



February 14, 2020

To Whom It May Concern:

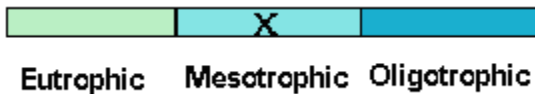
Lilly Lake in Brown County was part of the DNR Directed Lakes Monitoring Program. The purpose of this monitoring is to assess overall lake health. Monitoring was conducted on Lilly Lake in 2018 and 2019. Results from the 2018 monitoring effort were summarized in a letter report dated March 1, 2019 (attached). This report summarizes the 2018 aquatic invasive species (AIS) early detection monitoring and the 2019 water quality monitoring results.

A link to the DNR Directed Lake Monitoring protocols are available on our webpage at: <https://dnrx.wisconsin.gov/swims/downloadDocument.do?id=163086662>

Water Chemistry

The following information is taken from the Lilly Lake webpage provided by the DNR: <https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=82900>

Lily Lake - Deepest Part 2019 Results



Lily Lake - Deepest Part was sampled **5** different days during the 2019 season. Parameters sampled included:

- water clarity
- temperature
- dissolved oxygen
- total phosphorus
- chlorophyll

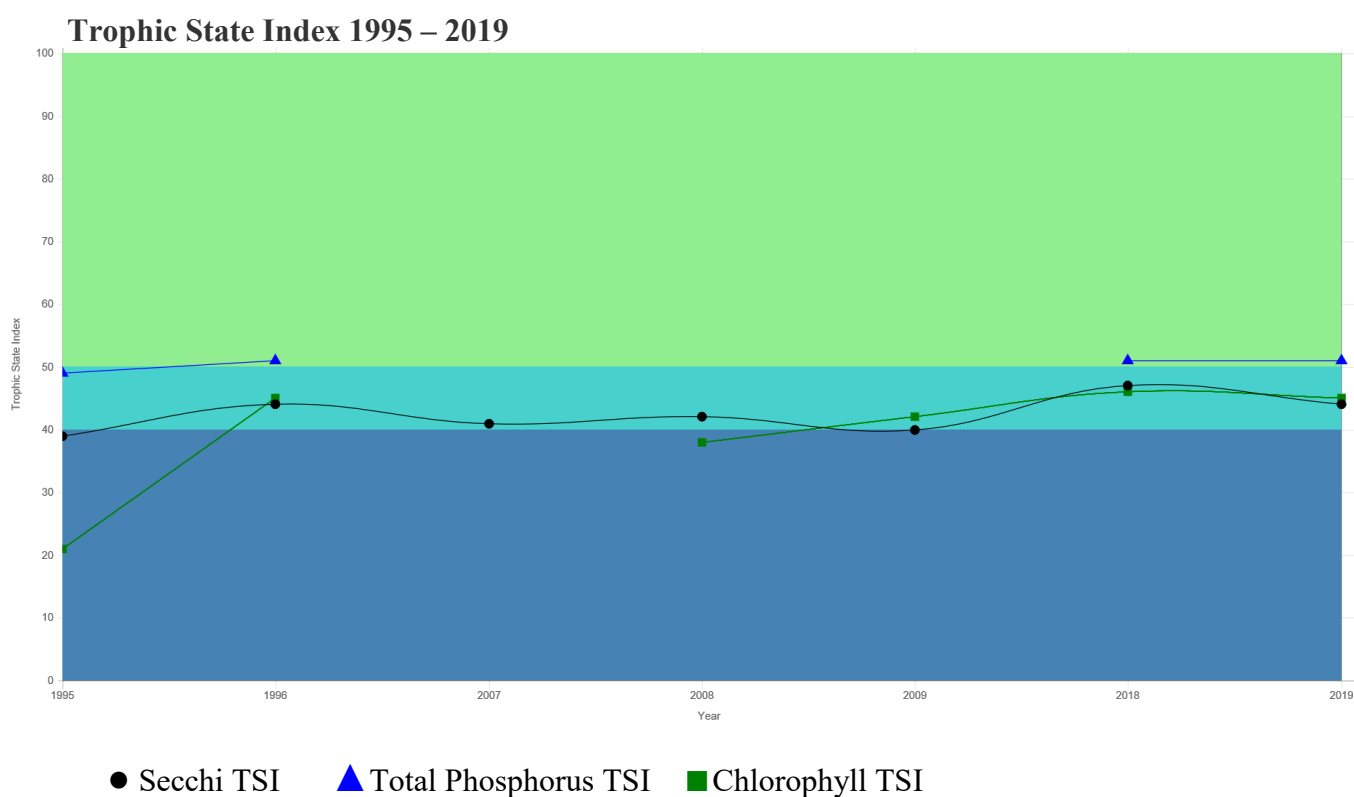
The average summer (July-Aug) secchi disk reading for Lily Lake - Deepest Part (Brown County, WBIC: 82900) was 10.15 feet. The average for the Southeast Georegion was 7 feet. Typically, the summer (July-Aug) water was reported as CLEAR and GREEN.

