East Twin Lake may protect the health of this lake.

A shoreline survey was completed in 2017: 84% of the shoreline was classified as "unaltered" and 16% was altered.

An aquatic plant survey was completed in 2017: the lake supports a healthy and diverse plant community. A plant species of special concern was found (swamp loosestrife).



Help keep East Twin Lake Healthy: Because this lake is currently healthy it is important to focus on preservation of current natural lands. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements.

2022 Lake Monitoring Results

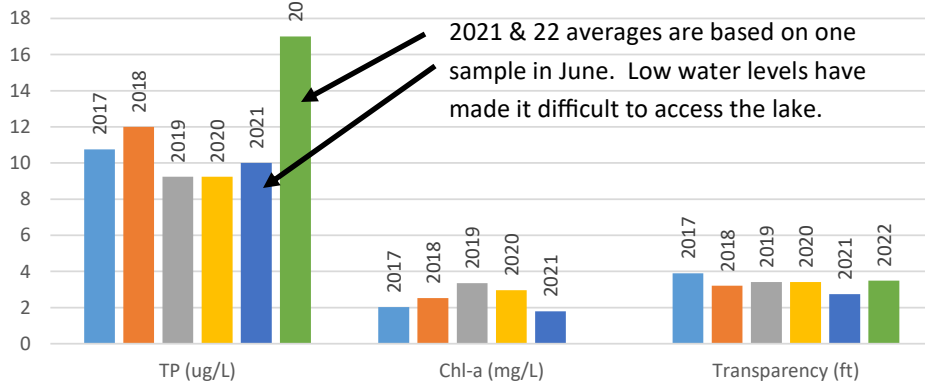
Chlorophyll-A , Total Phosphorus, and Transparency

Upper Birch Lake

MN Clean Water Goals for Shallow Lakes

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$ Chlorophyll-a: $\leq 20 \mu\text{g/L}$ Transparency: $\geq 3.28 \text{ ft}$

Upper Birch Lake- Growing Season Averages (June-Sept)



Year	Grade
2017	A
2018	A
2019	A
2020	A
2021	IF
2022	IF

Upper Birch Lake is 62 acres and has a maximum depth of 6 feet.

This lake drains south to the West Branch of the Sunrise River.

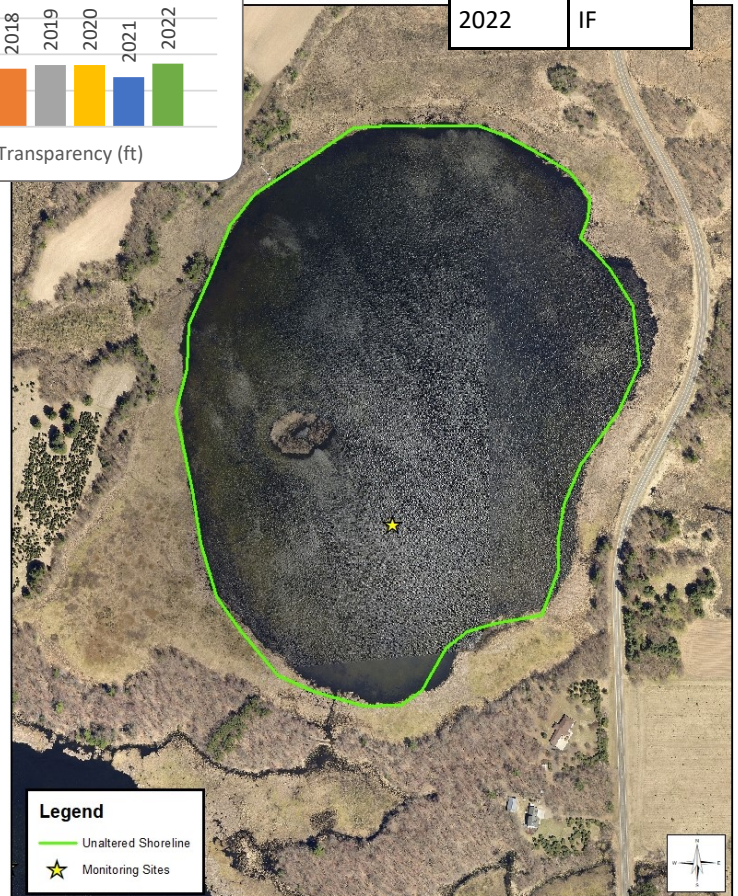
This is a healthy shallow water lake, data suggests the lake has excellent water quality!

