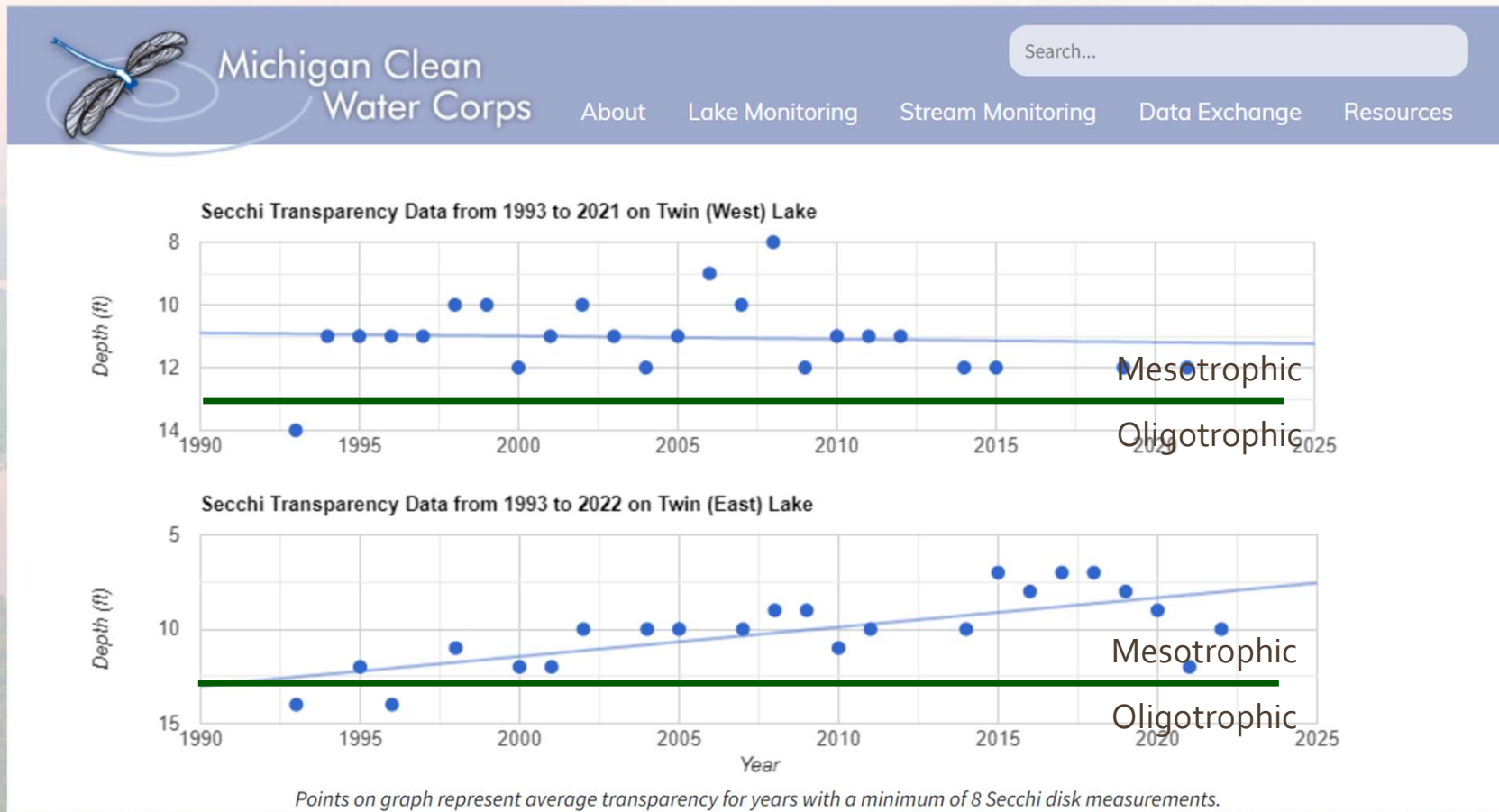




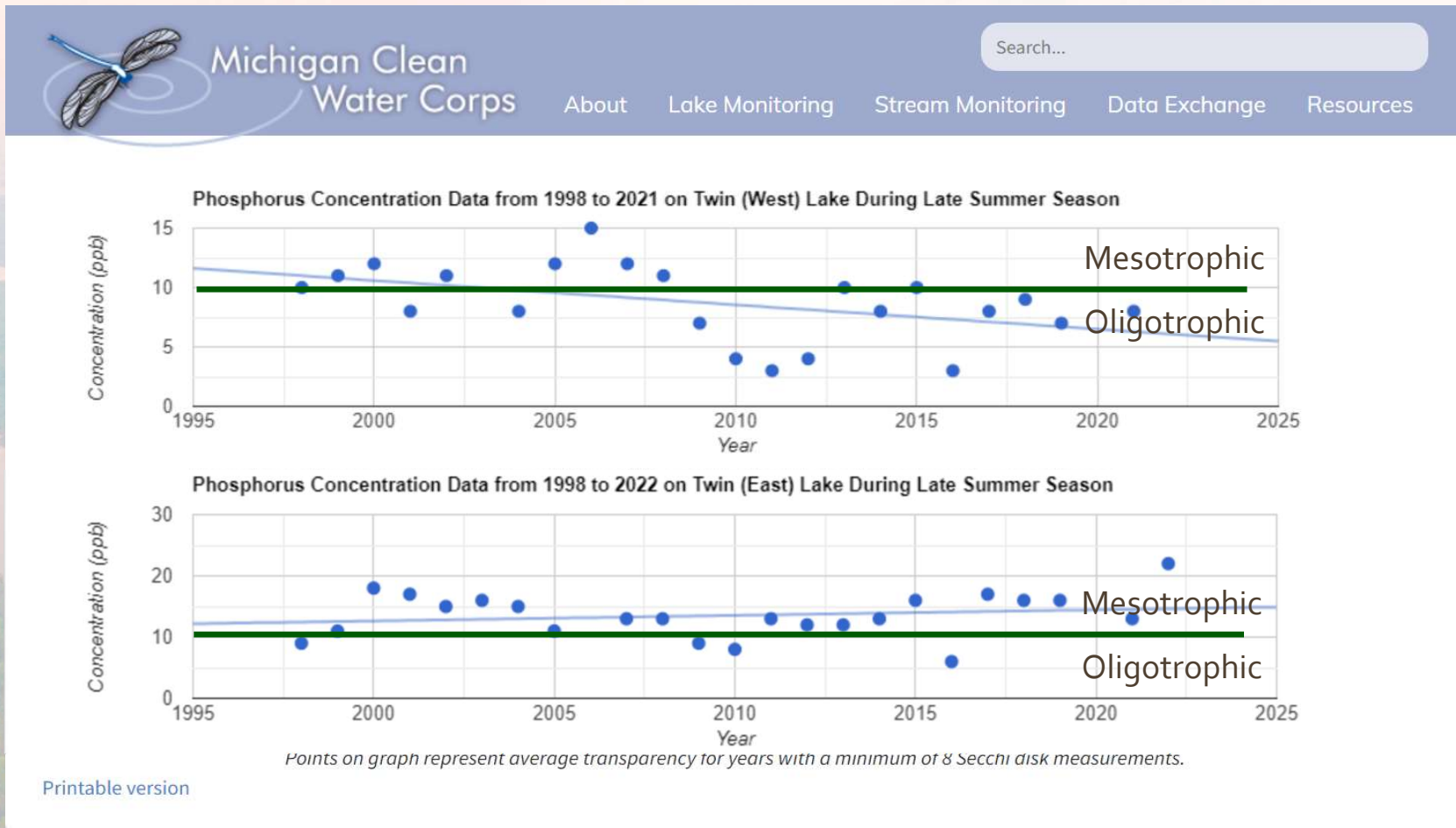
