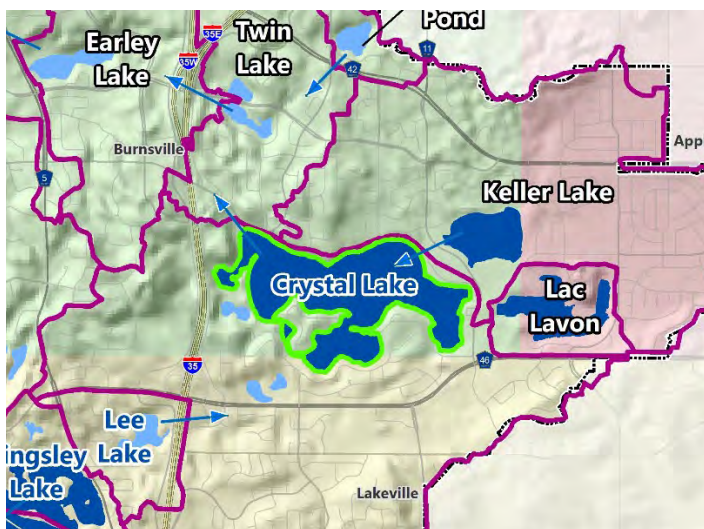




The Black Dog Watershed Management Organization (BDWMO) performs monitoring of its strategic waterbodies on a 5-year rotating basis. BDWMO monitored Crystal Lake in 2025. Monitoring results presented in this report include:

- Water chemistry:
 - Phosphorus
 - Chlorophyll-*a*
 - Secchi Disc Transparency
 - Chloride
- Phytoplankton (algae)
- Water levels
- Aquatic Plants

About Crystal Lake

BDWMO Classification	Strategic waterbody
MDNR ID number	19-0027
Watershed Area	3,667 acres
Lake Area	292 acres
Average Depth	10 feet
Maximum Depth	35 feet
Ordinary High Water Level	934.5 feet
Normal Water Level	933.5 feet (weir outlet)
100-year Flood Level	936 feet (FEMA)
Downstream Resource	Twin Lake
Location (city)	Burnsville
Public Access	Public beach; boat launch
MPCA Classification	Deep lake
MPCA Impairments	Mercury in fish tissue; delisted for excess nutrients in 2018
Aquatic Invasive Species	Curly-leaf pondweed Eurasian watermilfoil

Summary and Recommendations

- Continued good water quality; phosphorus, chlorophyll-*a*, and Secchi disc transparency better than MPCA standards
- Secchi disc transparency has a mild worsening trend that is not reflected in other parameters
- Chloride is near, but generally below, Minnesota water quality standards
- Low amount of phytoplankton (algae) in summer; algal community includes desirable green algae
- Submergent plant community is diverse; non-native invasive curlyleaf pondweed and Eurasian watermilfoil are present and managed by the City
- Recommend continued water quality monitoring and trend analysis, aquatic plant monitoring and invasive species management, and implementation of stormwater best management practices in the watershed as opportunities allow

Introduction

Crystal Lake is a deep lake that lies in the southeast portion of the City of Burnsville, on the border with the City of Lakeville. Crystal Lake receives runoff from a 3,667 acre watershed that includes Keller Lake. Crystal Lake discharges north towards Twin Lake, and is within the Minnesota River watershed.

The Crystal Lake watershed is nearly fully developed with a mix of land uses including residential, commercial, institutional, park and open space, golf course, and highway. areas. Overall, land use is low density, but includes areas along the Interstate 35 corridor that have undergone recent redevelopment.

The lake is a major recreational resource for the area and is used for fishing, swimming, boating, and aesthetic and wildlife viewing are also popular recreational uses. Three city parks are located on Crystal Lake. Access includes a public boat access on the northwest shore (Crystal Lake West Park), a public beach on the east shore (Crystal Beach), and a fishing pier on the north shore (Tyacke Park).

