

MEMORANDUM

To: Board of Managers, LMRWMO
CC: Joe Barten, LMRWMO Administrator
From: Lindsey Albright, Dakota County SWCD Water Resource Specialist
Date: April 3, 2018
Subject: Thompson Lake - 2017 Citizen Assisted Monitoring Program (CAMP) Results

Background

Thompson Lake is a 7-acre lake located in the City of West St. Paul and is bordered by Thompson County Park. The lake has a maximum depth of 8 feet and therefore must meet Minnesota water quality standards for shallow lakes. The Thompson Lake watershed is approximately 180 acres, comprised of commercial, institutional, low density residential, and Dakota County park land immediately around the lake.

The lake was monitored by Dakota County in 2011 and as part of the Watershed Restoration and Protection Strategy ([WRAPS](#)) performed by the Minnesota Pollution Control Agency (MPCA) in 2012. The averages for total phosphorus concentrations monitored during that period did not meet state water quality standards. Chlorophyll-a concentrations did not meet standards in 2011 and barely met standards in 2012, while the average Secchi depth did meet the water quality standard both years. In 2014, Thompson Lake was added to the Impaired Waters List for impairment to aquatic recreation. In 2016, Thompson Lake was added to the Impaired Waters List again for chloride levels not meeting state standards.

Studies done by the LMRWMO found that the majority of phosphorus was due to stormwater runoff from the contributing watershed. In 2016, the LMRWMO was awarded funding from the Minnesota Board of Water and Soil Resources (BWSR) through the Clean Water, Land and Legacy Amendment to construct a stormwater pond and treatment wetland at the north end of the lake to remove phosphorus from stormwater before entering Thompson Lake. That project is in progress, with construction of stormwater management improvements to occur in 2018- 2019.

Recent Water Quality Monitoring Activities

In the summers of 2016 and 2017, monitoring for eutrophication parameters (chlorophyll-*a*, total phosphorus, and Secchi disk transparency) took place on a biweekly schedule starting in mid- June and continuing through early-September through the Citizen Assisted Monitoring Program (CAMP). The monitoring location was the same as what used during the WRAPS project.

2017 Water Quality Monitoring Results

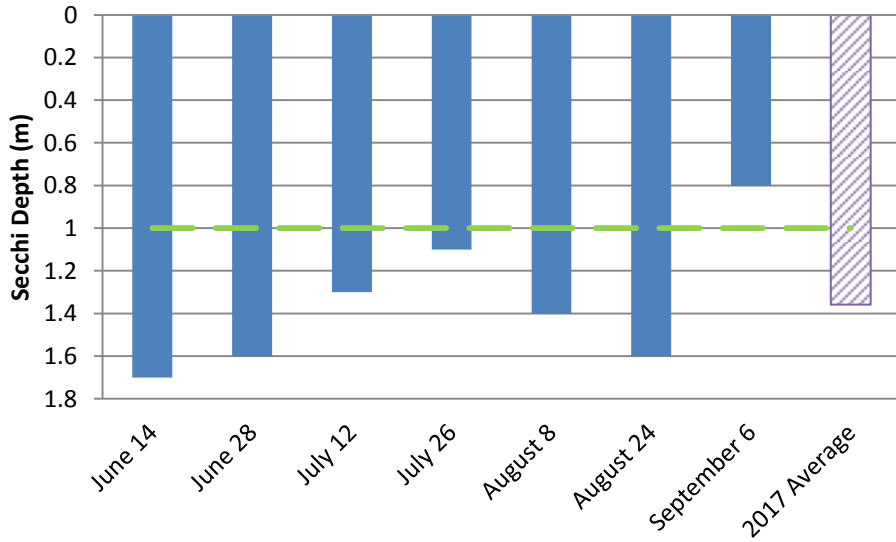
Water quality was monitored on Thompson Lake seven times in 2017 between June and September. Water clarity was determined using a Secchi disc, while water samples were collected and subsequently analyzed for total phosphorus and chlorophyll-*a* (field filtered). In 2017, Thompson Lake met the water quality standards for shallow lakes for both Secchi depth and chlorophyll-*a*, but continues to exceed (not meet) the standard for total phosphorus. This is consistent with the previous year's monitoring. The lake will continue to be monitored in future years to track the effectiveness of the stormwater improvement project.



