

Homme Reservoir

- Homme Reservoir is a reservoir in northeast North Dakota (Figure 1). See map at (<https://gf.nd.gov/gnf/maps/fishing/lakecontours/homme2020.pdf>).
- There is one public boat ramp on Homme Reservoir on the south side of the lake, west of the Dam in Walsh County. It is a popular destination for camping and recreation in the area.
- The Homme Reservoir watershed drains about 170,000 acres. Land cover in the watershed is mostly agriculture, with smaller amounts of forest and grassland/pasture. Agriculture is dominated by spring wheat, soybeans and canola (Table 1).
- Homme Reservoir is a Class III, warm-water fishery, which are “capable of supporting natural reproduction and growth of warm water fishes (e.g., largemouth bass and bluegill) and associated aquatic biota.”
- Homme Reservoir is managed for northern pike and walleye, Yellow perch, northern pike, white sucker, black bullhead and crappie were found during the last sample by the ND Game and Fish.
- Homme Reservoir is currently being monitored by local SCD staff.

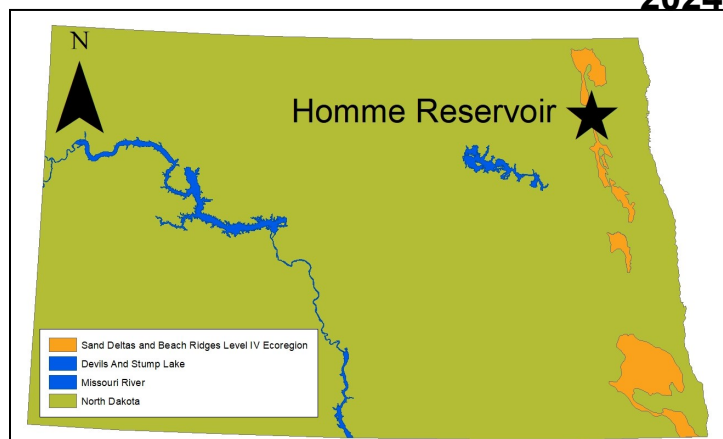


Figure 1. Location of Homme Reservoir within the state

Table 1. Percentage of land cover in the watershed and near the lake (NASSCDL 2023). Value listed of crop type represents percentage of total production

Land Cover Type	% in Watershed	% within 500 meters
Agriculture	64%	36%
Spring Wheat	24%	7%
Soybeans	17%	6%
Corn	8%	0%
Forest	8%	8%
Rangeland	18%	10%
Water/Wetlands	6%	18%
Developed	4%	8%

Temperature and Dissolved Oxygen

- Historically, Homme Reservoir 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 a slight thermal stratification in April. Temperature change in the water column was 1.1 degrees Celsius (°C), 1.1°C, and 1.15°C in April, July and August, respectively.
- Dissolved oxygen concentrations were relatively high throughout the water column, but there was some anoxic conditions near the bottom.

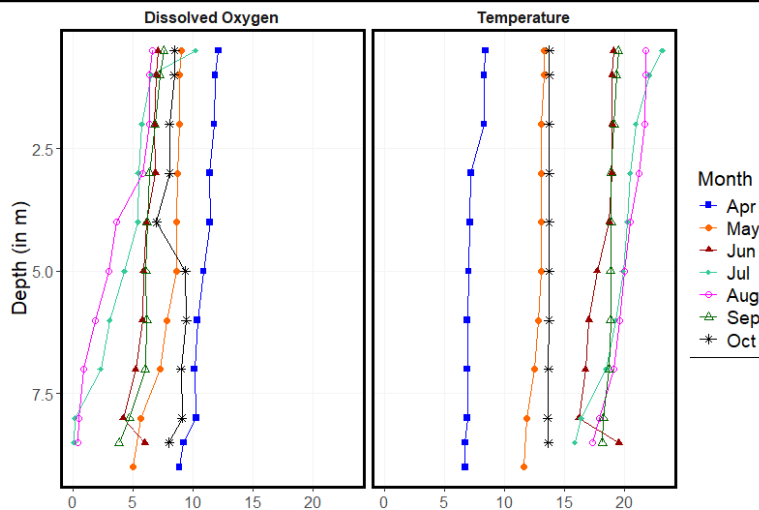


Figure 2. 2024 profiles of dissolved oxygen (left) and temperature (right) in milligrams per liter (mg L^{-1})

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.
- Homme Reservoir is a eutrophic reservoir (Figure 3) that has high nutrient concentrations and moderate algal and plant growth.
- Trophic state in 2024 has been relatively similar to historical condition.
- There have been confirmed **harmful** algal (cyanobacteria) blooms at Homme Reservoir.