2025 Water Quality Monitoring

Water quality monitoring performed by BDWMO in 2025 included eleven sampling events between March and September. Measured parameters included:

- Secchi disc transparency
- Chlorophyll-*a*
- Total phosphorus
- Chloride
- Field parameters including:
 - Temperature
 - Dissolved oxygen
 - Specific conductivity
 - pH

Volunteers also collected water samples in 2025 through the Metropolitan Council's Community Assisted Monitoring Program (CAMP). The CAMP data is generally consistent with data collected by the BDWMO. Results of 2025 BDWMO and CAMP water quality monitoring are presented in Figure 1A through 1C. Data collected in 2025 show low concentrations of total phosphorus and chlorophyll-*a* in the spring, with concentrations increasing into the summer months. This trend corresponded to a decrease in Secchi disc transparency.

Figure 1A: 2025 Secchi Disc Transparency

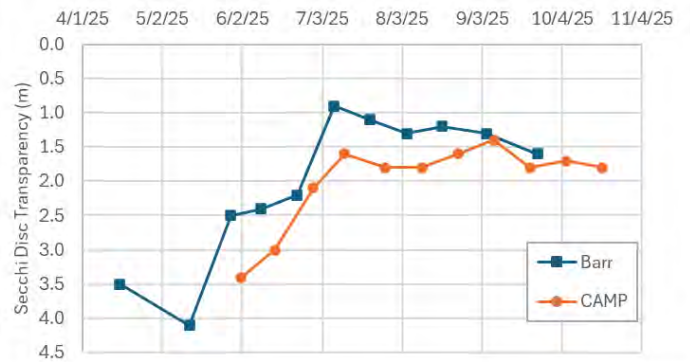


Figure 1B: 2025 Chlorophyll-*a*

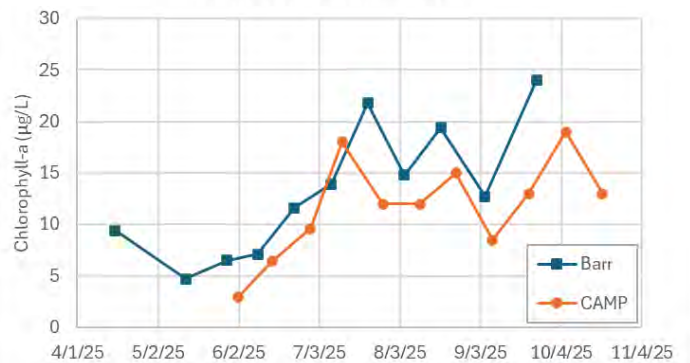
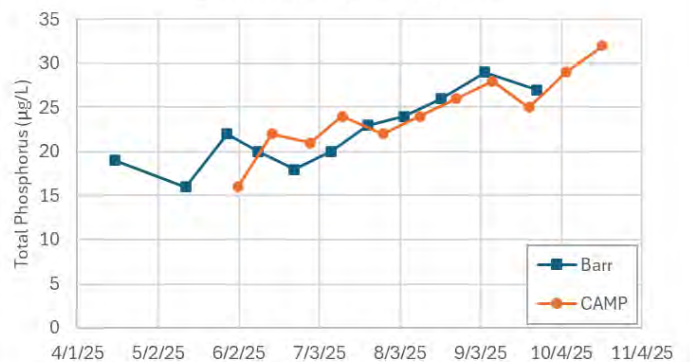
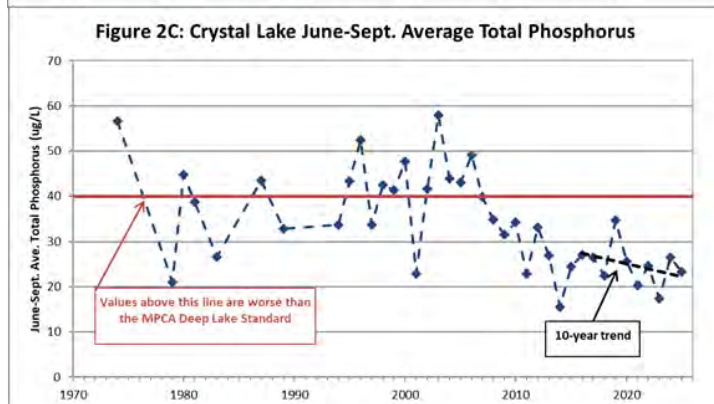
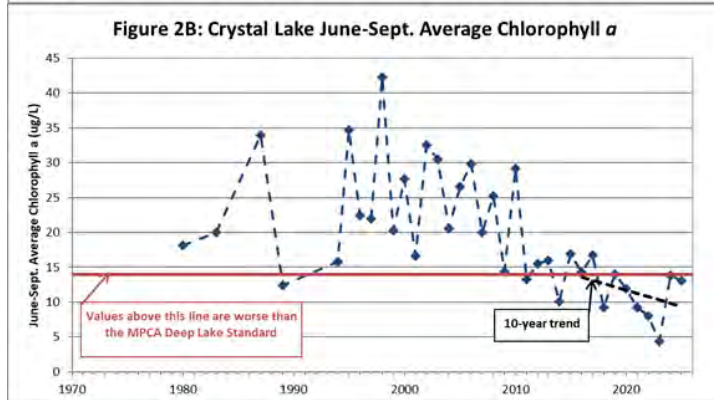
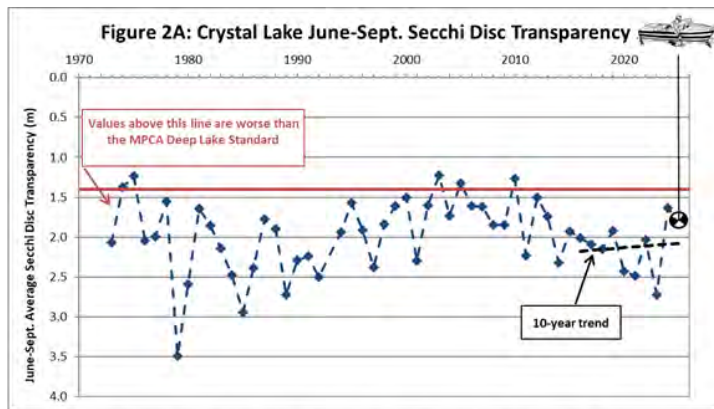


Figure 1C: 2025 Total Phosphorus



Aquatic plant growth in Crystal Lake observed during the August 4, 2025 water quality sampling event.



Parameter	MPCA Standard	BDWMO Goal	2016-2025 June-Sept Average
Secchi Disc Transparency (m)	1.4	2.4	2.1
Chlorophyll- <i>a</i> (µg/L)	14	14	12
Total Phosphorus (µg/L)	40	26	25

Summer Averages of Water Quality

The 2025 summer (June-September) averages of water quality parameters were calculated for Crystal Lake and plotted with previous years' summer averages (Figure 2).

Crystal Lake's water quality remained good in 2025, and summer averages of total phosphorus (23 µg/L), chlorophyll-*a* (13 µg/L), and Secchi disc transparency (1.8 meters [5.9 feet]) were all better than Minnesota deep lake water quality standards. Crystal Lake monitoring activities in 2025 included management level monitoring as well as routine CAMP level monitoring. Summer average phosphorus concentrations over the past 10 years show annual variability and have fluctuated between 17 and 35 µg/L, remaining below the standard of 40 µg/L for deep lakes. The 10-year trend in summer average total phosphorus is improving (i.e., decreasing), though the trend is not statistically significant.

