



CLFLWD
WATERSHED DISTRICT

Comfort Lake-Forest Lake Watershed District

2023 Progress Report

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INTRODUCTION

MN Rules 8410.0150, subpart 3, item E, states that watershed districts shall provide a report including: “E. at a minimum of every two years, an evaluation of progress on goals and the implementation actions, including the capital improvement program, to determine if amendments to the implementation actions are necessary according to part 8410.0140, subpart 1, item C, using the procedures established in the goals and implementation sections of the plan under parts 8410.0080, subpart 1, and 8410.0105, subpart 1.”

In 2015, the Comfort Lake-Forest Lake Watershed District (CLFLWD or District) began a comprehensive effort to evaluate progress toward the goals and metrics described in the District’s 10-Year Watershed Management Plan, resulting in the creation of the first comprehensive Progress Report in 2016. The District has produced this report on an annual basis from 2016-2021. Starting with reporting year 2022, the District scaled back its reporting efforts on a biennial basis. Every other year (odd years) the District produces a comprehensive Progress Report evaluating progress toward all of the goals in the Watershed Management Plan. In the even years, the District produces an abridged Progress Summary focusing on the highest priority water quality goals and capital improvement projects.

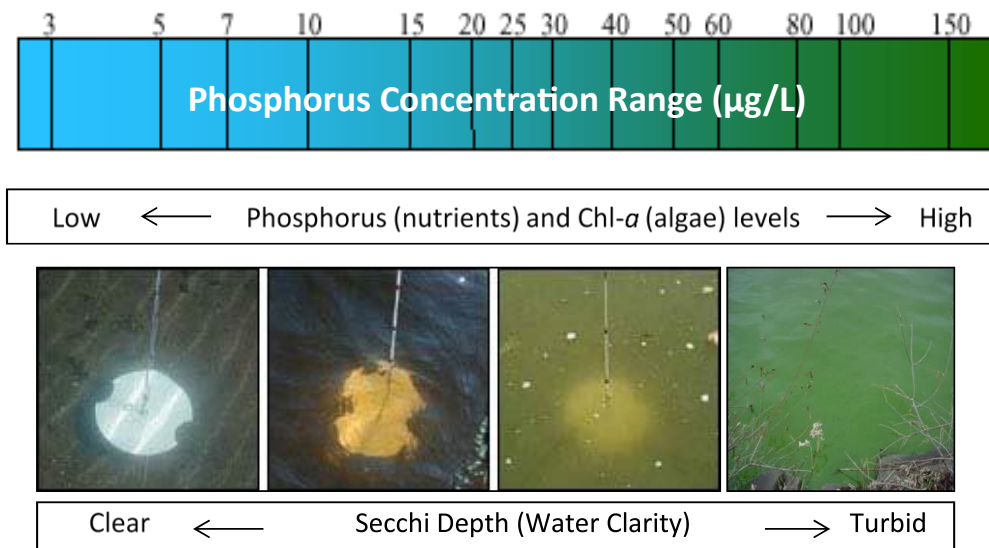
The Comfort Lake-Forest Lake Watershed District engages in a multitude of activities to realize water quality improvements as well as achieve additional benefits for water resources. For more information on District accomplishments in 2023, see the 2023 Yearend Summary Infographic and 2023 Annual Report. Both are available at www.clflwd.org.

Why Do We Want to Meet Water Quality Goals and Standards?

Cleaner, clearer water means:

- Better visibility/clarity
- Less frequent and less severe algae blooms
- Healthy native aquatic plant community
- Thriving gamefish population (muskie, northern, walleye, etc.)

More Phosphorus = More Algae = Less Clarity



1000 SERIES – ADMINISTRATION

1001 Board Administration

2023 Evaluation

Progress evaluation metrics for Board Administration are not laid out in the Plan. However, the CLFLWD Board is very active and engaged in the District’s activities. One way of measuring this level of commitment is through involvement in board meetings.

In 2023 the District held 29 board meetings (Figure 1). The Board held two *regular* meetings per month throughout most of the year and held an additional 7 *special* meetings throughout the year. Special meeting/workshop topics included a variety of topics, such as the 2024 budget. In 2023 the District offered two ways to attend public board meetings: in-person at the District office and virtually via Zoom.

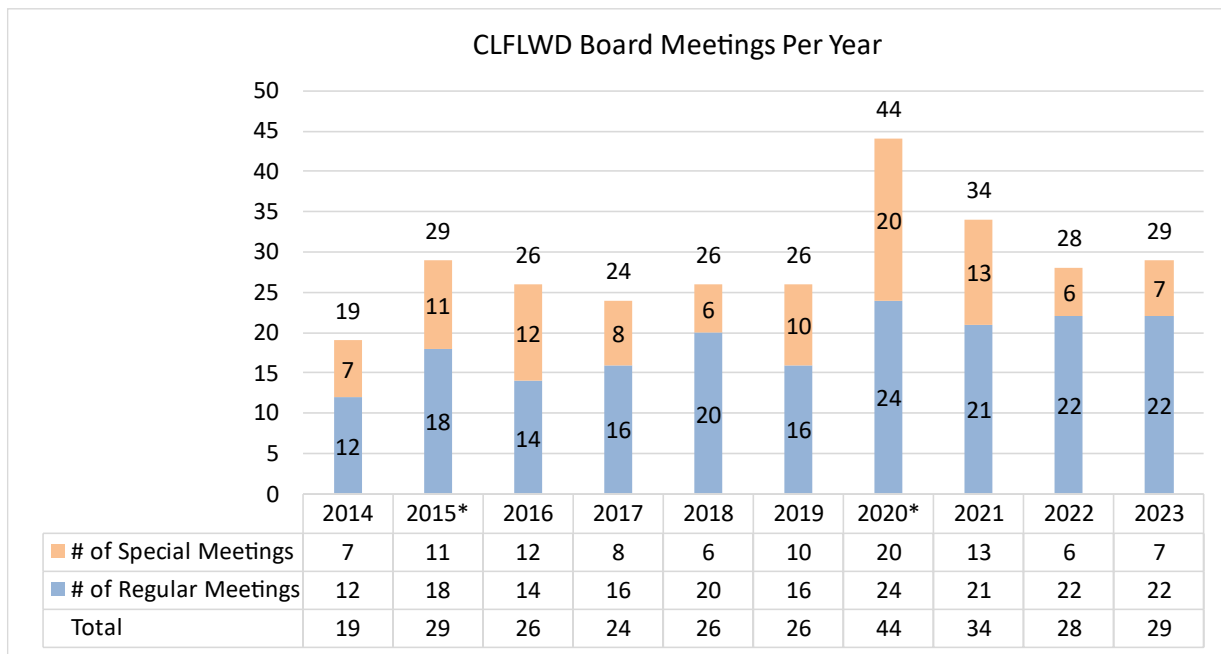


Figure 1. CLFLWD Board Meetings per Year

In 2023 the average board meeting length remained fairly consistent with the past several years (Figure 2). That is, the meetings themselves did not necessarily last longer than average. When looking at cumulative meeting time (Figure 3), 2020 and 2021 stand out. This is due to the high number of meetings that were held. A main driver for the high number of meetings in 2020 was the COVID-19 pandemic and the 10-year Watershed Management Plan update; a process which continued into 2021. In 2023 the District Board of Managers was convened in meetings for about 67 hours. This means that a quorum of managers (at least 3 managers) was present (in addition to staff, consultants and other attendees).

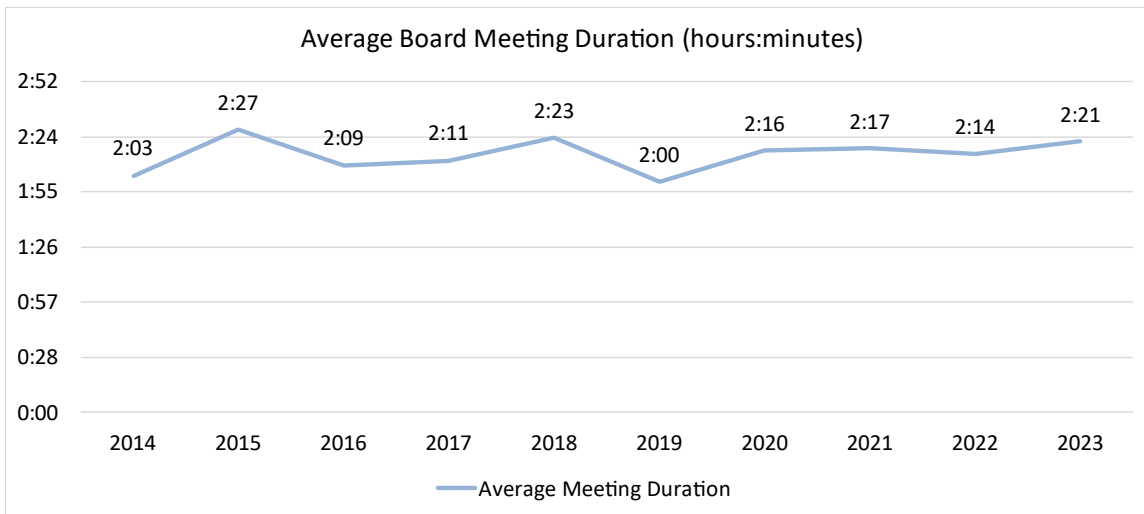


Figure 2. Average Board Meeting Duration (hours:minutes)

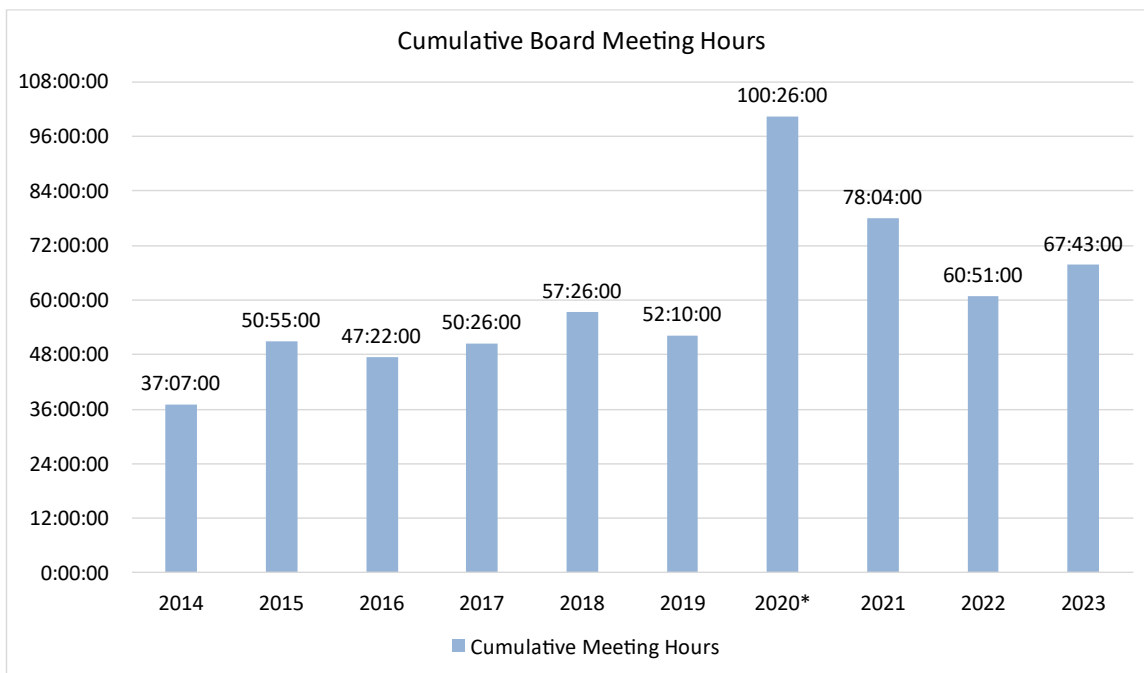


Figure 3. Cumulative Board Meeting Hours (hours:minutes:seconds)

1003 General Administration

2023 Evaluation

Progress evaluation metrics are not outlined in the Plan for General Administration. Board members have suggested that success in the overall Administration category be measured by the cost of administration as a percentage of the overall yearend expenses. This can be calculated in two ways: the entire 1000 Administration series (budget sections 1001 through 1004) as a percentage of the total 2023 yearend expenses, and the “in house” administration expenses (1001 through 1003) as a percentage of the total 2023 yearend expenses. A breakdown of each is provided in Table 1.

Table 1. Administration Over Total Expenses

| All Administration | | "In House" Administration (Excluding professional services) | |
|---|--------------|--|-------------|
| 2023 Estimated Yearend (Unaudited) | | 2023 Estimated Yearend (Unaudited) | |
| 1001 Board Administration | | 1001 Board Administration | |
| 1002 General Office Expenses | | 1002 General Office Expenses | |
| 1003 General Administration/Admin Staff | | 1003 General Administration/Admin Staff | |
| 1004 Professional Services | \$546,063 | (Does not include Professional Services) | \$392,674 |
| Total CLFLWD Yearend Expenses | \$4,168,875 | Total CLFLWD Yearend Expenses | \$4,168,875 |
| 2023 Administration/Total Expense | 13.1% | 2023 Administration/Total Expense | 9.4% |

Beginning in 2017 the District has allocated a portion of expenses under budget section 1004 Professional Services to the Programs and Projects sections of the budget, according to percentage of consultant time spent on program and project activities. Similarly, a portion of District staff costs (wages, benefits, retirement contribution/PERA, and payroll taxes) are allocated out of 1003 General Administration and into Programs and Project; this is done in accordance with the CLFLWD workload analysis. This reflects actual work done by staff/consultants to directly support programs and projects.

3000 SERIES - PROGRAMS

3001 District Rules & Rulemaking

3001 Program Goals

- **Goal 1:** Ensure fair and effective implementation of District Rules through the Permitting Program (see goals under 3002 Permitting).

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 2:** Review and update District Rules and standards at least once every ten years, or more often as needed.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

3001 Progress Evaluation Metric

Success in the District Rules and Rulemaking Program will be measured by the continued implementation of the District’s Rules through the Permitting Program and by the periodic reviews of rule effectiveness.

3001 Evaluation in 2023

- **Goal 1:** Ensure fair and effective implementation of District Rules through the Permitting Program (see goals under 3002 Permitting).
 - **2023 Evaluation:** Since adoption of the rules on December 18, 2008, the District has utilized the permitting program to implement the rules. Implementation of this program continued in 2023. Specific progress statistics on the permitting program are provided in section 3002 of this report.
- **Goal 2:** Review and update District Rules and standards at least once every ten years, or more often as needed.
 - **2023 Evaluation:** Revisions to the District rules were finalized in 2018. One significant result of the rule revisions was an increase in Erosion Control permit issuance due to the reduction in the applicability threshold from 200 cubic yards of disturbance to 50 cubic yards of disturbance (in addition to other threshold changes). As such, starting in 2018 there is a noticeable increase in permitting metrics, as documented in the following section. Staff continually track rule effectiveness and potential rule revisions to consider during the next rule revision process. Rules will be updated again within 10 years of the last update in 2018.

3002 Permitting

3002 Program Goals

- **Goal 1:** Hold a meeting prior to permit approval for 100% of stormwater management permit applications to maximize efficiency of the application process and reduce variance requests.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 2:** Inspect 90% or more of active permits at least once every two weeks.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 3:** Inspect 90% or more of permitted best management practices (BMPs) associated with maintenance instruments at least once a year.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 4:** Work with permittees to maintain compliance with District rules to achieve an average annual inspection compliance rating of at least 90%.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 5:** Work with maintenance instrument holders to maintain compliance with BMP maintenance instrument requirements to achieve an average annual inspection compliance rating of at least 90%.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 6:** Obtain 90% or more annual reports from permitted BMP maintenance instrument holders.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

3002 Progress Evaluation Metrics

Success in the Permitting Program will be measured using the following scale:

- 90% - 100% is measured as “Excellent”
- 75% - 89% is measured as “Good”
- 60% - 74% is measured as “Fair”
- less than 60% are measured as “Poor”

The District will utilize a consistent method for evaluating percent compliance with permit requirements which will include standard inspection and reporting forms.

3002 Evaluation in 2023

- **Goal 1:** Hold a meeting prior to permit approval for 100% of stormwater management permit applications to maximize efficiency of the application process and reduce variance requests.
 - **2023 Evaluation:** The District engaged in virtual **pre-permit meetings and correspondence for 100% of stormwater management permits** in 2023. The District received four stormwater management permit applications in 2023.
- **Goal 2:** Inspect 90% or more of active permits at least once every two weeks.
 - **2023 Evaluation:** Over the course of the year, **32 permits were active** at various times and **staff performed 1,304 site inspections**. In 2022 the District began using wireless tablets and online forms to complete inspection reports, which has improved efficiency. The number of inspections has remained high in order to ensure full coverage of highly active sites, as routine inspections have a positive effect on compliance with District rules. District staff have established and implemented an inspection rotation schedule wherein 100% of active permits are inspected at least once every two weeks. Some permits, such as large developments or sites with frequent compliance issues, are inspected more frequently. During the winter months, inspection frequency is reduced in some cases due to construction activity pausing due to snow cover and frozen conditions.

- **Goal 3:** Inspect 90% or more of permitted best management practices (BMPs) associated with maintenance instruments at least once a year.
 - **2023 Evaluation:** The District inspected **94 best management practices** (BMPs) across **53 sites** (some sites have multiple BMPs) under maintenance instruments in 2023 (**inspected 79% of sites with maintenance instruments**). All maintenance instrument holders are still required to perform their own inspections and reporting throughout the year, as detailed in their individual maintenance instruments (see Goal 5 below). The purpose of District staff performing inspections is to assist site managers with how to perform inspections and to personally audit the self-reporting done by maintenance instrument holders. District staff met with maintenance instrument holders and clarified maintenance requirements when necessary.
- **Goal 4:** Work with permittees to maintain compliance with District rules to achieve an average annual inspection compliance rating of at least 90%.
 - **2023 Evaluation:** The average compliance rating of all inspections performed in 2023 is **97%, which is measured as “Excellent.”** The high frequency of site inspections and consistent presence by District staff helps permittees achieve and maintain compliance.
- **Goal 5:** Work with maintenance instrument holders to maintain compliance with BMP maintenance instrument requirements to achieve an average annual inspection compliance rating of at least 90%.
 - **2023 Evaluation:** In 2023 the compliance rating for maintenance instrument holders was approximately **79% which is measured as “Good.”** Best management practice (BMP) conditions varied by site, and some BMPs were in better condition than others. Consistent outreach and oversight from the District will help maintenance instrument holders achieve and maintain compliance with maintenance requirements and ensure the BMPs are achieving their purpose.
- **Goal 6:** Obtain 90% or more annual reports from permitted BMP maintenance instrument holders.
 - **2023 Evaluation:** The District received **self-reporting annual reports from 7% (5 out of 67) maintenance instrument holders** (i.e., maintenance declarations for private entities, maintenance agreements for public entities).

Permits triggering the Stormwater Management rule often require construction of one or more stormwater treatment facilities to comply with District stormwater standards (stormwater volume, rate and water quality). Such facilities constructed in the District include infiltration/biofiltration basins, bioretention basins, retention ponds, swales, permeable pavement, and underground treatment facilities. Owners are required to perform regular inspections and maintenance of the facilities and submit an annual report to the District; public entities have recorded maintenance *agreements* and private entities have recorded maintenance *declarations* requiring this. Self-reporting is required, and the District also performs its own outreach and inspections of BMPs as well.

The self-reporting rate has historically been low. In the past, the District lacked the capacity to follow up on every report. With recent increased staffing capacity, the District is allocating more staff time to maintenance oversight including email reminders, site visits, and improved resources for site managers. The District developed an online app for annual maintenance reports. Maintenance instrument holders/site managers have the option of filling out a paper/PDF reporting form, or completing the report on the online app. This should further improve reporting rates and BMP compliance. Increased oversight and resources are expected to result in increased self-reporting rates in future years.

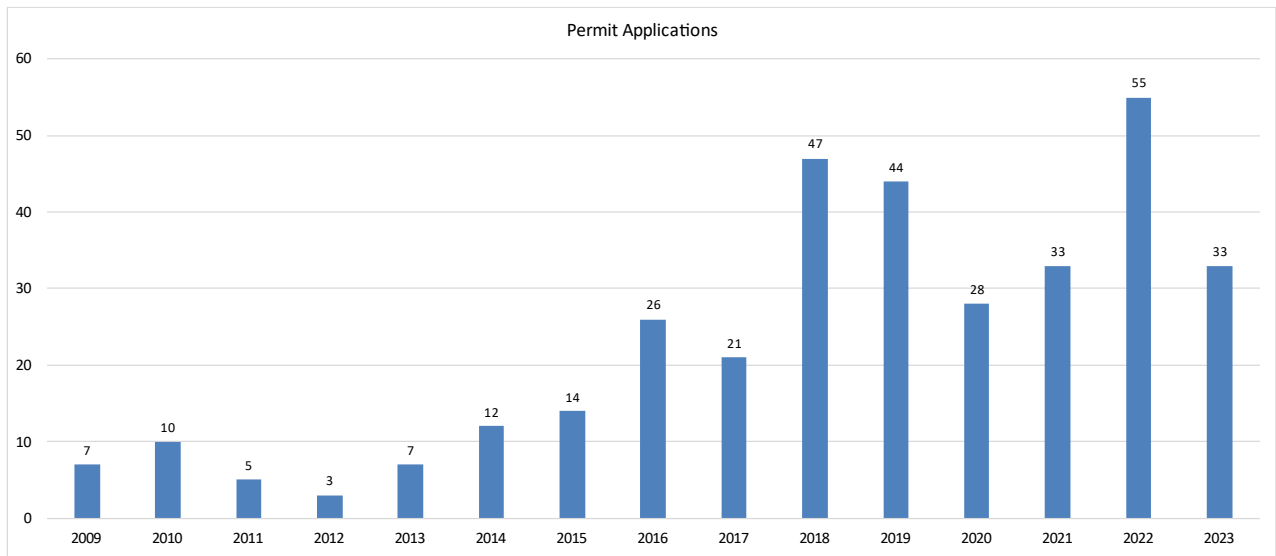


Figure 4. Permit Applications Received

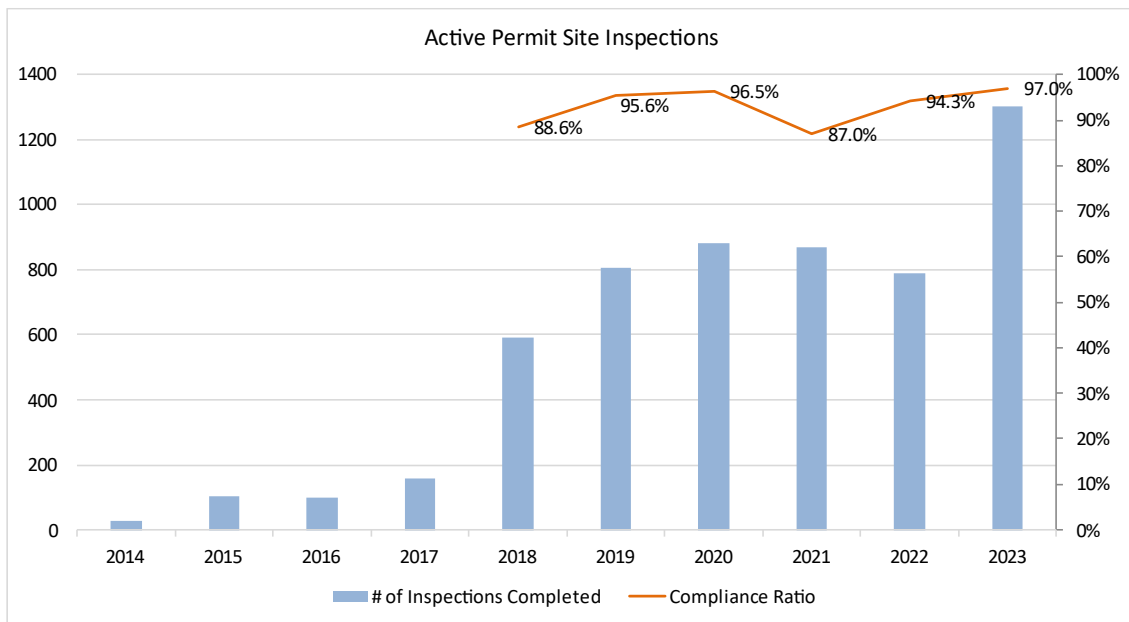


Figure 5. Permit Site Inspections and Compliance Ratio

3003 Monitoring & Data Assessment

3003 Program Goals

- **Goal 1:** Annually perform water monitoring in accordance with the Comprehensive Monitoring Plan to inform future management actions, identify water quality improvement opportunities, and evaluate progress toward goals.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

3003 Progress Evaluation Metric

Success in the Monitoring & Data Assessment Program will be measured by the completion of monitoring and data evaluation identified in the Comprehensive Monitoring Plan. These data are needed to support the District’s activities and evaluate progress toward water quality and resource goals and the quality and consistency of data collected.

3003 Evaluation in 2023

- **Goal 1:** Annually perform water monitoring in accordance with the Comprehensive Monitoring Plan to inform future management actions, identify water quality improvement opportunities, and evaluate progress toward goals.
 - **2023 Evaluation:** The following section summarizes key information from the 2023 Water Monitoring Report. The full report is available at www.clflwd.org. Section 5000 of the Progress Report evaluates progress toward water resource goals, which entails analysis of monitoring data.

Overall, the 2023 average growing season lake water quality was excellent with most of the lakes in the District showing an improving trend and meeting State standards. Spring 2023 was wetter than normal, and summer 2023 was dryer than normal. This had an effect on water monitoring data and is consistent with climate change predictions for Minnesota.

Monitoring reports and presentations can be found on the District’s website at www.clflwd.org.

