

# UPPER PRIOR LAKE: Water Quality Report Card



## Quick Facts

**Surface Area:** 386 acres

**Watershed Area:** 16,038 acres

**Average Depth:** 10 feet

**Maximum Depth:** 43 feet

Upper Prior Lake is located between Spring and Lower Prior Lake. The Spring Lake Outlet is the largest source of water inflow to Upper Prior lake, however it also receives water from Arctic Lake and Cates Creek. Upper Prior Lake flows directly into Lower Prior Lake which eventually flows to the Minnesota River. Upper Prior Lake has a unique feature, a heron and egret rookery, on the island in the northern bay,

## Water Quality

Upper Prior Lake's water quality has historically been fair. Water clarity is usually good enough to meet the state standard, phosphorus wavers above and below the standard, however Chlorophyll-a has not met the standard once in the past decade. An alum treatment was completed on Upper Prior Lake in spring of 2020 which has significantly improved phosphorus and water clarity. In addition to the alum treatment, the District is improving water quality by focusing on projects like carp removal, flood storage, and projects that reduce nutrients and sediment entering the lake.

| Water Quality Indicator | Risk to Water Quality  | Grade (2018-2020) | History (2011-2020) | Trend         |
|-------------------------|--|-------------------|---------------------|---------------|
| <b>PHOSPHORUS</b>       | Phosphorus is needed by plants and animals to survive, but can cause algae blooms if there is too much phosphorus available. In some cases, algae can produce a toxin which could cause illness or death in animals if ingested. Some sources of high phosphorus are fertilizer, human and animal waste, and soil erosion.   | <b>B</b>          |                     | <br>No Trend  |
| <b>CHL-A</b>            | Chlorophyll-a is a measurement of the amount of algae in a lake. Some algae can produce dangerous toxins and when algae dies and decomposes it consumes oxygen that would otherwise be used by fish and beneficial organisms. High algal concentrations threaten aquatic life and can impede recreation and enjoyment of the lake.   | <b>D</b>          |                     | <br>Improving |
| <b>CLARITY</b>          | Water clarity is affected by the abundance of algae or sediment in the water column. It is dependent on many factors including nutrients, temperature, wind, rain, and boat traffic. Low clarity means less sunlight to power photosynthesis in aquatic plants. These plants are beneficial for wildlife and stabilize the lake bed. Low clarity can also negatively impact a lake user's enjoyment and harm aquatic life. | <b>B</b>          |                     | <br>Improving |

| Grading Scale                                   |  |  |   |   | Graph Explanation   |  |
|---|--|--|---|---|---|--|
| <b>A</b>  | <b>B</b>   | <b>C</b>   | <b>D</b>  | <b>F</b>  | <p>The blue line shows the annual change in water quality from 2011-2020. The lower the line, the healthier the lake.</p> <p>The District's goal is for the blue line to be below the orange line, which is the water quality standard and the point at which the waterbody is not considered polluted.</p> |  |
| All or most samples meet the desired threshold. | Many samples meet or are near the desired threshold. | Some samples meet or are near desired threshold. | Many samples do not meet the desired threshold. | Most samples do not meet the desired threshold. |   |  |

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## What contributes to good water quality?

### *Carp Management*

The Prior Lake-Spring Lake Watershed District has been working hard to remove the invasive carp in Prior Lake in order to improve water quality. As carp populations go down, the lake plants will begin to thrive again.



### *Alum Treatments*

Aluminum Sulfate (alum) treatments reduce phosphorus levels in the lake. Phosphorus commonly drives algae growth and is overly abundant in Upper Prior Lake.

### *Other Water Quality Projects*

The Farmer Lead Council was established to develop and guide agricultural strategies to help reduce nutrient loading to our lakes from agricultural sources in the watershed.



## Upper Prior Lake Bathymetry Map