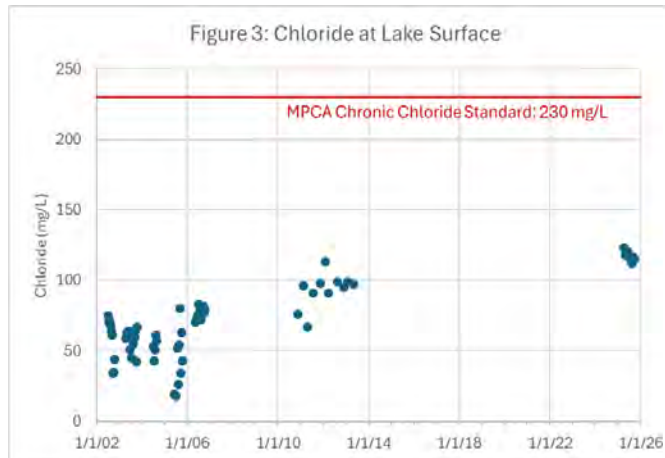
Summer average chlorophyll-*a* in 2025 was close to the standard of 14 µg/L for deep lakes for the second year in row. The 10-year summer average of chlorophyll-*a* remains below the standard and shows an improving (i.e., decreasing) but not statistically significant trend.

Like chlorophyll-*a* concentrations, summer average Secchi disc transparency in 2025 was similar to 2024 and closer to the 1.4m standard for deep lakes than prior years. Low transparency values in 2024 and 2025 contribute to a mild worsening (i.e., decreasing) trend over the 2016-2025 period. The trend is not statistically significant at the 90% confidence level. Continued regular monitoring and analysis are recommended to determine if recent results are attributable to annual variability or represent a significant trend.

With the addition of the 2025 data, summer averages of water quality parameters in Crystal Lake have been consistently better than the applicable state water quality standards for the last eighteen years (2008-2025). The BDWMO will continue to monitor the water quality of Crystal Lake in 2026 via CAMP monitoring. Management level monitoring of Crystal Lake is next scheduled for 2030.

Chlorides

Chloride concentrations in area lakes have increased since the early 1990s largely due to increased use of road salt in winter. Because high chloride concentrations can harm fish and plant life, the MPCA has established maximum chloride standards. A lake is considered impaired if two or more measurements exceed the chronic standard (230 mg/L) within a 3-year period or if one measurement exceeds the maximum standard (860 mg/L).



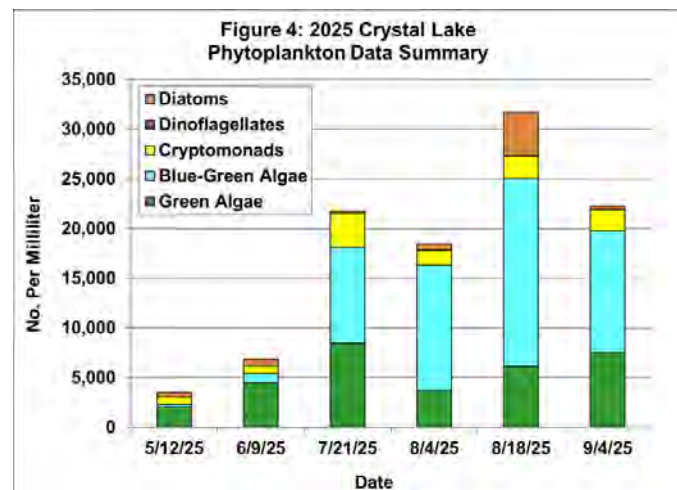
Chloride has been measured in select years in Crystal Lake, including by BDWMO in 2025. Data from the lake surface illustrates an increase in chloride concentrations over time (Figure 3), with 2025 chloride concentrations double the average chloride concentration observed in 2002. The highest observed chloride in 2025 is 123 mg/L, which is well below the chronic standard of 230 mg/L. Chloride was also measured near the lake bottom in 2025, and concentrations were similar to those measured at the lake surface.

Phytoplankton (Algae)

Phytoplankton, or algae, are small aquatic plants naturally present in lakes. Phytoplankton derive energy from the sun through photosynthesis and provide food for several types of aquatic organisms, including zooplankton (microscopic animals), which are eaten by fish. Excess phytoplankton can reduce water clarity while low numbers of phytoplankton can negatively impact zooplankton, and consequently, fish populations.