Table 2. Progress Toward District Phosphorus and Secchi Goals

| Lake | Total Phosphorus | | | Secchi Depth | | |
|-----------------|---|--------------------|------|---|--------------------|------|
| | Existing 5-year Average TP (2019-2023) (ug/L) | 2040 District Goal | Year | Existing 5-year Average Secchi Depth (2019-2023) (ft) | 2040 District Goal | Year |
| Bone | 25.1 | 30✓ | 5 | 5.8 | 7 | 5 |
| Comfort | 24.7 | 30✓ | 5 | 6.8 | 7 | 5 |
| Elwell | 56.2 | 60✓ | 3 | 2.1 | 3.3 | 3 |
| Forest (M) | 36.7 | 30 | 5 | 6.7 | 7 | 5 |
| Forest Lake (E) | 29.6 | 30✓ | 5 | 7.6 | 7✓ | 5 |
| Forest Lake (W) | 23.5 | 30✓ | 5 | 6.9 | 7 | 5 |
| Forest Lake | 29.9 | 30✓ | 5 | 7 | 7✓ | 5 |
| Keewahntin Lake | 14 | 20✓ | 5 | 12.7 | 10✓ | 5 |
| Little Comfort | 36.7 | 30 | 5 | 6.7 | 7✓ | 5 |
| Moody | 39.8 | 40✓ | 5 | 4.7 | 4.6✓ | 5 |
| School | 35.7 | 60✓ | 4 | 5.8 | 3.3✓ | 4 |
| Shields | 52.9 | 60✓ | 5 | 5.6 | 4.3✓ | 5 |
| Third | 16.9 | 60✓ | 3 | 5 | 3.3✓ | 4 |
| Twin | 26.9 | 60✓ | 2 | 4.1 | 3.3✓ | 2 |

3004 Nonpoint Source Pollution Abatement (Cost-Share) Program

3004 Program Goals

- **Goal 1:** Implement program to achieve shoreline and streambank restoration and maintenance goals under sections 5200 Lakes and 5300 Streams.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 2:** Reach out to 100% of high priority agricultural landowners identified in District diagnostic studies.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 3:** Establish a farmer-led council to inform and influence agricultural land management practices.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 4:** Annually coordinate with District communities on potential Municipal Stormwater Remediation project partnerships.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

3004 Progress Evaluation Metrics

Success in the Non-Point Source Pollution Abatement Program will be measured in two ways: by the BMP *outcomes* achieved and by the level of *output* of District materials, site visits etc. While BMP *outcomes* are the ultimate achievements for non-point source pollution abatement efforts, program *outputs* tell the story of how the District works toward those outcomes.

Priority BMP *outcomes* include, but are not limited to:

Reduction in phosphorus and total suspended solids loading to District lakes, streams and wetlands. Remaining phosphorus load reductions for priority District lakes based on implementation of projects completed or grant-funded through 2020 to meet long-term goals are as follows:

- Moody Lake: 169 lb/yr
- Bone Lake: 50 lb/yr
- Birch Lake: 323 lb/yr
- School Lake: 477 lb/yr
- Little Comfort Lake: 366 lb/yr
- Shields Lake: 0 lb/yr
- Lake Keewahstin: 0 lb/yr
- Forest Lake: 155 lb/yr
- Comfort Lake: 193 lb/yr

Metrics for measuring program *outputs* include, but are not limited to:

- Cumulative square footage of deep-rooted native vegetation along lake shorelines and streambanks
- Number of site visits performed
- Number of cost-share grants awarded
- Number of practices installed

3004 Evaluation in 2023

- **Goal 1:** Implement program to achieve shoreline and streambank restoration and maintenance goals under sections 5200 Lakes and 5300 Streams.
 - **2023 Evaluation:** In 2023, the District continued to partner with Washington Conservation District (WCD) and Chisago Soil and Water Conservation District (CSWCD) to implement its cost-share programs. In 2023, CLFLWD, WCD, and Chisago SWCD staff performed 35 initial site visits in order to engage with interested homeowners.

As a result of those site visits,

- 12 Mini Grants were approved (a 71% increase vs the previous “plant grant” program),
- 2 Clean Water applications were received,
- 6 residents participated in the Legacy Payment Program
- 8 residential soil tests were conducted
- \$23,000 in grant funds were awarded

- **Goal 2:** Reach out to 100% of high priority agricultural landowners identified in District diagnostic studies.
 - **2023 Evaluation:** The District has reached out to 100% of high priority agricultural landowners identified in District diagnostic studies.
- **Goal 3:** Establish a farmer-led council to inform and influence agricultural land management practices.
 - **2023 Evaluation:** In 2021 the District established a farmer-led council to assist in outreach and serve in an advisory role for the District’s agricultural programs. The District continues to hold meetings with regular attendance by farmers from seven different operations ranging in size from 20 to 900 acres, and a diversity of enterprises including conventional corn and beans, heritage winter wheat, and grass-fed cattle. All FLC members are in the process of implementing conservation ag BMPs, or have already done so. Practices include no-till planting, cover crops, managed rotational grazing, and conservation cover. FLC members are important members of the local farming community and have made important contributions to the uptake of conservation farming practices.
- **Goal 4:** Annually coordinate with District communities on potential Municipal Stormwater Remediation project partnerships.
 - **2023 Evaluation:** District staff meet monthly with City of Forest Lake staff and quarterly with staffs of Scandia and Wyoming. Inter-staff communications also occur regularly in between coordination meetings. In 2023 the District continued working with local cities and counties to evaluate stormwater treatment practices associated with upcoming roadway projects. Such practices may go above and beyond minimum stormwater treatment requirements.

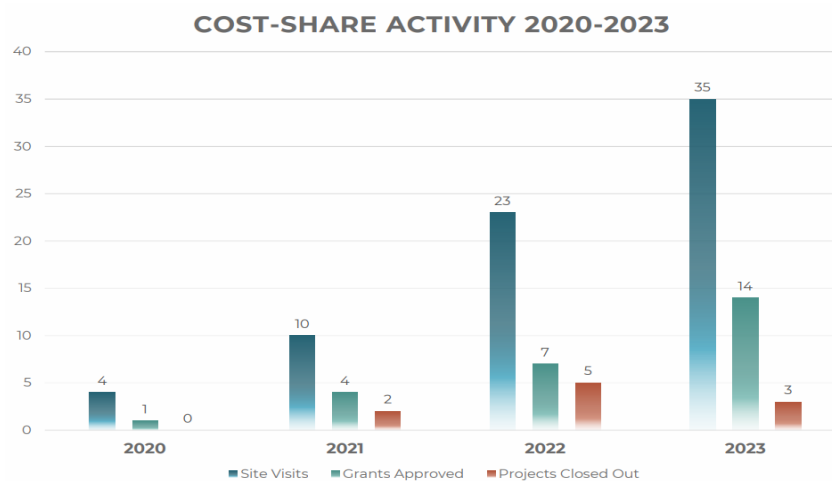


Figure 6. Cost-Share Activity 2020-2023

3005 Education & Outreach

3005 Program Goals

- **Goal 1:** Increase public knowledge of and appreciation for human impacts to surface water, groundwater and natural resources to increase target audiences' behaviors that positively impact water resources.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 2:** Communicate District programs, projects and other initiatives to the public in a clear, consistent and equitable manner.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

3005 Progress Evaluation Metrics

Success in the Education and Outreach Program will be measured in two ways: by the behavior change outcomes achieved for well-defined, targeted campaigns and by the level of output of District materials, events, programs etc. While behavior change outcomes are the ultimate achievements for education and outreach efforts, program outputs tell the story of how the District works toward those outcomes. As part of this Plan, the District will establish current baselines for the following metrics against which it will measure progress. Potential methods for establishing baselines include photographic inventories, regulatory site inspections, shoreline surveys, and public questionnaires/surveys.

Priority behavior change *outcomes* relate primarily to Goal 1 and include, but are not limited to:

- Reduced instances of yard waste disposal in wetlands, ditches and other water resources and/or conveyances
- Reduced instances of noncompliance with District rules and regulations which may include performance of work without required permits, improper erosion and sediment control practices, violation of lake/stream/wetland buffer requirements
- Increased instances of deep-rooted native vegetation along lake shorelines and streambanks
- Reduced chloride usage whether through road/sidewalk salt application, water softener usage, and/or other vectors

Metrics for measuring program *outputs* relate to both Goal 1 and Goal 2 and include, but are not limited to:

- Increased number of outgoing communications to the public
- Increased number of users reached by social media posts
- Increased number of new email addresses added to the District's notification list
- Increased number of District-sponsored meetings and events
- Increased attendance numbers for District-sponsored meetings and events
- Increased participation numbers for District programs such as cost-share grants under the Nonpoint Pollution Abatement Program (3004)
- Increased audience diversity engaging in District-sponsored meetings, events and programs

Outgoing communications will take several forms including direct mail campaigns, newsletters, brochures, publications in print media, social media posts, website updates, and staff and board attendance at meetings held by groups such as lake associations, schools, and nature centers. Gross total of outgoing messages will be considered as well as number of different types of media avenues. As in all its initiatives, the District will utilize adaptive management to ensure outreach methods evolve and adapt to suit audiences' needs. Overall, the District's communications with the public should be frequent and consistent.

3005 Evaluation in 2023

- **Goal 1:** Increase public knowledge of and appreciation for human impacts to surface water, groundwater and natural resources to increase target audiences' behaviors that positively impact water resources.

- **2023 Evaluation:**

Dumping: Reduced instances of yard waste disposal in wetlands, ditches and other water resources and/or conveyances.

- In 2023 the District updated its map of priority wetland dumping issue areas.
- The District has worked with the City of Forest Lake to implement a wetland dumping signage campaign in one high priority area so far. The City installed 49 signs along North Shore Trail and Hayward Ave. N, in Forest Lake. The District has not received any complaints of dumping since that time.
- The District began working with the cities of Scandia and Wyoming to expand the dumping signage campaign. Both cities have indicated a willingness to partner, and efforts will continue in 2024.
- The District provided yard waste disposal outreach materials to lake associations and cities, as well as posted on the District's website and social media.
- The wetland dumping signage campaign was nominated for MN Watersheds 2022 Program of the Year Award, and the District presented on the initiative at the 2022 MN Watersheds Annual Conference.

Rules: Reduced instances of noncompliance with District rules and regulations which may include performance of work without required permits, improper erosion and sediment control practices, violation of lake/stream/wetland buffer requirements.

- In 2023 the compliance rating for active permitted sites was 97%, which is measured as "Excellent."
- The District coordinated regularly with city regulatory staff.
- The District has been more proactive with regulatory communications and has increased the number of touch points with permit holders to promote compliance. For example, the District sent out emails to permit holders notifying of forecasted weather patterns which may affect erosion and sediment control best management practices.
- The District prepared an informational handout on stormwater pond safety and distributed it to applicable permittees.
- The District created door hangers to leave behind at sites which provide District contact information and notify residents that staff inspected the property.
- The District began updating and improving its regulatory materials on the District website.

Natural Buffers: Increased instances of deep-rooted native vegetation along lake shorelines and streambanks.

- The District created a comprehensive shoreline program in 2023 which is a holistic, multi-faceted approach to achieving shoreline buffer goals. The program offers financial resources through the District's revitalized cost-share program, technical assistance from District staff and soil and water conservation district partners, and educational materials which dovetail with the District's Education & Outreach program. Natural shoreline buffers will be a key outreach topic for the District in the upcoming years in order to instigate widespread behavior change among shoreline landowners.
- The District completed comprehensive shoreline inventories on Forest Lake, Bone Lake, and Comfort Lake in 2023, resulting in shoreline scoring and priority ranking.
- The District worked with interagency partners to co-create the Resilient Shorelines Workshop. This workshop format is used state-wide by Blue Thumb and offered locally by the CLFLWD. The District offers several other workshops on a variety of topics.
- The District participated in the Natural Shoreline Partnership, a state-wide group that collaborates on shoreline outreach and restoration strategies. The District presented on its shoreline program at Natural Shoreline Partnership meetings and at the 2023 MN Watersheds Annual Conference. The CLFLWD's legacy cost-share program was a finalist for the MN Watersheds 2023 Program of the Year Award.

Chloride: Reduced chloride usage whether through road/sidewalk salt application, water softener usage, and/or other vectors.

- The District posted educational materials about chlorides on its Facebook page. The District participated in the Isaak Walton Salt Watch initiative. Using Salt Watch materials provided consistency with other chloride outreach efforts by partners across the State.
- The District is a partner in the East Metro Water Resource Education Program and the Adopt-A-Drain program which both provided regional outreach on the topic of chlorides.
- The District hosted a MN Pollution Control Agency GreenCorps member in 2022/2023 who assisted with chloride outreach. The District has applied to host another GreenCorps member in 2024/2025.
- The District began setting up Salt Watch testing kits to help landowners and site managers measure and reduce chloride usage.
- The winter of 2023/2024 was a notably mild winter, and less snow/ice resulted in a lower demand for salt usage.
- **Goal 2:** Communicate District programs, projects and other initiatives to the public in a clear, consistent and equitable manner.
 - **2023 Evaluation:**
 - **Ongoing Activities:** The District engaged in several activities to share the District’s programs, projects and other initiatives with the public.
 - Continued the implementation of several citizen science programs including Citizen Assisted Monitoring Program (CAMP), Citizen Assisted Tributary monitoring program (CAT), and zebra mussel sampling plate program (see additional detail below).
 - Continued local student engagement with annual visits to classrooms at Lakes International Language Academy (LILA) and Wyoming Elementary School to present on water quality and facilitate the implementation of public-facing educational messaging as designed by the students.
 - Presented at local lake association meetings (Bone Lake, Comfort Lake and Forest Lake).
 - Maintained social media presence.
 - Hosted weekly informational booth at the City of Forest Lake’s Arts in the Park.
 - Worked with partner agencies to host and promote online webinars and in-person workshops on topics such as shoreline buffers, fall yard maintenance, aquatic plants, and information about District projects.
 - Presented at the Minnesota Watersheds annual conference on the District’s Legacy Payment Program.
 - Appendix A includes the District’s 2023 annual newsletter.

Working With Citizen Scientists: In order to further support District programs/projects and engage with the community, the District worked with multiple volunteers to collect important data throughout the watershed and advise on watershed activities in 2023.

- Citizen Assisted Monitoring Program (CAMP): 5 volunteers collected in-lake water quality samples – Tom Furey, Wally Ostlie, Doug Joens, Steve Schmaltz, and Amy Vislisl.
- Citizen Assisted Tributary (CAT) Monitoring Program: 1 volunteer collected tributary water quality samples – Randy Schumacher.
- Zebra Mussel Sampler Plates: 11 volunteers monitored zebra mussel sampler plates on their docks throughout the summer to gauge zebra mussel populations – Steve Schmaltz, Tom Furey, KC Douglas, Doug Joens, Dave Bakke, Kathleen Krause, Cheryl Komlac, Michelle Stevens, Mark Mckee, Geneva Kubal, Keith Kuhnly.
- Continued partnership in the regional Adopt-A-Drain program.
- Partnerships: In 2023 the District continued its support of the Minnesota Water Stewards Program, Blue Thumb Initiative, and Metro Blooms.
- Citizen Advisory Committee: In 2023 the Citizen Advisory Committee met eleven times, including a special meeting for a shoreline tour of Bone Lake. Specific initiatives the CAC pursued included shoreline restoration, wake boat impacts, and aquatic invasive species prevention and treatment.

3006 Interagency Communication

3006 Program Goals

- **Goal 1:** Coordinate efforts with partners to ensure the most efficient and cost-effective use of funds for water resource management.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 2:** Act as the local office for facilitating public input on water resource-related issues, react in a timely manner to the concerns of citizens and operate in an open and transparent manner.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 3:** Participate in the evaluation of Total Maximum Daily Load (TMDL) studies and implementation of projects and programs to address impairments of waters within the District.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 4:** Work with Lower St. Croix River partners to achieve the goals of Lower St. Croix One Watershed One Plan, including associated TMDLs and WRAPS.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

3006 Progress Evaluation Metric

Success in the Interagency Communication Program is measured in two ways:

Success in technical resource sharing is measured by the use of District data and information by other parties. Potential methods for establishing a baseline for this metric include ongoing partner meetings, review of partner websites and other materials, and establishment of interagency workgroups for specific programs (e.g., permitting).

Success in communication will be measured by the percent of District initiatives and projects that are conducted in partnership or cooperation with another agency and the distribution:

- Excellent = 70-100%
- Good = 50-69%
- Fair = 30-49%
- Poor < 30%

3006 Evaluation in 2023

- **Goal 1:** Coordinate efforts with partners to ensure the most efficient and cost-effective use of funds for water resource management.
 - **2023 Evaluation:** It is estimated that at least 70% (likely more) of the District’s activities are coordinated with another organization or agency. See Table 3 for more detail on coordinated activities.

- **Goal 2:** Act as the local office for facilitating public input on water resource-related issues, react in a timely manner to the concerns of citizens and operate in an open and transparent manner.
 - **2023 Evaluation:** In 2023 District staff performed several activities in order to facilitate public input on water resource-related issues, to react in a timely manner to the concerns of citizens, and to operate in an open and transparent manner.
 - Responded to calls/emails, and performed several site visits/field investigations. For example, District staff received numerous phone calls regarding suspected flowering rush growing along private shorelines, and staff visited these sites to confirm the sighting, clip seed heads, and mark the location for future herbicide treatments.
 - Held multiple outreach events and open houses in order to proactively inform the public and seek public opinion on matters including the District office space search and water quality improvement projects.
 - Received multiple calls from lakeshore owners inquiring about ways to manage aquatic vegetation around their shoreline and dock. Staff discussed the MNDNR's rules and regulations and forward them DNR contacts for more information.
 - Emailed monthly communications to local lake associations with updates on District activities. When invited, staff would also attend lake association meetings to share aquatic invasive species information and other important updates.
 - Collected and shared water quality monitoring data (annual monitoring reports) with local residents.
 - Routinely monitored and shared lake water level data with lakeshore residents.

- **Goal 3:** Participate in the evaluation of Total Maximum Daily Load (TMDL) studies and implementation of projects and programs to address impairments of waters within the District.
 - **2023 Evaluation:** In 2023 the District continued to make progress toward de-listing impaired waters, with a focus on nutrient impaired lakes. Bone Lake is slated to be removed from the impaired waters list in 2024, which will be the first in a series of anticipated de-listings over the next few years. See Section 5200 Lakes for an in-depth evaluation of nutrient reductions and progress toward de-listing impaired lakes.

- **Goal 4:** Work with Lower St. Croix River partners to achieve the goals of Lower St. Croix One Watershed One Plan, including associated Total Maximum Daily Loads (TMDLs) and Watershed Restoration and Protection Strategies (WRAPS).
 - **2023 Evaluation:** The District continued to be an active partner in the Lower St. Croix Partnership in 2023. CLFLWD managers participated on the Policy Committee. CLFLWD staff participated on the Advisory Committee, Steering Committee, Planning Team, and several implementation subcommittees. The Partnership approved several projects and initiatives for Watershed Based Implementation Funding grant dollars, which help make progress toward measurable water quality goals including TMDLs and WRAPS. More information, including a detailed annual report on the Lower St. Croix Partnership is available at www.lsc1w1p.org.

Ongoing Interagency Communication

The District coordinates with other agencies on a regular basis in order to implement the majority of its programs and projects. **At least 70%** (likely more) of the District’s activities are coordinated with another organization or agency. This is measured as “Excellent” according to the metric provided in the Watershed Management Plan. Below is a list of District activities that were coordinated with other agencies in 2023.

Table 3. Interagency Coordinated Activities in 2023

| Project/Initiative | Partnering Organization(s) | Description |
|--|--|---|
| Permitting Program | City of Forest Lake, City of Wyoming, City of Scandia, Chisago County Zoning Department (for Chisago Lake Twp), Metro Permitting Workgroup | Meetings and communications regarding development, staff attend monthly Forest Lake engineering meetings and quarterly coordination meetings with Scandia and Wyoming city staff |
| Monitoring and Data Assessment Program | Local volunteers, Metropolitan Council, MN Pollution Control Agency | Citizen Assisted Monitoring Program (CAMP), Citizen Assisted Tributary (CAT) Monitoring Program, impairment de-listing |
| Non-point Source Pollution Abatement (Cost-Share) Program & Shoreline Restorations | Washington Conservation District, Chisago Soil and Water Conservation District (SWCD), City of Forest Lake | Partnered with SWCDs for technical assistance/site visits. Partnered with City of Forest Lake to complete Shields Lake City Park Shoreline Restoration and develop additional shoreline restorations on city-owned properties around Forest Lake. |
| Education and Outreach Program | East Metro Water Resources Education Program, Lakes International Language Academy, lake associations, Community Thread, Metro Blooms, MN Lakes and Rivers, Watershed Partners | News releases, event coordination, meeting attendance. CLFLWD will collaborate closely with lake associations and other partners to achieve natural shoreline buffer goals. |
| Diversity, Equity, Inclusion & Accessibility | Watershed Equity Alliance | District staff participate in an interagency workgroup to share equity strategies to improve the District’s level of service to all its constituents. |
| Lower St. Croix One Watershed One, Plan Implementation | Anoka SWCD, Brown's Creek WD, Carnelian-Marine-St. Croix WD, Chisago County, Chisago SWCD, Isanti County, Isanti SWCD, Middle St. Croix WMO, Pine County, Pine SWCD, South Washington WD, Sunrise River WMO, Valley Branch WD, Washington County, Washington Conservation District | Participating partner (see paragraph on One Watershed, One Plan above) |

| Project/Initiative | Partnering Organization(s) | Description |
|--|---|--|
| Research Program | St. Croix Watershed Research Station, University of St. Thomas, Claros Technologies, MN Aquatic Invasive Species Research Center | Deep sediment cores, phosphorus adsorption technology, aquatic invasive species research updates |
| Grant Research and Preparation Program | Forest Lake Lake Association, City of Forest Lake, Bone Lake Association, City of Wyoming, Comfort Lakes Association, Great River Greening, MN Lakes and Rivers | Coordination on grant applications/projects, and in some cases lake associations provided letters of support for CLFLWD grant proposals |
| Watercraft Inspection Program | Chisago County/Chisago Lake Improvement District; City of Forest Lake, Forest Lake Lake Association, Comfort Lakes Association, Bone Lake Association, City of Scandia, Scandia-Marine Lions Club; Washington County | Jointly managed program; funding contributors; grant agency |
| Enhanced Street Sweeping | City of Forest Lake; City of Wyoming | Coordinated sweeping study, sweeper grant application and 2019 monitoring/analysis; coordinated sweeper grant funding for enhanced street sweepy study |
| Multiple Topics | Washington County Water Consortium, Chisago Water Plan Policy Team, DNR Shoreline Workgroup, AIS Behavior Change Design Workshop, MN Watersheds Annual Meeting, Metro Carp Management Group, MN Association of Government Communicators | District staff and managers participate in a number of additional collaborative meetings for multiple topics. |

3007 Research

3007 Program Goals

- **Goal 1:** Initiate, advance or support at least one research initiative each year.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 2:** Provide at least four updates to the Board of Managers on research topics, whether initiated by the District or other organizations, each year.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

3007 Progress Evaluation Metric

Success in the Research Program will be measured by the number of updates on current research received by the Board and on the number of research initiatives completed by the District or in partnership with the District. Completion of four updates and one research project per year is anticipated.

3007 Evaluation in 2023

- **Goal 1:** Initiate, advance or support at least one research initiative each year.
 - **2023 Evaluation:** The District’s main research focus in 2023 was the Native Aquatic Plant Transplant initiative. On August 1st, District staff and a researcher from the University of Minnesota implemented a native aquatic plant transplanting project on Moody Lake. A variety of native species were collected from Keewahtin Lake and planted in Moody Lake. In total, more than 700 clay balls with attached aquatic plants were planted in the lake. In 2024, staff will survey the lake for signs of new species establishing themselves after the project. Results will aid the researchers in their much broader study on the effectiveness of this new type of aquatic plant management practice.
- **Goal 2:** Provide at least four updates to the Board of Managers on research topics, whether initiated by the District or other organizations, each year.
 - **2023 Evaluation:** In 2023, District staff provided five updates to the Board on current research initiatives. Updates were provided at board meetings on the following dates.
 - January 19, 2023 – Update in Administrator’s Report on MN Aquatic Invasive Species Research Center
 - June 22, 2023 - Update in Administrator’s Report on Moody Lake Aquatic Plant Transplant Research
 - July 27, 2023 – Update in Administrator’s Report on Alum Treatment Research
 - August 24, 2023 - Update in Administrator’s Report on MN Aquatic Invasive Species Research Center
 - September 28, 2023 - Update in Administrator’s Report on Moody Lake Aquatic Plant Transplant Research

3008 Measurement of Progress

3008 Program Goals

- **Goal 1:** Annually complete a detailed Progress Report evaluating the previous year’s progress toward all goals and metrics in this Plan.

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|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 2:** Every five years perform a comprehensive review of District goals and metrics to evaluate achievability and course-correction actions, if needed.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

3008 Progress Evaluation Metric

Success in the Measurement of Progress Program will be based on completion of the annual progress report and 5-year comprehensive progress review.

3008 Evaluation in 2023

- **Goal 1:** Annually complete a detailed Progress Report evaluating the previous year’s progress toward all goals and metrics in this Plan.
 - **2023 Evaluation:** The draft 2023 Progress Report was distributed to the Board of Managers in the March 28, 2024 regular board meeting packet.
- **Goal 2:** Every five years perform a comprehensive review of District goals and metrics to evaluate achievability and course-correction actions, if needed.
 - **2023 Evaluation:** This will be done in 2026/2027.

3009 Grant Research & Preparation

3009 Program Goals

- **Goal 1:** Obtain grant awards in an amount at least equal to 25% of the District’s levy, as measured on a 3-year average.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 2:** Research and apply to at least one new grant program each year.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

- **Goal 3:** Complete grant reporting in accordance with grant contracts to ensure timely disbursement of grant funds.

| | | | | |
|--|-------------------|-----------------------------|---------------------|----------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|-------------------|-----------------------------|---------------------|----------------------|

3009 Progress Evaluation Metric

Success in the Grant Research & Preparation Program will be measured by the number of grant applications submitted to new grant programs, total grant dollars awarded per year, and percentage of required grant reports submitted on time.