CLMP and East Twin Water Clarity Update

John Jackson
Membership Meeting, May 29, 2023

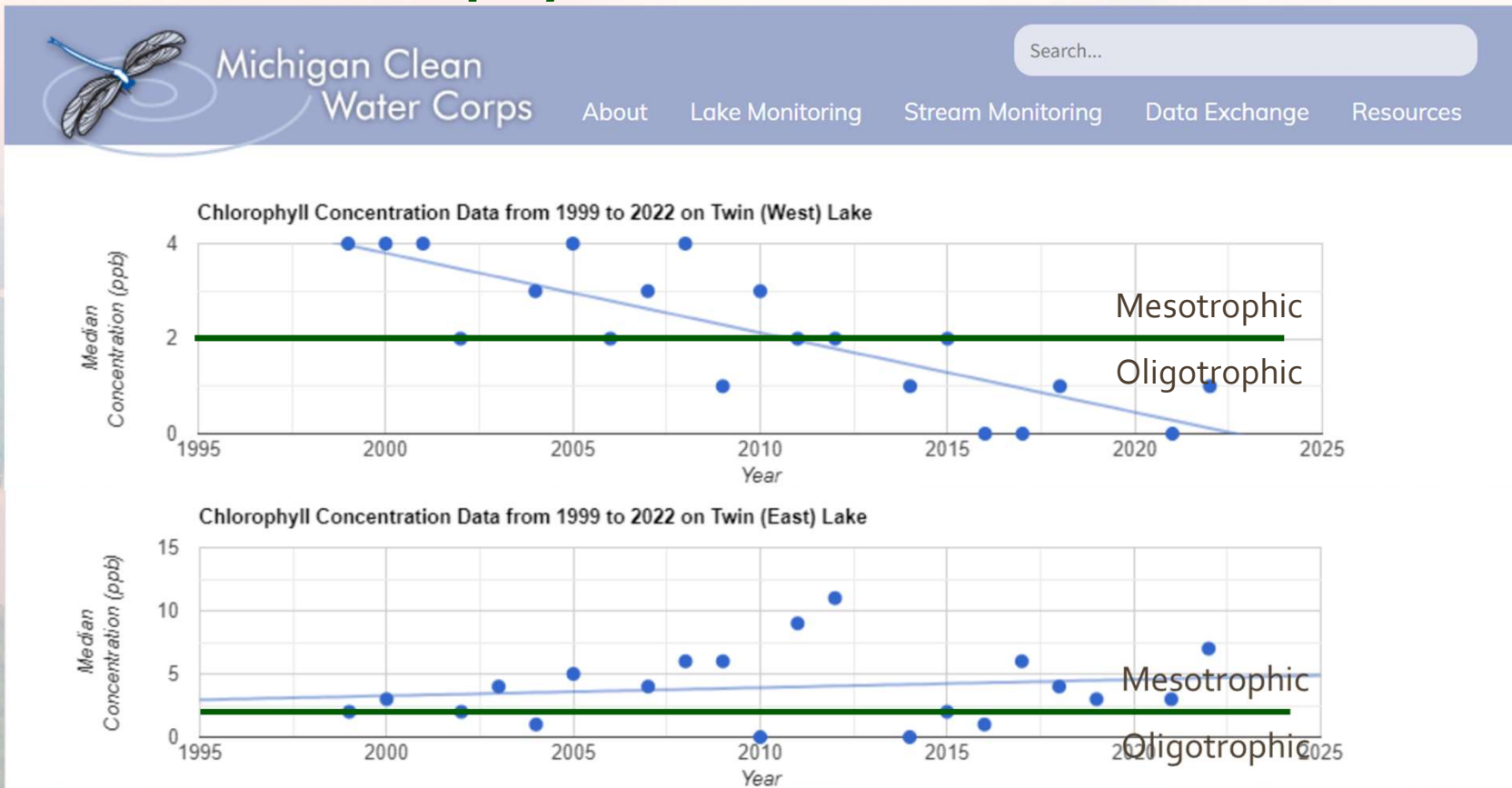
What are our Secchi Disk results?



What are our Summer Phosphorous results?



