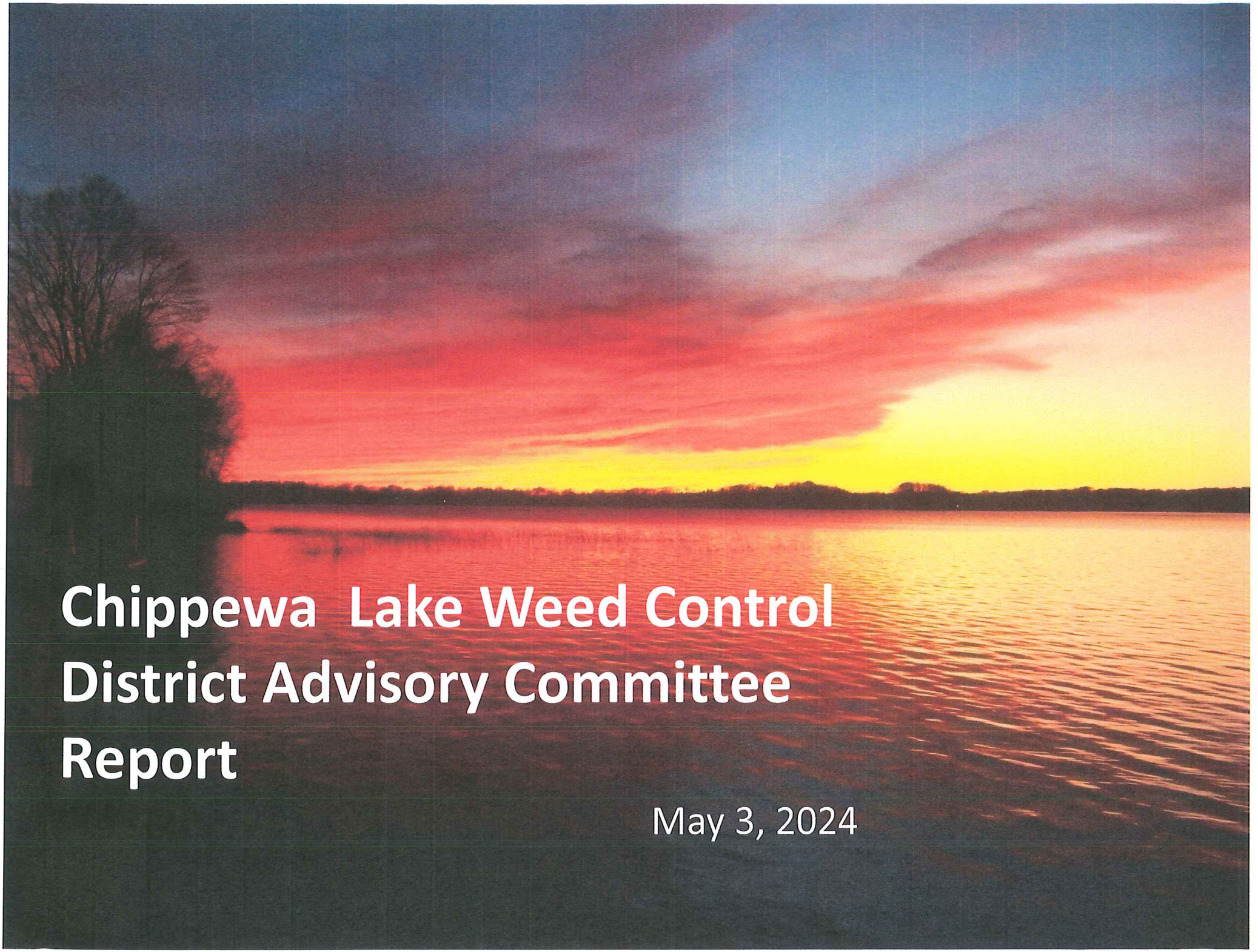


Chippewa Lake Weed Control District Advisory Committee Report

May 3, 2024

Agenda

- Chippewa Lake Level Control
- Committee Introduction
- Advisory Committee Mission
- Review of 2023 Team Monitoring
- PLM 2024 Monitoring and Treatment Plans
- Questions

Chippewa Lake Water Level Control

- Water level in Chippewa Lake is set by a court order at 1065.2’ above sea level since 1967 without variation for winter and summer (as near as practicable).
- Water level (exiting) is controlled by a dam near the south end of the lake feeding into Chippewa Creek.
- Mecosta County Drain Commission is responsible for maintaining the proper level.