3009 Evaluation in 2023

- **Goal 1:** Obtain grant awards in an amount at least equal to 25% of the District’s levy, as measured on a 3-year average.
 - **2023 Evaluation:** The latest 3-year grant awards average exceeds 25% of the 3-year average levy.

| Fiscal Year | Grant Awards* | Levy | Grant/Levy |
|-----------------------|--------------------|--------------------|-------------|
| 3-Year Average | \$1,605,107 | \$1,573,333 | 102% |
| 2021 | \$573,400 | \$1,475,000 | 39% |
| 2022 | \$1,355,919 | \$1,622,500 | 84% |
| 2023 | \$2,886,003 | \$1,622,500 | 178% |

**Grant awards do not necessarily equate to actual grant revenue for the fiscal year; every grant program has a different payment schedule. Earned grant revenue is tracked closely against the current year’s budget.*

- **Goal 2:** Research and apply to at least one new grant program each year.
 - **2023 Evaluation:** In 2023 the District applied to three new grant programs:
 - Lake Conservation Grant: Applied to the Midwest Glacial Lakes Partnership’s (MGLP) Lake Conservation Grant to inventory and restore lake shorelines on priority lakes within the District. The grant award decision will be announced in early 2024.
 - Noxious Invasive Species Grant: Applied to the MN Department of Agriculture’s (MDA) Noxious Invasive Species Grant to remove buckthorn on District-owned properties and public boat launches. The grant award decision will be announced in early 2024.
 - America the Beautiful Challenge: Partnered with other watershed management organizations and the MN Department of Natural Resources as part of an interagency shoreline workgroup to apply to the National Fish & Wildlife Foundation’s America the Beautiful Challenge grant. The grant application was unsuccessful, but the District will continue to participate in the shoreline workgroup and may re-apply in 2024.
 - Additionally, the District contracted with Access Philanthropy, a non-profit organization specializing in helping organizations obtain grant and donor funding. This work will continue in 2024 in hopes of identifying new grant sources, particularly for a new District office space.
- **Goal 3:** Complete grant reporting in accordance with grant contracts to ensure timely disbursement of grant funds.
 - **2023 Evaluation:** In 2023 District staff completed grant reporting for 100% of its active grants on time. The District had 21 active grants in 2023.

Additional Information

The Grant Research and Preparation program is a key component to the District’s implementation of its capital improvement plan. In order to balance its local tax levy, the District seeks additional revenue from multiple grant sources each year, in addition to coordinating with local partners to provide additional funds. The figures below provide a summary of the District’s grant research and preparation efforts.

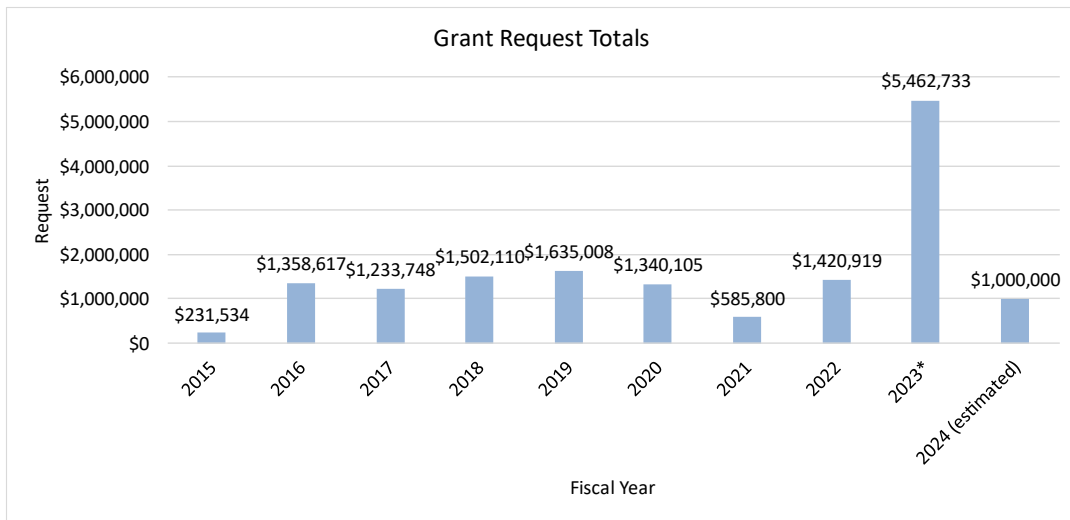


Figure 7. Total Requested Grant Dollars per Year¹

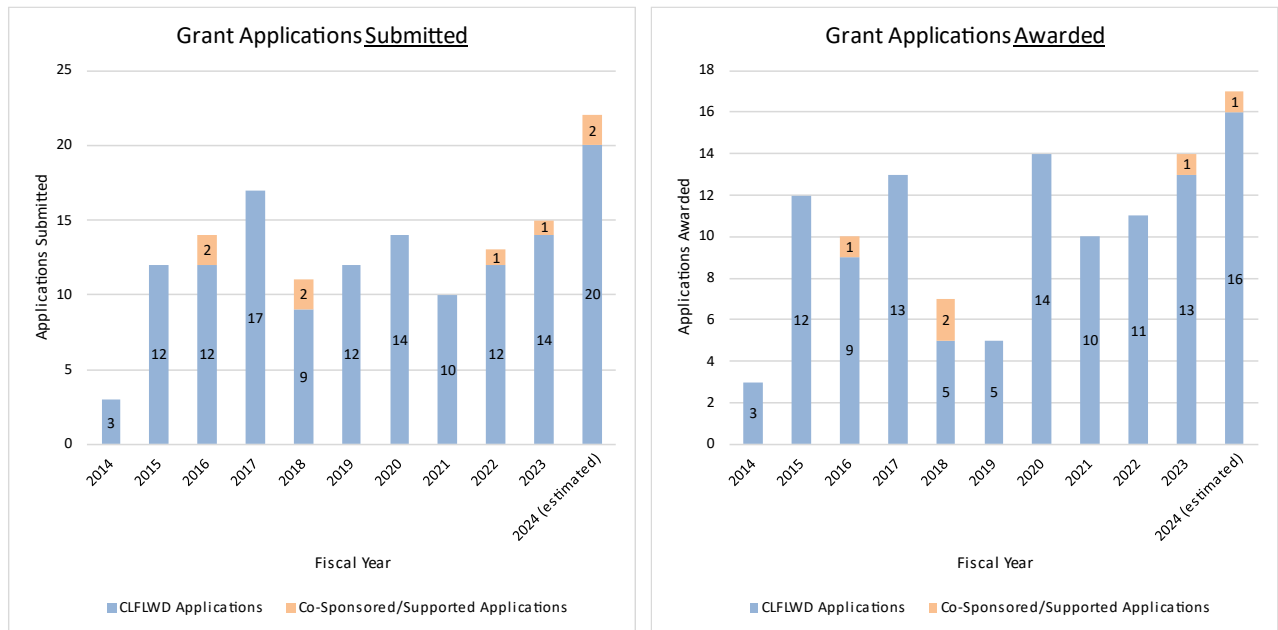


Figure 8. Grant Applications Submitted per Year, Applications Awarded per Year²

¹*FY23 included a large land acquisition grant application for \$4.5 million

² In 2017 the District applied for and was awarded seven DNR AIS Control grants for three lakes; in previous years grants for the same lake were combined. The DNR did not offer this grant program in 2018 nor 2019 due to lack of funding, but it was brought back in 2020 (only one application allowed per lake).

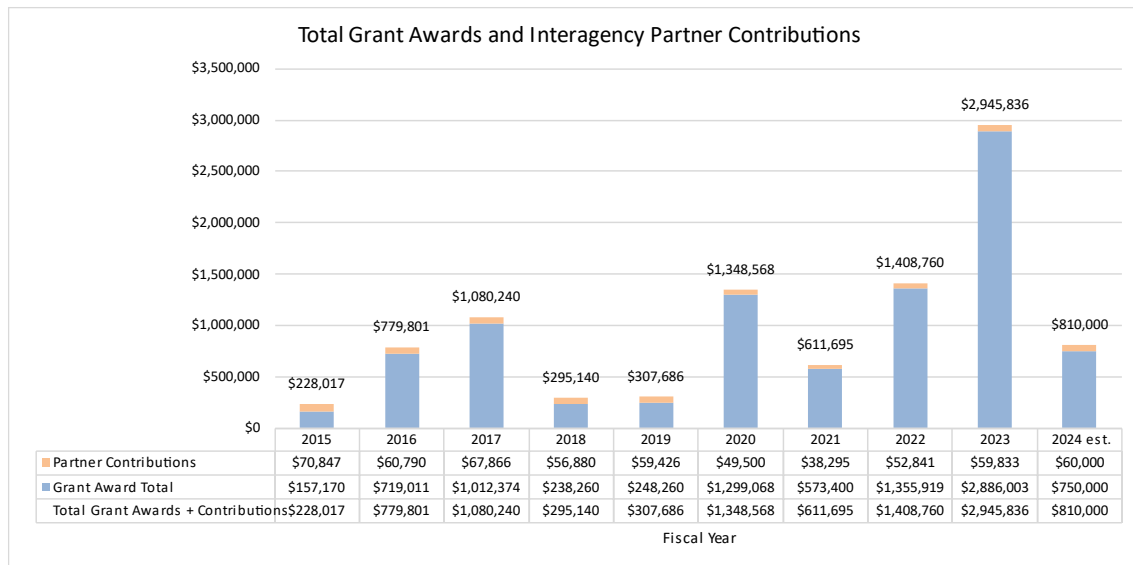


Figure 9. Awarded/Contributed Funds per Year³

Table 4 shows CLFLWD expenses funded by grants and/or other sources of revenue such as partner contributions. The remainder was funded by the District’s tax levy and/or reserve fund.

Table 4. Grant Revenue as Percentage of Total Expenditures

| Year | Total Yearend Expenditure | Earned Grants & Other Revenues | Percentage of Total Expenses Covered by Grants/Other |
|----------------|---------------------------|--------------------------------|--|
| 2021 | \$2,268,557 | \$235,494 | 10% |
| 2022 | \$4,074,728 | \$1,603,675 | 39% |
| 2023 unaudited | \$4,168,875 | \$1,075,013 | 26% |

Grant-funded projects are key to the District’s ability to make progress toward nutrient reduction goals and water quality improvements. The following is a list of in-progress and recently completed grant-funded projects. Project outcomes, including pounds of phosphorus and sediment reduced, can be found in Appendix D.

- **Moody Lake:** Wetland Rehabilitation Project, Whole-Lake Alum Treatment, Capstone Projects, Subwatershed Assessment Agricultural Best Management Practice Implementation
- **Bone Lake:** Southeast Wetland Restorations, Subwatershed Assessment Agricultural Best Management Practice Implementation, Northeast Legacy Wetland Restoration, Fish Barrier Retrofits, Bone Lake South Property Acquisition
- **Shields Lake:** Stormwater Reuse Project, Whole-Lake Alum Treatment, City Park Shoreline Restoration
- **Forest Lake:** Hilo Lane Iron Enhanced Sand Filter Project, Wetland Treatment Basin/3rd Lake Pond Project, Castlewood Cropland Conversion, County Road 50 Iron Enhanced Sand Filter, Washington Judicial Ditch 6 Wetland Restoration, Forest Lake Internal Load Feasibility Study, Forest Lake Alum Treatment, North Shore Trail Nature Area Acquisition and Restoration
- **School Lake/Little Comfort Lake:** July Avenue Feedlot
- **Comfort Lake:** Sunrise River/Highway 61 (Tax Forfeit) Wetland Restoration, Target Stormwater Retrofits Project, Bixby Park Water Quality Project
- **Multiple Lakes:** Enhanced Street Sweeping – partnership effort with CLFLWD, Washington Conservation District, Carnelian-Marine-St. Croix WD, Cities of Forest Lake, Wyoming, Scandia; GreenCorps Host Site – shoreline program outreach; Aquatic Invasive Species Prevention & Management grants

³ Grant awards do not necessarily equate to actual grant income for the fiscal year.

Clean Water Fund

In December 2023 the District was awarded a FY2024 Clean Water Fund Projects & Practices grant to implement a water quality improvement project (Table 5).

Table 5. FY2024 Projects & Practices Grant Award

| Grant ID and Project | Application Score | Application Ranking | Grant Request | Grant Award |
|------------------------------|-------------------|---------------------|---------------|-------------|
| C24-0002 July Avenue Feedlot | 88.5 | 11 th | \$90,000 | \$90,000 |

Statewide, the District is the biggest winner of Clean Water Fund Project and Practices grants over the past 11 years with a cumulative award of \$5.1 million (15 grants awarded between FY14-24). Additionally, CLFLWD proposals have been awarded the second most cumulative points by the grants review committee over the years. The grant review committee assigns points to each application according to predetermined scoring criteria which mainly focused on prioritization, targeting, measurability and cost-effectiveness. This means that the District’s projects have not merely had the highest requested dollar amounts over the years, but have consistently ranked highly in project quality and applicability to the grant program criteria. Table 6 compares cumulative grant dollars and application points for the top 10 dollars winners since 2014. See also Appendix B for more detail.

Table 6. Clean Water Fund Projects and Practices Grant Award Comparison (Top 10)

| | Organization | Grant Dollars Awarded Total Projects and Practices (FY 2014-2024) | Application Points Total Projects and Practices (FY2014-2024) |
|----------|------------------------------------|---|---|
| 1 | Comfort Lake-Forest Lake WD | \$5,157,334 | 1,286 |
| 2 | Becker SWCD | \$4,433,710 | 868 |
| 3 | Benton SWCD | \$3,658,210 | 1,010 |
| 4 | Bois de Sioux WD | \$3,355,010 | 504 |
| 5 | Crow Wing SWCD | \$3,335,000 | 519 |
| 6 | Vermillion River JPB/JPO | \$2,953,950 | 927 |
| 7 | Chisago SWCD | \$2,952,500 | 1,337 |
| 8 | Rice Creek WD | \$2,732,104 | 438 |
| 9 | Coon Creek WD | \$2,469,023 | 611 |
| 10 | Stearns SWCD | \$2,369,737 | 592 |

3010 Operations and Maintenance

3010 Program Goals

- **Goal 1:** Ensure all District projects and facilities achieve their designed lifespan.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 2:** Develop a Comprehensive Operations & Maintenance Plan.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 3:** Complete inspections and maintenance in accordance with the Comprehensive Operations & Maintenance Plan.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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3010 Progress Evaluation Metric

Success in the Operations & Maintenance Program will be measured by achieving the designed lifespan of each project and facility. It will also be measured by the development of a Comprehensive Operations & Maintenance Plan and by the successful implementation of activities included therein. The District will annually prepare a summary of actual inspections and maintenance activities in comparison to scheduled inspections and maintenance activities.

3010 Evaluation in 2023

- **Goal 1:** Ensure all District projects and facilities achieve their designed lifespan.
 - **2023 Evaluation:** Inspected and maintained all District projects and facilities to ensure they are performing as designed and expected to achieve their designated lifespan. Projects and facilities include fish barriers, aeration systems, wetland restorations, water level control structures, iron enhanced sand filters, stormwater reuse system, and District-owned/maintained properties.
- **Goal 2:** Develop a Comprehensive Operations & Maintenance Plan.
 - **2023 Evaluation:** The District has a Comprehensive Operations & Maintenance Plan which inventories projects and guides O&M inspections and activities. Each project also has an individual O&M plan with greater detail. The Plan will be updated as new projects and facilities are constructed. Permitted best management practices (BMPs) are under the ownership of the maintenance instrument holders; see Section 3002 of this report for an evaluation of permitted BMP inspections and maintenance.
- **Goal 3:** Complete inspections and maintenance in accordance with the Comprehensive Operations & Maintenance Plan.
 - **2023 Evaluation:** The District completed inspections and maintenance in accordance with the Comprehensive Operations & Maintenance Plan in 2023.

3011 Aquatic Invasive Species Prevention & Management

3011 Program Goals

- **Goal 1:** Continue use and refinement of the District’s prevention and early detection & rapid response initiatives to reduce the risk of new invasive species introductions to District waterbodies and prevent the spread of existing infestations to other waterbodies.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 2:** Manage existing populations of AIS to reduce internal phosphorus loading.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 3:** Manage existing populations of AIS to improve native plant diversity by managing AIS populations that pose a risk to native plant health.

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|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 4:** Ensure ecological integrity is protected by providing guidance and technical support to other organizations and residents who manage AIS for recreational benefits.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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3011 Progress Evaluation Metrics

- Success in preventing the spread of new and existing aquatic invasive species (AIS) populations will be measured by employing watercraft inspectors at public launches for at least 3,500 hours per year; performing at least 12 other AIS education and outreach activities per year such as distribution of information, events and meeting attendance; performing at least one early detection survey per week at each public boat launch during the open water season; and performing at least one invasive plant delineation survey per species per year on each lake in accordance with the Comprehensive AIS Prevention & Management Plan.
- Success in managing existing populations of AIS to improve water quality will be measured by maintaining carp densities below their adverse impact threshold (100 kg/ha) and controlling curly-leaf pondweed in areas exceeding moderate growth conditions (100-280 stems/m²). The District will coordinate with MN Department of Natural Resources to perform carp population surveys. The District will perform annual curly-leaf pondweed delineation surveys in lakes with known nuisance populations.
- Success in managing existing populations of AIS to improve native plant diversity will be measured by maintaining AIS densities below their adverse impact thresholds which will be described in the Comprehensive AIS Prevention and Management Plan. As part of this Plan, the District will establish adverse impact thresholds which will factor in ecological integrity (e.g., impacts to native plant and animal populations) and public recreation (e.g., impacts to swimming/boating etc.).
- Success in providing guidance and technical support to those who manage AIS for recreational benefits will be measured by attending at least one meeting of each lake association per year and performing at least two education and outreach activities per year such as distribution of information. An example of such information distribution may be dissemination of native plant protection facts via emails to lake associations and social media postings at the beginning of open water season.

3011 Evaluation in 2023

- **Goal 1:** Continue use and refinement of the District’s prevention and early detection & rapid response initiatives to reduce the risk of new aquatic invasive species (AIS) introductions to District waterbodies and prevent the spread of existing infestations to other waterbodies.
 - **2023 Evaluation:** No new AIS introductions were observed in 2023, despite several boaters coming from lakes with spiny waterflea and starry stonewort. Prevention, early detection and rapid response initiatives in 2023 included:
 - **Watercraft Inspections:** 3,934 watercraft inspection hours performed in 2023 at District boat launches including Bone Lake, Comfort Lake, and Forest Lake. Exceeded goal of 3,500 hours per year. Inspectors performed 7,903 inspection surveys over the course of the season. Surveys found that 68 watercrafts arriving at District lakes required removal of the bilge drainage plug. This is up from 29 in 2022.
 - **Outreach Activities:** Over 27 AIS education and outreach activities performed in 2023 including: attended 4 lake association meetings and sent 9 monthly update emails to lake association presidents with information on current AIS activities, posted 2 AIS-related posts on Facebook, posted all AIS treatment public notices on the District’s website, handed out AIS informational materials at 10 Forest Lake Arts in the Park events, mailed an informational postcard regarding flowering rush to 891 Forest Lake residents, gave watercraft inspectors 10 different informational items to hand out at boat launches including lake info pamphlets, AIS identification cards, herbicide treatment notices, and job advertisements.
 - **Early Detection Surveys:** The lead watercraft inspector performed at least 1 early detection survey per week at each public boat launch during the open water season. All watercraft inspectors were trained on performing such surveys, but the lead inspector was tasked with performing these surveys routinely.
 - **AIS Delineations:** Performed at least one invasive plant delineation survey per species per year on each lake in accordance with the Comprehensive AIS Prevention & Management Plan. A list of delineation surveys is provided below. The Comprehensive AIS Prevention & Management Plan is still in draft form and will be finalized in 2024.
- **Goal 2:** Manage existing populations of AIS to reduce internal phosphorus loading.
 - **2023 Evaluation:** The District coordinated treatment of a cumulative 64.62 acres of curly-leaf pondweed in 2023 on Forest Lake and Shields Lake. This is estimated to result in a phosphorus reduction in the range of 65 to 450 pounds. Depending on growth density, curly-leaf pondweed is estimated to result in an annual phosphorus release between one and seven pounds per acre (McComas).
- **Goal 3:** Manage existing populations of AIS to improve native plant diversity by managing AIS populations that pose a risk to native plant health.
 - **2023 Evaluation:** The District treated a combined total of 84.28 acres of curly-leaf pondweed, flowering rush, and purple loosestrife in 2023. The MN Department of Natural Resources (DNR) regulates treatment of AIS. DNR’s goal of invasive plant management is to minimize harmful effects caused by invasive plants while also protecting the natural resources and their use in the State. CLFLWD adheres to DNR regulations with all of its AIS treatments in order to avoid undue harmful impacts to native aquatic plants. The District coordinates with DNR on the scheduling and performance of fish surveys within District lakes in order to keep track of both native and invasive fish populations.
- **Goal 4:** Ensure ecological integrity is protected by providing guidance and technical support to other organizations and residents who manage AIS for recreational benefits.
 - **2023 Evaluation:** District staff attended lake association meetings and provided technical input on 2023 Eurasian watermilfoil treatments on Forest Lake and Comfort Lake. All herbicide treatments are reviewed and regulated by the MN Department of Natural Resources. The Bone Lake Association did not treat Eurasian watermilfoil on Bone Lake in 2023.

Additional Information - Reports

District staff presented monthly aquatic invasive species (AIS) Updates at board meetings throughout most of 2023. The latest report can always be found on the District's website: www.clflwd.org.

The following yearend reports and summaries were completed for the year 2023:

- District-Wide: AIS Program Yearend Summary and Watercraft Inspection Program Yearend Report
- Moody Lake: Curly-leaf Pondweed Delineation & Assessment (including full point-intercept survey as required for Natural Environment Lakes)
- Bone Lake: Curly-leaf Pondweed and Eurasian Watermilfoil Delineation & Assessment, Zebra Mussel and Starry Stonewort Search, plus a separate lake-wide Point-Intercept Survey
- Little Comfort Lake: Curly-leaf Pondweed Survey
- Lake Keewahtin: AIS Detection Survey (including observations of curly-leaf pondweed and purple loosestrife)
- Shields Lake: Curly-leaf Pondweed Delineation & Assessment (including full point-intercept survey as required for Natural Environment Lakes)
- Forest Lake: Curly-leaf Pondweed and Eurasian Watermilfoil Delineation & Assessment, Flowering Rush Delineation & Assessment, plus a separate lake-wide Point-Intercept Survey
- Comfort Lake: Curly-leaf Pondweed and Eurasian Watermilfoil Delineation & Assessment, plus a separate lake-wide Point-Intercept Survey

Prevention – Watercraft Inspections

It is generally recognized that the most effective strategy against invasive species is to prevent their introduction and establishment. Therefore, preventing the spread of invasive species is the primary objective of the District's AIS Prevention and Management Program. Through the watercraft inspection program, the District aims to educate as many boaters as possible and empower them to take steps to prevent the spread of AIS.

In 2023, there were **7,903 inspection surveys** performed **3,934 hours** at public accesses within the CLFLWD, which includes three accesses on Forest Lake, one on Bone Lake, and one on Comfort Lake. This includes inspections by the MN Department of Natural Resources, the CLFLWD-Chisago County joint program, and locally hired CLFLWD inspectors. Figure 10 shows the total number of inspection hours per public access in 2023. Figure 11 summarizes the District-wide total inspection hours and number of inspections performed each season since 2014.

Inspection Hours at Each Access And % Of Total Hours (DNR Hours Included)

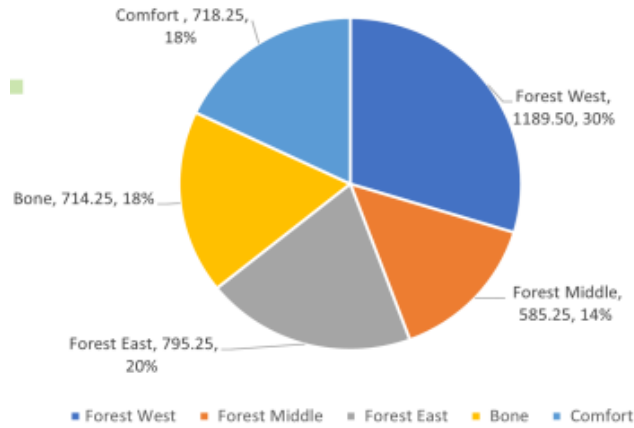


Figure 10. 2023 Inspection Hours per Access

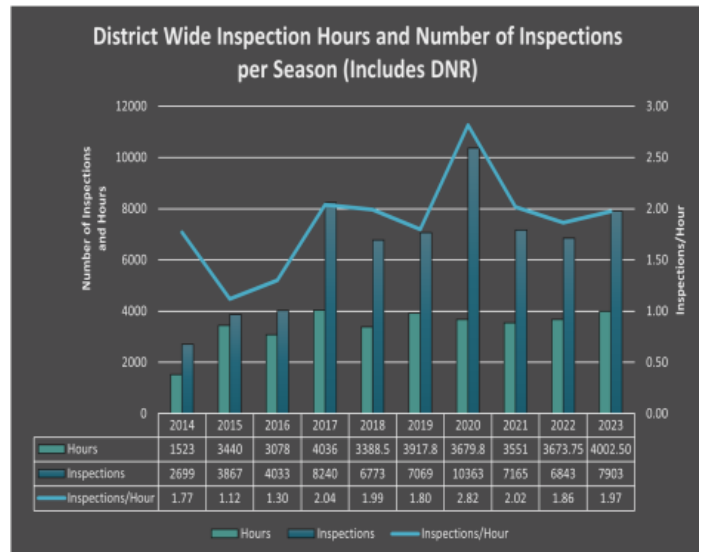


Figure 11. CLFLWD Inspection Hours, Number of Inspections, and Inspection Rate (2014-2023)

Inspection numbers vary each year, but overall show an increasing trend compared to when the program began (i.e., less than 800 hours in 2010). A major factor in the District’s ability to perform more inspection surveys and hours at accesses is funding, which comes from multiple sources such as local tax levy, grants, and partner organization contributions. In 2023, the District’s watercraft inspection program received funding contributions from the following sources: Washington County AIS Prevention Aid, Chisago County AIS Prevention Aid, City of Forest Lake, City of Scandia, Bone Lake Association, Comfort Lakes Association, Scandia-Marine Lions Club, and the District’s tax levy. Figure 12 summarizes program spending for each lake over the past seven years.

