



### Our Vision:

Water resources and related ecosystems are managed to sustain their long-term health and public value to contribute to the well-being of the communities within the watershed.

### Evaluating our Success

The BDWMO watershed management plan calls for the organization and its member cities to identify outcome-based goals for specific water bodies found within the watershed and to meet annually to discuss progress toward these goals. The BDWMO uses the following methods to track progress toward goals:

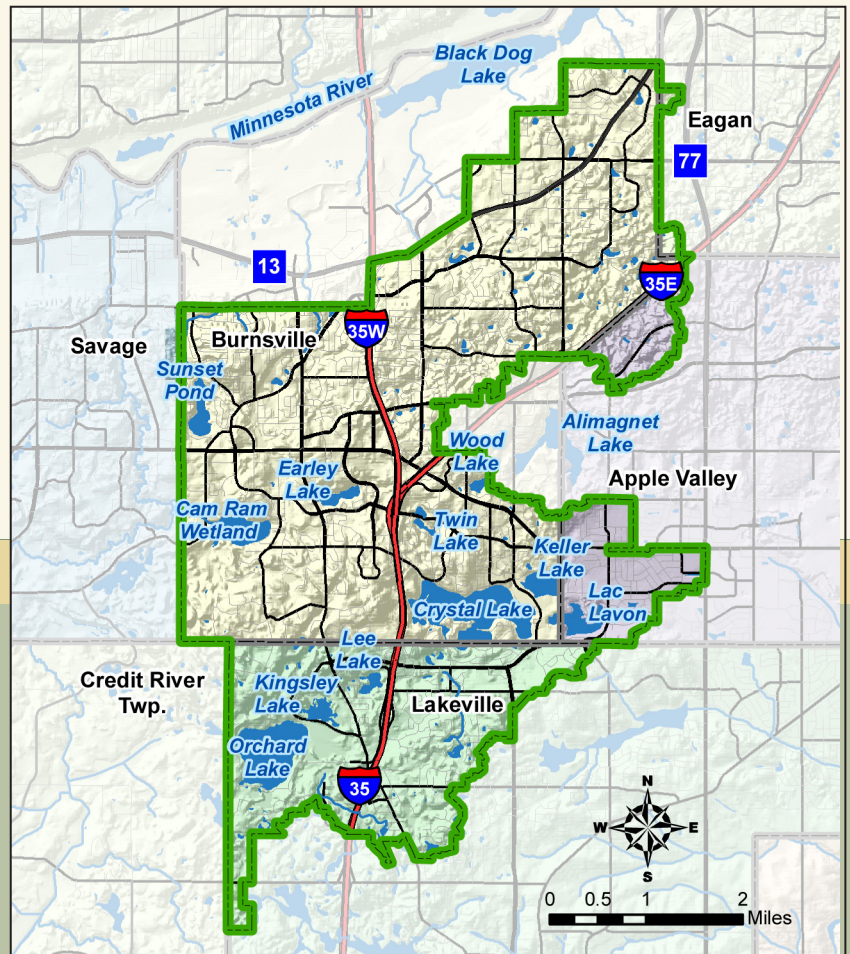
- **Trend Analysis**—The BDWMO collects water quality information and calculates trends to track the health of its strategic waterbodies.
- **BDWMO Goal Tracking**—The BDWMO identified metrics and outcomes associated with each goal included in its watershed management plan. At least biennially, the BDWMO evaluates those metrics to assess progress towards plan goals.

This annual report outlines BDWMO and member city actions relevant to BDWMO goals, progress toward water quality goals in 2023, and plans for 2024 and beyond.

### What is the Black Dog Watershed Management Organization?

The Black Dog Watershed Management Organization (BDWMO) actively manages surface water, such as that found in lakes, streams, and wetlands, located in the Black Dog and Credit River watersheds within Dakota County. To effectively manage surface water, the BDWMO develops and implements plans that address water quality, responds to drainage issues that cross multiple municipal boundaries, and assists cities within the watershed to manage surface water runoff. The BDWMO is represented by commissioners who are appointed by the cities within the watershed, which include Burnsville, Lakeville, Apple Valley, and Eagan.

The total area of the Black Dog watershed is 17,500 acres; 70 percent of the watershed lies within the city of Burnsville, 21 percent of the area is within the city of Lakeville, 8 percent is within the city of Apple Valley, and 1 percent is within the city of Eagan.



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## Developing a Framework to Track Progress Towards Goals

In late 2022, the BDWMO adopted its 2022-2032 Watershed Management Plan—a plan that establishes the vision, policies, and activities for protecting, restoring, and managing the surface water resources within the boundaries of the BDWMO for a 10-year period.