Chemistry data was collected on Lily Lake - Deepest Part. The average summer Chlorophyll was 4 µg/l (compared to a Southeast Georegion summer average of 32.8 µg/l). The summer Total Phosphorus average was 18.8 µg/l. Lakes that have more than 20 µg/l and impoundments that have more than 30 µg/l of total phosphorus may experience noticeable algae blooms.

Trophic State Index (TSI)

The overall Trophic State Index (based on chlorophyll) for Lily Lake - Deepest Part was 45. The TSI suggests that Lily Lake - Deepest Part was **mesotrophic**. Mesotrophic lakes are characterized by moderately clear water, but have a increasing chance of low dissolved oxygen in deep water during the summer.

TSI is determined using a mathematical formula (Wisconsin has its own version). The TSI is a score from 0 to 110, with lakes that are less fertile having a low TSI. We base the overall TSI on the Chlorophyll TSI when we have Chlorophyll data. If we don't have chemistry data, we use TSI Secchi. We do this rather than averaging, because the TSI is used to predict biomass. This makes chlorophyll the best indicator.



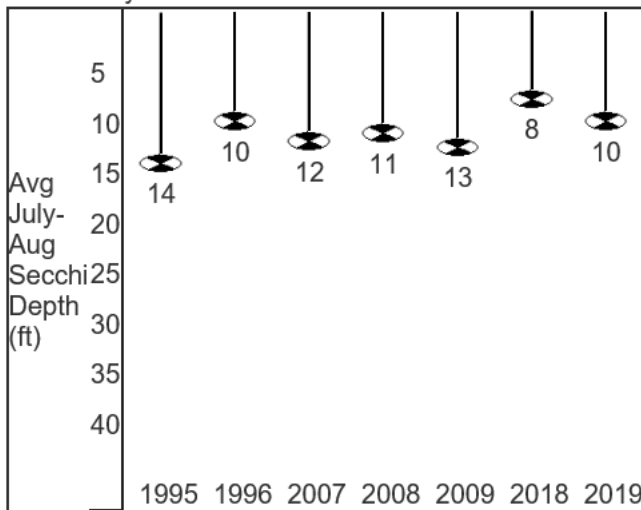
TSI	TSI Description
TSI < 30	Classical oligotrophy: clear water, many algal species, oxygen throughout the year in bottom water, cold water, oxygen-sensitive fish species in deep lakes. Excellent water quality.
TSI 30-40	Deeper lakes still oligotrophic, but bottom water of some shallower lakes will become oxygen-depleted during the summer.
TSI 40-50	Water moderately clear but increasing chance of low dissolved oxygen in deep water during the summer.

TSI	TSI Description
TSI 50-60	Lakes becoming eutrophic: decreased clarity, fewer algal species, oxygen-depleted bottom waters during the summer, plant overgrowth evident, warm-water fisheries (pike, perch, bass, etc.) only.
TSI 60-70	Blue-green algae become dominant and algal scums are possible, extensive plant overgrowth problems possible.
TSI 70-80	Becoming very eutrophic. Heavy algal blooms possible throughout summer, dense plant beds, but extent limited by light penetration (blue-green algae block sunlight).
TSI > 80	Algal scums, summer fish kills, few plants, rough fish dominant. Very poor water quality.

Water Clarity (secchi)

Water clarity data has been collected on Lilly Lake sporadically since 1995. Average secchi depth ranged from 8 to 14 feet.

Lilly Lake
Brown County
Waterbody Number: 82900



Past secchi averages in feet (July and August only).

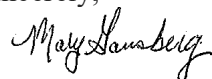
Year	Secchi Mean	Secchi Min	Secchi Max	Secchi Count
1995	14.38	12.75	16	2
1996	10.13	9	11.25	2
2007	12.25	11.5	13	2
2008	11.4	10	12.5	5
2009	12.81	10.5	14.5	4
2018	8	7.5	8.5	2
2019	10.15	10.1	10.2	2

Aquatic Invasive Species (AIS) Survey

An Aquatic invasive Species early detection survey was conducted in August 2018. A lake-wide aquatic plant point-intercept survey and an AIS meander survey were done. AIS found while monitoring consisted of Eurasian Watermilfoil (*Myriophyllum spicatum*), and Curly-leaf pondweed (*Potamogeton crispus*), Chinese mystery snails, (*Cipangopaludina chinensis*) and purple loosestrife (*Lythrum salicaria*). To learn more about aquatic invasive species and become more familiar with each specific species, please visit the DNR aquatic invasive species webpage at: <https://dnr.wi.gov/lakes/invasives/>

This report summarizes the 2018 and 2019 monitoring results. This completes the two-year monitoring effort on Lilly Lake. If you have any questions regarding the survey results from Lilly Lake, please feel free to contact me at 920-662-5489 or at Mary.Gansberg@Wisconsin.gov

Sincerely,



Mary Gansberg
Water Resources Management Specialist
Wisconsin Department of Natural Resources