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

A shoreline survey was completed in 2017: 100% of the shoreline was classified as "unaltered".

An aquatic plant survey was completed in 2017: the lake supports a healthy and diverse plant community.

A new development on the north side of the lake was approved in 2021. If near shore vegetation clearing, ditching and/or wetland filling occurs it could have a negative impact on the lake.



Help keep Upper Birch Lake Healthy: Because this lake is currently healthy it is important to focus on preservation of current natural lands. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements.

2022 Lake Monitoring Results

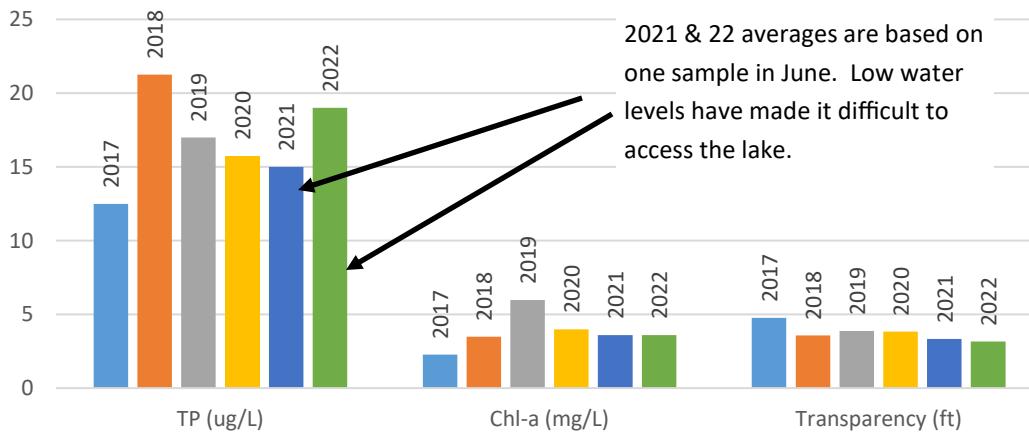
Chlorophyll-A, Total Phosphorus, and Transparency

Lower Birch Lake

MN Clean Water Goals for Shallow Lakes (MCWG)

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$ Chlorophyll-a: $\leq 20 \mu\text{g/L}$ Transparency: $\geq 3.28 \text{ ft}$

Lower Birch Lake- Growing Season Averages
(June-Sept)



Year	Grade
2017	A
2018	A
2019	A
2020	A
2021	IF
2022	IF

Lower Birch Lake is 62 acres and has a maximum depth of 6 feet.

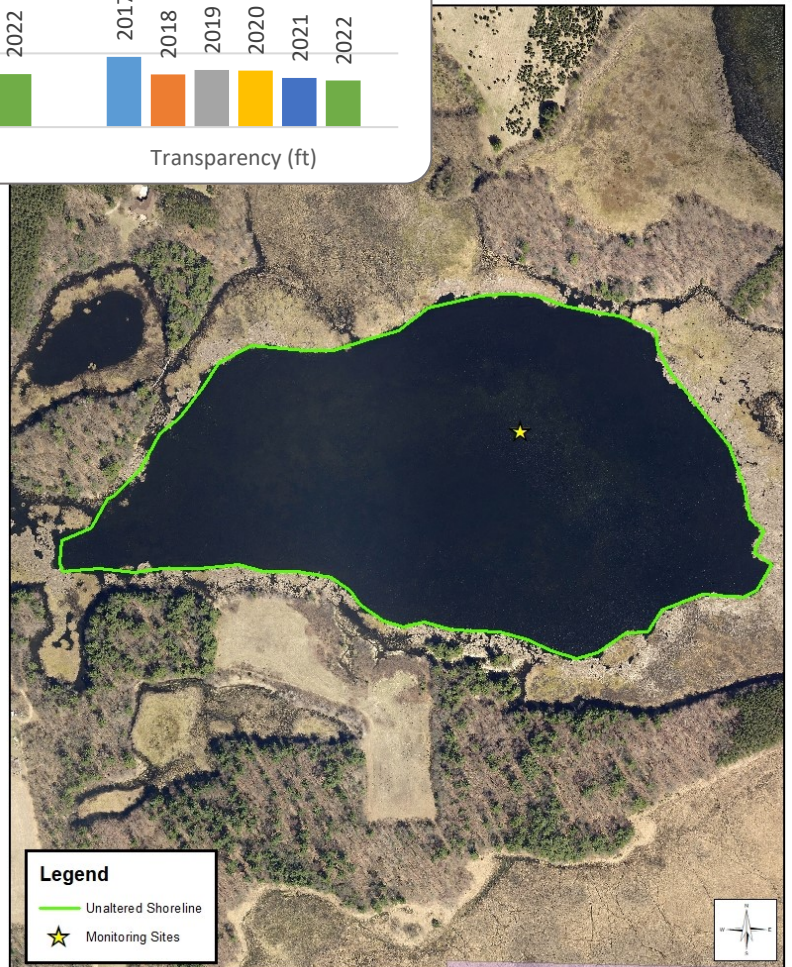
This lake drains south to the West Branch of the Sunrise River.