The plan includes 18 goals (Goal A through Goal R) that address a broad range of priority issues, including:

- Water quality
- Water quantity and flooding
- Wetland management
- Shoreland, habitat, and open space management
- Groundwater
- Administration
- Education and public involvement

Minnesota Rules 8410.0150 Sub. 3(E) requires that watershed management organizations like the BDWMO evaluate progress towards goals at least every two years. To support this evaluation, the BDWMO developed “scorecards” to identify metrics or criteria associated with each goal and track progress.

## Scorecard Design

Goal tracking scorecards include the following information:

**Goal**—as defined in the watershed management plan.

**Metrics/Measures**—the criteria, actions, or outcomes used to evaluate progress towards each goal. For water quality goals, metrics include numeric criteria. For most other goals, metrics include a combination of actions, outcomes, or conditions achieved or maintained.

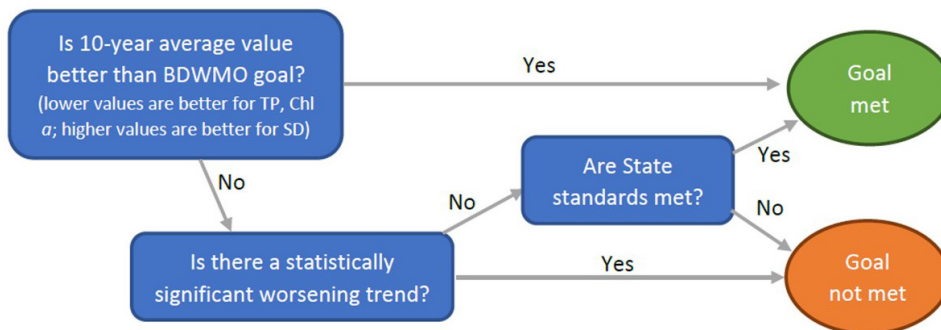
**Status**—a narrative or tabular summary of whether the appropriate metrics have or have not been met and whether the goal has been achieved. Possible outcomes include:

- Achieved
- Mostly Met
- Progress Made



**Implementation Actions**—actions defined in the watershed management plan that are most directly tied to achieving the goal.

### Example 1: Metric/Measures



This flowchart shows how the BDWMO assesses progress towards in-lake water quality goals (Goal A) for strategic waterbodies, using a combination of 10-year average observed data and trend analysis.

### Example 2: Goal Status/Tracking

Member City/Partner	2024		Cumulative 2023 – Present		Notes
	Volunteer Events	Small-scale BMPs supported <sup>1</sup>	Volunteer Events	Small-scale BMPs supported <sup>1</sup>	
Apple Valley					
Burnsville					
Eagan					
Lakeville					
Dakota SWCD		..1		..1	
Dakota County		--		--	

(1) Including Landscaping for Clean Water projects; projects are listed according to physical location.

This table tracks volunteer events and implementation of small-scale stormwater best management practices (BMPs) to assess progress towards a public education and involvement goal (Goal R).



## Landscaping for Clean Water—Clean Water Starts at Home

In 2023, Landscaping for Clean Water programming was held in-person and provided in virtual formats. One in-person and four virtual Introduction to Clean Water classes were held in the spring and followed with four in-person Design courses. Virtual learning options of both courses were also made available. A total of 62 residents of the BDWMO participated in the Introduction classes either in-person or virtually.

A total of 158 participants took part in the Design classes in-person or through pre-recorded videos; 36 of whom were BDWMO residents. Project materials for participants were made available online and an “Office Hours” program was used to provide virtual consultations to Design class participants. A total of 20 participants took advantage of these virtual consultations with staff in 2023. Participants were thankful for the additional one-on-one design assistance.

New for 2023, the Landscaping for Clean Water program offered an additional class for residents with shoreline areas to protect or enhance with native plantings. A total of 29 residents participated in the shoreline class.

19 projects were installed in the BDWMO in 2023—10 raingardens, 8 native gardens, and 1 shoreline project.

In 2023, one Maintenance workshop was taught in the spring. Each workshop focused on garden maintenance across all seasons and providing participants with seasonal information on how to maintain and promote the health, performance, and beauty of their garden. A total of 17 people registered for the 2023 Maintenance workshops.

The 2024 Landscaping for Clean Water program will be held in-person with virtual options also available. For more information and to get signed up, visit:

<https://dakotaswcd.org/services/landscaping-for-clean-water-2024/>



### PROJECT

This project involved the installation of a 360 square foot native shoreline planting in Apple Valley.

### COST

The project materials cost was estimated at \$457.

### FUNDING

The landowners received a \$250 Landscaping for Clean Water grant as well as technical assistance provided by the Dakota County Soil and Water Conservation District.

Landscaping for Clean Water is one type of cost-sharing program offered by the Dakota County SWCD. For more information, call 651-480-7777 or go to <https://dakotaswcd.org/services/landscaping-for-clean-water/>.

