



# Lake Edward

**DNR ID: 18-0305**

Vitals		Physical Characteristics	
MN Lake ID:	18-0305-00	Surface area (acres):	2,576
County:	Crow Wing	Littoral area (acres):	1,198
Lake Classification:	General Development (GD)	% Littoral area:	47%
Major Drainage Basin:	Upper Mississippi River	Max depth (ft):	75 (m): 22.9
Latitude/Longitude:	46.7875/-94.16138889	Mean depth (ft):	14.3 (m): 4.4
Water Body Type:	Public	Lakeshed size (acres):	4,809
Invasive Species	Curly-leaf pondweed	Lakeshed : lake area ratio	1.9:1
		Inlets / Outlets / Accesses	1 / 1 / 1

## Total Phosphorus

Lake Edward is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus. Total phosphorus was evaluated in Lake Edward in 1974-1976, 2000-2004, 2006, and 2008-2012. Generally, the values ranged from 10 -20 ug/L, which is in the mesotrophic range.

## Chlorophyll a

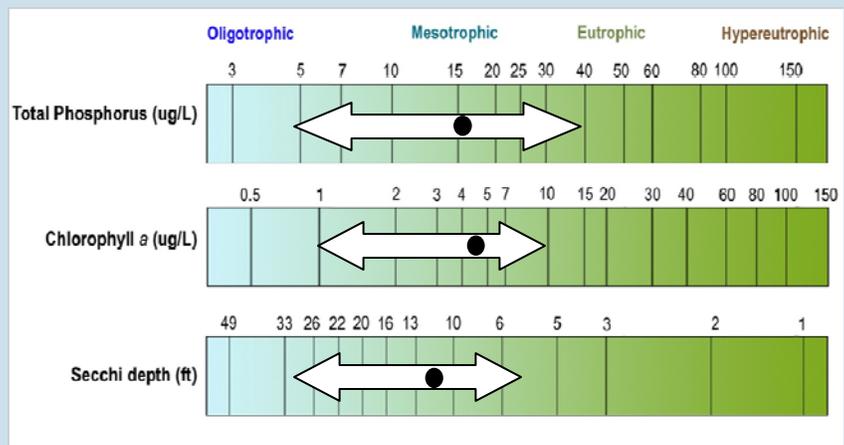
Chlorophyll a is the pigment that makes plants and algae green. Chlorophyll a is tested in lakes to determine the algae concentration or how "green" the water is. Chlorophyll a was evaluated in Lake Edward in 2000-2004, 2006, 2008-2012. Chlorophyll a concentrations in Lake Edward remained below 10 ug/L, indicating clear water all summer.

## 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 Lake Edward ranges from 9.0-17.5 ft. Lake Edward transparency ranges from 5.5 to 17 feet throughout the summer, with the max being in early summer. Lake Edward shows no evidence of water quality trends.

## 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 (43) for Lake Edward falls into the mesotrophic range. There is good agreement between the TSI for phosphorus (43), chlorophyll a (44) and transparency (43), indicating that these variables are strongly related. Mesotrophic lakes (TSI 40-50) are characterized by moderately clear water most of the summer. They can also be good for walleye fishing.



Lake Edward total phosphorus, chlorophyll a and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 201). Figure adapted after Moore and Thornton, [Ed.]. 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