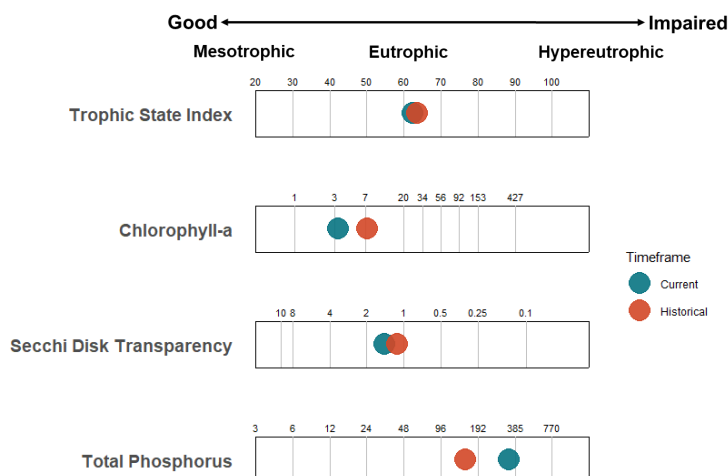


Figure 3. Trophic state indices for 2024 and historical samples

Nutrients

- Median concentration of total nitrogen (TN) in 2024 was less than the median for the lake but greater than the median for the Sand Deltas and Beach Ridges Level IV Ecoregion (hereafter, Drift Plains) where Homme Reservoir is located (Figure 4).
- Median TP concentration in 2024 was greater than the median for the lake and greater than the median for the Ecoregion (Figure 4).
- Ammonia was detected in 9 of 13 samples from Homme Reservoir in 2024 at low concentrations, and nitrate plus nitrite was detected in 12 of the 13 samples in 2024 also at low concentrations.

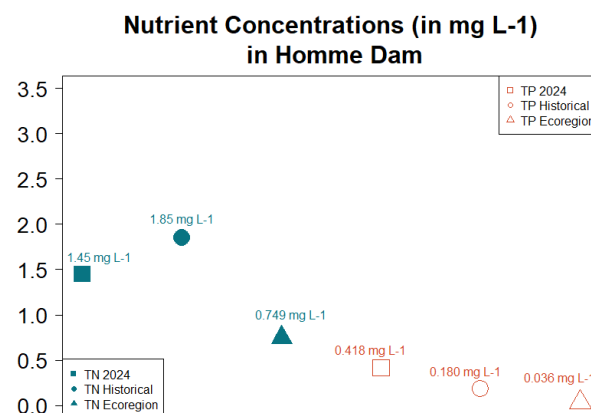


Figure 4. Median concentrations of TN and TP in mg L⁻¹

Water Chemistry

Table 2. Median concentrations of selected constituents for 2024 and historical samples and from all Ecoregion natural lakes and reservoirs.

Measure	2024 Median	Historical Median	Ecoregion Median
Alkalinity	-	233.5 mg L ⁻¹	213 mg L ⁻¹
Bicarbonate (HCO ₃ ⁻)	-	248 mg L ⁻¹	271.5 mg L ⁻¹
Calcium (Ca ²⁺)	-	99 mg L ⁻¹	76.75 mg L ⁻¹
Carbonate (CO ₃ ²⁻)	-	7.5 mg L ⁻¹	3 mg L ⁻¹
Conductivity	-	1200 mg L ⁻¹	930 μS cm ⁻¹
Dissolved Solids	-	817 mg L ⁻¹	622 mg L ⁻¹
Magnesium (Mg ²⁺)	-	48.6 mg L ⁻¹	60.2 mg L ⁻¹
Sodium (Na ⁺)	-	103 mg L ⁻¹	36.3 mg L ⁻¹
Sulfate (SO ₄ ²⁻)	-	383 mg L ⁻¹	338 mg L ⁻¹

- Carbonate is the dominant anion in Homme Reservoir, while calcium and sodium are co-dominant cations (Figure 5).
- Median historical concentrations of most cations and anions are similar to the median for the Ecoregion.

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