## Local Technical Advisory Committee Meets to Plan for Grant Funds

In October 2023, the BDWMO Administrator and engineer convened a meeting of the local Technical Advisory Committee (local TAC). The local TAC included staff from the following BDWMO partners:

- City of Burnsville
- City of Apple Valley
- City of Lakeville
- Dakota County (Groundwater group)
- Dakota County Soil and Water Conservation District

The local TAC met to discuss how to best align partner implementation activities and capital improvement programs

with BDWMO plan implementation and coordinate to use available watershed-based implementation funding (WBIF). WBIF is a dedicated source of grant funding to address primarily water quality issues administered through the Minnesota Board of Water and Soil Resources (BWSR). Local TAC participants shared information about planned projects that address common goals and potential future opportunities including education efforts and capital improvements. Moving forward, the local TAC plans to meet annually in the first quarter to coordinate implementation efforts.

### Local Grant Dollars Help Fund Water Quality Improvement Studies and Educational Guidebook

Local grant funding has been instrumental in supporting initiatives aimed at improving water quality in Keller Lake, a shared goal of the Cities of Burnsville and Apple Valley and the BDWMO. Recently, the City of Apple Valley successfully secured a Watershed Based Implementation Fund (WBIF) grant, enabling the completion of two feasibility studies for pond enhancement projects and the development of an educational guidebook for residents.

The feasibility studies focused on evaluating potential projects to expand two ponds within the Keller Lake watershed: Whitney Pond and “Arby’s Pond.” These projects were initially identified in a comprehensive water quality study conducted in 2017 (Keller Lake Subwatershed Assessment, by Barr Engineering Co.). The feasibility studies provided insight into project design concepts and associated costs, serving as valuable tools for leveraging additional grant funding. Public engagement, particularly for the Whitney Pond expansion, played a crucial role in refining the project’s final design. Currently, the City has secured a \$313,169 Clean Water Fund grant for the Whitney Pond project and plans to seek additional funding to ensure project completion. The pond expansion project is anticipated to start as early as late 2024. Detailed information regarding the project can be found on the City of Apple Valley website by searching for “Whitney Pond.”

Additionally, residents of the Keller Lake watershed have received copies of the “Backyard Watershed: A Clean



*Attendees at the August 17, 2023, Open House about the potential Whitney Pond expansion project*

Water Companion,” a guidebook funded by the grant. This resource equips residents with seasonal best practices, information on available grant resources, and guidance on understanding and appreciating the local watershed. The guidebook is designed in a template format, facilitating its adaptation and utilization by other organizations in their respective watersheds.

### New Additions to BDWMO Management Level Monitoring

2023 saw some changes to the BDWMO’s management level water quality monitoring program as methods prescribed in the 2022-2032 watershed management plan took effect. Management level monitoring, previously performed only on deep lakes—Crystal Lake, Orchard Lake, and Lac Lavon—on a 3-year rotation, will now be performed on all strategic waterbodies, including Keller Lake and Kingsley Lake, on a 5-year rotation. In 2023, the BDWMO performed management level monitoring on Keller Lake for the first time.

Other changes to the management level monitoring program include the addition of chloride monitoring and phytoplankton sampling:

**Chloride monitoring**—Chloride concentrations in area lakes have increased since the early 1990s due to increased use of road salt in winter. Because high chloride concentrations can harm fish and plant life, the MPCA has established maximum and chronic chloride standards. There is little existing information about chloride concentrations in

BDWMO strategic waterbodies. Beginning in 2023, the BDWMO will analyze water quality samples collected as part of its ongoing management level monitoring for chlorides to assess baseline conditions and allow tracking of trends in the future.

**Phytoplankton monitoring**—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, in turn, eaten by fish. Excess phytoplankton can reduce water clarity while low numbers of phytoplankton can negatively impact zooplankton, and consequently, fish populations. Starting in 2023, the BDWMO added phytoplankton monitoring to its ongoing management level monitoring to help interpret water quality data and better understand the ecological health of its strategic waterbodies.

See page 5 for water quality monitoring results. See [www.blackdogwmo.org](http://www.blackdogwmo.org) for the full report.



# 2023 Monitoring Results

## Water Quality Monitoring Program

The BDWMO and member cities continued to monitor several of their lakes during 2023 through the Metropolitan Council's Citizen-Assisted Monitoring Program (CAMP) to detect any water quality changes that would require management action by the WMO. In addition, the BDWMO conducted more detailed "management-level" monitoring on Keller Lake which included monitoring of phytoplankton (see page 7). The monitoring focused on three water quality indicators—total phosphorus and chlorophyll-a concentrations, plus Secchi disc transparency. All three variables correlate strongly to the open-water nuisance conditions of lakes (i.e., algal blooms).

