Otter Tail Coalition of Lake Associations
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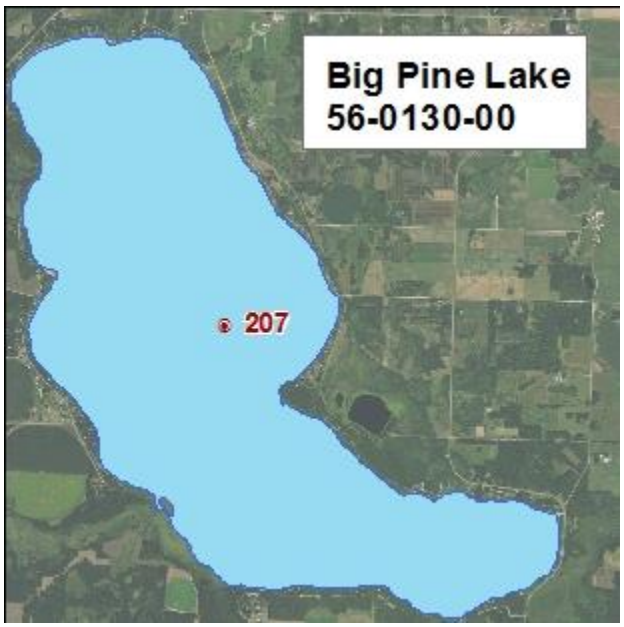
Water Quality Analysis Reports 2023

Big Pine 56-0130-00

10-Year Trend Analysis

Lake / Site	Year	Phosphorus Ave	Chlorophyll a Ave	Secchi Ft	TSI Ave
Big Pine 56-0130-00 207	2014	31.6	19.0	7.4	53.4
	2015	31.6	10.8	7.6	51.6
	2016	50.8	19.6	8.0	53.2
	2017	37.8	24.8	8.1	53.6
	2018	36.2	16.2	7.6	52.8
	2019	39.6	16.5	9.8	52.6
	2020	29.4	12.3	10.1	49.4
	2021	24.8	5.2	10.3	46.6
	2022	40.6	20.1	8.8	53.4
	2023	25.1	5.8	11.2	45.6
Big Pine 56-0130-00 207 Total		**34.8**	**15.0**	**8.9**	**51.2**



OTC COLA compiled available **Big Pine** Lake data for 10 years. Samples were taken for **Phosphorus**, **Chlorophyll-a** and water **Clarity** (Secchi). The results were averaged by site and year along with the **TSI Index**. The mini-graphs at the bottom of each analysis represent the trend line for the years included. See **Water Quality Analysis Reports.**

The classic model will indicate an inverse relationship between the nutrient elements (phosphorus, chlorophyll-a) and secchi (water clarity) measure. If phosphorus and chlorophyll-a trend to rise, water clarity will trend to decrease. If phosphorus and chlorophyll-a trend to increase, water clarity will trend to decrease.

Water Quality Parameter Relationships

Big Pine was Infested with zebra mussel in 2020

Congratulations to **Pine Lakes LID** and the dedicated volunteers who participated in the **OTC COLA Water Monitoring Program.** Water quality monitoring and testing is crucial to successful lake stewardship. See **The Case for Water Quality Monitoring**

The samples were analyzed by **RMB Laboratories** in Detroit Lakes, MN. Learn about collecting water samples on the **RMB Training** website**.** See the RMB **Trophic State Index** page for an in-depth explanation of analysis results.

Detailed analysis results and general information on **Big Pine** Lake is available from a number of sources:

DNR Lake Finder for Big Pine Lake

MPCA Dashboard for Big Pine Lake- See Water Quality Summary tab

DNR Health Assessment for Big Pine Lake- See MN Health Information

UMN Lake Browser for Big Pine Lake See- UMN LakeBrowser

RMB Lakes Database Interactive access to data for all lakes in the RMB program

Ecoregion Comparison

Another approach to evaluating health of lakes is test data compared to Ecoregions. An Ecoregion is a geographical area where the land use (agriculture, forest, prairie, etc.), underlying geology, potential native plant community, and soils are relatively

similar. The lakes in Otter Tail County are in the Northern Central Hardwood Forest Ecoregion (NCHF). Click **HERE t**o learn more about Ecoregions.

Compare the **Big Pine Lake Total** to the Northern Central Hardwood Forest Ecoregion ranges of averages shown here:

Phosphorus: 23–50, Chlorophyll: 5–22, Secchi (ft): 5–10.5

What Is A Healthy Lake?

A healthy lake is most often described as one whose physical, biological and chemical properties are in equilibrium. This balance provides stability that allows native aquatic organisms to flourish. Because each lake is different, it is difficult to compare lakes to each other. It is best to compare your own lake to itself over time. See **The Case For Water Quality Monitoring.**

It is widely accepted that the amount of phosphorus in a lake often determines the ultimate disposition of health for a lake. Phosphorus in a lake is the primary nutrient feeding the growth of algae and aquatic plant life. Control of infusion to Big Pine Lake of phosphorus from animal waste, human waste and fertilizers is the most probable objective to pursue to nurture lake health.

Concerned About Phosphorus?

What to do

- Investigate and control property owner septic system efficiency
- Identify and pursue adverse land run off from lake property owners, farms and feed lots
- Educate lake property owners on detrimental use of phosphate lawn fertilizers

Why Does Our Lake Continue To Get More Weeds?

Lake Organizations and Resources

OTC COLA Otter Tail County Coalition Of Lake Associations

OTC COLA has over 50 Member Lake Associations representing close to 60 lakes (70% of the lake acreage in the County). The **Water Quality Analysis**

Program has been in existence over 20 years providing running 10-year trend analysis reports.

OTC COLA partners with Lake Associations sponsoring water quality testing programs, communications, education and legislative forums. OTC COLA maintains strategic alliances with lake and river organizations, government lobbyists and State and County government officials.

- COLA sponsored water quality testing
- Monthly **NEWSLETTERS** **SUBSCRIBE**
- OTC COLA **WEBSITE**
- Attend summer monthly meetings
- Participate in COLA events
- Network with fellow COLA members
- OTC COLA **BROCHURE**

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Minnesota Pollution Control Agency MPCA

- The MPCA provides technical and financial assistance and enforces environmental regulations in the State of Minnesota.

East Otter Tail Soil & Water Conservation District EOT SWCD

- **Shore & Water**
- **Financial Assistance**

West Otter Tail Soil & Water Conservation District WOT SWCD

Otter Tail County Land & Resource Management

- The Department of Land and Resource Management is designed to enforce county and state ordinances / rules.

Minnesota Department of Natural Resources MN DNR

Minnesota Lake Organizations and Agencies

- Lake property owners and lake organizations are finding that coping with adverse trends requires awareness and engagement. Minnesota organizations and Agencies work with counties, lake property owners, cities, townships and other entities for the preservation and protection of Minnesota lakes.

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