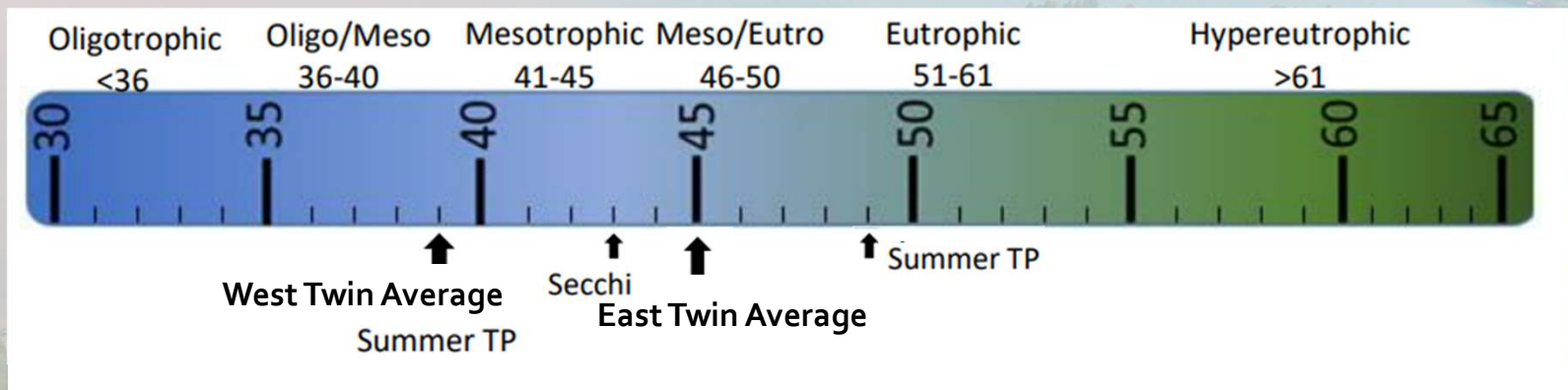
What are our Chlorophyll results?



Twin Lakes CLMP Results Analysis



- ✓ West Twin: With a TSI score of 39 based on 2022 summer total phosphorus, this lake is rated between the oligotrophic and mesotrophic lake classification. The lake leans slightly more mesotrophic than oligotrophic.
- ✓ East Twin: Long term monitoring shows slight upward slopes on all the parameters and an increase in average TSI score over time. These results indicate a slow movement toward higher nutrient levels in this lake.



East Twin Secchi Disk Archive

Date	CLMP	1939	1993	1995	1996	1998	2002	2004	2007	2009	2015	2016	2017	2018	2019	2020	2021	2022	2023	Ave	Feet	Trophic Classification
2023	Week																					
30-Apr	-1		21												11			14		15.8	22	Oligotrophic
7-May	0		19		18					16					10.5		13.5	14.5	14.5	13.7	21	Oligotrophic
14-May	1								12.5						10	13	14	14	14	13.4	20	Oligotrophic
21-May	2		21	18	19.5	16.5	11									12.5	15	16.5	16.5	12.7	19	Oligotrophic
28-May	3					14.5	1									13.5	13.5	13.5	13.5	12.0	18	Oligotrophic
4-Jun	4			18	19.5	15.5	1									11.5	15.5	12.5		12.1	17	Oligotrophic
11-Jun	5			18		15.5										11.5	21.5	13		11.8	16	Oligotrophic
18-Jun	6		21	16.5	17											10	17.5	11.5		11.9	15	Oligotrophic
25-Jun	7						10									9	12	10		10.1	14	Oligotrophic
2-Jul	8		16	15			9									9	11.5	9		10.1	13	Mesotrophic
9-Jul	9			9	10.5	9										8	9	8		9.0	12	Mesotrophic
16-Jul	10		11			10.5									6	6.5	11	8		9.6	11	Mesotrophic
23-Jul	11			9.5		10.5									6.5	7	11	7		9.2	10	Mesotrophic
30-Jul	12				10	10	11.5								6.5	6.5	7.5	10	8	9.6	9	Mesotrophic
6-Aug	13					9.5	11	7					6.5	6.5	7	8	9	8		8.5	8	Mesotrophic
13-Aug	14		13	9	10	9.5	10.5			9.5	6.5	10	6.5	6.5	7	8	9	8		9.0	7	Mesotrophic
20-Aug	15			9	10.5	12	7	7.5	7.5		6.5	9.5	6.5	7	7	8	9	8.5		8.5	6	Eutrophic
27-Aug	16		11.5	9		13	9.5			9	6.5	9.5	6.5	6.5	7	8.5	11	8		9.0	5	Eutrophic
3-Sep	17	14.5	11.5	10.5	17		10	7	8		6.5	10	6	8	7	9	10	9		9.4	4	Eutrophic
10-Sep	18		12	10.5	13.5	10	10.5			10	6.5		9	9	7.5	9.5	9	9		9.7	3	Hypereutrophic
17-Sep	19			12.5	15		11	8.5	8.5			11	7.5	9.5	8.5	10	10	10		10.3	2	Hypereutrophic
24-Sep	20					13				9.5									2022	11.4	1	Hypereutrophic
Ave		14.5	14.7	12.7	14.3	11.8	10.9	10.7	10.2	9.9	7.2	8.5	7.1	7.7	8.1	9.5	12.1	10.5	14.6	10.4		

East Twin Water Clarity Records Cover 84 Years!