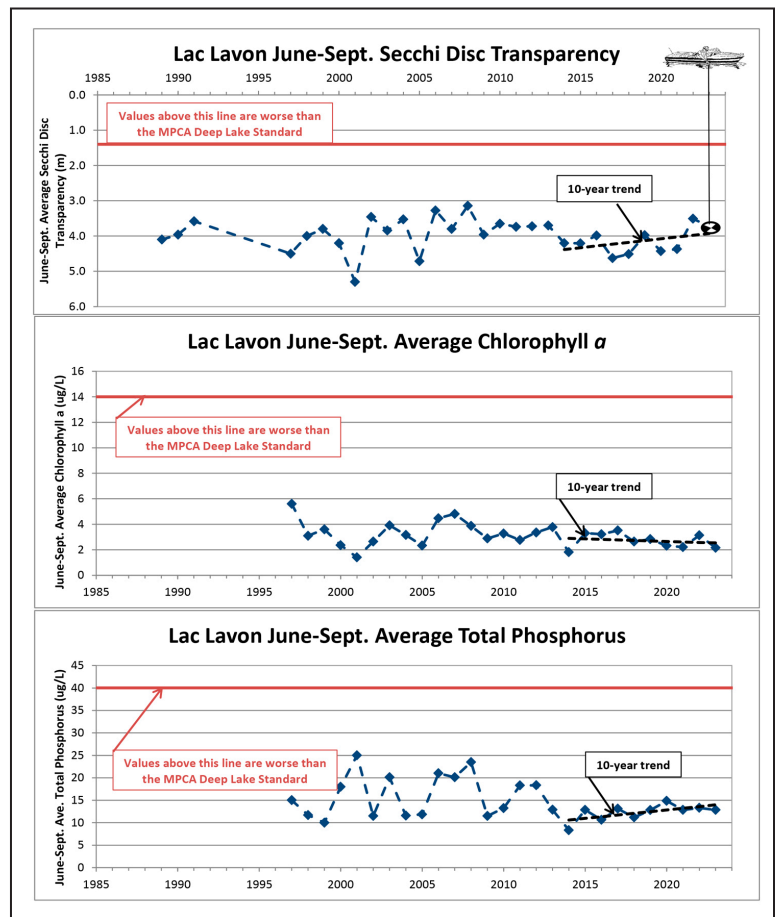
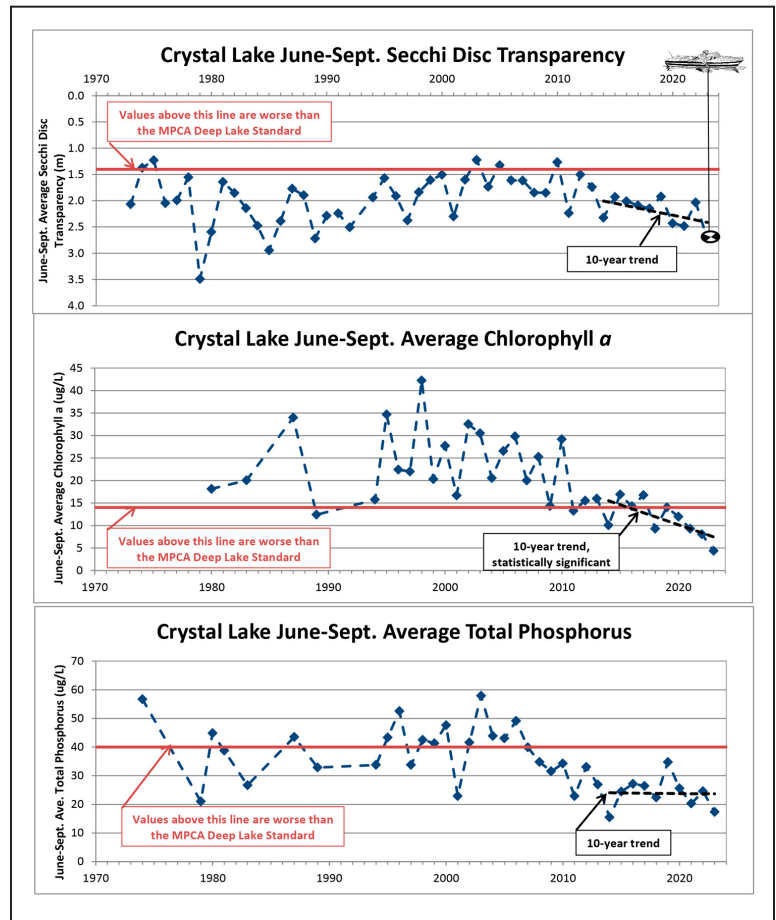
Long-term monitoring is important because lakes can change from year to year. Only when several years of data are compiled do trends become apparent. The MPCA periodically evaluates water quality data from the most recent ten-year period to determine if a lake exceeds applicable water quality standards. The BDWMO has adopted the same time convention for conducting its annual trend analyses. Graphs on this page and subsequent pages show historic trends in water quality.

