

2020 North Lake Water Quality Summary

Note: In 2020 the funding for the CLMP testing and report was eliminated from the state budget. Consequently there will be no detailed CLMP testing and report this year. In spite of this, testing continued on the lake this summer to provide information from the tests we do ourselves without the benefit of the more sophisticated CLMP testing facilities and personnel. This report is being presented here in lieu of the CLMP report with gratitude to Charlie Taylor for compiling the information. Hopefully, a new source for funding will be found to continue the CLMP program next year.

Mary Lou Frendt

Compiled and Written by Charlie Taylor

I tried to summarize from Secchi disk readings, dissolved oxygen and temperature depth profiles over the past six years...

Attached below are three graphs summarizing data from North Lake.

1. A rough-and-ready estimate of overall water quality (invented in 1865) is the depth that a 10-inch black and white target is visible from the surface (first attached graph). In early spring, Secchi readings usually start at a modest depth of about 10 feet and then gradually increase over the summer, as floating particles (algae, pollen, dust) settle to the bottom. The first attached graph shows Secchi measurements from this year. It is obvious from the graph (and from swimming) that clarity for the past month has been excellent. Average Secchi depth from weekly measurements over warm months has been recorded on and off for about 14 years, and these measurements (second attached graph) show that for the past seven years or so, average seasonal water clarity has been about 25% greater than in 1996 to 2002.
2. As expected with warming weather during the spring/summer, surface temperature (yellow symbols from the third graph, measured 1 ft under the surface) rises each spring and usually peaks about the first of August. 2020 was unusual, as temperature was above 75 degrees already by May 21, similar to 2016 but earlier warming than in 2015, 2017, 2018 or 2019.
3. Each year the thermocline (red symbols in third graph, region where warm surface water gives way to static cold deep water) is very gradual and deep in early spring, then it gets steeper and shallower (steepest point about 20 to 25 feet) by late May or June and then stays at a similar depth but becomes steeper all the way into September. This general pattern has been true each year it has been measured.
4. In the early spring, oxygen is dissolved in the cold water all the way to the bottom of the lake (blue symbols in third graph). As expected from oxygen utilization by algae (both bottom-anchored and floating) and de-gassing from warmed water, over the summer months oxygen becomes depleted (less than 10% of that found at the surface) at depths below about 20 feet between mid-June and early August. This pattern contrasts with northern Michigan cold lakes that have dissolved oxygen down to the bottom. The pattern in North Lake has been more-or-less the same each year but occurred somewhat late in the season (by Aug 5) this year.