Chippewa Lake Water Level Control

Other Factors

- **Weather**
  - Rainfall and springs are the major inputs for replenishing the water
  - 2023 we had near drought conditions Chippewa Lake level dropped significantly
  - The dam cannot add to the water level.

Chippewa Lake Water Level Control

Other Factors

- Beavers
  - Build dams that prevent water from getting to the dam.
  - Results in higher water levels until the beavers are removed and the dams destroyed.

Committee Members

Chippewa Lake Weed Advisory Committee

- Bryan Roels
- Paul Phillips
- Mark Coscarelli

2023 Team Monitoring

- During 2023 the team conducted more than 50 samplings including Total Phosphorous, Dissolved Oxygen, Chlorophyll, Water Clarity, Temperature and monitored for new invasive species.
- "Hands on" with PLM – Surveys and monitored application of herbicides.
- Results shared with Cooperative Lakes Monitoring Program (CLMP) and compared with more than 150 Michigan Lakes.
- Year to year water quality trend information.

Cooperative Lakes Monitoring Program

Michigan Lakes– Ours to Protect

2023 Data Report for Chippewa Lake, Mecosta County

Site ID: 540050

43.7611°N, 85.295°W

The CLMP is brought to you by:

Michigan Clean Water Corps

EGLE Michigan Department of Environment, Great Lakes, and Energy

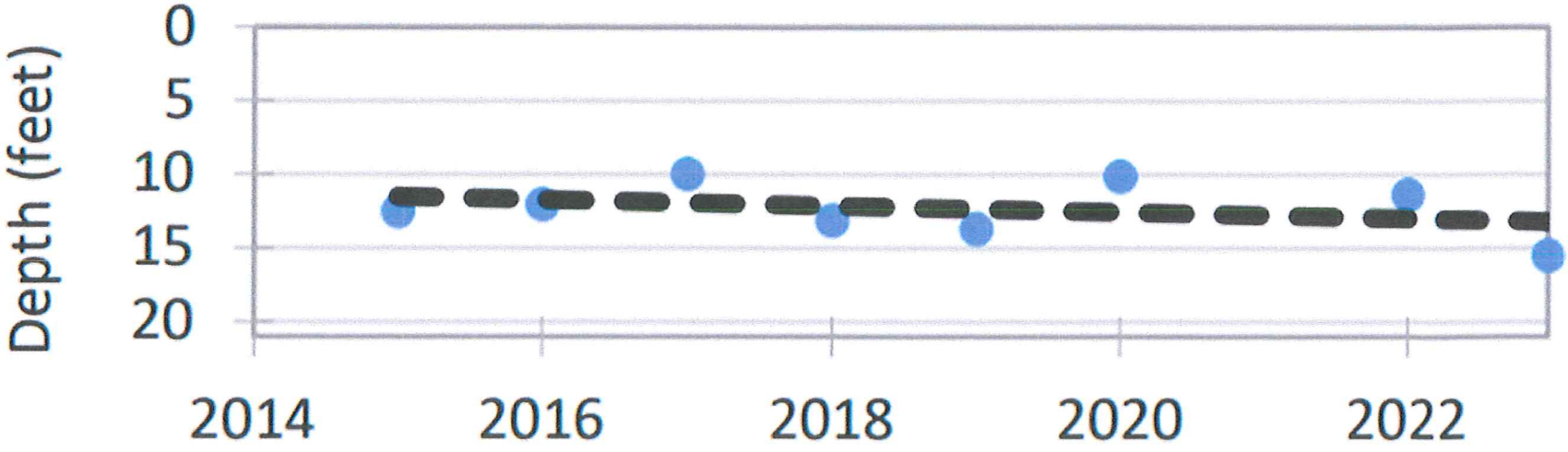
Michigan State University

Huron River Watershed Council

Micorps.net/lake-monitoring/

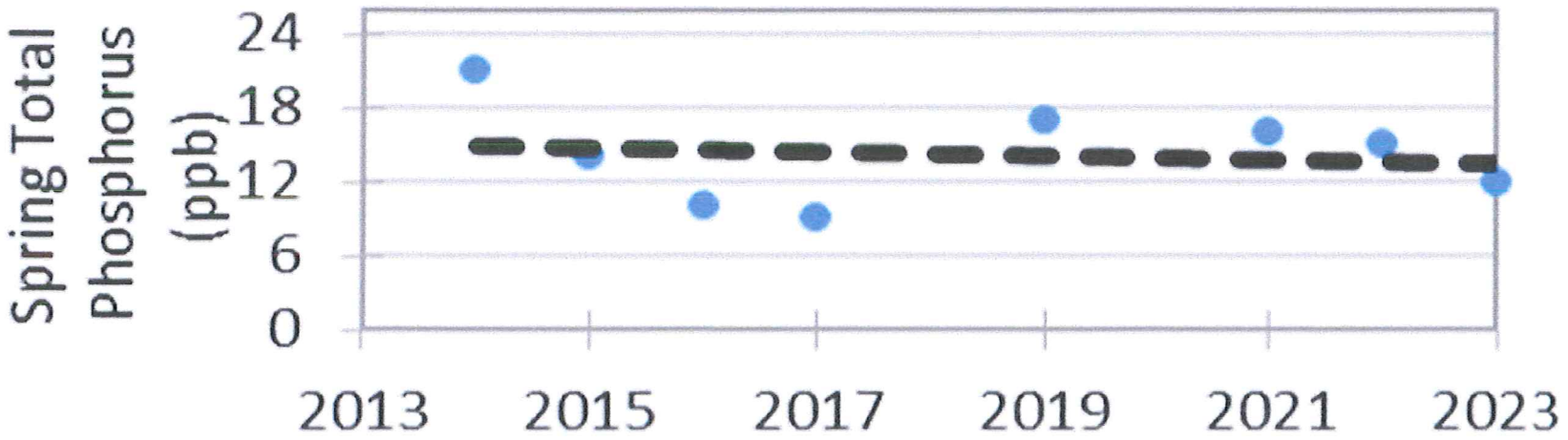
Secchi Disk Transparency (feet)

Year	# Readings	Min	Max	Average	Std. Dev	Carlson TSI
2023	13	12.0	20.0	15.5	2.7	38
2018-2022	57	6.0	24.0	12.1	2.9	41
2015-2017	50	8.0	20.0	11.5	2.4	42
2023 All CLMP Lakes	2825	0.5	51.0	12.2	2.7	43