This is a healthy shallow water lake, data suggests the lake has excellent water quality!

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

A shoreline survey was completed in 2017: 100% of the shoreline was classified as "unaltered".

An aquatic plant survey was completed in 2017: the lake supports a healthy and diverse plant community. The MN Biological Survey indicated a rare habitat type on this lake: Low shrub poor fen.



Help keep Lower Birch Lake Healthy: Because this lake is currently healthy it is important to focus on preservation of current natural lands. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements.

2022 Lake Monitoring Results

Chlorophyll-A, Total Phosphorus, and Transparency

Hoffman Lake

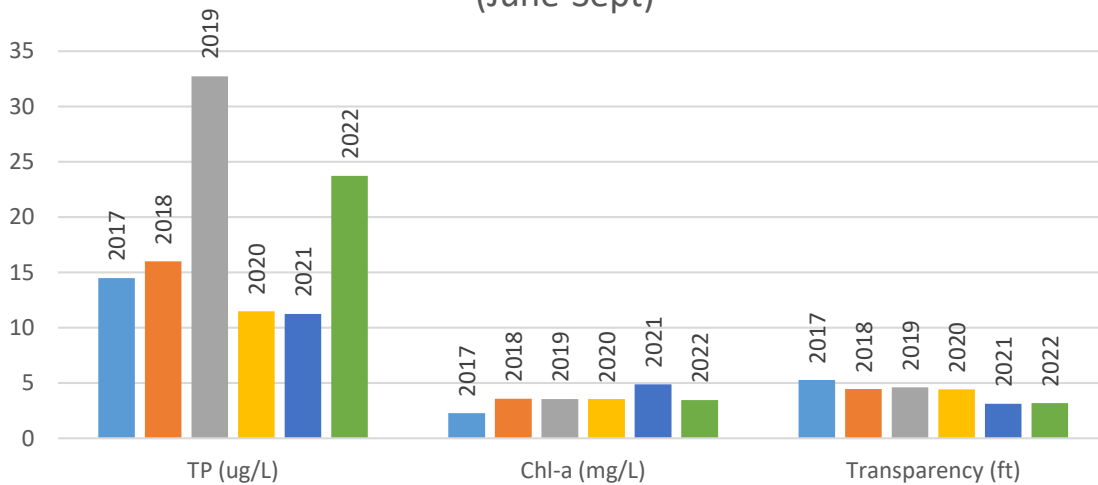
MN Clean Water Goals for Shallow Lakes

Total Phosphorus (TP): $\leq 60 \mu\text{g/L}$

Chlorophyll-a: $\leq 20 \mu\text{g/L}$

Transparency: $\geq 3.28 \text{ ft}$

Hoffman Lake- Growing Season Averages
(June-Sept)



Year	Grade
2017	A
2018	A
2019	A
2020	A
2021	A
2022	A

Hoffman Lake is 52 acres and has a maximum depth of 6 feet.

