

November 2019

Schlecht-Thom Dam

(46.362871 N, -98.832764 W)

Lamoure County

- Schlecht-Thom Dam is a small reservoir in southeast North Dakota (Figure 1). See map at (<https://gf.nd.gov/gnf/maps/fishing/lakecontours/schlechtthom2005.pdf>).
- There is one boat ramp on Schlecht-Thom Dam on the northeast side of the lake.
- The Schlecht-Thom Dam watershed is about 2,200 acres of mostly agriculture. The most common crops grown are soybeans (Table 1).
- Schlecht-Thom Dam is a Class III fishery, which are “capable of supporting natural reproduction and growth of warm water fishes (e.g., largemouth bass and bluegill) and associated aquatic biota.”
- Schlecht-Thom Dam is managed mostly for northern pike, though black crappie, yellow perch and largemouth bass have been stocked in recent years. Northern pike and yellow perch were captured during the last sample by the ND Game and Fish.
- Schlecht-Thom Dam was previously assessed in 1993-1994 and 2005-2006.

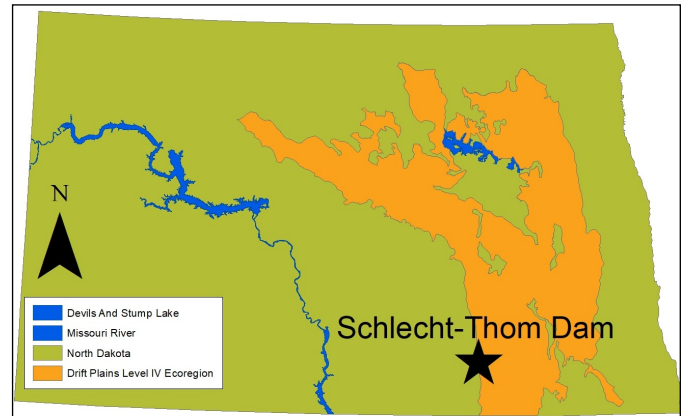


Figure 1. Location of Schlecht-Thom Dam within the state

Table 1. Percentage of land cover in the watershed and near the lake (NASS, 2018). Value listed of crop type represents percentage of total production

Land Cover Type	% in Watershed	% within 500 meters
Agriculture	79.0%	64.8%
Soybeans	80.1%	94.7%
Corn	11.0%	0.5%
Spring Wheat	4.9%	4.5%
Grassland/Pasture	12.4%	28.3%
Developed	4.2%	0.8%
Open Water	1.7%	1.5%
Wetlands	1.6%	2.7%
Shrubland	1.0%	1.8%

Temperature and Dissolved Oxygen

- Schlecht-Thom Dam commonly stratifies in the summer, with warm, well-oxygenated water at the top of the water column, and cold, low-oxygen water near the bottom.
- There was thermal stratification recorded at every visit in 2019. Temperature change in the water column was 6.7 degrees Celsius (°C), 9.7°C and 6.4°C in May, July and September, respectively.
- Dissolved oxygen concentrations declined quickly during thermal stratification.

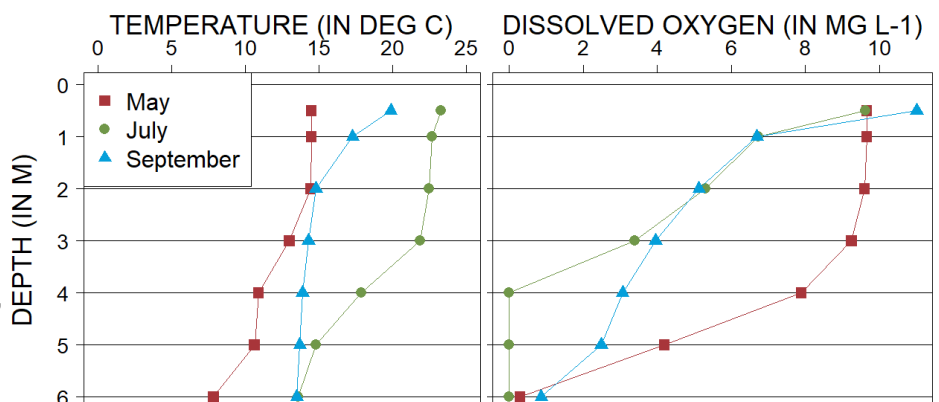


Figure 2. 2019 profiles of temperature (left) and dissolved oxygen (right) in milligrams per liter ($mg L^{-1}$)

Trophic State Indices

- Trophic state is a measure used by scientists to assess the condition (where lower scores indicate better water quality) of a lake using three common measures: total phosphorus (TP), Secchi disk transparency and chlorophyll-a concentration.
- Schlecht-Thom Dam is a hypereutrophic reservoir (Figure 3) that has high nutrient concentrations and dense algal growth.
- Current trophic state is similar to historical indices.
- Schlecht-Thom Dam does experience frequent **harmful** algal (cyanobacteria) blooms in the summer.