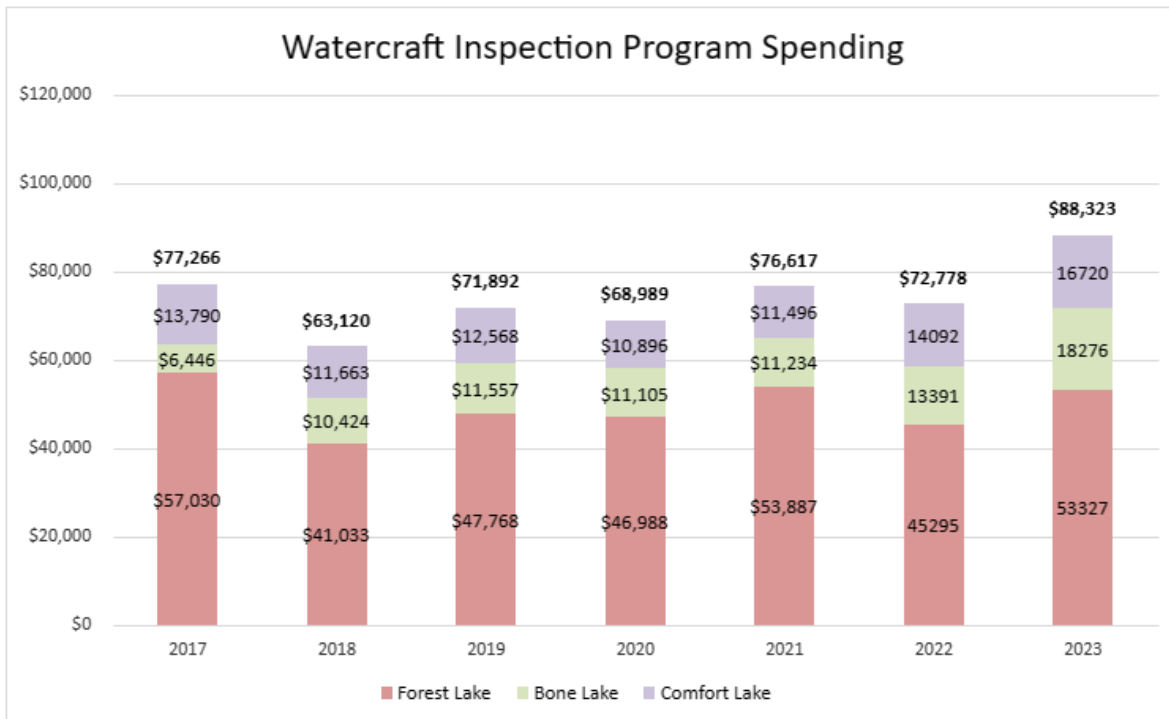


Figure 12. Watercraft Inspection Program Spending per Year per Lake

Management – Invasive Plant Control

The “management” aspect of the AIS Prevention and Management Program aims to holistically manage aquatic invasive species in District lakes with a view toward the overall health of the waterbody. Policies and goals in the CLFLWD Watershed Management Plan are designed around the ecological integrity of water resources within the District. Accordingly, the District’s involvement in the long-term management of AIS present is based on the benefit to ecological systems.

One of the ways that invasive species can negatively impact a waterbody is through uncontrolled growth then subsequent die-off and phosphorus release. Specially, curly-leaf pondweed follows this pattern. In the early summer months, it can grow to high densities and vast acreages. Then, in mid-summer it will die off and decompose, releasing phosphorus into the water column which promotes algae growth and reduces water quality. Depending on growth density, curly-leaf pondweed is estimated to result in an annual phosphorus release **between one and seven pounds per acre** (McComas). For lakes with large acreages of dense growth, this amount of phosphorus release can be significant. By managing curly-leaf pondweed in its lakes, the District aims to prevent phosphorus release and preserve water quality. While other species such as Eurasian watermilfoil and flowering rush do not have such a direct impact on water quality, they can negatively impact recreational suitability, and in severe cases limit the ability for some native plants and animals to thrive.

For the past several years the District contracted with Blue Water Science to survey aquatic plant growth, including aquatic invasive species. It is both time- and cost-prohibitive to perform a detailed point-intercept survey for each species on each lake every year. Natural Environment Lakes, including Moody Lake and Shields Lake, are required to have a full point-intercept survey performed prior to herbicide treatments. General Development and Recreational Development Lakes, including Bone Lake, Forest Lake, and Comfort Lake, do not have such strict requirements. For these lakes, Blue Water Science delineates nuisance growth areas using a meander survey. These areas are then considered by District staff for treatment. While this information is not always an exact measurement of invasive plant coverage, it is useful in understanding general growth trends over time. Below, Figure 13 shows the delineated acreage of nuisance growth that was considered for treatment. Figure 14 shows the actual acreage that was treated by the District. Treatments by private homeowners or other organizations may have occurred in some cases and are not documented here.

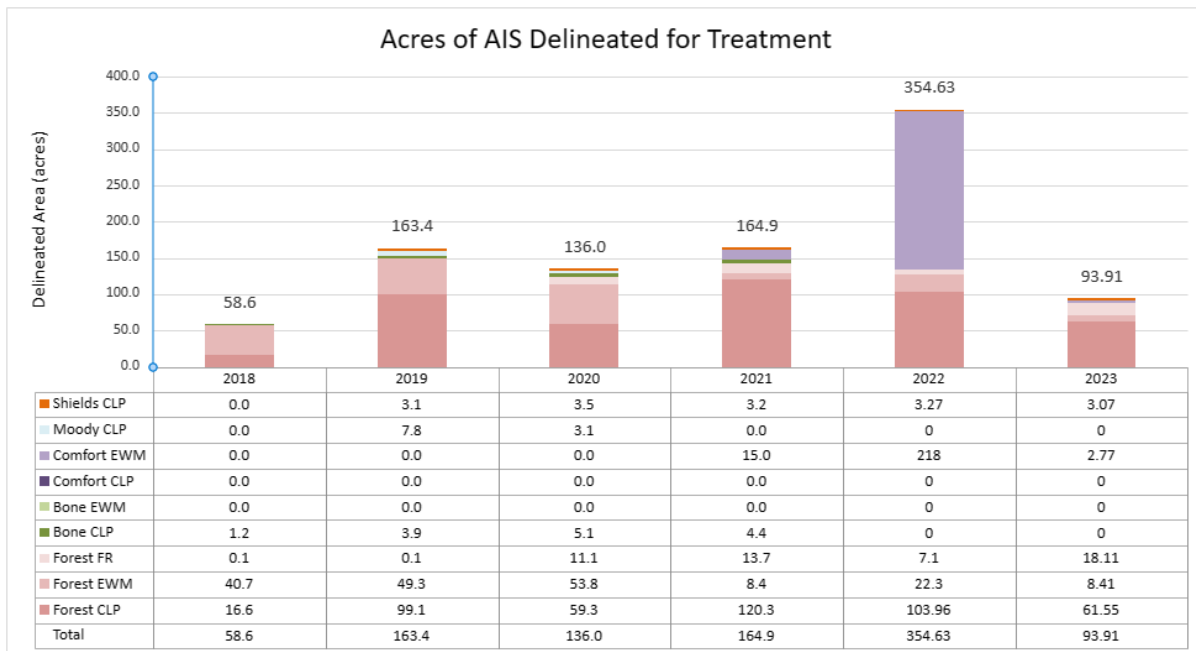


Figure 13. Acres of AIS Delineated by Blue Water Science for Treatment

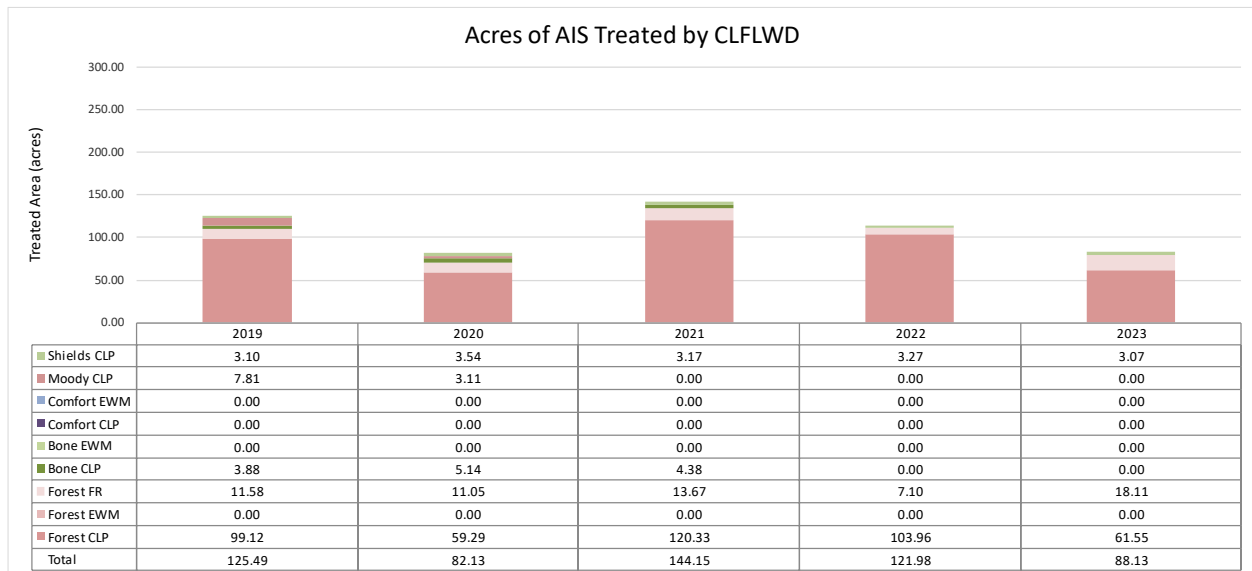


Figure 14. Acres of AIS Treated by the District⁴

AIS coverage in District lakes varies year to year based on a variety of conditions. As illustrated in the figures above, one of the main contributors to the district-wide total AIS coverage is typically Forest Lake curly-leaf pondweed, which is well established throughout the lake and fluctuates widely from year to year. It is hypothesized that late ice-out and early spring snows caused a significant reduction in curly-leaf pondweed growth in 2018. Curly-leaf pondweed follows an earlier growth schedule compared to most aquatic plants and is therefore more susceptible to early spring condition variations than other plants. Snow cover on top of lake ice reduces the amount of sunlight reaching aquatic plants underneath, thus reducing their growth in early spring.

The District has generally been limited to achieving seasonal control of AIS, with new and existing patches growing and re-growing year after year. One exception to this trend is Forest Lake flowering rush. An aggressive annual treatment program of Forest Lake flowering rush began in 2014. That year, flowering rush was surveyed across Forest Lake’s middle (a.k.a. 2nd Lake) and east (a.k.a. 3rd Lake) basins, covering an estimated 340,740 square feet (almost 8 acres). With annual financial assistance from a variety of grants and partner agencies, the CLFLWD coordinated two or more herbicide treatments per year along with hand cutting of small patches in 2016 and flower removal in 2016-2023. The variety of flowering rush present in Forest Lake is different from other populations in the state of Minnesota in that it can spread in two ways: via rhizomes in the roots and viable seeds in the flowers. The flower cutting method aims to prevent propagation via seeds and appears to be effective at preventing new patches from occurring. Figure 15 shows the surveyed flowering rush growth year by year. Typically, two surveys occur each year: one pre-treatment and one post-treatment. It should be noted that herbicide impacts to native plants are taken into consideration with every round of treatment. Native plants are surveyed alongside flowering rush and the District is careful to avoid beds of native plants during herbicide treatments when feasible.

⁴If multiple treatments occurred, the acreages are added together for a total amount treated (e.g., two rounds of treatment of flowering rush occurred in 2017 (40.2 acres and 31.1 acres), which equate to a combined 71.3 acres).

While CLFLWD contracted to have delineation and assessment surveys performed for Eurasian watermilfoil (EWM) in District lakes, treatments were performed in 2021 by the following entities: Forest Lake (8 acres treated by Forest Lake Lake Association and City of Forest Lake), Comfort Lake (15 acres treated by Comfort Lakes Association).

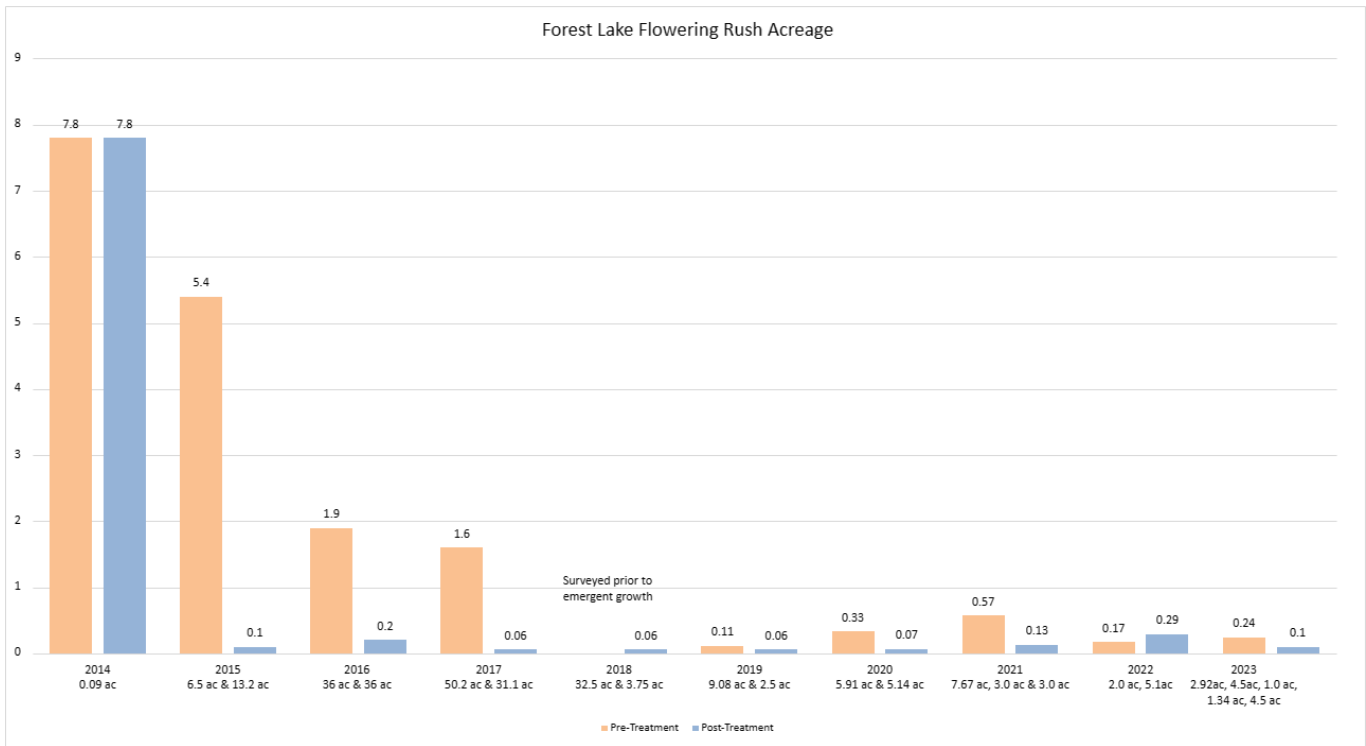


Figure 15. Forest Lake flowering rush acreage as surveyed by Blue Water Science

3012 Land Acquisition & Management

3012 Program Goals

- **Goal 1:** Implement the Land Acquisition & Management Program to cost-effectively support District capital projects and programs.

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|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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3012 Progress Evaluation Metric

Success in using this program will be judged by a qualitative assessment of how the District has used it for cost-effective support of its capital projects and programs, and in collaboration with its cities and towns in pursuit of complementary public goals. Each year, the District administrator will report to the Board of Managers on the implementation of management plans; carrying costs; and recommendations for potential project siting, continued holding or disposition of District properties.

3012 Evaluation in 2023

- **Goal 1:** Implement the Land Acquisition & Management Program to cost-effectively support District capital projects and programs.
 - **2023 Evaluation:** In 2021 the District researched several properties that align with District goals and objectives including shoreland preservation, wetland protection/restoration, native plant species protection, education and outreach, and placement of a new District office space. In early 2022 the District closed on one of the properties that it had evaluated the year prior – Cranberry Lake Channel Property. This is a 19-acre parcel with shoreline frontage on the north side of Forest Lake’s east basin (“3rd Lake”). The District’s acquisition of this parcel means protection of approximately 2-3 acres of mature forested upland, 16 acres of wetland and over 3,000 feet of undeveloped shoreline, all of which provide significant habitat for a variety of terrestrial and aquatic species. The District obtained a Conservation Partners Legacy grant in the amount of \$400,000 which funded the majority of the acquisition cost.

3013 Watershed Planning & Resiliency

3013 Program Goals

- **Goal 1:** Incorporate climate and flooding resiliency into annual District planning and budgeting efforts.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 2:** Develop an emergency response plan for the District.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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3013 Progress Evaluation Metric

Progress in the Watershed Planning & Resiliency Program will be measured by the inclusion of resiliency planning information in the District’s annual planning and budgeting process, and by the development and implementation of an emergency response plan.

3013 Evaluation in 2023

- **Goal 1:** Incorporate climate and flooding resiliency into annual District planning and budgeting efforts.
 - **2023 Evaluation:** The District began to evaluate flood hazards with local communities in 2022 and continued that work in 2023. The Floodplain Vulnerability Assessment will continue into 2024 with further community engagement, prioritization, and final reporting.
- **Goal 2:** Develop an emergency response plan for the District.
 - **2023 Evaluation:** In progress. Completion of the Floodplain Vulnerability Assessment will inform development of the emergency response plan.

5000 SERIES- PROJECTS

5100 Floodplain

5100 10-Year (2031) Measurable Goals

- **Goal 1:** Reduce or mitigate flooding in areas with known flooding and/or high water problems by achieving the interim measurable goal of increasing water storage by an additional 99 ac-ft (or 0.16 inches over 7,397 acres of upland) over the next 10 years (2022-2031) based on the Lower St. Croix 1W1P. The District will determine LMD-specific measurable goals from modeling floodplain conditions under future rainfall scenarios.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 2:** Maintain and improve community preparedness and emergency response capacity to flooding and/or high water problems by sharing floodplain modeling and mapping results under future climate conditions with counties and District communities.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
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Table 7. Floodplain Goal and Starting Point

| Water Resource | Parameter | 2021 Starting Point | 10-year (2031) Measurable Goal |
|----------------------------|---------------------|---------------------|--------------------------------|
| Floodplain (District-Wide) | Increase in Storage | 65 ac-ft | ≥99 ac-ft |

5100 Progress Evaluation Metrics

- 99 ac-ft of storage added District-wide.
- Floodplain Vulnerability Assessment and hydrologic & hydraulic (H&H) modeling completed; results provided to counties and District communities.
- Annual check-in with District communities’ vulnerability planning.

5100 Evaluation in 2023

- **Goal 1:** Reduce or mitigate flooding in areas with known flooding and/or high water problems by achieving the interim measurable goal of increasing water storage by an additional 99 ac-ft (or 0.16 inches over 7,397 acres of upland) over the next 10 years (2022-2031) based on the Lower St. Croix 1W1P. The District will determine LMD-specific measurable goals from modeling floodplain conditions under future rainfall scenarios.
 - **2023 Evaluation:** Storage added prior to 2021 (65 ac-ft) is not counted toward the 99 ac-ft goal. Completed and in-progress projects, which count toward 99 ac-ft goal include:
 - Tax Forfeit Wetland Restoration: 26.3 ac-ft (project completed in 2023)
 - Bone Lake Northeast Legacy Wetland Restoration: 3.5 ac-ft (project completed in 2022)
 - WJD-6 Wetland Restoration: 8.7 ac-ft (project to be completed in 2024)
 - Moody Lake Capstone Projects: 1.3 ac-ft (project to be completed in 2024)
 - **Total: 39.8 ac-ft**

Additional projects in development:

- Bone Lake South Property Acquisition & Wetland Restoration: TBD up to 300 ac-ft
- Regional Stormwater Treatment Facility: TBD
- The District will continue project identification to target water storage projects

- **Goal 2:** Maintain and improve community preparedness and emergency response capacity to flooding and/or high water problems by sharing floodplain modeling and mapping results under future climate conditions with counties and District communities.
 - **2023 Evaluation:** The District began the process of completing a comprehensive floodplain vulnerability assessment including preliminary meetings with board members, staff, engineers, and communities. This initiative will continue in 2022. Also in 2022, the District will update the H&H model for the Little Comfort Lake subwatershed and remaining portions of the Forest Lake subwatershed, completing the H&H model update District-wide. Other portions of the H&H model that have been updated were shared with municipalities – shared with City of Forest Lake for regional treatment planning and downtown joint study; shared with MN Dept. of Transportation and Chisago County for planning related to Highway 8 reconstruction project which is still in the planning phase.

5200 Lakes – District Wide

This section describes progress made toward lake water quality goals as of 2020 (benchmark year with respect to watershed management plan goals), with a focus on in-lake water quality. The goals described are those set forth in the 2022-2031 Watershed Management Plan, which was adopted September 23, 2021.

The District’s science-based diagnostic monitoring and commitment to using economic principles are the main drivers for the District’s success restoring lakes to pre-development conditions within a short timeframe. As of 2020, five of the seven lakes that were previously impaired for excess nutrients are meeting state water quality standards, three lakes are meeting or very close to meeting pre-settlement water quality conditions, and all the major District lakes have improving trends in at least one measure of water quality. The 2012-2021 Plan set incremental goals of 2020, 2030 and 2040 for achieving pre-development conditions in the major District lakes. Based on the successful use of adaptive management, diagnostic monitoring and cost-benefit analysis, the District expects to achieve pre-settlement conditions in the major District lakes by 2031. In other words, what were previously the District’s 2040 goals, are now its 2031 goals. The 2019 Progress Report showed several lakes achieving 2020 and 2030 goals, but only one met the 2040 goal (Lake Keewahtin). The 2020 Progress Report shows that most lakes are not meeting their 2031 goals. When comparing the two reports, it may look as though lakes are no longer achieving goals. This is not because lakes have gotten worse, but because goals have gotten more ambitious (shorter timeframe to achieve).

5200 10-Year (2031) Measurable Goals

- **Goal 1:** Adaptively manage District lakes to reduce phosphorus loads and de-list impaired lakes with Total Maximum Daily Loads (TMDLs) to achieve state water quality eutrophication standards (total phosphorus, chlorophyll-a and Secchi).

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 2:** Adaptively manage District lakes to improve water quality by achieving the 10-year (2031) total phosphorus and Secchi goals.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 3:** Partner with agencies to manage District lakes for healthy fish and aquatic plant communities.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
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- **Goal 4:** Establish bottom water chloride trends in District lakes and provide resources to salt applicators on ways to reduce chloride inputs.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
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- **Goal 5:** Promote natural, deep rooted, native vegetation buffers to ensure at least 75% of lakeshore parcels have at least 75% natural shoreline condition. For example, in its last shoreline survey 55% of parcels on Bone Lake were covered in at least 75% natural shoreline vegetation; the goal is to ensure 75% of parcels are vegetated thusly.

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| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
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Table 8. Lake Goals and Progress

| Water Resource | Parameter | 2021 Starting Point | 10-year (2031) Measurable Goal |
|--|--|-------------------------|--------------------------------|
| Moody Lake | 5-Year Mean Phosphorus Concentration | 78 µg/L | ≤40 µg/L |
| | 5-Year Mean Secchi Depth | 2.4 ft | ≥4.6 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | TBD ³ | ≥75% |
| Bone Lake | 5-Year Mean Phosphorus Concentration | 31 µg/L | ≤30 µg/L |
| | 5-Year Mean Secchi Depth | 5.1 ft | ≥7 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | 55% | ≥75% |
| Birch Lake | 5-Year Mean Phosphorus Concentration | 91 µg/L | ≤60 µg/L |
| | 5-Year Mean Secchi Depth | 4.7 ft | ≥3.3 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | TBD ³ | ≥75% |
| School Lake ¹ | 5-Year Mean Phosphorus Concentration | 51 µg/L | ≤40 µg/L |
| | 5-Year Mean Secchi Depth | 3.1 ft | ≥4.6 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | TBD ³ | ≥75% |
| Little Comfort Lake ² | 5-Year Mean Phosphorus Concentration | 49 µg/L | ≤30 µg/L |
| | 5-Year Mean Secchi Depth | 4.5 ft | ≥7 ft |
| | 10-Year Mean Bottom Water Chloride | TBD | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | 82% | ≥75% |
| Shields Lake | 5-Year Mean Phosphorus Concentration | 153 µg/L | ≤60 µg/L |
| | 5-Year Mean Secchi Depth | 2.6 ft | ≥4.26 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | TBD ³ | ≥75% |
| Lake Keewahstin | 5-Year Mean Phosphorus Concentration | 15 µg/L | ≤20 µg/L |
| | 5-Year Mean Secchi Depth | 14.3 ft | ≥10 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | 67% | ≥75% |
| Forest Lake ² | 5-Year Mean Phosphorus Concentration (Average) | 37 µg/L | ≤30 µg/L |
| | <i>Forest West (1st Lake), Middle (2nd), East (3rd)</i> | <i>29, 40, 41 µg/L</i> | |
| | 5-Year Mean Secchi Depth (Average) | 6.2 ft | ≥7 ft |
| | <i>Forest West (1st Lake), Middle (2nd), East (3rd)</i> | <i>5.4, 6.8, 6.4 ft</i> | |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| % of Parcels with ≥75% Natural Shoreline | 27% | ≥75% | |
| Comfort Lake | 5-Year Mean Phosphorus Concentration | 32 µg/L | ≤30 µg/L |
| | 5-Year Mean Secchi Depth | 5.6 ft | ≥7 ft |
| | 10-Year Mean Bottom Water Chloride | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Shoreline | 61% | ≥75% |

¹ Paleolimnological core data collected in 2019 indicate that in-lake phosphorus concentrations under pre-development conditions were 50 µg/L; the Board may pursue a site-specific standard for this lake.

² Paleo cores collected in 2021 to determine if phosphorus conc. of 30 µg/L was achieved under pre-development conditions and is therefore a feasible goal.

³ Data is not available for these resources on the percent of parcels with >75% natural shoreline/streambank. Lake shoreline and streambank goals will be determined following completion of shoreline/streambank inventories (3004A).

⁴Chloride and total suspended solids concentrations will be determined within the first five years of the planning period.

5200 Progress Evaluation Metrics

- Total Maximum Daily Load (TMDL) phosphorus reductions needed to meet State and District Goals.
- Remaining phosphorus load reductions for priority District lakes based on implementation of projects completed or grant-funded through 2020 (benchmark year with respect to watershed management plan goals) to meet long-term goals are as follows:
 - Moody Lake: 169 lb/yr
 - Bone Lake: 50 lb/yr
 - Birch Lake: 323 lb/yr
 - School Lake: 477 lb/yr
 - Little Comfort Lake: 366 lb/yr
 - Shields Lake: 0 lb/yr
 - Lake Keewahtin: 0 lb/yr
 - Forest Lake: 155 lb/yr
 - Comfort Lake: 193 lb/yr
- Fish index of biological integrity (IBI) scores.
- Aquatic point intercept surveys.
- Determine trends in lake bottom water chlorides.
- Number of salt applicators participating in MPCA's Smart Salting training programs.
- Number of landowners contacted.
- Number of workshops.
- Percent shoreline/shoreland in vegetated buffer/natural upland.

