

**Table 1.** Concentrations (micrograms per liter, or parts per billion) of Chlorophyll-a and Total Phosphorus at the “deep hole” station in Teal Lake (a shallow drainage lake) in Sawyer County, Wisconsin from June 2012 through August 2016 – WDNR’s 2018 assessment cycle for Section 303(d) listing. Water samples were collected monthly during the summer monitoring season by citizen volunteer Jack Wellauer (Past-President of the Quiet Lakes Improvement Association). Results are transcribed from Wisconsin DNR’s SWIMS database at <https://dnrx.wisconsin.gov/swims/public/reporting.do?type=10&action=post&stationNo=583055&year1=2016&format=html>.

Sample Dates within Wisconsin DNR’s 2018 Assessment Cycle for Section 303(d) Listing	Chlorophyll-a (µg/L)	Total Phosphorus (µg/L)	Palmer Drought Severity Index (Approximate Annual Mean Visualized from Graph)
<b>2016:</b>			<b>+3.6 (Unusually Moist)</b>
June 19, 2016	8.57	23.3	
July 24, 2016	19.5	27.2	
August 21, 2016	9.97	28.5	
<b>Summer 2016 Mean (N=3)</b>	<b>12.7</b>	<b>26.3</b>	
<b>2015:</b>			<b>+1.0 (Near Normal)</b>
June 22, 2015	5.95	28.8	
July 20, 2015	6.07	29.4	
August 30, 2015	25.4	34.3	
<b>Summer 2015 Mean (N=3)</b>	<b>12.5</b>	<b>30.8</b>	
<b>2014:</b>			<b>+3.8 (Unusually Moist)</b>
June 23, 2014	5.02	16.1	
July 27, 2014	17.7	32.8	
August 25, 2014	18.5	35.0	
<b>Summer 2014 Mean (N=3)</b>	<b>13.7</b>	<b>28.0</b>	
<b>2013:</b>			<b>0.0 (Near Normal)</b>
June 23, 2013	12.3	16.8	
July 13, 2013	12.1	23.1	
August 26, 2013	23.9	34.3	
<b>Summer 2013 Mean (N=3)</b>	<b>16.1</b>	<b>24.7</b>	
<b>2012:</b>			<b>-2.0 to -3.0 (Moderate to Severe Drought)</b>
June 18, 2012	10.4	23.0	
July 22, 2012	21.0	28.0	
August 21, 2012	35.4	36.0	
<b>Summer 2012 Mean (N=3)</b>	<b>22.3</b>	<b>29.0</b>	
<b>Grand Sample Mean 2012-2016 (N=15)</b>	<b>15.452</b>	<b>27.773</b>	
Sample Standard Deviation	s = 8.623	s = 6.304	
90% Confidence Interval on Population Mean (µ)* (N-1 degrees of freedom)	11.4 ≤ µ ≤ 19.5	24.8 ≤ µ ≤ 30.7	
One-tailed T-Test** of Null Hypothesis that µ ≤ 20 µg/L CHL-A at .05 level of significance	NOT Rejected (P = .9698) Therefore, µ ≤ 20	--	

\* Calculations were based on Student’s *t* distribution, assuming a normal distribution (though data appear skewed to low side), from page 549 of Snedecor and Cochran (1976), Statistical Methods, 6<sup>th</sup> edition.

\*\* Wolfram Mathematica 11.0 was used to confirm the 90% confidence interval for Chlorophyll-a is  $11.53 \leq \mu \leq 19.37$  (rounding errors account for minor difference with hand-held calculation), and to perform a one-tailed t-test that failed to reject the null hypothesis that Teal Lake was not impaired ( $CHL-A \leq 20 \mu\text{g/L}$ ). Conclusion: Teal Lake is not impaired based on the former, threshold concentration method for determining whether June-August Chlorophyll a data exceed the impairment limit of 20 µg/L.