Figure 4 summarizes the number and major groups of phytoplankton observed in Crystal Lake in 2025. Phytoplankton numbers were low in May and June. The numbers increased substantially in July, peaked in

August, and remained relatively high into September, though still moderate for suburban lakes like Crystal Lake.



Green algae were dominant in May and June. Green algae are a good source of food for zooplankton and are indicative of healthy aquatic ecosystems. Blue-green algae, diatoms, dinoflagellates, and cryptomonads were also present in smaller numbers.

Blue-green algae numbers were similar to green algae in July, but blue-green algae exceeded all other algae types during the August and September sampling events. Blue-green algae thrive in warm, nutrient-rich water and can grow rapidly under certain conditions, causing “blooms.” Blue-green algae can produce algal toxins that may be harmful to humans and animals and are also a poor-quality food for zooplankton. Macrophytes (Aquatic Plants)

Harmful Algal Blooms

During algal blooms, some blue-green algae (cyanobacteria) can produce toxins that can be harmful to humans and animals if ingested. Such algal blooms can occur rapidly under specific aquatic conditions (e.g., high temperatures). Not all blue-green algae produce toxins and laboratory testing is necessary to determine the presence and concentration of algal toxins in lake water.

BDWMO residents should look to their respective Cities for information and communications regarding harmful algal blooms and associated public health guidance (such as beach closures or bodily contact warnings). Additional information is available from the [MPCA](#) and [MDH](#).

Aquatic Vegetation

The BDWMO assesses the health of a lake's submerged aquatic plant community based on the number of species present and the "quality" of the species as measured by the Floristic Quality Index (FQI). The FQI considers the number of different species and the sensitivity of each species to disturbance (referred to as a "C-value"). Higher C-values and FQI indicate better lake health. The BDWMO established goals for the number of native species and FQI of strategic waterbodies.

Parameter	BDWMO Goal	2025 Results
Floristic Quality Index (submergent zone)	≥17.8	22.2
Native Species (submergent zone)	≥11	15

Seventeen aquatic plant species were identified in the submergent zone in 2025, including 15 native species and two non-native aquatic invasive species. The 2025 survey found aquatic plants growing in depths of up to 17 feet.

Native Species

Of the 15 native species observed in Crystal Lake in 2025, coontail and water celery had the highest occurrence in late summer, and were observed at 73% and 33% of sampling stations, respectively.



Coontail (*Ceratophyllum demersum*)



Water celery (*Vallisneria spiralis*)

Aquatic Invasive Species

Curly-leaf pondweed (CLP) was found at 78% of sampling points in May, 2025. A total of 35.8 acres was harvested to remove CLP during period of May 29 – June 13. In July, 2025, CLP was observed at 6% of sampling points. CLP often out-competes native vegetation early in the growing season and dies off in early to mid-summer, which releases nutrients into the water that can produce algal blooms and create turbid water conditions. The presence of CLP in Crystal Lake can impact the lake's water quality. This impact has been mitigated through regular CLP harvesting performed by the City of Burnsville.

Eurasian watermilfoil (EWM) can create dense, nuisance growths at the lake surface, and have a negative impact on recreational activities and may also crowd out native plant species. EWM was found at 25% of sampling points in May, 2025, and 73% of sampling locations in July, 2025. The City of Burnsville does not treat EWM in Crystal Lake, but some homeowners may treat their respective shoreline areas.

Fisheries

A standard fish survey was most recently conducted on Crystal Lake in 2023 (and previously in 2012). Targeted surveys for gamefish have been performed other years as well. The Minnesota Department of Natural Resources stocks Crystal Lake biennially with tiger muskellunge. Walleye are stocked by the DNR when surplus fingerlings are available.