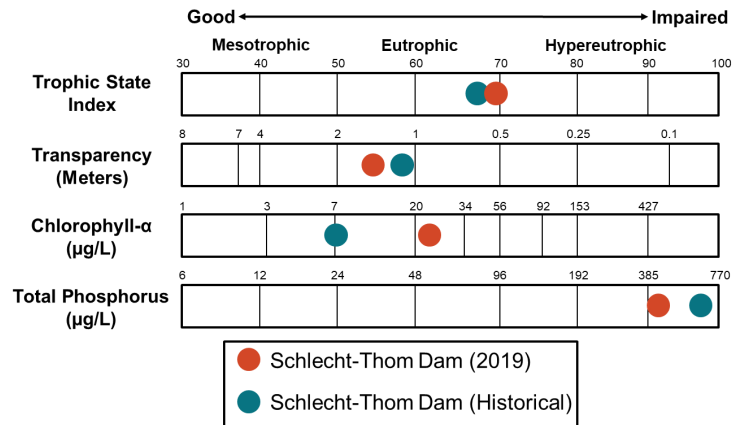


Figure 3. Trophic state indices for 2019 and historical samples

Nutrients

- Median concentration of total nitrogen (TN) in 2019 was less than the historical median for the lake but slightly greater than the median for reservoirs in the Drift Plains Level IV Ecoregion (hereafter, Ecoregion) where Schlecht-Thom Dam is located (Figure 4).
- Median concentration of dissolved TN was similar to TN.
- Median TP concentration in 2019 was less than the median for the lake but greater than the median for the Ecoregion (Figure 4).
- Median concentration of dissolved phosphorus was slightly less than TP.
- Ammonia was not detected in 2019 at Schlecht-Thom Dam, while nitrate-plus-nitrite was detected twice at low concentrations.

Nutrient Concentrations (in mg L⁻¹) in Schlecht-Thom Dam

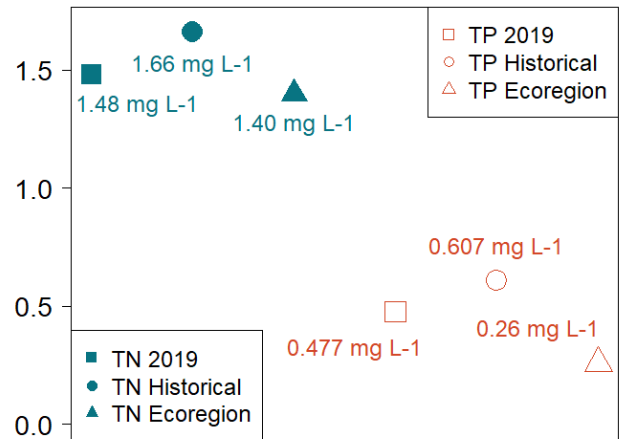


Figure 4. Median concentrations of TN and TP in mg L⁻¹ compared to regional medians

Water Chemistry

Table 2. Median concentrations of selected constituents for 2019 and historical samples and from all Ecoregion reservoirs.

Measure	2019 Median	Historical Median	Ecoregion Median
Alkalinity	184 mg L ⁻¹	180 mg L ⁻¹	311 mg L ⁻¹
Bicarbonate (HCO ₃ ⁻)	224 mg L ⁻¹	220 mg L ⁻¹	343 mg L ⁻¹
Calcium (Ca ²⁺)	100 mg L ⁻¹	59.6 mg L ⁻¹	74.6 mg L ⁻¹
Carbonate (CO ₃ ²⁻)	< 1 mg L ⁻¹	< 1 mg L ⁻¹	14 mg L ⁻¹
Conductivity	1,250 µS cm ⁻¹	719 µS cm ⁻¹	1,100 µS cm ⁻¹
Dissolved Solids	883 mg L ⁻¹	448 mg L ⁻¹	734 mg L ⁻¹
Magnesium (Mg ²⁺)	72.4 mg L ⁻¹	32.8 mg L ⁻¹	52.9 mg L ⁻¹
Sodium (Na ⁺)	74.6 mg L ⁻¹	31.4 mg L ⁻¹	106.5 mg L ⁻¹
Sulfate (SO ₄ ²⁻)	492 mg L ⁻¹	176 mg L ⁻¹	275 mg L ⁻¹

- Sulfate is the dominant anion in Schlecht-Thom Dam, while calcium and magnesium are the dominant cations (Figure 5).
- Median concentrations of most cations and anions are much greater than the historical median for the lake and greater than the median for the Ecoregion.

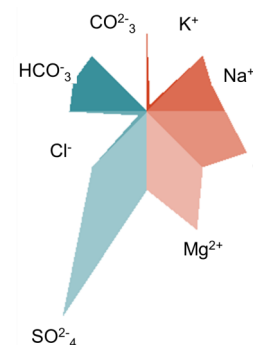


Figure 5. Maucha diagram showing ionic balance based on 2019 data