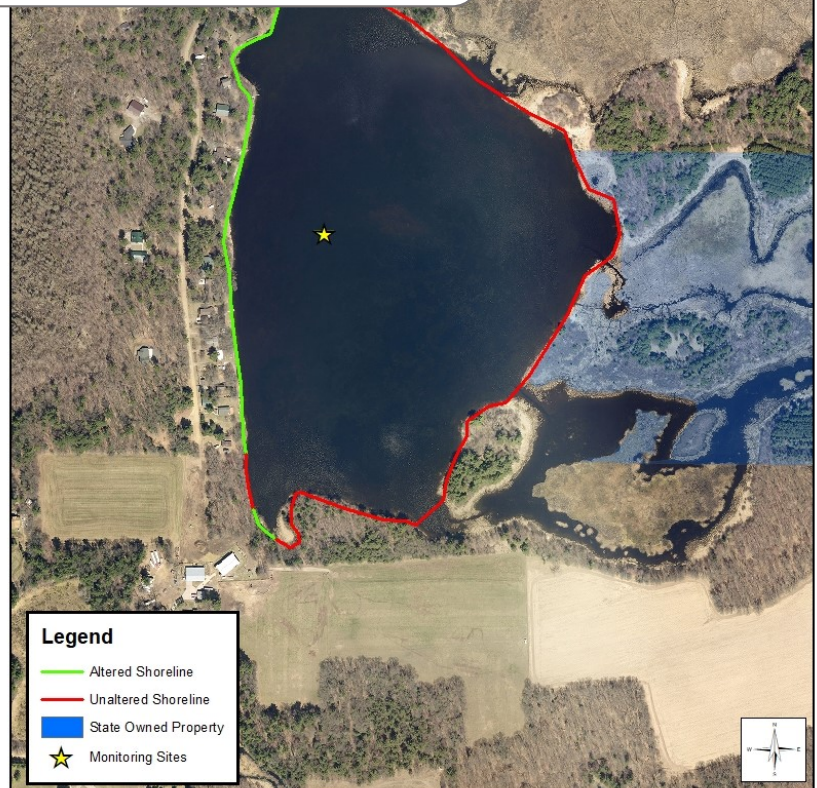
This lake drains south to the West Branch of the Sunrise River.

This is a healthy shallow water lake, data suggests the lake has excellent water quality!

Grades are based on Met Council grading system which creates an easy to understand way to communicate lake health.

A shoreline survey was completed in 2017: 66% of the shoreline was classified as "unaltered" and 34% was altered.

An aquatic plant survey was completed in 2017: the lake supports a healthy and diverse plant community. Invasive upland species were documented: reed canary grass and glossy



Help keep Hoffman Lake Healthy: Because this lake is currently healthy, it is important to focus on preservation of current natural lands. How? Ordinances that preserve vegetative cover adjacent to the lake and wetlands, forest management, wetland restorations, land purchases and conservation easements.

2022 Results and Recommendations

Summary:

The last six years of data (2017-2022) indicate that the lakes, excluding West Twin Lake, have exceptional health. It is important to note that even though West Twin Lake has somewhat degraded water health, it does support a unique plant community and wildlife. Minimal shoreline development and land alterations around the lakes play a significant role in maintaining water health, healthy native plant communities, and wildlife habitat. Furthermore, except for purple loosestrife on Horseleg lake, none of the lakes monitored have aquatic invasive species!

Recommendations for 2023

- Continue with the monitoring schedule as planned. **2023 costs:** not to exceed \$8,478
- Secure volunteer to record lake levels

Programs Available to help protect the lakes:

1. Permanent Conservation Easements: Conservation easements are a cost-effective way to protect the natural resource values of the land and protect environmentally sensitive areas. You will typically receive a one-time payment of 60% of the county-assessed land value for the portion of your enrolled property. **Enroll today!**

2. Soil Health: Reduced tillage and cover crops can improve agricultural profitability by reducing input costs and increasing productivity. At the same time, they may help protect water resources by increasing the soil's water-holding capacity and reducing the transport of pollutants to lakes. **Funding is available for soil health practices!**

3. Education and Outreach: The Isanti SWCD partners with the Lower St. Croix Watershed Partnership to offer enhanced education and outreach.

Upcoming opportunities include:

- Agricultural Lunch N Learn: Participations will learn more about soil health and local programs.
- Fall 2023: Soil Health Field Day: Event will take place at a local farm and will showcase cover crops.
- Watch the SWCD website or signup for our newsletter for more opportunities!

Contact Isanti SWCD for More information: 763-689-3271

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

Tiffany Determan, District Mgr TDeterman@isantiswcd.org