

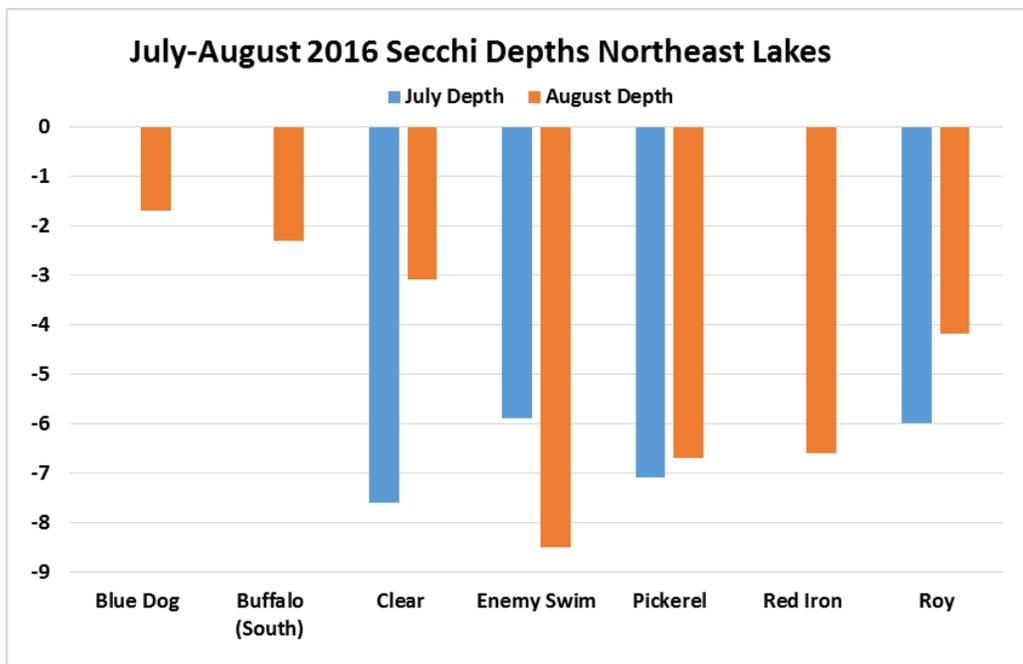
2016 Water Quality Comparisons Northeast South Dakota Lakes

Two consecutive springs with little snow melt have left most northeast SD lakes, especially Marshall County lakes, at their lowest levels in almost twenty years. The summer started with abnormally dry to moderate drought conditions across most of northeast SD until after July 4, when several large storm events over the next few weeks brought 10 to 12 inches of rainfall over the area alleviating drought conditions at least in Day, Grant, and southern Roberts Counties.

Clear, Enemy Swim, Pickerel, and Roy Lakes are tested once a month from May through September. Composite bottom and surface samples are taken from three sites on each lake. Blue Dog, South Buffalo, and South Red Iron Lakes are sampled the middle of August. Only surface samples are collected from these lakes.

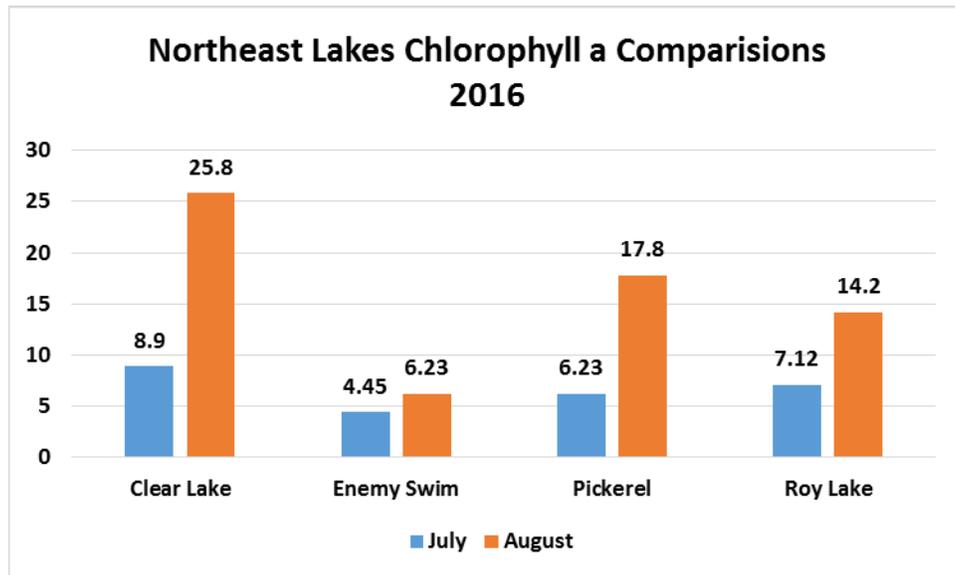
Secchi Depth

Secchi depth is a measure of lake transparency or clarity. A secchi disk, an 8 inch or larger plastic or metal disk alternately painted black and white, is lowered into the water until it is no longer visible. The point where the disk disappears is called secchi depth. Low secchi depth measurements are typically due to algae blooms or suspended sediments. Enemy Swim had the best water clarity or secchi depth of area lakes measured in 2016. Blue Dog Lake had the lowest water clarity due mainly to suspended sediment because of the lakes shallow depth.



Chlorophyll *a*

Chlorophyll is the green pigment found in plants that photosynthesis, including algae. Measuring chlorophyll *a* levels in a lake provides a means to assess algal abundance. The production of algae is controlled by the amount of nutrients available in the water column. High levels of dissolved phosphorus in a lakes water typically translates to high algae production, low water clarity, and blooms of nuisance blue-green algae. The peak production period of algae in northern temperate lakes is during the summer. In July and August, Enemy Swim Lake had the lowest chlorophyll *a* levels of northeast lakes tested in 2016, and Clear Lake the highest.



Total Dissolved Phosphorus

Total dissolved phosphorus is the form of phosphorus readily available for algae and other aquatic plant growth. Enemy Swim Lake had the lowest levels of TDP of the northeast lakes measured in 2016 which corresponds with the lakes low chlorophyll *a* levels and greater secchi depths. Pickerel Lake had very high levels of total dissolved phosphorus, especially at the bottom of the lake. However, in 2016 conditions apparently did not favor a large algae bloom even though TDP levels would have supported a bloom similar to what the lake produced in 2013. Recent testing of both in-lake and tributary water quality at Pickerel Lake shows the high levels of TDP are from internal loadings and currently not due to changes in watershed land-use post Conservation Reserve Program. Because of Pickerel Lake's depth and topography, the lake often stratifies during the summer setting up anoxic conditions on the lakes bottom allowing phosphorus to be released from the lake's sediment into the water column.