DNR Reports

14.5

2022

An aerial photograph of a large, winding lake at sunset. The sky is filled with soft, colorful clouds in shades of orange, pink, and purple. The lake's water reflects the sky, showing a mix of blue and brownish tones. The surrounding land is covered in dense green forest. On the right side of the lake, there is a developed area with many small buildings, likely a campsite or resort, with roads and parking lots visible. The overall scene is peaceful and scenic.

Lewiston Retention Pond Update

John Jackson
Membership Meeting, May 29, 2023

This was the article we had hoped for

Albert Township Board Approves Stormwater Pollution Study by Huron Pines

by Yvonne Swager

Staff reporter

The water clarity for East Twin Lake in Lewiston is getting worse despite the state's 2010 outlawing of phosphorus in lawn fertilizer. Since the state's ban on phosphorus, other inland lakes in Michigan have reflected improvement in water clarity, but East Twin Lake showed a high phosphorus reading in 2022. The matter was discussed at the regular Albert Township board meeting on April 3.

"The health of our lakes is the health of our town," said Pete Stephens, member of the Downtown Development Authority and of the Twin Lakes Property Owners' Association.

Nick Theisen, water program technician for Huron Pines, suggested conducting a storm water assessment to determine where the phosphorus levels in the groundwater that eventually makes it into East Twin Lake are the highest. He said installation of rain gardens could help absorb rainwater, limiting the amount that makes it to East Twin. Some of the water from East Twin also flows into West Twin Lake.

This was the article we got

Water clarity of East Twin Lake in Lewiston getting worse

by Yvonne Swager

Staff reporter

East Twin Lake in Lewiston, Minn., is getting worse. The water clarity has declined since the state's 2010 outbreak of cyanobacteria, other inland lakes in the state have reflected the same trend. In water clarity, East Twin Lake shows a downward trend. A reading in 2022 was 1.5 meters, a decrease from a reading in 2021 of 2.5 meters. The township board is looking on April 15, 2023.

"The health of our lake is the health of our town," said Steve Stepien, a member of the Lewiston Development and Planning Commission and the Lewiston Lakes Property Owners Association.

Nick Stepien, water program manager for the township, suggests installing a storm water management system to determine where cyanobacteria levels in the lake are highest. He eventually made a plan for East Twin Lake and said that the installation of a storm water management system could be limiting the amount of water from East Twin Lake.

Huron Pines Storm Sewer Mapping

1. On the ground mapping of the storm sewer system. Huron Pines will be responsible for this, with assistance from the Road Commission.
2. Desktop analysis of storm sewer system - Huron Pines
 - Digitize storm sewer plans
 - Delineate drainage zones
 - Gather land use data, soil information, elevation data etc.
 - Calculate stormwater discharge values for each drainage zone
 - Calculate pollutant loading for each drainage zone
3. Synthesize Stormwater Assessment - Huron Pines
 - Summarize results from the desktop analysis
 - Give BMP recommendations for each drainage zone
4. Finalize stormwater assessment - Huron Pines

How will we use this analysis?

- ✓ Identify and Quantify Nutrient (Phosphorous) Increases in East Twin
- ✓ Similar analysis has been done on other inland lakes (Muskellunge Lake WI)
- ✓ There are 4 input sources of nutrients for East Twin
 - Stormwater input from Huron Pines Analysis
 - Septic systems
 - Precipitation
 - Ground water
- ✓ What was the breakdown at Muskellunge Lake
 - **23%** Surface water input (Stormwater for Lewiston)
 - **16%** Septic systems
 - **3%** Precipitation
 - **52%** Ground Water

An aerial photograph of a large, winding lake at sunset. The sky is filled with soft, colorful clouds in shades of orange, pink, and blue. The lake's surface reflects the light, showing a mix of blue and brown tones. The surrounding land is covered in dense green forest. On the right side of the lake, there is a developed campsite with numerous tents, trailers, and buildings. The overall scene is peaceful and scenic.

Questions ?

John Jackson
Membership Meeting, May 29, 2023