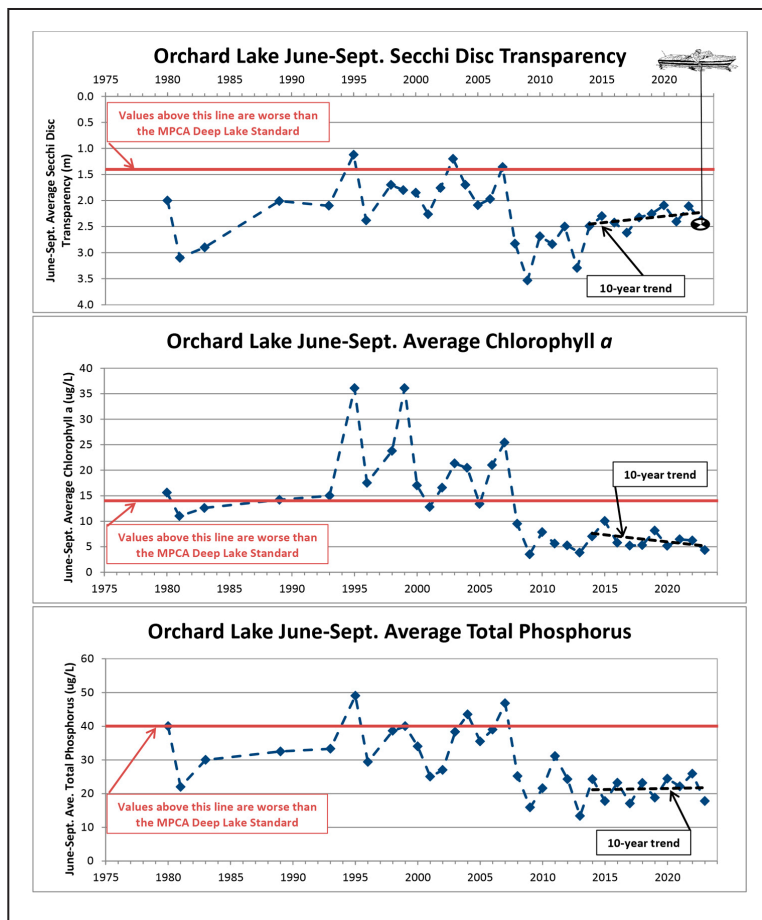
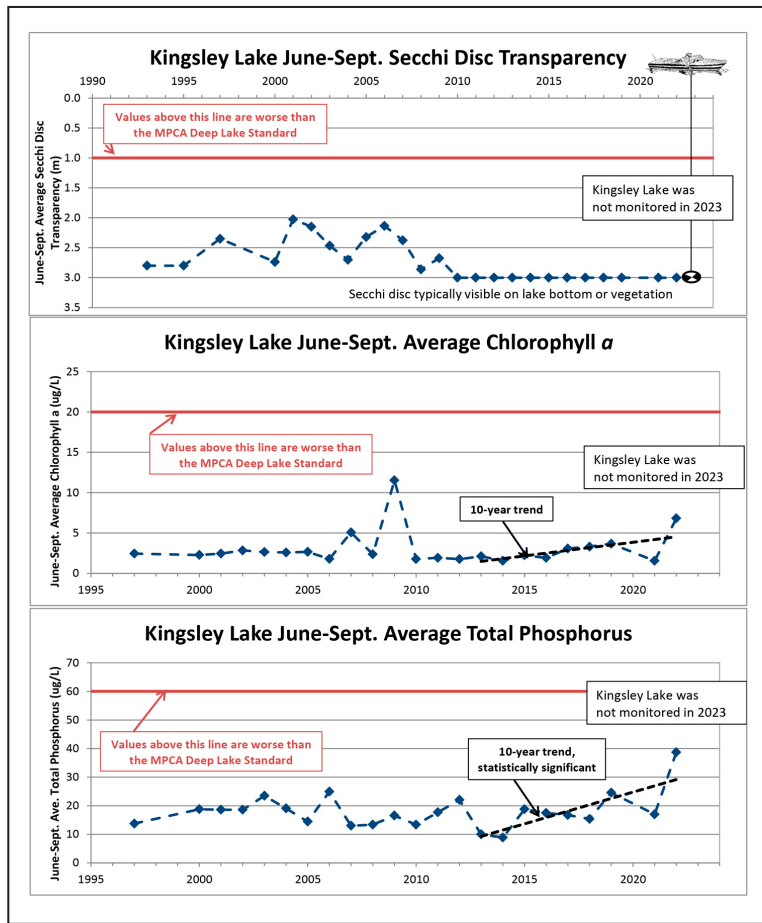
### Crystal Lake (Burnsville & Lakeville)

**Water Quality Monitoring**—Crystal Lake continued to experience good water quality in 2023. The 2023 summer-average Secchi disc transparency was 2.7 meters (8.9 feet), which is better than the MPCA deep-lake water quality standard of 1.4 meters. The 2023 summer average of total phosphorus (24  $\mu\text{g/L}$ ) was better than the deep lake standard (40  $\mu\text{g/L}$ ). The summer average of chlorophyll-a (4  $\mu\text{g/L}$ ) was also better than the deep lake standard (14  $\mu\text{g/L}$ ), and was the best on record for Crystal Lake. There was a statistically significant trend of improving water quality in summer averages of chlorophyll-a for the period 2014-2023; there were not statistically significant trends in summer averages of Secchi disc transparency or total phosphorus. The BDWMO will continue to monitor the water quality of Crystal Lake in 2024.

