

## Big Sturgeon Lake

DNR Lake ID: 69-0939-01  
 County: St. Louis-Itasca  
 Major Watershed: Little Fork River  
 Ecoregion: Northern Lakes and Forests  
 Surface Area: 1579 acres  
 Maximum Depth: 80 feet  
 Water Quality Data: 5 years  
 Secchi Data: 20 years



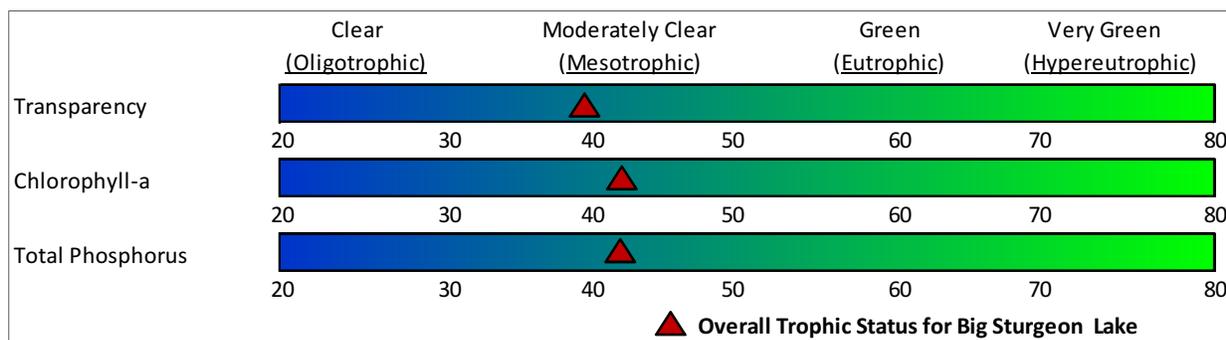
### 2013 Water Quality Summary

Sampling results for Big Sturgeon Lake in 2013 were very similar to the lake's historical average and within expected regional ranges. The trophic status of Big Sturgeon is mesotrophic which is indicative of moderately clear, good quality lakes of intermediate depth, temperature and nutrient levels. Overall, Big Sturgeon Lake appears to be in good condition and should be closely managed to protect it.

### Big Sturgeon Water Quality

Parameter	2013 Sampling Big Sturgeon Lake	Historical Average Big Sturgeon Lake	MN Northern Lakes & Forests Ecoregion
Total Phosphorus (ug/l)	14	14	14 - 27
Chlorophyll mean (ug/l)	3.2	3.1	4 - 10
Secchi Disk (feet)	12.6	13.9	8 - 15
Secchi Disk (meters)	3.9	4.2	(2.4 - 4.6)
TSI-Phosphorus	42	42	42 - 52
TSI-Chlorophyll-a	42	42	44 - 53
TSI-Secchi	41	39	38 - 47

### Carlson's Trophic Status Index (TSI)



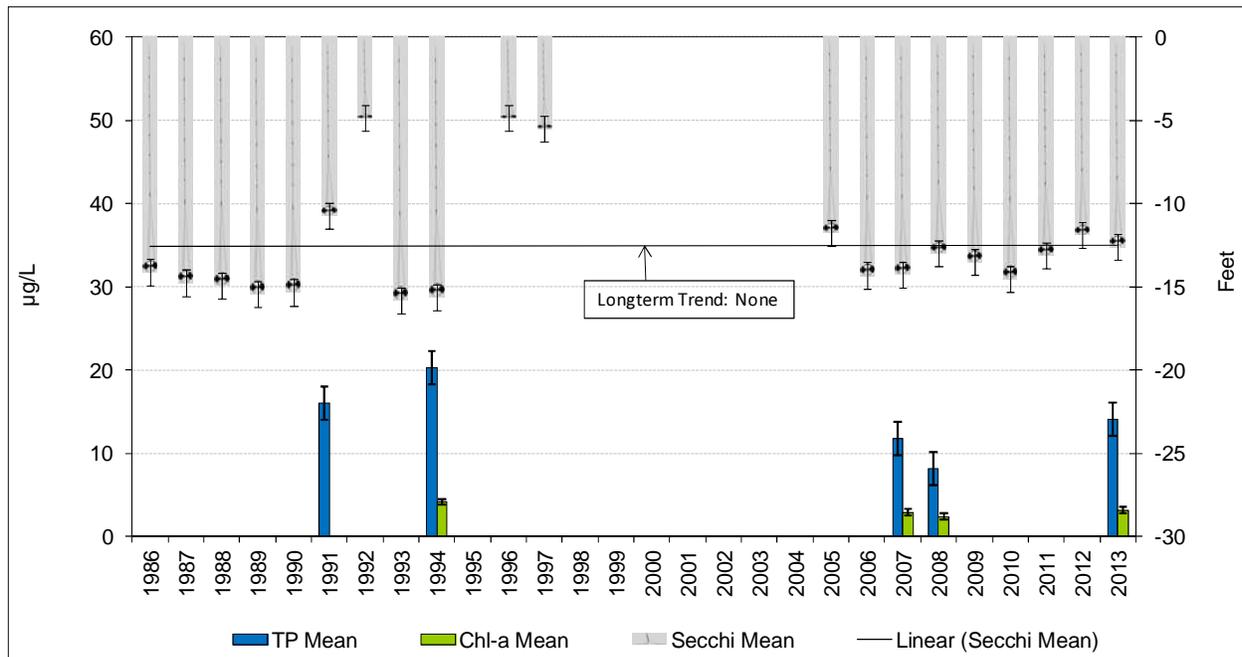
Note: Trophic State Indices (TSIs) are an attempt to provide a single quantitative index for the purpose of classifying and ranking lakes, most often from the standpoint of assessing water quality. TSI ranges from clear lakes, low in nutrients (oligotrophic), to green lakes, with very high nutrient levels (hypereutrophic).

## Historical Water Quality Summary

Big Sturgeon Lake's historical data for total phosphorus and chlorophyll-a do not meet the minimum requirements for looking at trends. There is however a database of 20 years of secchi data which provide sufficient data to perform long term trend analysis.

MPCA reports: *The median transparency for Big Sturgeon from 1986 to 2011 increased by 0.00 feet per decade. Given the variability over these years, there is no evidence of a long-term trend in either direction. A plausible range for the long-term trend is between no trend and a decrease of 0.55 feet per decade.*

Basically, amidst the highs and lows, the lake's water clarity has remained the same since 1986. Data from the last decade was also reviewed and also indicated no trends. There are some outlier years in 1992 and 1996-97 which are abnormally low and should be reviewed closer for accuracy.



*Note: For detecting trends, a minimum of 8-10 years of data with 4 or more readings per season are recommended. Minimum confidence accepted by the MPCA is 90%. This means that there is a 90% chance that the data are showing a true trend and a 10% chance that the trend is a random result of the data.*

## Monitoring Recommendations

Transparency monitoring at site 202 should be continued annually. It is important to continue transparency monitoring weekly or at least bimonthly every year to enable year-to-year comparisons and trend analyses. Phosphorus and chlorophyll-a monitoring should continue at site 202, every 5 years or as the budget allows, to track future water quality trends.