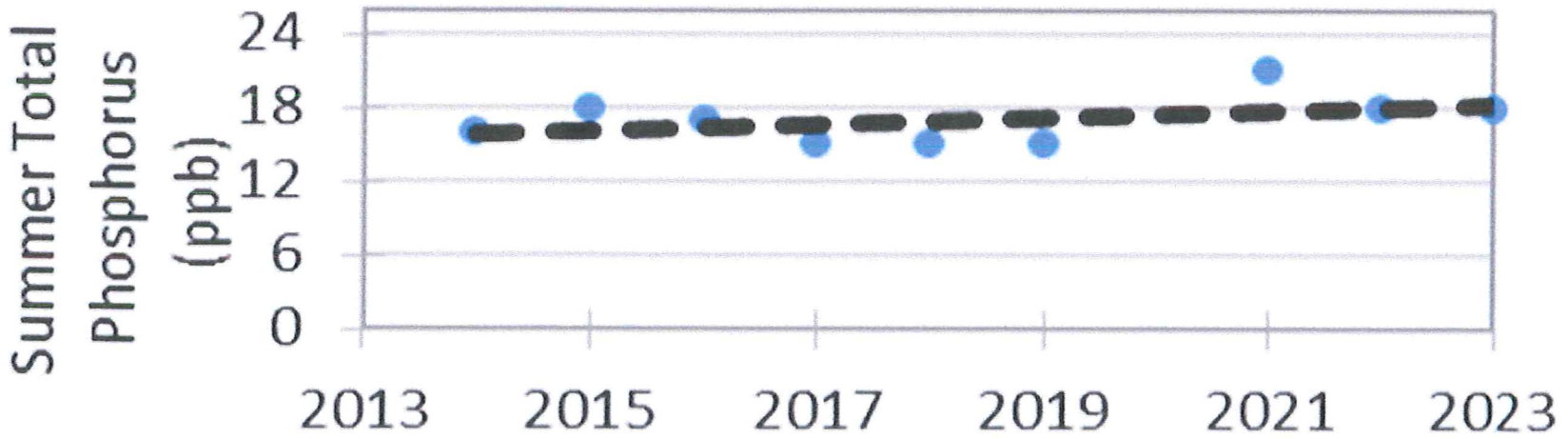
Spring Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev
2023	1	12.0	12.0	12.0	NA
2018-2022	2	16.0	17.0	16.5	0.7
2014-2017	4	9.0	21.0	13.5	5.4
2023 All CLMP Lakes	220	<5	220.0	20.7	21.3