### Lac Lavon (Apple Valley & Burnsville)

**Water Quality Monitoring**—Lac Lavon continued to experience excellent water quality in 2023. The 2023 summer-average Secchi disc transparency was 3.7 meters (12 feet), and is much better than the MPCA deep-lake water quality standard of 1.4 meters. The 2023 summer averages of total phosphorus (13  $\mu\text{g/L}$ ) and chlorophyll-a (2  $\mu\text{g/L}$ ) further indicate excellent water quality for Lac Lavon. There were no statistically significant trends in summer averages of water quality for the most recent 10-year period of 2014-2023. The BDWMO will continue to monitor the water quality of Lac Lavon in 2024.





## Kingsley Lake (Lakeville)

**Water Quality Monitoring**—Water quality monitoring was not performed on Kingsley Lake in 2023, due to low water levels which made accessing open water difficult. The following discussion is based on data through 2022. Water quality monitoring data from 2022 show continued good water quality in Kingsley Lake. Water is often clear enough that the Secchi disc used to measure transparency can still be seen when resting on the bottom of the lake.\* The 2022 summer average of total phosphorus (39 µg/L) was the worst on record, and double the 2021 summer average, but still much better than the shallow lake standard (60 µg/L). However, there is a statistically significant trend of degrading total phosphorus concentration for the 10-year period of 2013–2022. chlorophyll-a (7 µg/L) concentrations were the worst they have been since 2009, but also still much better than the shallow lake standard (20 µg/L). The 2022 summer averages of total phosphorus and chlorophyll-a were better than the MPCA’s shallow lake standards, and have consistently been better than the water quality standards since 1997. Water quality was not monitored in Kingsley Lake in 2020. The BDWMO will continue to monitor the water quality of Kingsley Lake in 2024 if water levels allow. \*Secchi disc readings in Kingsley Lake are difficult because lake vegetation obscures the Secchi disc, giving false measurements; therefore, there is no trend line in the graph at left.

## Orchard Lake (Lakeville)

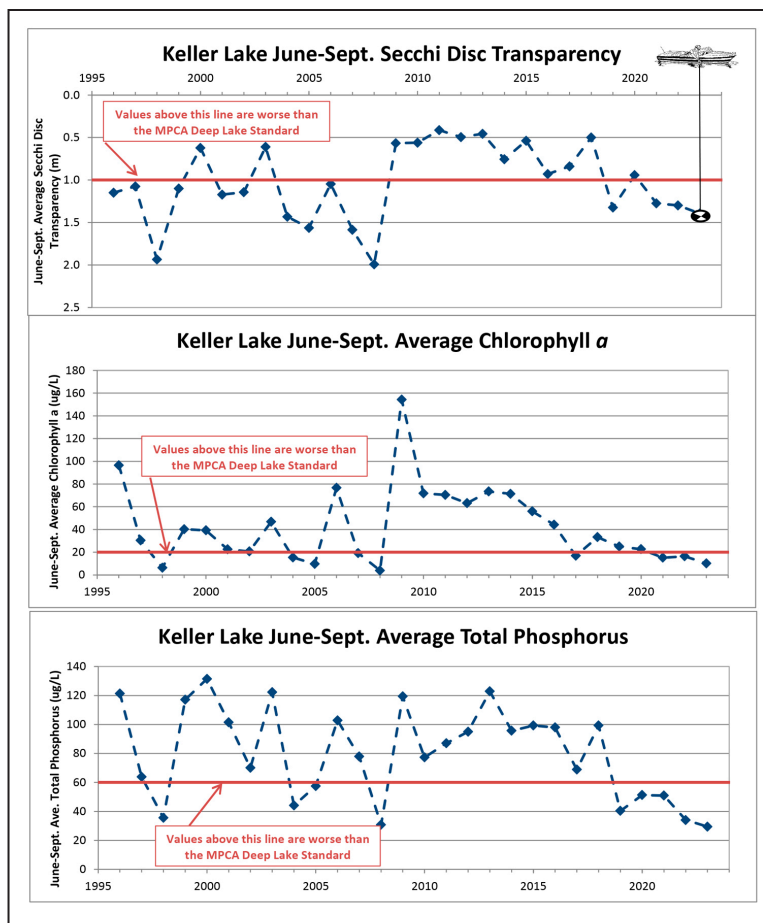
**Water Quality Monitoring**—Orchard Lake’s water quality in 2023 was similar to other recent years. The 2023 summer average Secchi disc transparency was 2.4 meters (7.9 feet), which is better than the MPCA deep-lake water quality standard of 1.4 meters. The 2023 summer-averages of total phosphorus (18 µg/L) and chlorophyll-a (4 µg/L) were better than the MPCA’s deep-lake water quality standards as well; the 2023 summer average chlorophyll-a was the 3rd best on record for the lake. There were no statistically significant trends in summer averages of water quality parameters for the most recent 10-year period. Summer averages of water quality in Orchard Lake have been consistently better than the water quality standards for the last sixteen years (2008-2023). The BDWMO will perform “management level” monitoring of Orchard Lake in 2024, including chloride and phytoplankton monitoring in addition to monitoring for phosphorus, chlorophyll, and water clarity.