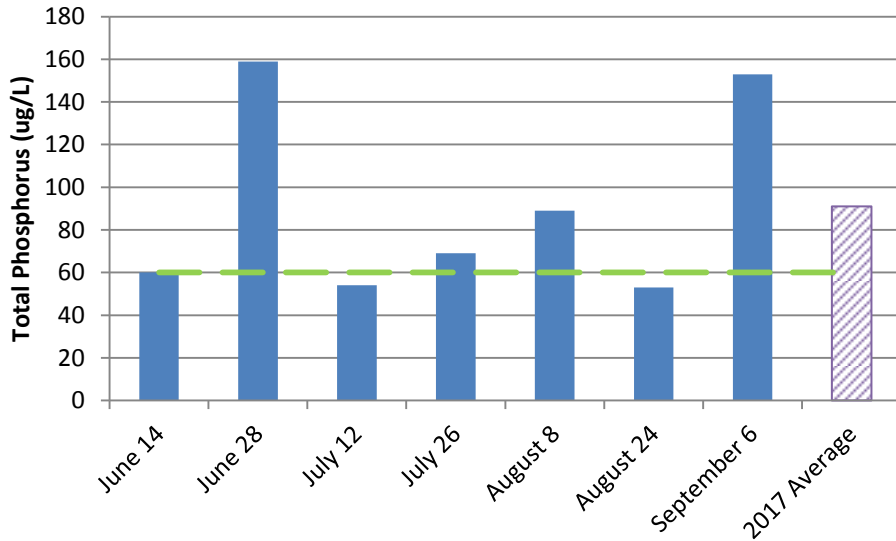
★ Monitoring Location

2017 Monitoring Results

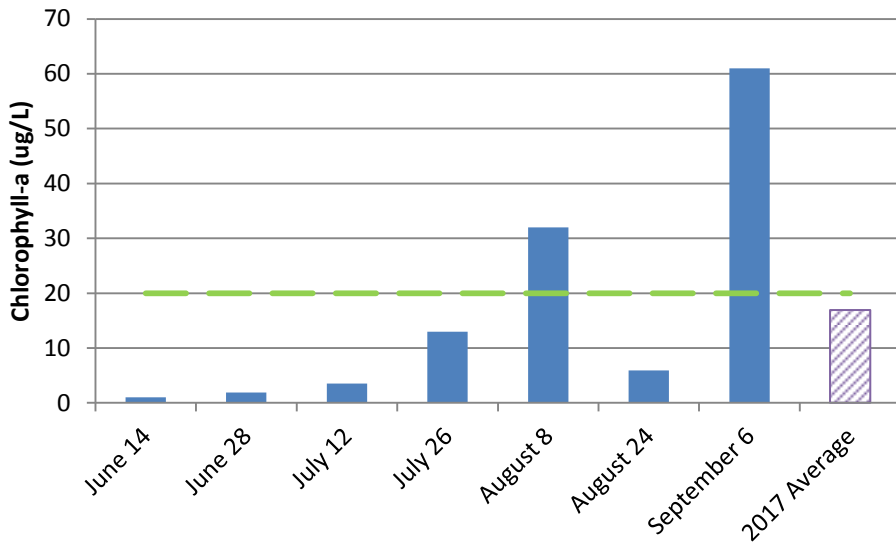
Secchi Depth



Total Phosphorus (TP)



Chlorophyll-a (Chl a)



The 2017 water monitoring results for Pickerel Lake were evaluated against the shallow lake criteria set for lakes in the North Central Hardwood Forest (NCHF) Ecoregion.

