Walloon Lake Water Quality

Although Michigan, the Great Lakes State, borders four out of the five Great Lakes, Michigan has thousands of inland lakes that are also “great.” One of these large, idyllic, glacially-formed lakes is Walloon. For 30 years, Tip of the Mitt Watershed Council (TOMWC) staff and volunteers have ventured out on Walloon Lake year after year to monitor and capture important data on the health of Walloon Lake. This important collection of data allows us to not only understand the lake’s current conditions but to also identify any deviations from long-term trends.

Parameters and Results

Every year, our team of dedicated Volunteer Lake Monitors (VLM) spend time on their assigned lakes collecting data on a few key water quality indicators. Walloon Lake is lucky to have John Marklewitz, who marked his third consecutive year of monitoring the Lake as part of the VLM program. Throughout the spring, summer, and early fall monitors venture out onto Walloon Lake and measure water temperature, Secchi disk depth, dissolved oxygen, and chlorophyll-a samples. Here is a brief recap of the 2018 water quality monitoring reports.

Secchi Disc

The Secchi disc is a weighted black and white disc used to measure water clarity by lowering it into the water and recording the depth at which it disappears. Water clarity, which is principally determined by the concentration of algae and/or sediment in the water, is a simple and valuable way to assess water quality.

The average Secchi disk depth for the Foot, North, and Wildwood Basins 11.75 feet (ft.), with Wildwood averaging the deepest depth of 13.78 ft.

Chlorophyll-a

Chlorophyll-a is a pigment found in all green plants, including algae. Water samples collected by volunteers are analyzed for chlorophyll-a to estimate the amount of phytoplankton (minute free-floating algae) in the water column. Higher chlorophyll concentrations indicate greater phytoplankton densities, which reduce water clarity.

Foot 0.36054 West 0.179763
WW 0.234958 North 0.479032

Chloride

Chloride (Cl-) is likely on your kitchen table, in water softener salts, some fertilizers, and used in the wintertime to de-ice roadways. Chloride has steadily increased in Walloon Lake over the last few decades. Chloride is not readily used in biological or chemical processes of a lake, allowing it to accumulate over time. Although most freshwater life is not impacted until levels exceed 1,000ppm, chloride can be a proxy measurement of human impact to the watershed. As development increases, typically so do impermeable (paved) surfaces requiring road salt in the wintertime, which then can runoff into nearby surface waters during spring snowmelt.

Average chloride levels taken from the four main basins remained consistent between 2017 and 2018, with an average reading of about 14 mg/L both years. The North Basin had the highest chloride levels.

Total Nitrogen and Phosphorus

Phosphorus and nitrogen are two important nutrients for plant and algal growth. However, too much of either can have negative impacts to the water quality of Walloon Lake. Both nutrients are found in fertilizers and can leach from failing septic systems or surface runoff after rainfall. Most lakes in our area are phosphorus limited, meaning the biological productivity (i.e. - algal growth) is limited by the amount of phosphorus available. As such, minimizing external phosphorus inputs (i.e. - septic systems and fertilizers) to Walloon Lake is vital to managing nuisance algal blooms and maintaining high water quality. Phosphorus reached a 29 year low in 2015 but has seen a slight increase in recent monitoring years, while nitrogen has remained relatively consistent. The slight increase in phosphorus in recent monitoring years is possibly due to phosphorus-containing fertilizer usage along the lakeshore.

The average Total Phosphorus (TP) concentrations for the Foot, North, West, and Wildwood Basins was 3.2 (µg/L), which is slightly lower than 3.8 (µg/L) measured in 2017. The average Total Nitrogen (TN) concentrations for the same basins in 2018 was 405.2 (µg/L), which was also down slightly from 2017 levels of 431.5 (µg/L).

Overall, the water quality of Walloon Lake remains high, but not without threats.

The unique physical structure composing five distinct basins help make Walloon an amazing lake to enjoy. Tip of the Mitt Watershed Council will continue to work closely with the Walloon Lake Association and Conservancy to identify any changes in Walloon Lake water quality and take steps to mitigate any negative impacts so that future Walloiners can continue to enjoy this idyllic lake. If you have any questions, comments, or concerns about the above information, please do not hesitate to contact Tip of the Mitt Watershed Council, (231) 231-347-1181 or email at info@watershedsCouncil.org.