5200 Evaluation in 2023 (District-Wide Lakes)

- **Goal 1:** Adaptively manage District lakes to reduce phosphorus loads and de-list impaired lakes with Total Maximum Daily Loads (TMDLs) to achieve state water quality eutrophication standards (total phosphorus, chlorophyll-a and Secchi).
 - **2023 Evaluation:** Most District lakes are showing an improving water quality trend. See District-Wide Lake Water Quality section and individual lake summary pages for detailed analysis of progress toward water quality goals.
- **Goal 2:** Adaptively manage District lakes to improve water quality by achieving the 10-year (2031) total phosphorus and Secchi goals.
 - **2023 Evaluation:** Most District lakes are showing an improving water quality trend. See District-Wide Lake Water Quality section and individual lake summary pages for detailed analysis of progress toward water quality goals.
- **Goal 3:** Partner with agencies to manage District lakes for healthy fish and aquatic plant communities.
 - **2023 Evaluation:** CLFLWD adheres to MN Department of Natural Resources (DNR) regulations with all of its aquatic invasive species (AIS) treatments in order to avoid undue harmful impacts to native aquatic plants. The District coordinates with DNR on the scheduling and performance of fish surveys within District lakes in order to keep track of both native and invasive fish populations. See Program 3011 AIS Prevention & Management for more information.
- **Goal 4:** Establish bottom water chloride trends in District lakes and provide resources to salt applicators on ways to reduce chloride inputs.
 - **2023 Evaluation:** Chloride trends were not yet established in 2023, but the District will work on establishing trends in 2024.

- **Goal 5:** Promote natural, deep rooted, native vegetation buffers to ensure at least 75% of lakeshore parcels have at least 75% natural shoreline condition. For example, in its last shoreline survey 55% of parcels on Bone Lake were covered in at least 75% natural shoreline vegetation; the goal is to ensure 75% of parcels are vegetated thusly.
 - **2023 Evaluation:** The District created a comprehensive shoreline program in 2023. See Program 3002 Permitting and 3004 Non-Point Source Pollution Abatement for more information.

District-Wide Lake Water Quality

This report quantifies the District’s progress toward achieving its long-term phosphorus load reduction goals through project implementation. Phosphorus loading is a main contributor to lake water quality (phosphorus concentration, Secchi depth). It is estimated that 1 pound of phosphorus can support up to 500 pounds of algae growth. Progress toward reducing phosphorus loads to waterbodies generally results in progress toward achieving water quality goals.

Charts are meant to better assist with visualizing the District’s progress toward its long-term phosphorus reduction goals for each lake. Status charts in this section are reflective of the District’s long-term (2031) estimated phosphorus reduction goals from all loading sources (watershed, upstream lakes, and internal). The figures in these charts and graphs are based on monitoring data collected through 2023 and hydrologic/lake water quality response modeling.

Note that while the information contained in this section can be useful for high-level implementation planning, the data is always associated with some level of uncertainty. Watersheds are dynamic systems that are subject to frequent changes. Annual water monitoring data is subject to many different variables such as weather events and land use changes. Because of this annual variability, multi-year averages are generally used when evaluating progress toward goals. This report attempts to reflect actual conditions as accurately as possible but recognizes the limitations of the data and associated margin of error. The standard margin of error for water quality goals is 10%.

Furthermore, while modeling can be used to estimate phosphorus load reductions for many of the District’s capital improvement projects (e.g., wetland restorations and stormwater basins), some projects have impacts that are more difficult to estimate (e.g., public education projects, regulatory measures, curly-leaf pondweed management). While such projects are difficult to quantify, and therefore would not be reflected in the status charts, they are nonetheless important in protecting and improving water resources. Additional notable projects and programs that have been completed to date, or are ongoing, are listed under some of the bar graph charts below. Some of which are also described in the 3000 – Programs section of this report above.

A table which further summarizes capital improvement project implementation progress can be found in Appendix C.

Example Lake Summary Page

Explanations regarding tables and figures are provided in the following Example Lake Summary Page.

(Example) 2023 Water Quality Grade: lake grade will be outlined in bold borders

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples no not meet the desired threshold | F Most samples do not meet the desired threshold |

(Example) Lake Goals & Status Summary

Table 9. Example Lake Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|---|-----------------------------|-----------------------------|--|
| 5-Year Average Phosphorus Concentration ¹ | (µg/L) micrograms per liter | (µg/L) micrograms per liter | (lb/yr) pounds per year phosphorus load still in need of removal |
| 5-Year Average Secchi Depth ¹ | (ft) feet | (ft) feet | |
| 10-Year Average Bottom Water Chloride ² | (mg/L) milligrams per liter | (mg/L) milligrams per liter | TBD |
| % of Parcels with ≥75% Natural Shoreline ³ | (%) percentage of parcels | (%) percentage of parcels | (%) percentage of parcels without natural shorelines |

¹5-year average phosphorus concentration and Secchi depth goals are based on the summertime (June-September) averages for each of the five most recently-monitored years. While state standards are based on the most recent 10-year summer average, District goals take the most recent 5-year summer average, which is a stricter measure.

²Chloride concentrations for each lake will be determined between 2022-2026.

³Data is not available for some lakes on the percent of parcels with >75% natural shoreline/streambank. Lake shoreline and streambank goals will be determined following completion of shoreline/streambank inventories.

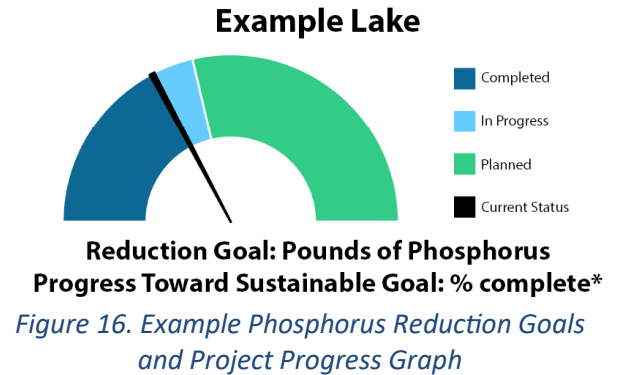
Table 10. Example Lake Phosphorus Reduction Goals

| Watershed Management Plan Code, Lake Name | Phosphorus Reduction (lb/yr) |
|---|---|
| Load Reduction to Achieve Long-term Goal of X µg/L: (based on YEAR benchmark of X µg/L) | Phosphorus reduction needed, compared to benchmark (starting place), for the lake to achieve District long-term sustainable water quality goals (stable natural waterbody state, sometimes stricter than state standards) |
| Load reduction progress through 2023 | Phosphorus reduction achieved between benchmark load date and December 31, 2023 |
| 2023 Remaining Load Reduction | Phosphorus reduction needed, compared to most recent available data, for the lake to achieve District long-term sustainable water quality goals (stable natural waterbody state, sometimes stricter than state standards) |

(Example) Project Implementation Progress

This figure illustrates progress achieving the necessary phosphorus load reductions described in the table above.

- **Completed:** Phosphorus reductions achieved by projects that are completed as of the end of 2020.
- **In Progress:** Reductions that will be achieved by projects that are in progress as of the end of 2023.
- **Planned:** Reductions that will be achieved by projects that are planned, but not yet started, as of the end of 2023.
- **Current Status:** Aligns with completed projects and emphasizes phosphorus reductions achieved by completed projects as of the end of 2023.



*The District bases its water quality goals on historic data, collecting actual lake sediment cores in some cases, in order to determine the water quality level which each lake can sustain in the long-term. In many cases, the District goal exceeds the minimum state water quality standards.

(Example) Progress Toward State Standards

Six CLFLWD priority lakes are on the impaired waters list for nutrients: Moody Lake, Bone Lake, School Lake, Shields Lake, Little Comfort Lake and Comfort Lake. Forest Lake is not listed as impaired for nutrients, but its summertime water quality readings occasionally exceed state standards. The lake summaries for these seven lakes contain an additional section evaluating progress toward meeting State nutrient standards and de-listing (or prevention of being listed) for nutrient impairments. The District’s ultimate goal is to delist impaired waters and prevent unimpaired waters from becoming impaired. In the meantime, an impairment listing, or even being close to the state standard, can put a lake into a higher priority ranking for certain water quality improvement grant programs.

All State water quality standards are based on growing season (June-September) averages. To be removed from the impaired waters list, a lake must meet minimum requirements in the following two categories.

1. **Water Quality Samples:** Meet the phosphorus standard and the chlorophyll-a or Secchi depth standard based on at least 8 samples collected from at least 2 years within the most recent 10-year period. Chlorophyll-a samples are pheophytin-corrected. The MN Pollution Control Agency considers 10-year average phosphorus concentrations in addition to the 2 most recent summer averages and the individual samples of the most recent 2 years.
2. **Trend/Management:** In addition, there must be an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations. The local entity must provide information that details how the response conditions will be met over time for a lake to be de-listed.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.

The most recent 2-year period of data will be outlined in black. Up to eight samples are shown in each table. In some cases, more than eight samples are collected within a single growing season. The summer average includes all samples taken between June-September, but all individual samples may not be shown.

| | | | | | | | | | | |
|--|--|------|------|------|------|---|------|------|------|------|
| Example Lake Phosphorus Deep Lake State Standard $\leq 40 \mu\text{g/L}$ Shallow Lake State Std $\leq 60 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| Summer Average | | | | | | | | | | |
| Samples 1-8. Sample dates vary by year. All samples shown were taken between June-September. | Orange cells indicate samples that do not meet state standards | | | | | Blue cells indicate samples that meet state standards | | | | |

| | | | | | | | | | | |
|--|--|------|------|------|------|---|------|------|------|------|
| Example Lake Secchi Deep Lake State Standard $\geq 4.6 \text{ ft}$ Shallow Lake State Std $\geq 3.3 \text{ ft}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| Summer Average | | | | | | | | | | |
| Samples 1-8. Sample dates vary by year. All samples shown were taken between June-September. | Orange cells indicate samples that do not meet state standards | | | | | Blue cells indicate samples that meet state standards | | | | |

| | | | | | | | | | | |
|---|--|------|------|------|------|---|------|------|------|------|
| Example Lake Chlorophyll-a Deep Lake State Standard $\leq 14 \mu\text{g/L}$ Shallow Lake State Std $\leq 20 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| Summer Average | | | | | | | | | | |
| Samples 1-8. Sample dates vary by year. All samples shown were taken between June-September. | Orange cells indicate samples that do not meet state standards | | | | | Blue cells indicate samples that meet state standards | | | | |

#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

Trend: Phosphorus trend is the criterion necessary for de-listing. Chlorophyll-a and Secchi trends are shown for reference.

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|--------------|---|---|---|
| Example Lake | <p>Significantly Improving Trend</p> <p>Improving Trend</p> <p>Declining Trend</p> <p>Significantly Declining Trend</p> | <p>Significantly Improving Trend</p> <p>Improving Trend</p> <p>Declining Trend</p> <p>Significantly Declining Trend</p> | <p>Significantly Improving Trend</p> <p>Improving Trend</p> <p>Declining Trend</p> <p>Significantly Declining Trend</p> |

Management Activities:

- List of management activities in place, as well as in-progress/future activities

Conclusion:

This section will conclude whether the lake meets de-listing criteria. Once reliable data shows that the lake meets the de-listing criteria, the District may contact the MN Pollution Control Agency to proceed with the de-listing process. The District will consider management activities in place to protect water quality when evaluating lakes for de-listing.



Qualifies for de-listing



To be determined



Does not qualify for de-listing

5221 Moody Lake Summary

(Moody) 2023 Water Quality Grade: B+

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Moody) Lake Goals & Status Summary

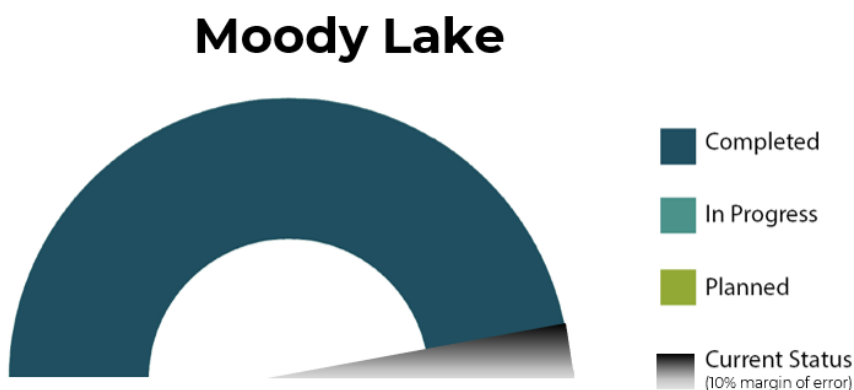
Table 11. Moody Lake Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|--|-----------------|----------------|---------------|
| 5-Year Average Phosphorus Concentration | ≤40 µg/L | 39.8 µg/L | Goal achieved |
| 5-Year Average Secchi Depth | ≥4.6 ft | 4.7 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline | ≥75% of parcels | TBD | TBD |

Table 12. Moody Lake Phosphorus Reduction Goals

| 5221 Moody Lake | Phosphorus Reduction (lb/yr) |
|--|------------------------------|
| Load Reduction to Achieve Long-term Goal of 40 µg/L: (based on 2004 benchmark of 152 µg/L; 10% margin of error = 88 lbs) | 879 |
| Load reduction progress through 2023 | 837 |
| 2023 Remaining Load Reduction (cross-referenced w/ in-lake data and trends) | Goal achieved |

(Moody) Project Implementation Progress



Phosphorus Reduction Goal: 879 lbs
Progress Toward Goal & State Standards: 100%

Figure 17. Moody Lake Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: annual curly-leaf pondweed management, permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

(Moody) Progress Toward State Standards

Moody Lake is nutrient impaired for aquatic recreation.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.



#1 – Water Quality Samples:

Moody Lake is meeting the criteria for phosphorus concentration, but not for Secchi depth nor chlorophyll-a. **Moody Lake does not meet criterion #1 for de-listing. Though, it is very close, and we expect it to meet this criterion by next year.**

| Moody Lake <u>Phosphorus</u> | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Deep Lake State Standard $\leq 40 \mu\text{g/L}$ 10-Year Average: 71 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | 113 | 122 | 104 | 86 | 92 | 60 | 36 | 33 | 36 | 27 |
| Sample 1 | 185 | 79 | 59 | 101 | 73 | 75 | 58 | 30 | 46 | 22 |
| Sample 2 | 220 | 114 | 72 | 107 | 103 | 83 | 24 | 62 | 39 | 13 |
| Sample 3 | 102 | 158 | 130 | 152 | 84 | 67 | 45 | 47 | 51 | 38 |
| Sample 4 | 95 | 175 | 106 | 63 | 153 | 109 | 31 | 55 | 37 | 20 |
| Sample 5 | 78 | 195 | 91 | 68 | 112 | 64 | 34 | 14 | 44 | 24 |
| Sample 6 | 62 | 138 | 117 | 72 | 112 | 57 | 30 | 14 | 26 | 22 |
| Sample 7 | 54 | 89 | 162 | 71 | 41 | 37 | 40 | 11 | 17 | 20 |
| Sample 8 | 44 | 84 | 91 | 54 | 60 | 40 | 32 | 27 | 20 | 34 |

| Moody Lake <u>Secchi</u> | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Deep Lake State Standard $\geq 4.6 \text{ ft}$ 10-Year Average: 3.6 ft | | | | | | | | | | |
| Summer Average | 2.7 | 2.1 | 2.7 | 1.9 | 1.8 | 2.4 | 3.6 | 8.7 | 4.2 | 5.5 |
| Sample 1 | 3.0 | 3.0 | 4.0 | 4.0 | 2.5 | 1.5 | 2.6 | 8.9 | 5.9 | 5.6 |
| Sample 2 | 1.5 | 3.5 | 3.0 | 1.0 | 1.0 | 2.0 | 4.3 | 8.5 | 5.6 | 4.6 |
| Sample 3 | 2.5 | 1.5 | 2.0 | 1.2 | 1.5 | 1.7 | 2.0 | 7.2 | 4.9 | 3.3 |
| Sample 4 | 2.0 | 1.0 | 2.5 | 1.5 | 0.5 | 0.8 | 3.6 | 7.9 | 3.6 | 5.6 |
| Sample 5 | 2.0 | 2.0 | 2.0 | 1.5 | 1.2 | 1.5 | 3.3 | 7.2 | 3.0 | 5.6 |
| Sample 6 | 3.0 | 1.5 | 1.5 | 2.0 | 1.0 | 1.0 | | 7.2 | 3.3 | 7.5 |
| Sample 7 | 3.0 | 1.5 | 3.0 | 2.0 | 3.5 | 4.0 | 5.2 | 9.8 | 4.3 | 5.6 |
| Sample 8 | 3.5 | 1.5 | 3.0 | 2.0 | 3.5 | 2.0 | 3.9 | 12.5 | 5.2 | 7.2 |

| Moody Lake <u>Chlorophyll-a</u> | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|
| Deep Lake State Standard $\leq 14 \mu\text{g/L}$ 10-Year Average: 37 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | 45 | 59 | 42 | 44 | 77 | 41 | 22 | 4 | 24 | 9 |
| Sample 1 | 36 | 46 | 28 | 22 | 34 | 60 | 33 | 3 | 8 | 7 |
| Sample 2 | 110 | 17 | 38 | 80 | 110 | 45 | 11 | 5 | 11 | 16 |
| Sample 3 | 61 | 67 | 48 | 66 | 73 | 63 | 41 | 4 | 23 | 21 |
| Sample 4 | 41 | 110 | 30 | 72 | 130 | 45 | 17 | 2 | 20 | 6 |
| Sample 5 | 51 | 67 | 47 | 34 | 84 | 19 | 27 | 7 | 20 | 7 |
| Sample 6 | 45 | 69 | 74 | 27 | 93 | 46 | 23 | 5 | 20 | 6 |
| Sample 7 | 33 | 65 | 44 | 30 | 43 | 22 | 9 | 5 | 11 | 4 |
| Sample 8 | 23 | 47 | 33 | 24 | 30 | 54 | 17 | 1 | 8 | 4 |

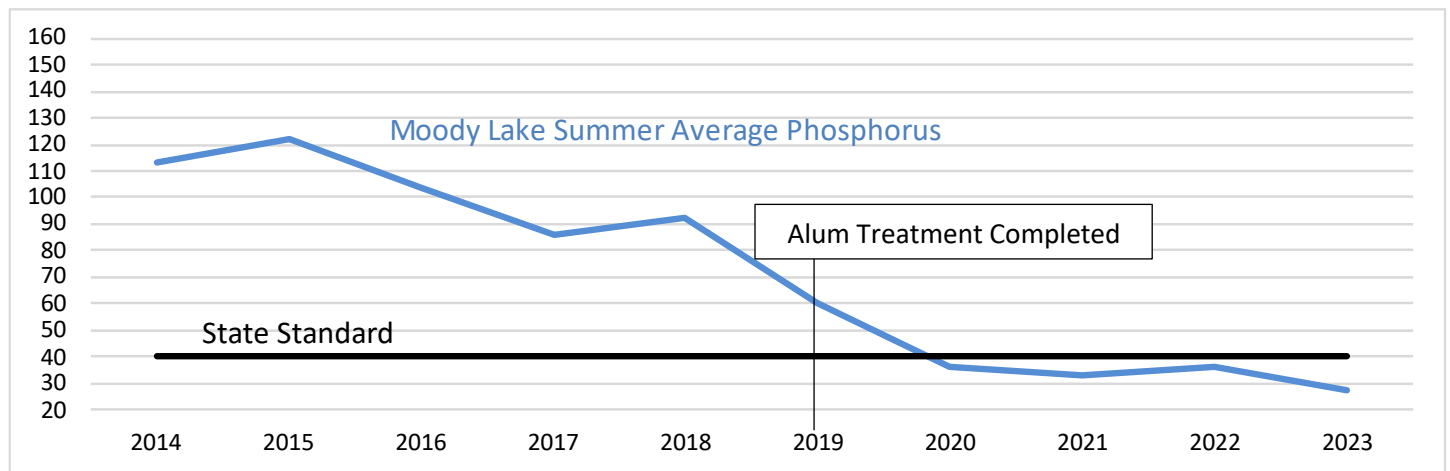
#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

✓ **#2 Trend/Management:**
 Management activities are in place to maintain improved chlorophyll-a and Secchi observations in Moody Lake. The phosphorus trend is improving. **Moody Lake meets criterion #2 for de-listing.**

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|------------|---|----------------------------|----------------------------|
| Moody Lake | Significantly Improving Trend Since 2013 | Improving Trend Since 2005 | Improving Trend Since 2005 |

**Trends that are not "significantly" improving or declining are not statistically significant.*



Management Activities:

- Wetland Restoration Projects (445 lb/yr phosphorus reduction)
- Whole Lake Alum Treatment (324 lb/yr phosphorus reduction, completed in 2019 – split application '18 and '19)
- Rough Fish Harvest (performed in 2009)
- Winter Aeration System (operated annually by CLFLWD)
- Downstream Fish Barrier at Bone Lake Inlet (operated annually by CLFLWD)
- Curly-leaf Pondweed Treatments (performed annually by CLFLWD)
- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)
- Moody Lake Agricultural Practices and Farmer Led Council (ongoing)
- Moody Lake Capstone Projects (58 lb/yr phosphorus reduction)

✘ **Conclusion:**
Moody Lake does not qualify for de-listing at this time, but it is very close. Once Secchi and/or chlorophyll-a summer averages meet state standards two years in a row, the District can proceed with de-listing discussions with MN Pollution Control Agency. The District will continue to collect at least 8 water quality samples each year, analyze trends, and complete implementation and O&M of water quality improvement projects. We expect to see this criterion met within the next year.

5222 Bone Lake Summary

(Bone) 2023 Water Quality Grade: B

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Bone) Lake Goals & Status Summary

Table 13. Bone Lake Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|--|--------------------------------|------------------------------|------------------------------|
| 5-Year Average Phosphorus Concentration | ≤30 µg/L | 25.1 µg/L | P reduction goal achieved |
| 5-Year Average Secchi Depth | ≥7 ft | 5.8 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline Source: 2023 Shoreland Inventory | ≥75% of parcels ≥69 parcels | 53% of parcels 49 parcels | 22% of parcels 20 parcels |

Table 14. Bone Lake Phosphorus Reduction Goals

| 5222 Bone Lake | Phosphorus Reduction (lb/yr) |
|--|------------------------------|
| Load Reduction to Achieve Long-term Goal of 30 µg/L: (based on 2004 benchmark of 60 µg/L; 10% margin of error = 78 lbs) | 786 |
| Load reduction progress through 2023 | 821 |
| 2023 Remaining Load Reduction (cross-referenced w/ in-lake data and trends) | Goal achieved |

(Bone) Project Implementation Progress

Bone Lake



Phosphorus Reduction Goal: 786 lbs
Progress Toward Goal & State Standards: 100%

Figure 18. Bone Lake Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: cost-share projects, annual curly-leaf pondweed management, permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

(Bone) Progress Toward State Standards

Bone Lake is nutrient impaired for aquatic recreation, mercury impaired, and fish bioassessments impaired.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.