Upper limits of the threshold are indicated by the **green dashed line**:
 > 1.0 m Secchi depth
 < 60 $\mu\text{g/L}$ TP
 < 20 $\mu\text{g/L}$ Chl a

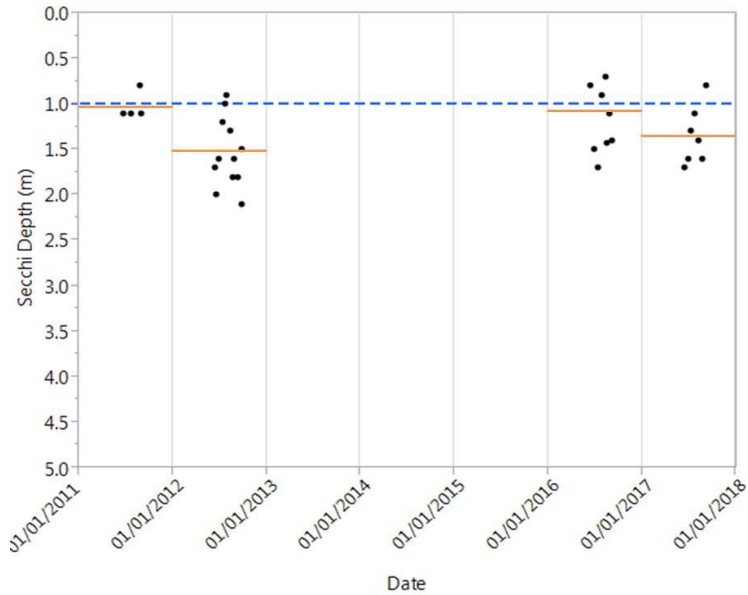
The **purple diagonal column** on the right side of each graph shows the summer average for each parameter.



The CAMP program is coordinated by the Metropolitan Council

Historical Water Quality Monitoring

Secchi Depth

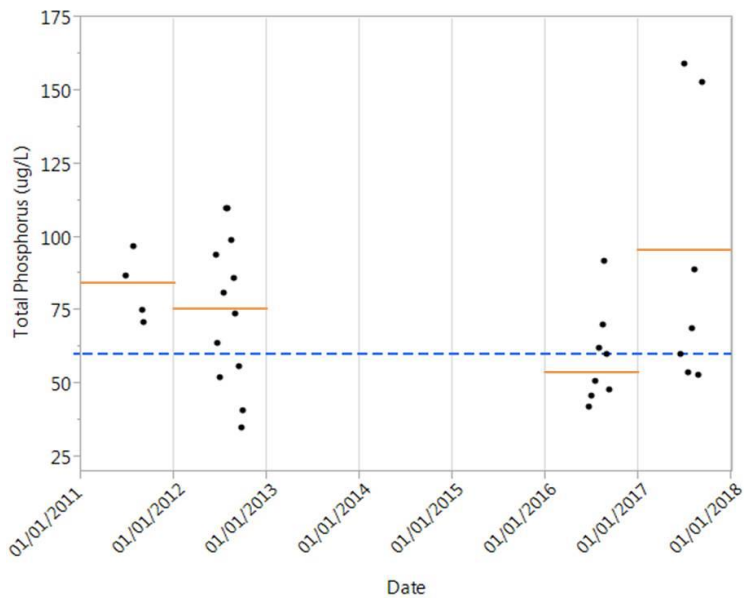


The federal Clean Water Act requires states to adopt water quality standards to protect waters from pollution. These standards define how much of a pollutant can be in the water and still meet beneficial uses, such as drinking water, fishing, and swimming. **Water quality standards** (---) are the fundamental tools used to assess the quality of all surface waters.

Total phosphorus is a key nutrient measure; chlorophyll-a is a measure of algal abundance; and Secchi depth is a measure of water clarity. If Total Phosphorus, and one or both, of the other parameters is not meeting the state standard (---), the lake may be 'impaired'.

Growing season averages (___) are calculated using samples collected from June through September of each year.

Total Phosphorus



Chlorophyll-a