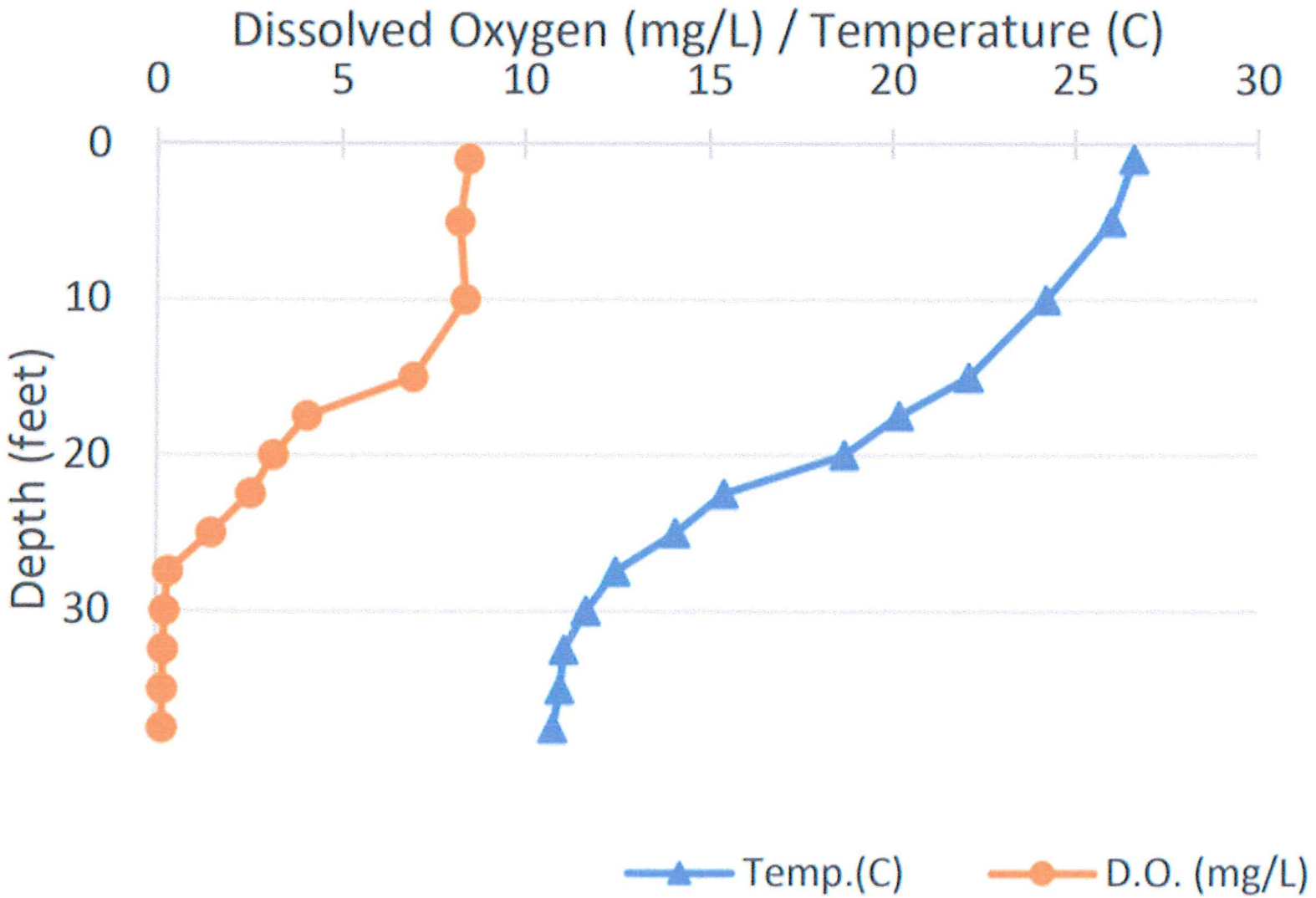


Summer Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev	Carlson TSI
2023	1	18.0	18.0	18.0	NA	46
2018-2022	4	15.0	21.0	17.3	2.9	45