# 2023 Monitoring Results

## Keller Lake (Burnsville & Apple Valley)

**Water Quality Monitoring**—An alum and sodium aluminate treatment was conducted on Keller Lake in Spring 2019 and Spring 2021, resulting in improved water quality in recent years. The 2023 Secchi disc transparency summer average was 1.4 meters (4.6 feet), which is better than the MPCA's shallow lake standard of 1.0 meter (3.3 feet), and the best it has been since 2008. The summer-average total phosphorus (29 µg/L) was also better than the MPCA's shallow lake standard of 60 µg/L, and the best on record for Keller Lake. Summer averages of total phosphorus had been consistently worse than the MPCA standard every year for the period 2009-2018, before the alum and sodium aluminate treatment of the lake. The 2023 summer-average of chlorophyll-a (10 µg/L) was also better than the MPCA's shallow lake standard of 20 µg/L, and the best it has been since 2008.

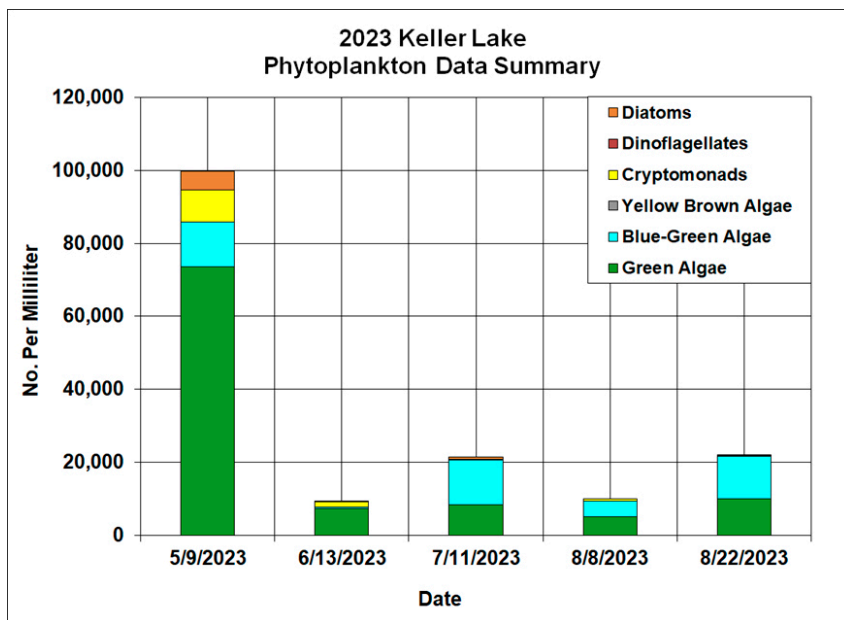
Trend analyses were not completed for Keller Lake because of the alum and sodium aluminate treatments that were conducted in 2019 and 2021. The three-lake TMDL study and implementation plan identifies the water quality improvement measures needed to continue to achieve the BDWMO and MPCA goals for the lake. The BDWMO will continue to monitor the water quality of Keller Lake in 2024.



## Keller Lake 2023 Phytoplankton Monitoring

Samples of phytoplankton, microscopic aquatic plants, were collected from Keller Lake to evaluate water quality and the quality of food available to zooplankton (microscopic animals). Phytoplankton numbers were high in May and declined to low to moderate levels from June through September, reflecting the lake's good water quality. Green algae, a good source of food for the lake's zooplankton, were present throughout the monitoring period (see figure at right) although their percentage of the overall phytoplankton community declined later in the summer.

Blue-green algae, which are associated with water quality problems and can be a source of health concerns (if certain species are present in significant numbers), were present from May through August and dominant in July and late August. Not all blue-green algae produce toxins and laboratory testing is necessary to determine the presence and concentration of algal toxins in lake water.





# BLACK DOG

Watershed Management Organization

www.blackdogwmo.org

## WANTED: Lakeville Alternate Commissioner

The City of Lakeville is seeking an alternate commissioner to represent the City on the Black Dog Watershed Management Commission through 2025. Alternates serve as an acting member but vote only during the absence of a regular commissioner. The Commission meets the third Wednesday of each month. The position is open to Lakeville residents ages 18 and older who live within the Black Dog Watershed. Those interested in this volunteer position should send a letter of interest to the Lakeville City Engineer Zach Johnson. The City will interview interested qualifying candidates.

