MEMORANDUM

To: Board of Managers, LMRWMO  
CC: Joe Barten, LMRWMO Administrator  
From: Lindsey Albright, Dakota County SWCD Water Resource Specialist  
Date: February 3, 2016  
Subject: Pickerel Lake - 2015 Citizen Assisted Monitoring Program (CAMP) Results

Background
Pickerel Lake is a floodplain lake along the Mississippi River. The River historically flooded Pickerel Lake about once every 10 years, but the incidence has occurred more often in the recent past, with flooding occurring twice in 2010, and once in both 2011 and 2014. Based on available water quality data, flooding in 2010 and 2011 diminished the water quality in the lake; but in 2012 when flooding did not occur, water quality was much improved. These large flood events replace Pickerel Lake water with high nutrient flood water from the Mississippi River and do not represent the health of the lake itself, but instead reflect the water quality of the river. For this reason, Pickerel Lake was not included in the 2014 303(d) Impaired Water List for eutrophication (excess nutrients). Continued water quality monitoring during years when the river does not flood will help determine the trophic status of Pickerel Lake.

2015 Water Quality Monitoring Activities
In the summer of 2015, 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 though the Citizen Assisted Monitoring Program (CAMP). The monitoring location was the same as what was monitored as part of the Watershed Restoration and Protection Strategy (WRAPS) Project performed by the Minnesota Pollution Control Agency (MPCA) from 2010 until 2012.

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.

2015 Monitoring Results
Water quality was monitored on Pickerel 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 2015 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 2015 average for each parameter is shown as a purple diagonal column on the right side of each chart.

In 2015, Pickerel Lake met the water quality standards for shallow lakes for both Secchi depth and total phosphorus, but exceeded (did not meet) the standard for chlorophyll-\(a\).
The 2015 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:
- \( \geq 1 \text{ m Secchi} \)
- \(< 60 \mu g/L \text{ TP} \)
- \(< 20 \mu g/L \text{ Chl } a \)

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.