#1 – Water Quality Samples:

Bone Lake is meeting the criteria for phosphorus concentration, Secchi depth, and chlorophyll-a. **Bone Lake meets criterion #1 for de-listing.**

| Bone Lake Phosphorus Deep Lake State Standard ≤ 40 $\mu\text{g/L}$ 10-Year Average: 31 $\mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Summer Average | 55 | 39 | 39 | 30 | 22 | 29 | 26 | 26 | 25 | 20 |
| Sample 1 | 24 | 44 | 35 | 35 | 22 | 24 | 30 | 32 | 24 | 12 |
| Sample 2 | 46 | 26 | 37 | 41 | 21 | 23 | 45 | 36 | 37 | 11 |
| Sample 3 | 130 | 32 | 58 | 38 | 24 | 28 | 13 | 31 | 26 | 22 |
| Sample 4 | 103 | 36 | 31 | 28 | 26 | 35 | 20 | 17 | 16 | 18 |
| Sample 5 | 34 | 45 | 51 | 20 | 22 | 30 | 31 | 28 | 29 | 22 |
| Sample 6 | 25 | 53 | 28 | 23 | 20 | 29 | 22 | 18 | 24 | 26 |
| Sample 7 | 31 | 42 | 41 | 26 | 19 | 30 | 18 | 22 | 19 | 30 |
| Sample 8 | 48 | 37 | 42 | 23 | 20 | 33 | | 22 | 28 | |

| Bone Lake Secchi Deep Lake State Standard ≥ 4.6 ft 10-Year Average: 5.3 ft | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Summer Average | 3.6 | 3.9 | 4.2 | 5.8 | 6.5 | 5.0 | 5.8 | 7.3 | 5.9 | 5.5 |
| Sample 1 | 4.3 | 4.0 | 3.5 | 2.5 | 6.5 | 7.0 | 4.9 | 6.2 | 4.3 | 7.2 |
| Sample 2 | 4.6 | 3.5 | 4.0 | 4.5 | 7.0 | 6.0 | 5.6 | 6.9 | 5.2 | 6.6 |
| Sample 3 | 3.9 | 4.5 | 4.5 | 3.5 | 6.5 | 5.0 | 8.5 | 7.9 | 6.6 | 5.2 |
| Sample 4 | 3.3 | 4.0 | 3.5 | 4.5 | 7.5 | 4.5 | 5.6 | 7.5 | 8.2 | 6.9 |
| Sample 5 | 3.0 | 3.0 | 3.5 | 6.5 | 4.5 | 3.0 | 5.6 | 8.2 | 6.9 | 4.9 |
| Sample 6 | 2.6 | 3.5 | 5.5 | 9.5 | 5.0 | 4.5 | 6.6 | 8.2 | 5.9 | 4.3 |
| Sample 7 | 3.3 | 4.0 | 5.5 | 8.5 | 9.0 | 4.5 | 3.9 | 8.2 | 5.6 | 3.6 |
| Sample 8 | 3.6 | 4.0 | 4.0 | 7.0 | 6.0 | 5.5 | | 4.9 | 4.3 | |

| Bone Lake Chlorophyll-a Deep Lake State Standard ≤ 14 $\mu\text{g/L}$ 10-Year Average: 17 $\mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|
| Summer Average | 24 | 30 | 22 | 20 | 10 | 21 | 12 | 8 | 14 | 13 |
| Sample 1 | 22 | 14 | 26 | 59 | 9 | 10 | 16 | 10 | 11 | 9 |
| Sample 2 | 31 | 13 | 20 | 15 | 6 | 11 | 11 | 6 | 18 | 8 |
| Sample 3 | 26 | 20 | 27 | 26 | 1 | 15 | 4 | 6 | 8 | 6 |
| Sample 4 | 26 | 36 | 21 | 12 | 12 | 26 | 9 | 6 | 10 | 7 |
| Sample 5 | 26 | 56 | 24 | 11 | 20 | 40 | 12 | 6 | 15 | 10 |
| Sample 6 | 13 | 33 | 15 | 7 | 10 | 18 | 19 | 6 | 18 | 26 |
| Sample 7 | 23 | 43 | 17 | 9 | 7 | 26 | 11 | 5 | 18 | 24 |
| Sample 8 | 27 | 37 | 33 | 17 | 16 | 21 | | 15 | 16 | |

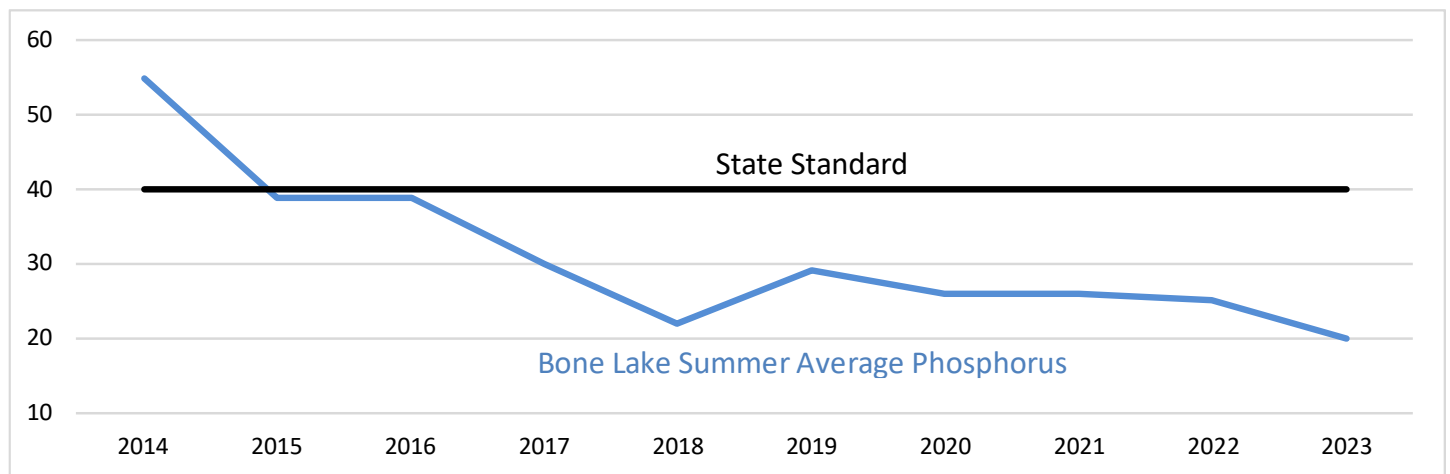
#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

✓ **#2 Trend/Management:** Phosphorus trends are improving in Bone Lake. Bone Lake meets criteria #2 for de-listing, and management activities are in place to protect water quality. **Bone Lake meets criterion #1 for de-listing.**

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|-----------|---|----------------------------|---|
| Bone Lake | Significantly Improving Trend Since 2013 | Improving Trend Since 2001 | Significantly Improving Trend Since 2013 |

**Trends that are not "significantly" improving or declining are not statistically significant.*



Management Activities:

- Melanie Trail Row Crop Conversion to Perennial (34 lb/yr phosphorus reduction)
- Southeast (Meadowbrook) Drained Wetland Restorations (35 lb/yr phosphorus reduction)
- Northeast Legacy Wetland Restoration (15 lb/yr phosphorus reduction)
- Inlet and Outlet Fish Barriers (operated annually by CLFLWD)
- Curly-leaf Pondweed Treatments (performed annually by CLFLWD)
- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)
- Bone Lake Agricultural Practices (ongoing, estimated 90 lb/yr phosphorus reduction)
- Additional projects that are currently in-progress:
 - Southwest Wetland Improvements (TBD)

✓ **Conclusion:** Bone Lake qualifies for de-listing. The District submitted a bid to de-list Bone Lake, and the MN Pollution Control Agency has recommended it be de-listed by the US Environmental Protection Agency. **Bone Lake is slated to be de-listed in 2024.**

5223 Birch Lake Summary

(Birch) 2021 Water Quality Grade (last year monitored): C

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Birch) Lake Goals & Status Summary

Table 15. Birch Lake Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|--|-----------------|----------------|-----------|
| 5-Year Average Phosphorus Concentration | ≤60 µg/L | 81 µg/L | TBD |
| 5-Year Average Secchi Depth | ≥3.3 ft | 5.0 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline | ≥75% of parcels | TBD | TBD |

Birch Lake is very shallow and has characteristics similar to an open water wetland. Birch Lake is located downstream of Bone Lake and is connected by a tributary stream. As such, improvements to Bone Lake will result in improvements to Birch Lake. Within the Birch Lake direct drainage area, a large portion of cropland was converted to residential subdivision in recent years. Conversion from row crop to residential is estimated to actually result in reduced phosphorus and sediment loading to Birch Lake. The District will continue to monitor Birch Lake in order to determine whether upstream improvements to Bone Lake result in reduced phosphorus concentrations in Birch Lake.

5224 School Lake Summary

(School) 2023 Water Quality Grade: B+

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(School) Lake Goals & Status Summary

Table 16. School Lake Goals & Status Summary

| | Long-Term Goal/ State Standard | Current Status | Remaining |
|--|-----------------------------------|----------------|--------------------------|
| 5-Year Average Phosphorus Concentration | ≤60 µg/L | 35.7 µg/L | [meeting state standard] |
| 5-Year Average Secchi Depth | ≥3.3 ft | 5.8 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline | ≥75% of parcels | TBD | TBD |

School Lake is located downstream of Birch Lake and, similarly to Birch Lake, will see improvements resulting from upstream improvements to Bone Lake. Additionally, the District is in the process of working with a rural landowner in the School Lake direct drainage area to implement best management practices to reduce phosphorus and sediment loading from a cattle feedlot. School Lake is classified as a shallow lake, and therefore the state standard is 60 µg/L for phosphorus concentration and 3.3 feet for Secchi depth.

(School) Progress Toward State Standards

School Lake is nutrient impaired for aquatic recreation.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.



#1 – Water Quality Samples:

School Lake is meeting the criteria for phosphorus concentration and Secchi depth, but not chlorophyll-a. School Lake **meets** criterion #1 for de-listing.

| School Lake Phosphorus | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------|------|------|------|------|------|------|------|------|------|
| Shallow Lake State Standard $\leq 60 \mu\text{g/L}$ 10-Year Average: 42 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | | | | 51 | 53 | | 49 | 40 | 28 | 28 |
| Sample 1 | | | | 54 | 38 | | 49 | 52 | 37 | 28 |
| Sample 2 | | | | 53 | 40 | | 49 | 39 | 29 | 28 |
| Sample 3 | | | | 41 | 49 | | 64 | 72 | 14 | 24 |
| Sample 4 | | | | 59 | 125 | | 34 | 17 | 27 | 20 |
| Sample 5 | | | | 34 | 62 | | | 70 | 33 | 20 |
| Sample 6 | | | | 31 | 56 | | | 30 | | 22 |
| Sample 7 | | | | 116 | 40 | | | 27 | | 38 |
| Sample 8 | | | | 40 | 48 | | | 21 | | 42 |

| School Lake Secchi | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------|------|------|------|------|------|------|------|------|------|
| Shallow Lake State Standard ≥ 3.3 feet 10-Year Average: 4.8 ft | | | | | | | | | | |
| Summer Average | | | | 2.8 | 2.5 | | 4.8 | 5.3 | 6.1 | 7.1 |
| Sample 1 | | | | 4.5 | 4.0 | | 3.0 | 7.5 | 7.4 | 9.2 |
| Sample 2 | | | | 2.5 | 3.0 | | 3.3 | 5.6 | 6.6 | 7.5 |
| Sample 3 | | | | 1.0 | 2.0 | | 6.6 | 7.2 | 5.2 | 7.5 |
| Sample 4 | | | | 1.5 | 1.0 | | 6.2 | 4.3 | 5.9 | 6.2 |
| Sample 5 | | | | 3.0 | 1.5 | | | 3.8 | 5.6 | 9.2 |
| Sample 6 | | | | 3.5 | 1.5 | | | 4.3 | | 6.9 |
| Sample 7 | | | | 3.0 | 4.0 | | | 4.3 | | 4.6 |
| Sample 8 | | | | 3.0 | 3.0 | | | 4.6 | | 5.6 |

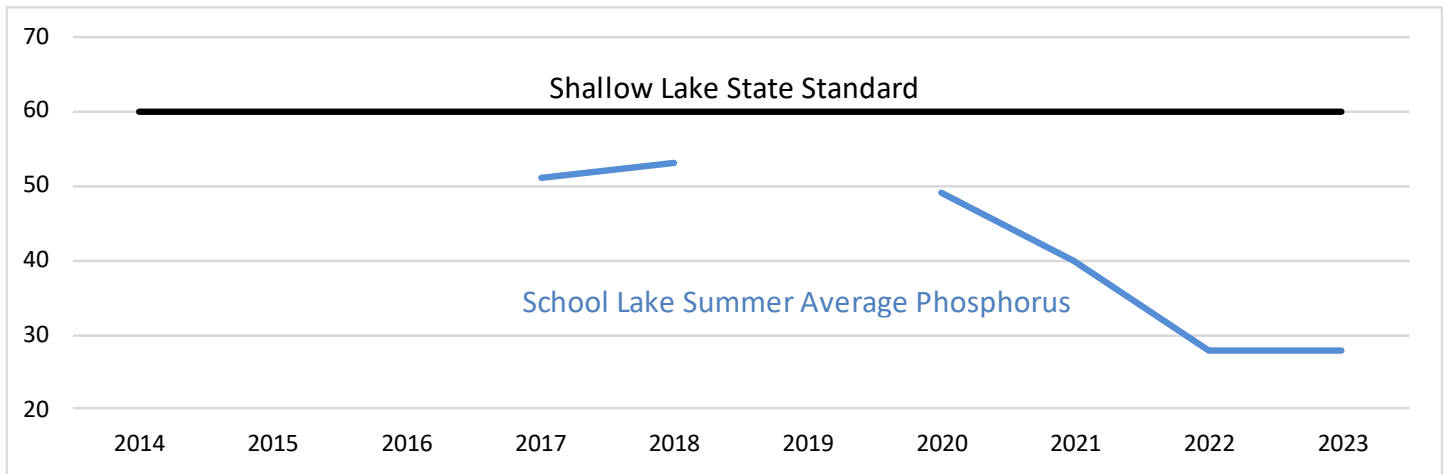
| School Lake Chlorophyll-a | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------|------|------|------|------|------|------|------|------|------|
| Shallow Lake State Standard $\leq 20 \mu\text{g/L}$ 10-Year Average: 23 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | | | | 31 | 50 | | 24 | 12 | 14 | 9 |
| Sample 1 | | | | 24 | 46 | | 38 | 4 | 13 | 6 |
| Sample 2 | | | | 42 | 22 | | 29 | 4 | 14 | 4 |
| Sample 3 | | | | 61 | 44 | | 17 | 5 | 16 | 8 |
| Sample 4 | | | | 56 | 69 | | 13 | 17 | 19 | 20 |
| Sample 5 | | | | 19 | 75 | | | 16 | 10 | 7 |
| Sample 6 | | | | 19 | 54 | | | 15 | | 7 |
| Sample 7 | | | | 38 | 47 | | | 17 | | 9 |
| Sample 8 | | | | 32 | 46 | | | 17 | | 10 |

#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

✓ **#2 Trend/Management:** School Lake does not have enough water quality data collected to calculate long-term trends. However, recent summer average phosphorus concentrations have been below the state standard, and several management activities are in place for Bone Lake which is located upstream of School Lake and Birch Lake.

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|-------------|---|---------------------|-------------------|
| School Lake | Not enough data exists to calculate long-term trends for School Lake. | | |



Management Activities:

- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)
- Project currently in-progress: July Avenue Feedlot (61 lb/yr phosphorus reduction)

✓ **Conclusion:** **School Lake qualifies for de-listing at this time.** However, the District still has a project in-progress that will reduce watershed phosphorus loading. **The District will implement more management activities to protect School Lake’s water quality long-term.**

5225 Little Comfort Lake Summary

(Little Comfort) 2023 Water Quality Grade: A-

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Little Comfort) Lake Goals & Status Summary

Table 17. Little Comfort Lake Water Quality Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|--|--------------------------------|------------------------------|---------------------------|
| 5-Year Average Phosphorus Concentration | ≤30 µg/L | 36.7 µg/L | 336 lb/yr phosphorus load |
| 5-Year Average Secchi Depth | ≥7 ft | 6.7 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline Source: 2015 Shoreland Inventory | ≥75% of parcels ≥25 parcels | 82% of parcels 27 parcels | [maintain] |

Table 18. Little Comfort Lake Phosphorus Reduction Goals

| 5225 Little Comfort Lake | Phosphorus Reduction (lb/yr) |
|---|------------------------------|
| Load Reduction to Achieve Long-term Goal of 30 µg/L: (based on 2004 benchmark of 72 µg/L; 10% margin of error = 84 lbs) | 839 |
| Load reduction progress through 2023 | 503 |
| 2023 Remaining Load Reduction (cross-referenced w/ in-lake data and trends) | 336 |

(Little Comfort) Project Implementation Progress

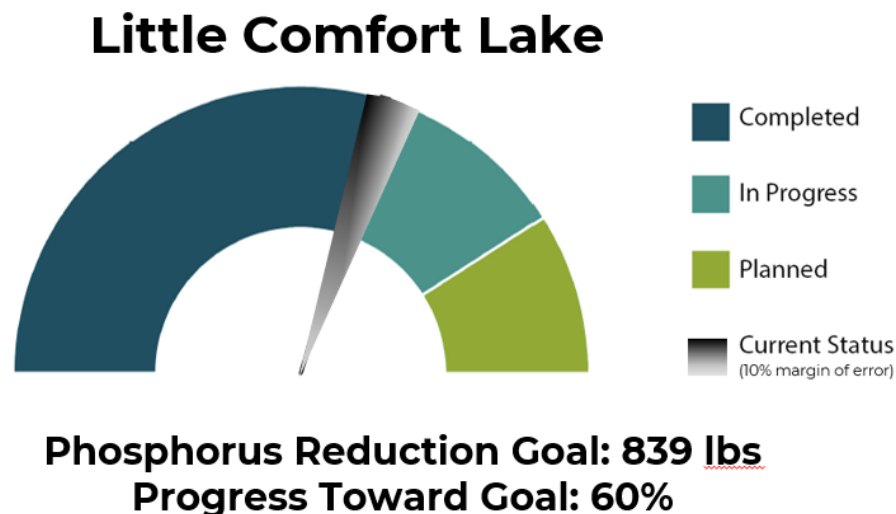


Figure 19. Little Comfort Lake Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

(Little Comfort) Progress Toward State Standards

Little Comfort Lake is nutrient impaired for aquatic recreation.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.



#1 – Water Quality Samples:

Little Comfort Lake is meeting the criteria for phosphorus, Secchi depth and chlorophyll-a. **Little Comfort Lake meets criterion #1 for de-listing.**

| Little Comfort Lake Phosphorus Deep Lake State Standard $\leq 40 \mu\text{g/L}$ 10-Year Average: $49 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Summer Average | 58 | 88 | 68 | 43 | 50 | 56 | 34 | 43 | 23 | 23 |
| Sample 1 | 63 | 26 | 28 | 19 | 33 | 74 | 33 | 54 | 24 | 17 |
| Sample 2 | 93 | 67 | 176 | 42 | 33 | 37 | 29 | 86 | 24 | 19 |
| Sample 3 | 97 | 74 | 44 | 26 | 45 | 41 | 44 | 34 | 31 | 22 |
| Sample 4 | 50 | 366 | 50 | 63 | 114 | 76 | 30 | 12 | 26 | 13 |
| Sample 5 | 40 | 56 | 61 | 71 | 52 | 113 | 36 | 22 | 24 | 22 |
| Sample 6 | 44 | | 56 | 34 | 50 | 39 | | 34 | 17 | 18 |
| Sample 7 | 72 | 23 | 71 | 36 | 33 | 29 | | 100 | 12 | 26 |
| Sample 8 | 25 | 28 | 92 | 50 | 43 | 39 | | 24 | 10 | 24 |

| Little Comfort Lake Secchi Deep Lake State Standard $\geq 4.6 \text{ ft}$ 10-Year Average: 5.4 ft | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Summer Average | 5.9 | 4.3 | 3.5 | 3.6 | 4.2 | 4.5 | 5.8 | 8.4 | 7.5 | 6.9 |
| Sample 1 | 6.0 | 6.0 | 5.0 | 3.5 | 6.0 | 5.5 | 5.7 | 9.8 | 8.5 | 5.9 |
| Sample 2 | 3.5 | 3.5 | 2.5 | 3.0 | 4.5 | 4.5 | 4.8 | 9.8 | 8.2 | 7.2 |
| Sample 3 | 3.7 | 2.0 | 4.0 | 1.5 | 3.0 | 5.5 | 6.2 | 9.5 | 7.2 | 3.3 |
| Sample 4 | 5.5 | 3.5 | 3.0 | 2.0 | 2.5 | 2.0 | 5.6 | 10.2 | 7.1 | 7.9 |
| Sample 5 | 8.5 | 4.5 | 2.5 | 3.0 | 3.0 | 3.5 | 6.6 | 7.2 | 7.5 | 9.8 |
| Sample 6 | 5.5 | 4.5 | 4.0 | 3.5 | 3.5 | 4.8 | | 5.9 | 6.9 | 9.2 |
| Sample 7 | 5.0 | 4.5 | 3.0 | 5.0 | 4.5 | 5.5 | | 4.6 | 8.5 | 6.2 |
| Sample 8 | 7.5 | 4.5 | 4.0 | 7.0 | 7.0 | 4.5 | | 7.2 | 7.2 | 8.5 |

| Little Comfort Lake Chlorophyll-a Deep Lake State Standard $\leq 14 \mu\text{g/L}$ 10-Year Average: $21 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|-----------|
| Summer Average | 22 | 28 | 47 | 26 | 26 | 27 | 13 | 7 | 7 | 10 |
| Sample 1 | 13 | 7 | 19 | 29 | 5 | 15 | 23 | 3 | 3 | 11 |
| Sample 2 | 24 | 37 | 43 | 26 | 7 | 13 | 16 | 3 | 7 | 8 |
| Sample 3 | 30 | 77 | 27 | 44 | 30 | 19 | 12 | 4 | 7 | 36 |
| Sample 4 | 16 | 24 | 36 | 28 | 41 | 30 | 10 | 3 | 7 | 5 |
| Sample 5 | 12 | 20 | 51 | 20 | 43 | 35 | 2 | 13 | 8 | 6 |
| Sample 6 | 27 | | 31 | 23 | 24 | 36 | | 15 | 6 | 2 |
| Sample 7 | 37 | 23 | 90 | 19 | 28 | 27 | | 12 | 6 | 5 |
| Sample 8 | 16 | 28 | 77 | 17 | 27 | 41 | | 10 | 8 | 3 |

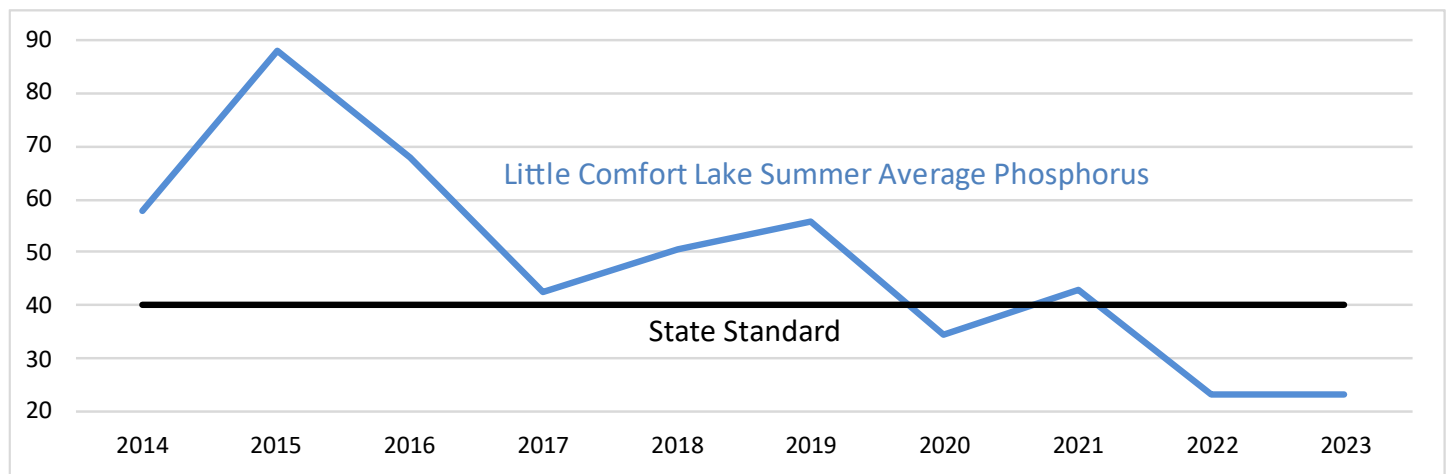
#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

✓ **#2 Trend/Management:** Phosphorus trends are improving in Little Comfort Lake. Little Comfort Lake meets criteria #2 for de-listing, but the District is putting additional management activities into place to protect water quality.

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|---------------------|---|----------------------------|----------------------------|
| Little Comfort Lake | Significantly Improving Trend Since 2013 | Improving Trend Since 2013 | Improving Trend Since 2013 |

**Trends that are not "significantly" improving or declining are not statistically significant.*



Management Activities:

- Curly-leaf Pondweed Surveys (performed annually by CLFLWD, treatment usually not warranted- due to low density growth)
- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)
- In progress projects:
 - July Avenue Feedlot (estimated 61 lb/yr phosphorus reduction for upstream School Lake)
 - Heath Ave Iron Enhanced Sand Filter (estimated 79 lb/yr phosphorus reduction)
- Potential future projects:
 - Livestock Management
 - Whole Lake Alum Treatment (estimated 59 lb/yr phosphorus reduction)

✓ **Conclusion:** Little Comfort Lake qualifies for de-listing at this time, but the District will implement more management activities to meet the phosphorus load reduction goal.

5226 Shields Lake Summary

(Shields) 2023 Water Quality Grade: B+

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Shields) Lake Goals & Status Summary

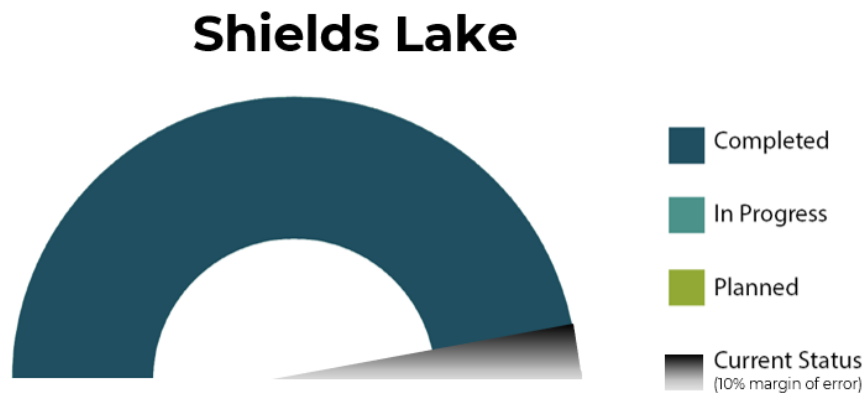
Table 19. Shields Lake Water Quality Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|--|-----------------|----------------|---------------|
| 5-Year Average Phosphorus Concentration | ≤60 µg/L | 52.9 µg/L | Goal achieved |
| 5-Year Average Secchi Depth | ≥4.26 ft | 5.6 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline | ≥75% of parcels | TBD | TBD |

Table 20. Shields Lake Phosphorus Reduction Goals

| 5226 Shields Lake | Phosphorus Reduction (lb/yr) |
|--|------------------------------|
| Load Reduction to Achieve Long-term Goal of 60 µg/L: (based on 2006-2015 benchmark of 241 µg/L; 10% margin of error = 102 lbs) | 1,023 |
| Load reduction progress through 2023 | 1,023 |
| 2023 Remaining Load Reduction (cross-referenced w/ in-lake data and trends) | Goal achieved |

(Shields) Project Implementation Progress



Phosphorus Reduction Goal: 1,023 lbs
Progress Toward Goal & State Standards: 100%

Figure 20. Shields Lake Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: curly-leaf pondweed management in 2019, permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

(Shields) Progress Toward State Standards

Shields Lake is nutrient impaired for aquatic recreation.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.