Email Zach Johnson at:  
[zjohnson@lakevillemn.gov](mailto:zjohnson@lakevillemn.gov)

## Board of Commissioners

### Representing Burnsville:

- Curtis Enestvedt, Chair  
(serving since 2014)
- Mike Hughes, Vice Chair  
(serving since 2008)
- Todd Christopherson, Commissioner  
(serving since 2023)
- Cyndi Bergloff, Alternate  
(serving since 2023)

### Representing Apple Valley and Eagan:

- Rollie Greeno, Commissioner  
(serving since 2018)
- Greg Helms, Alternate  
(serving since 2011)

### Representing Lakeville:

- Scott Thureen, Secretary/Treasurer  
(serving since 2008)
- Alternate — Open position

### Engineering Consultant:

Greg Williams, P.E., Barr Engineering Co.

### Legal Consultant:

Cole Birkeland, Campbell Knutson, P.A.

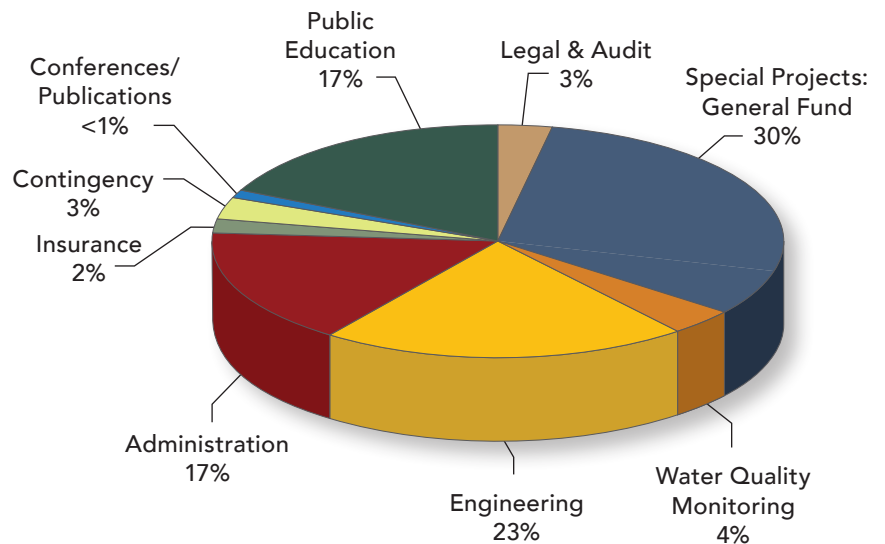
**For more information, please contact:**

**Daryl Jacobson, Administrator  
 Black Dog WMO**

City of Burnsville  
 13713 Frontier Court | Burnsville, MN 55337  
 Phone: 952-895-4574  
[Daryl.Jacobson@burnsvillemn.gov](mailto:Daryl.Jacobson@burnsvillemn.gov)

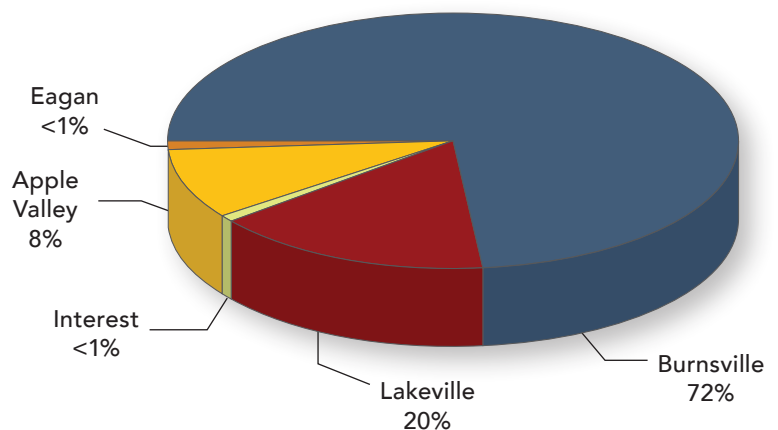
## 2024 Budget

Engineering .....	\$34,000
Legal and Audit .....	\$5,000
Administrative Services .....	\$24,000
Public Education .....	\$24,000
Insurance .....	\$2,000
Special Projects – General Fund .....	\$43,800
Conference/Publications .....	\$500
Water Quality Monitoring .....	\$6,000
Contingency .....	\$5,000
<b>Total Expenditures .....</b>	<b>\$144,800</b>



## 2024 Income

Member Contributions .....	\$143,500
Interest .....	\$500
<b>Total Income .....</b>	<b>\$144,000</b>



## Regular board meetings...

are held at 5:00 p.m. on the third Wednesday of the month at the Burnsville Maintenance Facility at 13713 Frontier Court.