2014-2017	4	15.0	18.0	16.5	1.3	45
2023 All CLMP Lakes	234	<= 3	150.0	17.4	15.3	45

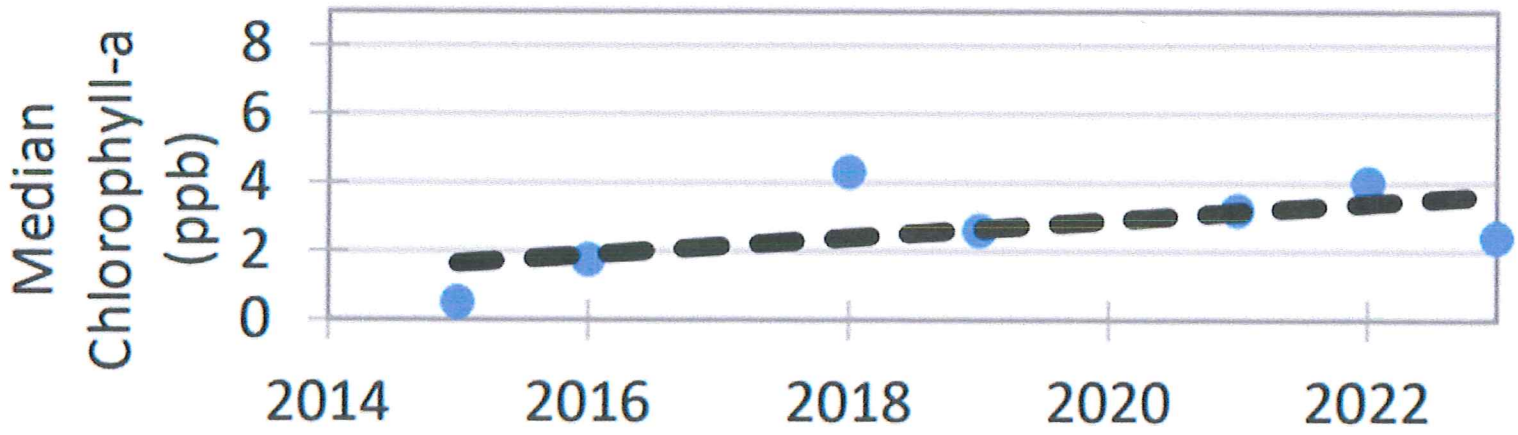


Dissolved Oxygen and Temperature Profile 7/2/23



Chlorophyll-a (parts per billion)