#1 – Water Quality Samples:

Shields Lake is meeting the criteria for phosphorus concentration and Secchi depth, but not chlorophyll-a. Shields Lake meets criterion #1 for de-listing.

| Shields Lake Phosphorus | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| Shallow Lake State Standard $\leq 60 \mu\text{g/L}$ 10-Year Average: 148 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | 299 | 349 | 194 | 191 | 180 | 128 | 54 | 38 | 27 | 20 |
| Sample 1 | 255 | 358 | 121 | 74 | 222 | 102 | 19 | 27 | 22 | 18 |
| Sample 2 | 326 | 366 | 238 | 170 | 210 | 150 | 45 | 27 | 33 | 16 |
| Sample 3 | 291 | 333 | 317 | 262 | 283 | 212 | 66 | 28 | 32 | 11 |
| Sample 4 | 356 | 346 | 241 | 300 | 201 | 141 | 81 | 25 | 23 | 19 |
| Sample 5 | 299 | 329 | 153 | 203 | 174 | 138 | 75 | 104 | 21 | 24 |
| Sample 6 | 327 | 383 | 128 | 226 | 149 | 93 | 65 | 36 | 36 | 24 |
| Sample 7 | 332 | 303 | 190 | 190 | 122 | 82 | 24 | 51 | 22 | 20 |
| Sample 8 | 288 | 582 | 168 | 118 | 76 | 114 | | 23 | 14 | 22 |

| Shields Lake Secchi | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Shallow Lake State Standard ≥ 3.3 feet 10-Year Average: 3.9 ft | | | | | | | | | | |
| Summer Average | 3.4 | 1.9 | 2.7 | 2.2 | 1.9 | 2.5 | 3.7 | 8.4 | 6.5 | 5.9 |
| Sample 1 | 5.0 | 3.5 | 5.0 | 6.5 | 4.0 | 5.5 | 5.9 | 13.6 | 7.9 | 7.5 |
| Sample 2 | 3.5 | 1.0 | 3.0 | 4.5 | 0.5 | 2.0 | 3.6 | 14.4 | 6.6 | 4.6 |
| Sample 3 | 3.0 | 1.5 | 2.5 | 1.0 | 1.0 | 1.5 | 5.2 | 14.4 | 5.2 | 6.2 |
| Sample 4 | 2.5 | 1.5 | 2.5 | 1.0 | 1.5 | 3.2 | 3.3 | 8.4 | 5.9 | 6.6 |
| Sample 5 | 2.0 | 1.0 | 2.0 | 1.5 | 1.7 | 0.5 | 2.5 | 2.6 | 6.9 | 4.6 |
| Sample 6 | 2.5 | 1.0 | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 6.6 | 6.6 | 3.6 |
| Sample 7 | 3.5 | 1.0 | 2.5 | 1.0 | 2.0 | 2.0 | 3.6 | 4.3 | 7.9 | 6.9 |
| Sample 8 | 2.5 | 1.5 | 3.5 | 2.0 | 3.0 | 2.5 | | 5.9 | 6.9 | 8.9 |

| Shields Lake Chlorophyll-a | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|
| Shallow Lake State Standard $\leq 20 \mu\text{g/L}$ 10-Year Average: 40 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | 34 | 77 | 52 | 64 | 67 | 52 | 31 | 6 | 7 | 7 |
| Sample 1 | 11 | 59 | 22 | 7 | 21 | 25 | 14 | 1 | 9 | 9 |
| Sample 2 | 44 | 120 | 37 | 35 | 160 | 88 | 25 | 2 | 1 | 8 |
| Sample 3 | 33 | 64 | 76 | 160 | 99 | 52 | 13 | 4 | 5 | 4 |
| Sample 4 | 39 | 75 | 82 | 97 | 56 | 28 | 48 | 9 | 7 | 5 |
| Sample 5 | 28 | 86 | 59 | 92 | 68 | 62 | 45 | 9 | 8 | 12 |
| Sample 6 | 37 | 98 | 41 | 55 | 47 | 68 | 58 | 10 | 7 | 6 |
| Sample 7 | 59 | 64 | 51 | 58 | 52 | 73 | 13 | 5 | 5 | 2 |
| Sample 8 | 47 | 126 | 65 | 39 | 36 | 51 | | 14 | 5 | 7 |

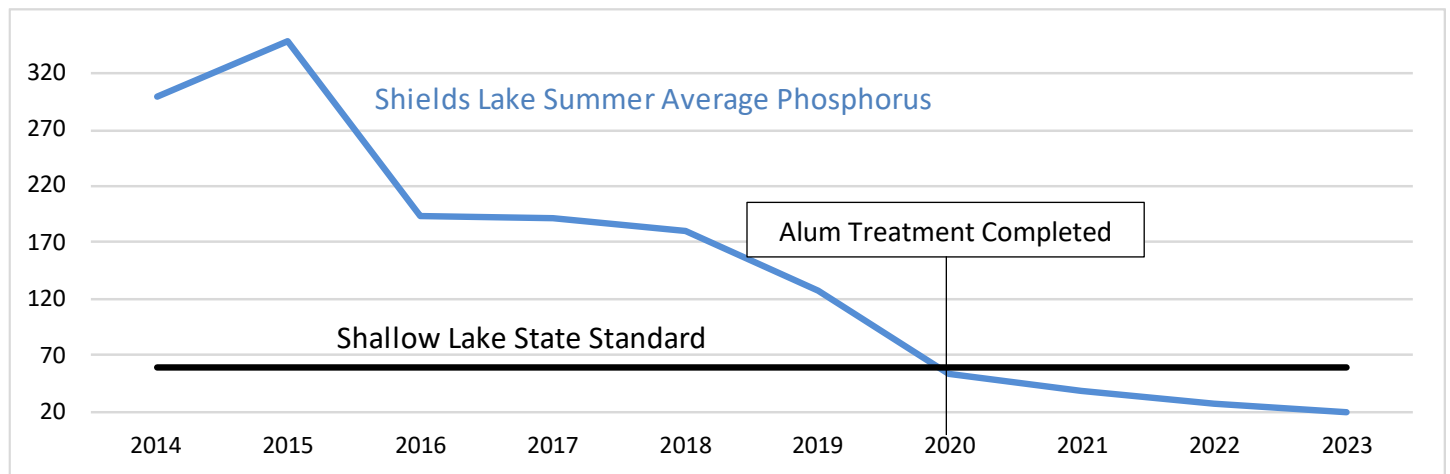
#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

✓ **#2 Trend/Management:** Phosphorus trends are improving in Shields Lake, and management activities are in place. **Shields Lake meets criteria #2 for de-listing.**

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|--------------|---|----------------------------|----------------------------|
| Shields Lake | Significantly Improving Trend Since 2013 | Improving Trend Since 2001 | Improving Trend Since 1993 |

**Trends that are not “significantly” improving or declining are not statistically significant.*



Management Activities:

- Stormwater Harvest & Irrigation Reuse System (94 lb/yr phosphorus reduction completed in 2018)
- Whole Lake Alum Treatment (913 lb/yr, completed in 2020 – split application between fall '19 and fall '20)
- Winter Aeration System (upgraded in 2021, operated annually by CLFLWD)
- Downstream Fish Barriers (operated annually by CLFLWD)
- Curly-leaf Pondweed Treatments (performed annually by CLFLWD)
- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)

✓ **Conclusion:** **Shields Lake qualifies for de-listing at this time.** The District must communicate with the MN Pollution Control Agency to initiate the de-listing process. The District may wish to collect more years of data first.

5227 Lake Keewahtin Summary

(Keewahtin) 2023 Water Quality Grade: A

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Keewahtin) Lake Goals & Status Summary

Table 21. Lake Keewahtin Water Quality Goals & Status Summary

| | Long-Term Goal | Current Status* | Remaining |
|--|--------------------------------|------------------------------|----------------------------|
| 5-Year Average Phosphorus Concentration | ≤20 µg/L | 14 µg/L | 0 lb/yr phosphorus load* |
| 5-Year Average Secchi Depth | ≥10 ft | 12.7 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline Source: 2016 Shoreland Inventory | ≥75% of parcels ≥57 parcels | 67% of parcels 50 parcels | 8% of parcels 7 parcels |

*Currently meets goal, no further reductions needed until the next round of diagnostic monitoring.

Table 22. Lake Keewahtin Phosphorus Reduction Goals

| 5227 Lake Keewahtin | Phosphorus Reduction (lb/yr) |
|--|------------------------------|
| Load Reduction to Achieve Long-term Goal of 20 µg/L: (based on 2004 benchmark of 20 µg/L) | 0 |
| Load reduction progress through 2023 | 0 |
| 2023 Remaining Load Reduction | 0 |

(Keewahtin) Project Implementation Progress



Reduction Goal: 0 lbs

Progress (Completed + In Progress Projects): N/A

Figure 21. Lake Keewahtin Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: cropland conversion cost-share projects, permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

5228 Forest Lake Summary

(Forest) 2023 Water Quality Grade: A-

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Forest) Lake Goals & Status Summary

Table 23. Forest Lake Water Quality Goals & Status Summary

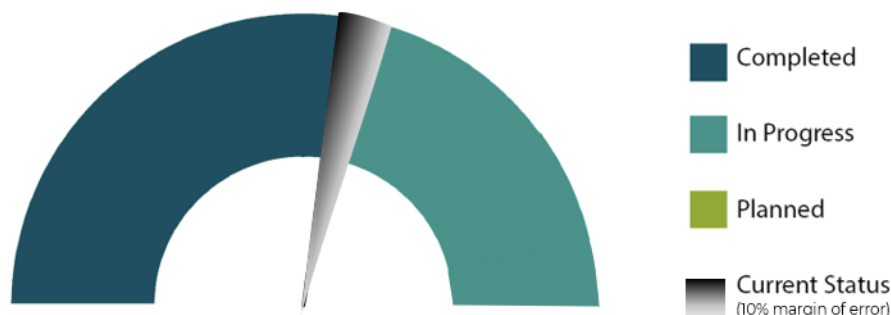
| | Long-Term Goal | Current Status | Remaining |
|--|---------------------------------|-------------------------------|-------------------------------|
| 5-Year Average Phosphorus Concentration | ≤30 µg/L | 30 µg/L | 627 lb/yr phosphorus load |
| 5-Year Average Secchi Depth | ≥7 ft | 7.1 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline Source: 2023 Shoreland Inventory | ≥75% of parcels ≥750 parcels | 30% of parcels 300 parcels | 45% of parcels 450 parcels |

Table 24. Forest Lake Phosphorus Reduction Goals

| 5228 Forest Lake | Phosphorus Reduction (lb/yr) |
|---|------------------------------|
| Load Reduction to Achieve Long-term Goal of 30 µg/L: (based on 2007-2016 benchmark of 35 µg/L; 10% margin of error = 145 lbs) | 1,450 |
| Load reduction progress through 2023 | 823 |
| 2023 Remaining Load Reduction (cross-referenced w/ in-lake data and trends) | 627 |

(Forest) Project Implementation Progress

Forest Lake



Phosphorus Reduction Goal: 1,450 lbs
Progress Toward Goal & State Standards: 56%

Figure 22. Forest Lake Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: cost-share projects, educational storm drain stenciling, annual curly-leaf pondweed management, permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

(Forest) State Standards Status

Forest Lake is **not** nutrient impaired for aquatic recreation, but water quality readings are sometimes close to or exceed the state standard. Forest Lake is impaired for polychlorinated biphenyls (PCBs) in fish tissue.

(Forest West) State Standards Status

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.

| Forest Lake West Phosphorus Deep Lake State Standard ≤ 40 $\mu\text{g/L}$ 10-Year Average: 30 $\mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Summer Average | 37 | 37 | 40 | 25 | 37 | 26 | 27 | 24 | 20 | 23 |
| Sample 1 | 34 | 22 | 24 | 22 | 46 | 13 | 21 | 24 | 25 | 30 |
| Sample 2 | 30 | 15 | 29 | 27 | 44 | 23 | 26 | 38 | 22 | 24 |
| Sample 3 | 24 | 42 | 27 | 23 | 35 | 24 | 26 | 19 | 23 | 32 |
| Sample 4 | 49 | 21 | 30 | 28 | 45 | 30 | 38 | 17 | 22 | 24 |
| Sample 5 | 25 | 41 | 35 | 30 | 39 | 38 | 32 | 19 | 20 | 26 |
| Sample 6 | 39 | 39 | 44 | 26 | 31 | 26 | 22 | 19 | 21 | 20 |
| Sample 7 | 54 | 43 | 90 | 21 | 30 | 25 | 32 | 24 | 17 | 15 |
| Sample 8 | 40 | 28 | 45 | 25 | 29 | | 19 | 28 | 12 | 24 |

| Forest Lake West Secchi Deep Lake State Standard ≥ 4.6 ft 10-Year Average: 5.5 ft | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Summer Average | 3.4 | 4.7 | 4.3 | 6.2 | 4.9 | 7.1 | 5.7 | 7.5 | 7.3 | 6.7 |
| Sample 1 | 5.0 | 7.5 | 6.5 | 6.5 | 5.0 | 12.0 | 8.2 | 11.2 | 8.5 | 4.8 |
| Sample 2 | 4.0 | 7.0 | 5.0 | 6.5 | 5.0 | 7.0 | 5.6 | 10.2 | 9.5 | 4.6 |
| Sample 3 | 3.0 | 6.5 | 3.5 | 6.5 | 4.5 | 5.0 | 6.9 | 6.2 | 5.9 | 5.9 |
| Sample 4 | 2.5 | 5.0 | 5.0 | 5.5 | 4.5 | 6.5 | 5.2 | 7.9 | 5.2 | 5.2 |
| Sample 5 | 3.5 | 3.5 | 4.5 | 6.5 | 4.5 | 5.5 | 4.8 | 5.9 | 6.2 | 7.2 |
| Sample 6 | 4.0 | 3.0 | 3.5 | 6.5 | 5.0 | 6.0 | 4.8 | 5.6 | 7.5 | 8.9 |
| Sample 7 | 2.5 | 3.0 | 3.0 | 6.0 | 5.5 | 7.5 | 4.3 | 5.1 | 7.2 | 11.5 |
| Sample 8 | 2.5 | 3.0 | 4.0 | 5.5 | 5.5 | | 6.2 | 6.7 | 8.5 | 8.2 |

| Forest Lake West Chlorophyll-a Deep Lake State Standard ≤ 14 $\mu\text{g/L}$ 10-Year Average: 11 $\mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|-----------|-----------|-----------|----------|-----------|----------|----------|----------|----------|----------|
| Summer Average | 17 | 19 | 19 | 8 | 13 | 8 | 8 | 6 | 6 | 9 |
| Sample 1 | 7 | 5 | 7 | 6 | 13 | 2 | 4 | 2 | 3 | 11 |
| Sample 2 | 6 | 5 | 11 | 8 | 9 | 6 | 4 | 2 | 3 | 13 |
| Sample 3 | 14 | 13 | 14 | 6 | 15 | 8 | 6 | 6 | 5 | 10 |
| Sample 4 | 16 | 16 | 12 | 6 | 15 | 6 | 8 | 7 | 8 | 11 |
| Sample 5 | 12 | 22 | 13 | 8 | 15 | 13 | 10 | 8 | 8 | 8 |
| Sample 6 | 19 | 21 | 23 | 9 | 11 | 9 | 10 | 8 | 7 | 6 |
| Sample 7 | 36 | 29 | 53 | 10 | 12 | 9 | 12 | 11 | 9 | 2 |
| Sample 8 | 22 | 10 | 22 | 9 | 11 | | 7 | 6 | 5 | 1 |

(Forest Middle) State Standards Status

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.

| Forest Lake Middle Phosphorus Deep Lake State Standard $\leq 40 \mu\text{g/L}$ 10-Year Average: $36 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Summer Average | 31 | 35 | 41 | 34 | 35 | 61 | 42 | 36 | 31 | 15 |
| Sample 1 | 38 | 32 | 28 | 27 | 21 | 23 | 23 | 19 | 53 | 11 |
| Sample 2 | 20 | 19 | 23 | 29 | 35 | 97 | 30 | 32 | 33 | 15 |
| Sample 3 | 45 | 22 | 22 | 31 | 25 | 39 | 36 | 31 | 34 | 22 |
| Sample 4 | 33 | 26 | 71 | 25 | 51 | 44 | 58 | 21 | 21 | 19 |
| Sample 5 | 20 | 43 | 40 | 51 | 63 | 103 | 33 | 28 | 30 | 11 |
| Sample 6 | 24 | 31 | 35 | 37 | 28 | 50 | 35 | 38 | 30 | 20 |
| Sample 7 | 32 | 46 | 39 | 35 | 29 | 91 | 56 | 57 | 20 | 15 |
| Sample 8 | 39 | 51 | 65 | 35 | 26 | 41 | 64 | 47 | 29 | 13 |

| Forest Lake Middle Secchi Deep Lake State Standard $\geq 4.6 \text{ ft}$ 10-Year Average: 6.7 ft | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Summer Average | 5.2 | 6.4 | 5.7 | 8.2 | 7.7 | 7.1 | 5.7 | 6.9 | 5.0 | 9.2 |
| Sample 1 | 8.0 | 10.0 | 8.0 | 13.0 | 11.0 | 15.0 | 12.1 | 12.8 | 6.2 | 8.2 |
| Sample 2 | 6.5 | 10.5 | 6.5 | 8.0 | 10.0 | 12.0 | 9.5 | 9.2 | 5.6 | 8.9 |
| Sample 3 | 5.0 | 9.5 | 5.5 | 9.5 | 7.5 | 8.0 | 6.2 | 6.9 | 4.4 | 8.5 |
| Sample 4 | 5.0 | 6.5 | 6.0 | 9.5 | 10.0 | 5.5 | 3.9 | 6.6 | 5.6 | 6.9 |
| Sample 5 | 4.0 | 4.5 | 6.0 | 7.5 | 5.0 | 4.0 | 3.6 | 5.9 | 4.6 | 9.2 |
| Sample 6 | 5.2 | 4.5 | 5.0 | 5.5 | 6.5 | 4.0 | 2.6 | 5.2 | 3.6 | 8.5 |
| Sample 7 | 4.0 | 5.0 | 4.0 | 6.0 | 5.5 | 4.0 | 3.0 | 4.9 | 4.9 | 15.1 |
| Sample 8 | 3.5 | 3.5 | 5.5 | 7.0 | 6.0 | 4.0 | 4.3 | 5.2 | 5.2 | 10.2 |

| Forest Lake Middle Chlorophyll-a Deep Lake State Standard $\leq 14 \mu\text{g/L}$ 10-Year Average: $15 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|
| Summer Average | 13 | 21 | 17 | 13 | 15 | 20 | 24 | 9 | 13 | 5 |
| Sample 1 | 5 | 4 | 6 | 4 | 3 | 1 | 3 | 3 | 2 | 5 |
| Sample 2 | 8 | 6 | 10 | 10 | 10 | 8 | 12 | 1 | 12 | 6 |
| Sample 3 | 11 | 8 | 9 | 9 | 10 | 9 | 15 | 7 | 16 | 4 |
| Sample 4 | 12 | 9 | 12 | 5 | 12 | 14 | 32 | 6 | 16 | 5 |
| Sample 5 | 10 | 24 | 11 | 11 | 33 | 28 | 38 | 7 | 11 | 4 |
| Sample 6 | 10 | 28 | 16 | 23 | 18 | 34 | 30 | 12 | 23 | 10 |
| Sample 7 | 18 | 27 | 29 | 21 | 21 | 32 | 36 | 16 | 11 | 4 |
| Sample 8 | 27 | 38 | 20 | 23 | 12 | 31 | 22 | 11 | 12 | 3 |

(Forest East) State Standards Status

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.

| Forest Lake East Phosphorus Deep Lake State Standard $\leq 40 \mu\text{g/L}$ 10-Year Average: $33 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Summer Average | 28 | 28 | 44 | 46 | 36 | 34 | 26 | 34 | 38 | 17 |
| Sample 1 | 20 | 15 | 22 | 18 | 24 | 26 | 19 | 13 | 21 | 26 |
| Sample 2 | 28 | 14 | 22 | 38 | 25 | 28 | 19 | 28 | 46 | 22 |
| Sample 3 | 22 | 14 | 24 | 46 | 30 | 31 | 20 | 50 | 48 | 12 |
| Sample 4 | 36 | 27 | 87 | 44 | 39 | 28 | 32 | 29 | 48 | 13 |
| Sample 5 | 23 | 27 | 26 | 51 | 57 | 28 | 40 | 26 | 35 | 17 |
| Sample 6 | 27 | 40 | 56 | 51 | 28 | 39 | 27 | 41 | 38 | 16 |
| Sample 7 | 29 | 43 | 55 | 53 | 47 | 47 | | 38 | 34 | 20 |
| Sample 8 | 38 | 34 | 53 | 65 | 37 | 43 | | 43 | 36 | 11 |

| Forest Lake East Secchi Deep Lake State Standard $\geq 4.6 \text{ ft}$ 10-Year Average: 7.2 ft | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Summer Average | 5.5 | 7.8 | 5.7 | 8.1 | 6.4 | 7.3 | 9.6 | 8.1 | 4.7 | 8.5 |
| Sample 1 | 7.0 | 15.0 | 8.5 | 14.0 | 9.0 | 14.5 | 11.8 | 18.0 | 9.7 | 6.6 |
| Sample 2 | 6.5 | 10.0 | 8.0 | 13.0 | 9.5 | 12.0 | 21.3 | 14.8 | 5.9 | 7.9 |
| Sample 3 | 6.5 | 12.0 | 7.5 | 8.5 | 7.5 | 9.0 | 6.2 | 6.6 | 4.6 | 8.9 |
| Sample 4 | 6.5 | 8.0 | 7.0 | 6.5 | 7.5 | 6.0 | 5.2 | 6.6 | 3.6 | 9.2 |
| Sample 5 | 4.0 | 6.5 | 5.0 | 5.5 | 4.5 | 4.5 | 3.6 | 4.9 | 3.3 | 8.2 |
| Sample 6 | 5.0 | 5.0 | 3.0 | 6.0 | 4.5 | 4.5 | | 4.9 | 3.0 | 8.2 |
| Sample 7 | 4.5 | 5.5 | 3.5 | 6.0 | 4.5 | 4.0 | | 4.9 | 3.9 | 7.2 |
| Sample 8 | 4.0 | 4.0 | 4.5 | 5.0 | 4.5 | 4.0 | | 4.1 | 3.6 | 13.8 |

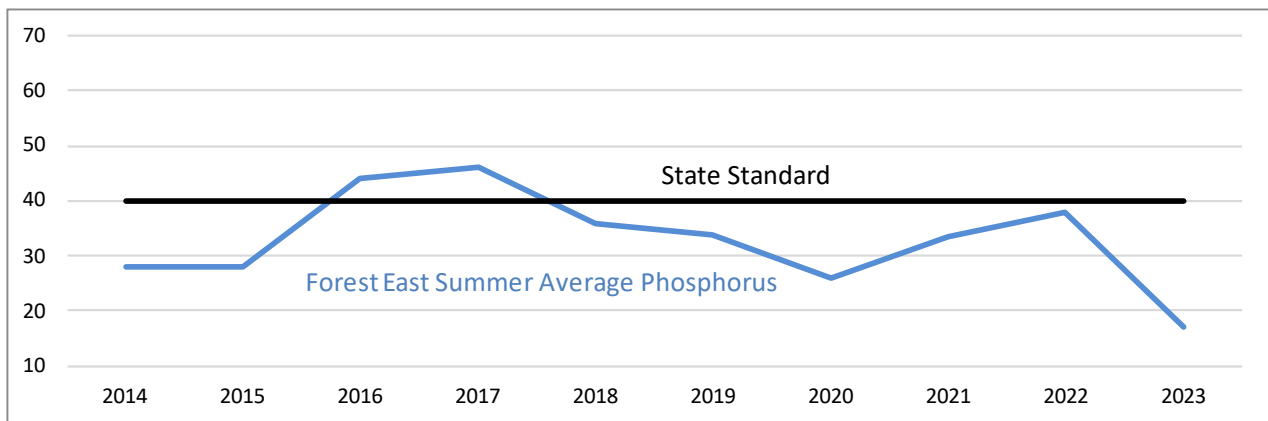
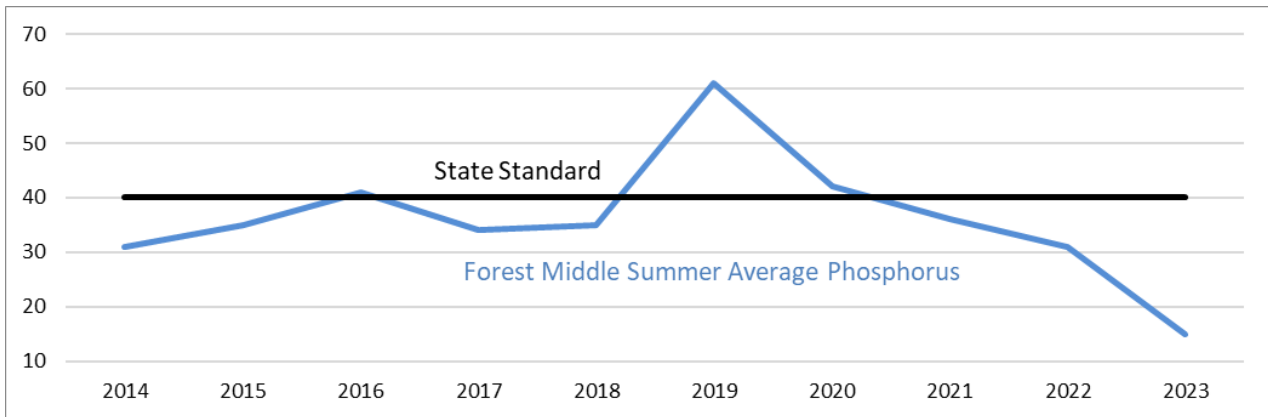
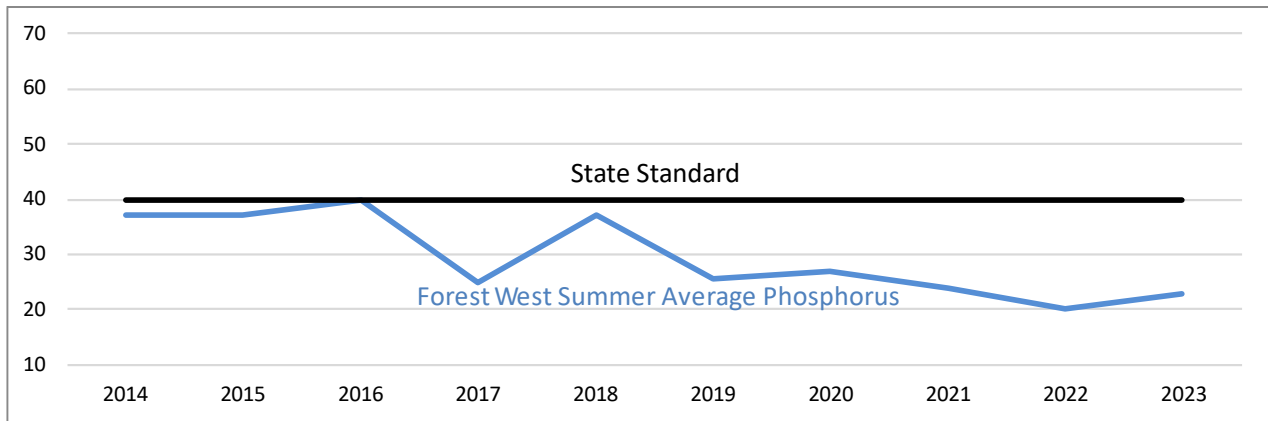
| Forest Lake East Chlorophyll-a Deep Lake State Standard $\leq 14 \mu\text{g/L}$ 10-Year Average: $18 \mu\text{g/L}$ | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| Summer Average | 14 | 19 | 22 | 23 | 22 | 18 | 14 | 14 | 22 | 7 |
| Sample 1 | 4 | 3 | 5 | 7 | 5 | 3 | 3 | 1 | 3 | 16 |
| Sample 2 | 12 | 8 | 10 | 12 | 9 | 5 | 10 | 12 | 9 | 8 |
| Sample 3 | 8 | 7 | 7 | 15 | 11 | 9 | 9 | 14 | 20 | 6 |
| Sample 4 | 8 | 10 | 13 | 26 | 20 | 13 | 34 | 8 | 32 | 5 |
| Sample 5 | 16 | 17 | 23 | 25 | 45 | 29 | | 16 | 20 | 5 |
| Sample 6 | 12 | 34 | 45 | 28 | 31 | 34 | | 16 | 32 | 4 |
| Sample 7 | 28 | 22 | 33 | 27 | 33 | 24 | | 20 | 26 | 6 |
| Sample 8 | 28 | 34 | 24 | 45 | 25 | 25 | | 28 | 32 | 4 |

#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|--------------------|--|--|--|
| Forest Lake West | Significantly Improving Trend Since 1984 | Significantly Improving Trend Since 2001 | Significantly Improving Trend Since 2013 |
| Forest Lake Middle | Improving Trend Since 2013 | Improving Trend Since 2013 | Improving Trend Since 2013 |
| Forest Lake East | Declining Trend Since 2013 | Improving Trend Since 2013 | Improving Trend Since 2013 |

**Trends that are not "significantly" improving or declining are not statistically significant.*



Management Activities:

- County Road 50 Iron Enhanced Sand Filter (97 lb/yr phosphorus reduction)
- WJD-6 Wetland Restoration (20 lb/yr phosphorus reduction)
- Shields Lake Improvement Projects (531 lb/yr)
- Hilo Lane Stormwater Retrofit (12 lb/yr phosphorus reduction)
- 3rd Lake Pond Wetland Treatment Basin (56 lb/yr phosphorus reduction)
- Enhanced Street Sweeping Program (72 lb/yr)
- Stormwater Management Permits (10 lb/yr)
- Cost-Share Projects (16 lb/yr)
- North Shore Circle Improvements Roadside BMPs (3.4 lb/yr phosphorus reduction)
- Curly-leaf Pondweed Treatment (performed annually by CLFLWD)
- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)
- Additional projects that are currently in-progress or planned for future:
 - Castlewood Agricultural BMPs (estimated 5 lb/yr phosphorus reduction)
 - Direct Drainage Retrofits (estimated phosphorus reduction TBD)
 - Forest Lake Alum Treatment (527 lb/yr)

Conclusion:

Forest Lake is **not** nutrient impaired for aquatic recreation, but water quality readings are sometimes close to or exceed the state standard. The District will continue to implement management activities to improve water quality in Forest Lake and monitor in-lake water quality annually.

