



Pelican Lake

DNR ID: 18-0308

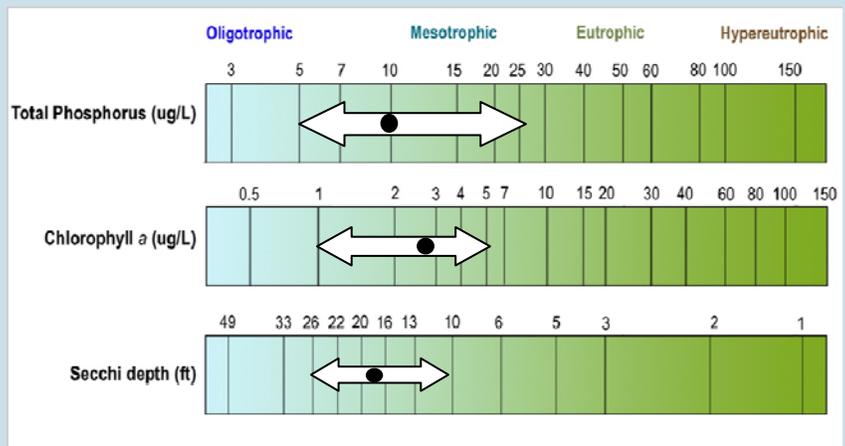
Vitals		Physical Characteristics	
MN Lake ID:	18-0308-00	Surface area (acres):	8,367
County:	Crow Wing	Littoral area (acres):	3910
Lake Classification:	General Development (GD)	% Littoral area:	47%
Major Watershed:	Pine River	Max depth (ft):	104 (m): 31.7
Latitude/Longitude:	46.58333333/-94.16694444	Mean depth (ft):	60 (m): 18.3
Water Body Type:	Public	Lakeshed size (acres):	12,465
Invasive Species	Curly-Lead Pondweed, Zebra Mussels	Lakeshed : lake area ratio	1.5:1
		Inlets / Outlets / Accesses	0 / 1 / 5

Total Phosphorus

Pelican Lake is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus. Total phosphorus was evaluated in Pelican Lake in 2000-2012. The data do not indicate much seasonal variability. Most of the phosphorus data points are very low level and fall into the oligotrophic range.

Chlorophyll a

Chlorophyll a is the pigment that makes plants and algae green. Chlorophyll a is tested in lakes to determine the algae concentration or how "green" the water is. Chlorophyll a was evaluated in Pelican Lake from 2000-2012. Chlorophyll a concentrations remained well below 10 ug/L on all sample dates, indicating clear water most of the summer.



Pelican Lake total phosphorus, chlorophyll a and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 101). Figure adapted after Moore and Thornton, [Ed.]. 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

Transparency (Secchi Depth)

Transparency is how easily light can pass through a substance. In lakes, it is how deep sunlight penetrates through the water. Plants and algae need sunlight to grow, so they are only able to grow in areas of lakes where the sun penetrates. Water transparency depends on the amount of particles in the water. An increase in particulates results in a decrease in transparency. The annual means for Pelican Lake range from 12.5-22.7 ft. Transparency has been higher than the long-term mean in 2002-2004, 2006, 2008, and 2010. Pelican Lake shows no evidence of water quality trends. That means that the water quality is relatively stable.

Trophic State Index (TSI)

Phosphorus (nutrients), chlorophyll a (algae concentration) and Secchi depth transparency) are related. As phosphorus increases, there is more food available for algae, resulting in increased algal concentrations. When algal concentrations increase, the water becomes less transparent and the Secchi depth decreases. The results from these three measurements cover different units and ranges and thus cannot be directly compared to each other or averaged. In order to standardize these three measurements to make them directly comparable, we convert them to a trophic state index (TSI). The mean TSI for Pelican Lake (38) falls in the oligotrophic range. There is good agreement between the TSI for phosphorus (37), chlorophyll a (39) and transparency (36), indicating that these variables are strongly related. Oligotrophic lakes (TSI 0-39) are characteristic of extremely clear water throughout the summer and sandy or rocky shores. They are excellent for recreation.

