

MEMORANDUM

To: Board of Managers, LMRWMO
CC: Joe Barten, LMRWMO Administrator
From: Lindsey Albright, Dakota County SWCD Water Resource Specialist
Date: April 5, 2017
Subject: Thompson Lake - 2016 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 Thompson Lake watershed is approximately 180 acres, comprised of commercial, institutional, several blocks of low density residential areas, and Dakota County park land immediately around the lake.

Thompson Lake has a maximum depth of 8 feet and therefore must meet Minnesota water quality standards for shallow lakes. 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.

The area draining to the lake (its watershed) lies mainly to the west of the lake. Studies done by the LMRWMO in the watershed have found that the majority of phosphorus was coming from the surrounding watershed and being washed into the lake with stormwater runoff. 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 along the northern part of the lake to remove phosphorus from the stormwater before it enters Thompson Lake.

2016 Water Quality Monitoring Activities

In the summer of 2016, 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.

Additional water quality parameters recorded: water color and odor; atmospheric conditions (wind, cloud cover, air temperature); water surface and lake level; aquatic plants; algae; and suitability for recreation.



★ Monitoring Location

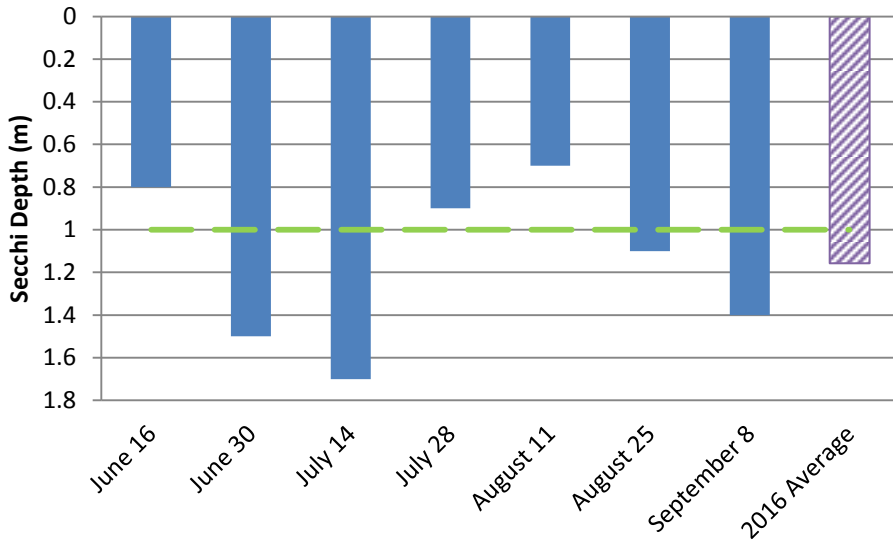
2016 Monitoring Results

Water quality was monitored on Thompson Lake seven times 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). Results from 2016 are displayed on the following page in relation to the state standard for shallow lakes (shown as a green dotted line) for each parameter (Secchi depth: > 1.0 meters; total phosphorus: < 60 ug/L; chlorophyll-*a*: < 20 ug/L). The 2016 average for each parameter is shown as a purple diagonal column on the right side of each chart.

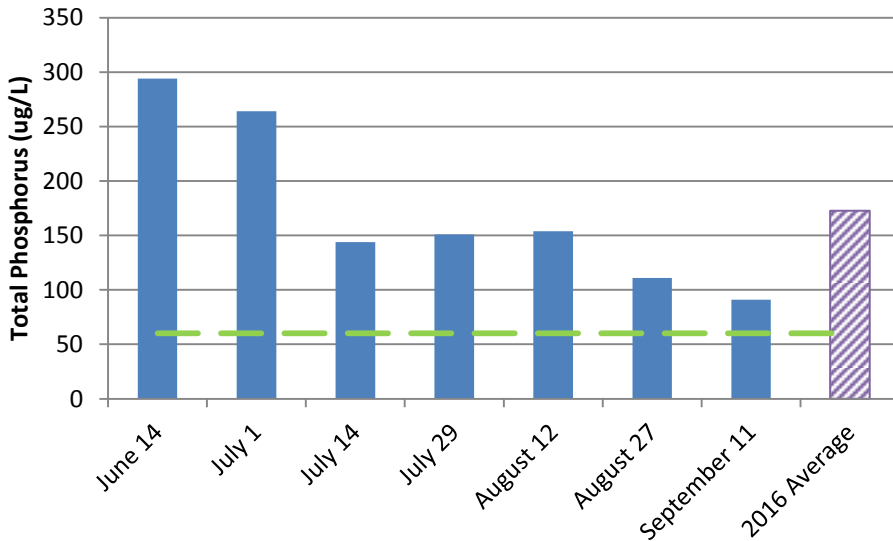
In 2016, Thompson Lake met the water quality standards for shallow lakes for both Secchi depth and chlorophyll-*a*, but exceeded (did not meet) the standard for total phosphorus.

2016 Monitoring Results

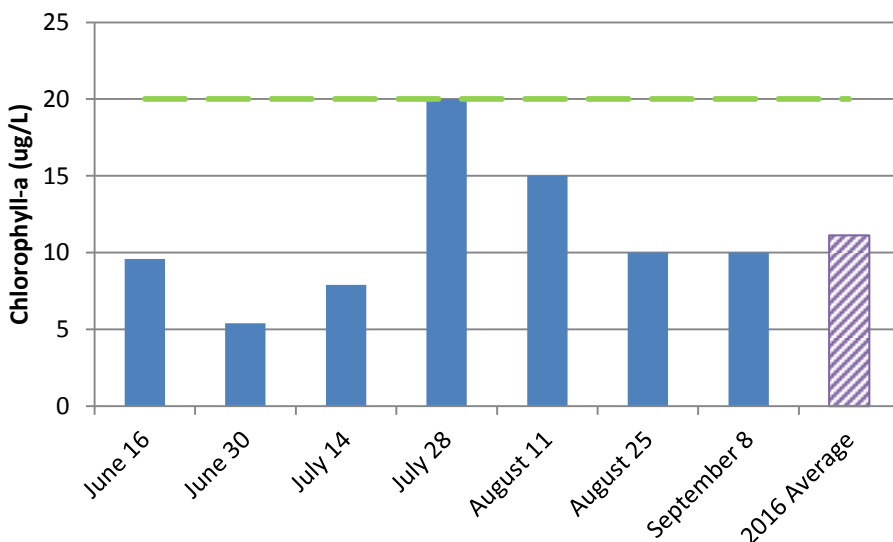
Secchi Depth



Total Phosphorus (TP)



Chlorophyll-a (Chl a)



The 2016 monitoring results for Thompson 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 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