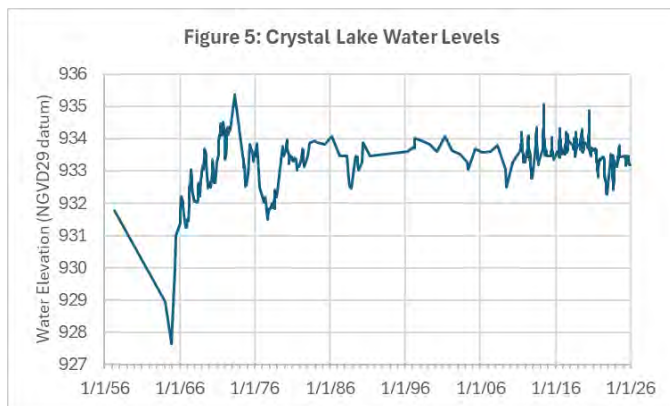
The 2023 survey found bluegill sunfish to be the dominant fish species; hybrid, pumpkinseed, and green sunfish were also present in moderate numbers. Largemouth bass, which prey on bluegill, were the most prevalent game fish. Northern pike, tiger muskellunge, and walleye were also observed in the 2023 survey. Other species observed in the 2023 survey include black and yellow bullhead, yellow perch, and black crappie.

Crystal Lake is listed by the Minnesota Pollution Control Agency as impaired due to concentrations of mercury in fish tissue. To mitigate this risk, the Minnesota Department of Health has published [Fish Consumption Guidance](#).

Water Levels

Crystal Lake drains over a weir at an elevation of approximately 933.5 feet (NGVD29 datum). Water from Crystal Lake flows towards Twin Lake and Early Lake, on its way towards the Minnesota River to the north. Water elevations have been measured dating back to 1957, (Figure 5).

Crystal Lake's outlet weir has maintained water levels within a relatively narrow range. Over the last 10 years, water levels ranged between a high of 934.8 feet in 2020 to a low of 932.2 feet in 2022. Water levels since 2020 have frequently been below the outlet elevation, reflecting drought conditions that occurred from approximately 2020 through 2024.



Management Recommendations

Crystal Lake continues to demonstrate excellent water quality that meets applicable state standards for transparency, chlorophyll-*a*, and total phosphorus. Based on the 2025 monitoring results, Barr Engineering Co. (Barr) staff recommend that the BDWMO and/or the City perform the following management actions:

- Continue CAMP water quality monitoring annually.
- Continue to monitor for trends in water quality.
- Perform BDWMO management level monitoring in 2030.
- Continue aquatic vegetation monitoring and curlyleaf pondweed management.
- Implement stormwater best management practices in the watershed as opportunities allow

Ways to Get Involved

Because runoff from stormwater can be generated anywhere, anyone in the watershed can help protect ponds and lakes through their own actions!

Top 5 Things You Can Do to Protect Ponds & Lakes

- 1 Adopt a Storm Drain**
 Keep leaves, grass clippings and other debris off the street and storm drain in front of your house. Debris can clog storm drains or end up as pollution in your neighborhood pond.
- 2 Stop the Drops**
 Increase the number of raindrops that soak into the ground by installing a rain barrel (and using the water for your garden) or by directing downspouts onto your lawn or into a rain garden.
- 3 Walk Your Dog, Bring a Bag**
 Clean up your dog's droppings so they don't wash down a storm drain. Not only is it gross to step in, but your dog's waste harbors harmful bacteria and boosts algae growth in ponds.
- 4 Don't Feed the Storm Drain**
 Keep grass clippings and leaves out of the street so rain doesn't wash them into a storm drain. Also, never dump motor oil or paint down a storm drain.
- 5 Fertilize Your Lawn... Not the Street**
 Fertilizer that ends up on hard surfaces will likely be washed into a storm drain & sent to your neighborhood pond. In a pond, fertilizer causes an explosion of algae growth.

The Dakota County Soil and Water Conservation District also offers the [Landscaping for Clean Water](#) program which includes free educational classes, garden design courses, natural shoreline and garden maintenance workshops, and grants for homeowners that install a raingarden, native garden, or native shoreline planting.