Year	# Samples	Min	Max	Median	Std. Dev	Carlson TSI
2023	5	1.2	7.1	2.4	2.4	39
2018-2022	15	<1.0	6.8	3.2	1.9	42
2015-2017	10	<1.0	5.1	3.2	1.5	34
2023 All CLMP Lakes	687	< 1.0	43.0	3.7	5.3	43



Summary

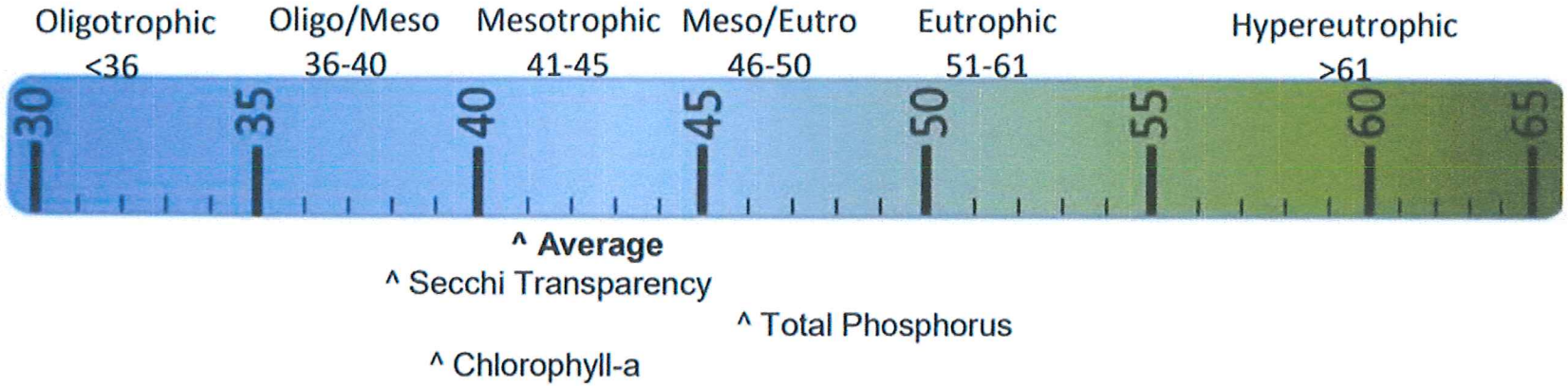
Average TSI	2023	2018-2022	2015-2017
Chippewa Lake	41	43	41
All CLMP Lakes	44	41	39

With an average TSI score of 41 based on 2023 Secchi transparency, chlorophyll-a, and summer total phosphorus data, this lake is rated as mesotrophic.

The lake keeps some dissolved oxygen in the bottom waters through early summer, but by mid-summer the lake has stratified and the bottom water is devoid of oxygen.

Long term trends indicate that the trophic status parameters have not changed beyond minor year-to year variation since monitoring began.

TSI for Chippewa Lake in 2023	
Average	41
Secchi Disk	38
Summer TP	46
Chlorophyll-a	39



Oligotrophic: Generally deep and clear lakes with little aquatic plant or algae growth. These lakes maintain sufficient dissolved oxygen in the cool, deep-bottom waters during late summer to support cold water fish, such as trout and whitefish.

Mesotrophic: Lakes that fall between oligotrophic and eutrophic. Mid-ranged amounts of nutrients.

Eutrophic: Highly productive eutrophic lakes are generally shallow, turbid, and support abundant aquatic plant growth. In deep eutrophic lakes, the cool bottom waters usually contain little or no dissolved oxygen. Therefore, these lakes can only support warm water fish, such as bass and pike.

Hypereutrophic: A specialized category of euthrophic lakes. These lakes exhibit extremely high productivity, such as nuisance algae and weed growth.

New Invasive Threats
Rivularia Alga

Identified in Chippewa Lake in 2023
Can be transported from lake to lake easily, even through the air
Can be dormant for many years
It is classified as a blue/green alga (but different)

Rivularia sp.

See video meeting with Dr. Bishop on Rivularia alga @
www.chippewatwp.org/lake_info.aspg