5229 Comfort Lake Summary

(Comfort) 2023 Water Quality Grade: A-

| Excellent | Good | Average | Marginal | Poor |
|--|---|---|--|--|
| A All or most samples meet the desired threshold | B Many samples meet or are near the desired threshold | C Some samples meet or are near desired threshold | D Many samples do not meet the desired threshold | F Most samples do not meet the desired threshold |

(Comfort) Lake Goals & Status Summary

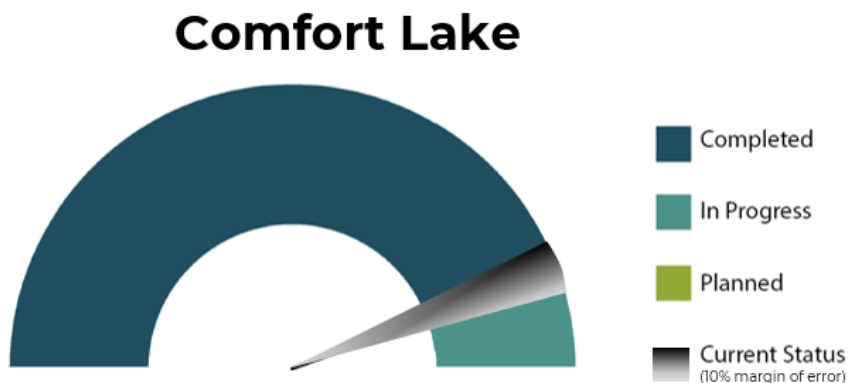
Table 25. Comfort Lake Water Quality Goals & Status Summary

| | Long-Term Goal | Current Status | Remaining |
|--|--------------------------------|------------------------------|------------------------------|
| 5-Year Average Phosphorus Concentration | ≤30 µg/L | 24.7 µg/L | 193 lb/yr phosphorus load |
| 5-Year Average Secchi Depth | ≥7 ft | 6.8 ft | |
| 10-Year Average Bottom Water Chloride | ≤230 mg/L | TBD | TBD |
| % of Parcels with ≥75% Natural Shoreline Source: 2014 Shoreland Inventory (more recent photo inventories have occurred but % not quantified) | ≥75% of parcels ≥94 parcels | 59% of parcels 74 parcels | 16% of parcels 20 parcels |

Table 26. Comfort Lake Phosphorus Reduction Goals

| 5229 Comfort Lake | Phosphorus Reduction (lb/yr) |
|--|------------------------------|
| Load Reduction to Achieve Long-term Goal of 30 µg/L: (based on 2004 benchmark of 42 µg/L; 10% margin of error = 83 lbs) | 825 |
| Load reduction progress through 2023 | 697 |
| 2023 Remaining Load Reduction (cross-referenced w/ in-lake data and trends) | 128 |

(Comfort) Project Implementation Progress



Phosphorus Reduction Goal: 825 lbs
Progress Toward Goal: 85%

Figure 23. Comfort Lake Phosphorus Reduction Goals and Project Progress Graph

Additional notable projects: cost-share projects, permitting oversight (e.g., erosion control, stormwater management, and waterbody buffer requirements).

(Comfort) Progress Toward State Standards

Comfort Lake is nutrient impaired for aquatic recreation.

#1 – Water Quality Samples: If seasonal averages of the last two years of data (minimum of 8 samples) meet the total phosphorus standard, and either the Secchi or chlorophyll-a standard, then the lake meets criterion #1 for de-listing.



#1 – Water Quality Samples:

Comfort Lake is meeting the criteria for phosphorus concentration, Secchi depth, and chlorophyll-a. **Comfort Lake meets criterion #1 for de-listing.**

| Comfort Lake Phosphorus | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Deep Lake State Standard $\leq 40 \mu\text{g/L}$ 10-Year Average: 29 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | 43 | 31 | 34 | 33 | 32 | 26 | 31 | 20 | 28 | 16 |
| Sample 1 | 45 | 23 | 16 | 18 | 51 | 57 | 21 | 31 | 26 | 10 |
| Sample 2 | 61 | 14 | 27 | 67 | 20 | 22 | 13 | 44 | 34 | 13 |
| Sample 3 | 85 | 28 | 86 | 27 | 34 | 24 | 17 | 20 | 38 | 25 |
| Sample 4 | 45 | 50 | 28 | 55 | 38 | 20 | 16 | 8 | 25 | 10 |
| Sample 5 | 17 | 38 | 32 | 23 | 24 | 30 | 73 | 12 | 25 | 16 |
| Sample 6 | 16 | 36 | 29 | 23 | 22 | 33 | 45 | 15 | 15 | 22 |
| Sample 7 | 41 | 38 | 29 | 17 | | 19 | 30 | 16 | 24 | 17 |
| Sample 8 | 30 | 28 | 27 | 18 | | 23 | 18 | 15 | 33 | |

| Comfort Lake Secchi | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Deep Lake State Standard $\geq 4.6 \text{ ft}$ 10-Year Average: 6.2 ft | | | | | | | | | | |
| Summer Average | 4.6 | 5.5 | 5.5 | 5.8 | 7.7 | 5.3 | 6.0 | 8.4 | 5.9 | 7.4 |
| Sample 1 | 6.0 | 7.5 | 8.0 | 7.5 | 14.0 | 7.5 | 6.6 | 9.8 | 8.2 | 5.6 |
| Sample 2 | 4.0 | 6.5 | 6.0 | 6.5 | 8.5 | 6.0 | 9.5 | 9.8 | 6.6 | 7.9 |
| Sample 3 | 3.5 | 4.5 | 6.5 | 6.0 | 7.0 | 5.5 | 7.5 | 8.9 | 4.6 | 8.5 |
| Sample 4 | 4.0 | 3.0 | 6.0 | 4.5 | 4.5 | 5.0 | 5.6 | 10.2 | 5.2 | 7.7 |
| Sample 5 | 4.5 | 4.5 | 3.0 | 4.5 | 6.0 | 4.0 | 6.0 | 7.9 | 4.6 | 8.0 |
| Sample 6 | 6.0 | 4.5 | 4.5 | 6.0 | 6.0 | 4.5 | 5.7 | 9.2 | 5.9 | 5.2 |
| Sample 7 | 4.5 | 4.5 | 4.0 | 5.5 | | 5.5 | 5.5 | 6.2 | 6.9 | 9.0 |
| Sample 8 | 4.5 | 5.0 | 4.5 | 6.0 | | 6.0 | 4.9 | 5.6 | 5.6 | 7.2 |

| Comfort Lake Chlorophyll-a | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|
| Deep Lake State Standard $\leq 14 \mu\text{g/L}$ 10-Year Average: 12 $\mu\text{g/L}$ | | | | | | | | | | |
| Summer Average | 17 | 20 | 16 | 12 | 14 | 16 | 10 | 4 | 10 | 5 |
| Sample 1 | 6 | 10 | 7 | 9 | 4 | 9 | 5 | 4 | 2 | 6 |
| Sample 2 | 28 | 10 | 10 | 1 | 9 | 13 | 7 | 7 | 8 | 3 |
| Sample 3 | 16 | 26 | 9 | 13 | 10 | 21 | 6 | 2 | 16 | 3 |
| Sample 4 | 24 | 27 | 14 | 17 | 33 | 21 | 8 | 1 | 10 | 3 |
| Sample 5 | 16 | 28 | 31 | 13 | 12 | 15 | 16 | 3 | 13 | 8 |
| Sample 6 | 7 | 25 | 22 | 13 | 14 | 27 | 10 | 4 | 8 | 3 |
| Sample 7 | 16 | 26 | 25 | 13 | | 20 | 11 | 8 | 8 | 6 |
| Sample 8 | 26 | 24 | 23 | 21 | | 15 | 12 | 6 | 13 | |

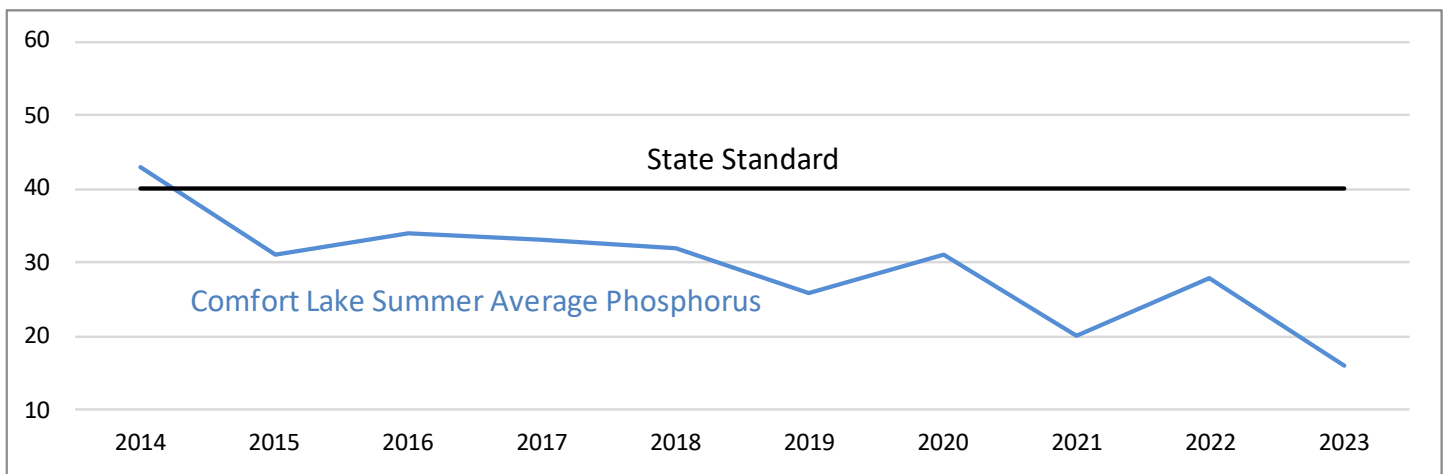
#2 Trend/Management: If there is either an improving trend in total phosphorus or management activities in place to maintain improved chlorophyll-a or Secchi observations, then the lake meets criterion #2 for de-listing.

#2 Trend/Management:
 ✓ Phosphorus trend is improving in Comfort Lake. Several management activities are in place to maintain improved chlorophyll-a or Secchi observations in Comfort Lake, but several projects are still in progress. **Comfort Lake meets criteria #2 for de-listing, but more management activities are in progress.**

Trends:

| Lake | Total Phosphorus Trend | Chlorophyll-a Trend | Secchi Disk Trend |
|--------------|----------------------------|--|--|
| Comfort Lake | Improving Trend Since 1994 | Significantly Improving Trend Since 2014 | Significantly Improving Trend Since 2014 |

**Trends that are not “significantly” improving or declining are not statistically significant.*



Management Activities:

- Sunrise River/Hwy 61 Wetland Restoration – Chisago Co. Petitioned Project (estimated 65 lb/yr phos. reduction)
- Bixby Park Water Quality Improvement Project – Chisago Co. Petitioned Project (92 lb/yr phosphorus reduction)
- Target Big Box Retrofits (5 lb/yr phosphorus reduction)
- Stormwater Management Permits (43 lb/yr)
- Curly-leaf Pondweed Surveys (annually by CLFLWD, treatment usually not warranted- due to low density growth)
- CLFLWD Rules and Permitting (ongoing program resulting in erosion prevention, stormwater management practices, native buffers, etc. for development projects)
- Additional projects that are currently in-progress or planned for future:
 - Little Comfort Lake Improvement Projects (estimated 64 lb/yr phosphorus reduction)
 - Shoreline Restorations (estimated phosphorus/sediment reduction TBD)
 - Shallow Pond Restoration (estimated phosphorus/sediment reduction TBD)
 - Regional Stormwater Treatment Facility (estimated phosphorus/sediment reduction TBD)

Conclusion:
 ✓ Comfort Lake qualifies for de-listing at this time. However, the estimated phosphorus load entering Comfort Lake is still above the long-term District goal. **The District will implement more management activities, particularly on Little Comfort Lake, to protect Comfort Lake’s water quality long-term.**

5300 Rivers/Streams

5300 10-Year (2031) Measurable Goals

- Goal 1:** Adaptively manage District streams to achieve annual total suspended solids (TSS) flow-weighted mean concentrations less than the Ecoregion standard of 30 mg/L.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- Goal 2:** Confirm the headwaters of the Sunrise River.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- Goal 3:** Adaptively manage District streams to achieve stream chloride concentrations less than the State standard of 230 mg/L.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- Goal 4:** Promote natural, deep rooted, native vegetation buffers to ensure at least 75% of streambank parcels have at least 75% natural shoreline condition. Quantified streambank buffer goals will be assessed and established.

| | | | | |
|--|------------------|----------------------------|--------------------|---------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
|--|------------------|----------------------------|--------------------|---------------------|

- Goal 5:** Restore abandoned drainage systems to natural conditions (wetlands, bogs, fens, etc.) as opportunity arises.

| | | | | |
|---|---------------|-------------------------|-----------------|------------------|
| Priority Ranking by Lake Management District (LMD) ¹ | Bone LMD: N/A | Little Comfort LMD: N/A | Forest LMD: N/A | Comfort LMD: N/A |
|---|---------------|-------------------------|-----------------|------------------|

¹The District Board of Managers chose not to assign a priority ranking for this goal as it will be pursued as opportunity arises.

Table 27. River/Stream Goals and Starting Point

| Water Resource | Parameter | 2021 Starting Point | 10-year (2031) Measurable Goal |
|--|---|---------------------|--------------------------------|
| Sunrise River | 10-Year Mean Total Suspended Solids | TBD ⁴ | ≤30 mg/L |
| | 10-Year Mean Chloride Concentration | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Streambank | TBD ³ | ≥75% |
| Bone-Birch-School-Little Comfort (BBSLC) Tributary | 10-Year Mean Total Suspended Solids | TBD ⁴ | ≤30 mg/L |
| | 10-Year Mean Chloride Concentration | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Streambank | TBD ³ | ≥75% |
| Washington Judicial Ditch 6 | 10-Year Mean Total Suspended Solids | TBD ⁴ | ≤30 mg/L |
| | 10-Year Mean Chloride Concentration | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Streambank | TBD ³ | ≥75% |
| Meadowbrook Tributary | 10-Year Mean Total Suspended Solids | TBD ⁴ | ≤30 mg/L |
| | 10-Year Mean Chloride Concentration | TBD ⁴ | ≤230 mg/L |
| | % of Parcels with ≥75% Natural Streambank | TBD ³ | ≥75% |

5300 Progress Evaluation Metrics

- Stream chloride concentrations and statistical trend analyses.
- Stream total suspended solids flow-weighted mean concentrations and statistical trend analyses.
- Percent of streambank parcels with at least 75% natural shoreline condition.
- District program outputs may include: Number of stream buffer site visits performed, buffer practices installed, grant applications received, applications approved for funding.

5300 Evaluation in 2023

- **Goal 1:** Adaptively manage District streams to achieve annual total suspended solids (TSS) flow-weighted mean concentrations less than the Ecoregion standard of 30 mg/L.
 - **2023 Evaluation:** The 2023 water monitoring report includes TSS monitoring.
- **Goal 2:** Confirm the headwaters of the Sunrise River.
 - **2023 Evaluation:** The longest stream reach length and largest drainage area associated with a reach of the Sunrise River is located in the CLFLWD, supporting the idea that the Sunrise River headwaters is in fact located in the CLFLWD.

In 2021 District staff had multiple communications with state agencies on this topic. All of the state agencies indicated that they do not have a procedure for officially naming an area “headwaters.” Staff also corresponded with state agencies and did not find any grant programs that give special consideration to headwaters designations. In 2021 District Engineer, Emmons & Olivier Resources (EOR) conducted a GIS analysis of watercourse length and drainage area of the major tributaries of the Sunrise River to provide supporting data for the determination of the headwaters of the Sunrise River. Washington Judicial Ditch 6 extending south from the east basin of Forest Lake has the longest watercourse length and drainage area of the major tributaries of the Sunrise River. In addition, the Comfort Lake-Forest Lake Watershed recently updated the hydrologic boundary of WJD-6 and determined it extends beyond the MN DNR minor subwatershed layer, further supporting that WJD-6 has the largest drainage area of the major tributaries of the Sunrise River. District staff updated Wikipedia to reflect these findings.

- **Goal 3:** Adaptively manage District streams to achieve stream chloride concentrations less than the State standard of 230 mg/L.
 - **2023 Evaluation:** The 2023 water monitoring report includes chloride monitoring.
- **Goal 4:** Promote natural, deep rooted, native vegetation buffers to ensure at least 75% of streambank parcels have at least 75% natural shoreline condition. Quantified streambank buffer goals will be assessed and established.
 - **2023 Evaluation:** No stream buffers were implemented in 2023. The District continued implementation of both its regulatory permitting program and its voluntary cost-share program in 2023. See Program 3002 Permitting and 3004 Non-Point Source Pollution Abatement for more information.
- **Goal 5:** Restore abandoned drainage systems to natural conditions (wetlands, bogs, fens, etc.) as opportunity arises.
 - **2023 Evaluation:** The following CLFLWD projects restored ditched wetland systems, improved natural hydrology, and restored native plant communities:
 - Southeast Meadowbrook Wetland Restoration: located on a ditched tributary system flowing to Bone Lake, completed in 2021.
 - Sunrise River/Highway 61 (Tax Forfeit) Wetland Restoration: located on a ditched tributary system flowing to the Sunrise River and Comfort Lake, completed in 2023.
 - WJD-6 Wetland Restoration: Located along a tributary to the Washington Judicial Ditch 6 (WJD-6), began construction in 2023 and will close out in 2024.

5400 Wetlands

5400 10-Year (2031) Measurable Goals

- **Goal 1:** Restore or enhance at least 400 acres of wetlands that support water quality treatment.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 2:** Restore or enhance at least 200 acres of wetlands to support flood attenuation and storage.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 3:** Preserve existing wetland buffers and encourage the establishment of buffers for water quality and habitat benefits through District Programs.

| | | | | |
|--|----------------|--------------------------|------------------|-------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: High | Little Comfort LMD: High | Forest LMD: High | Comfort LMD: High |
|--|----------------|--------------------------|------------------|-------------------|

- **Goal 4:** Restore or enhance at least 80 acres of wetlands to support wildlife habitat and recreational opportunities.

| | | | | |
|--|------------------|----------------------------|--------------------|---------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
|--|------------------|----------------------------|--------------------|---------------------|

5400 Progress Evaluation Metrics

- Acres of wetland restoration or enhancement that support water quality treatment, flood attenuation and storage, and wildlife habitat and recreational opportunities.
- District program outputs may include: number of wetland buffer permits issued and cost-share grants awarded.

5400 Evaluation in 2023

- **Goal 1:** Restore or enhance at least 400 acres of wetlands that support water quality treatment.
 - **2023 Evaluation:** The following projects result/will result in wetland restoration to support water quality treatment:
 - Sunrise River/Highway 61 (Tax Forfeit) Wetland Restoration: 22.1 ac
 - Bone Lake Northeast Legacy Wetland Restoration: 2.0 ac
 - WJD-6 Wetland Restoration: 3.7 ac
 - Moody Lake Capstone Projects: 0.5 ac
 - **TOTAL: 28.3 ac**
- **Goal 2:** Restore or enhance at least 200 acres of wetlands to support flood attenuation and storage.
 - **2023 Evaluation:** The following projects result/will result in wetland restoration to support flood attenuation and storage:
 - Sunrise River/Highway 61 (Tax Forfeit) Wetland Restoration: 22.1 ac
 - Bone Lake Northeast Legacy Wetland Restoration: 2.0 ac
 - WJD-6 Wetland Restoration: 3.7 ac
 - Moody Lake Capstone Projects: 0.5 ac
 - **TOTAL: 28.3 ac**

- **Goal 3:** Preserve existing wetland buffers and encourage the establishment of buffers for water quality and habitat benefits through District Programs.
 - **2023 Evaluation:** In 2023 the District issued one wetland buffer permit (#23-010) which will result in 15.2 acres of restored/protected wetland buffer. The District received an additional 3 wetland buffer permit applications in 2023, which are still in the application review process. The District continued implementation of both its regulatory permitting program and its voluntary cost-share program in 2023.
- **Goal 4:** Restore or enhance at least 80 acres of wetlands to support wildlife habitat and recreational opportunities.
 - **2023 Evaluation:** The following projects result/will result in wetland restoration to support wildlife habitat:
 - Sunrise River/Highway 61 (Tax Forfeit) Wetland Restoration: 22.1 ac
 - Bone Lake Northeast Legacy Wetland Restoration: 2.0 ac
 - WJD-6 Wetland Restoration: 3.7 ac
 - Moody Lake Capstone Projects: 0.5 ac
 - **TOTAL: 28.3 ac**

5500 Upland Resources

5500 10-Year (2031) Measurable Goals

- **Goal 1:** Partner with municipalities to establish at least 1 new natural park open space within a LMD priority area (see LMD profiles).

| | | | | |
|--|------------------|----------------------------|--------------------|---------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
|--|------------------|----------------------------|--------------------|---------------------|

- **Goal 2:** Establish partnerships with agencies and municipalities within 1 greenway corridor in the District as identified in the Greenway Corridor Visioning and Assessment (5120B).

| | | | | |
|--|------------------|----------------------------|--------------------|---------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
|--|------------------|----------------------------|--------------------|---------------------|

5500 Progress Evaluation Metrics

- Establishment of at least 1 new park open space.
- Establishment of partnerships with agencies and municipalities within at least 1 continuous greenway corridor.
- Annual coordination meeting with partnering agencies and municipalities to discuss upland forest cover protection.

5500 Evaluation in 2023

- **Goal 1:** Partner with municipalities to establish at least 1 new natural park open space within a LMD priority area (see LMD profiles).
 - **2023 Evaluation:** North Shore Trail Nature Area - In 2022 the District acquired a 19-acre parcel with shoreline frontage on the north side of Forest Lake’s east basin (“3rd Lake”). The parcel contains approximately 2-3 acres of mature forested upland, 16 acres of wetland and over 3,000 feet of undeveloped shoreline, all of which provide significant habitat for a variety of terrestrial and aquatic species. Now under public ownership, this parcel may be utilized as a natural park open space within the Forest Lake Management District.
- **Goal 2:** Establish partnerships with agencies and municipalities within 1 greenway corridor in the District as identified in the Greenway Corridor Visioning and Assessment (5120B).
 - **2023 Evaluation:** The District held several meetings with cities and counties regarding greenway corridor visioning in recent years. The 2024 Floodplain Vulnerability Assessment will provide additional direction for this effort by prioritizing sites for flood storage. This effort will dovetail with the greenway visioning and help identify sites that achieve multiple benefits.

5600 Groundwater

5600 10-Year (2031) Measurable Goals

- **Goal 1:** Implement best management practices to protect groundwater (drinking water) from nitrate contamination in three areas of high aquifer vulnerability in order to maintain or improve groundwater quality.

| | | | | |
|--|------------------|----------------------------|--------------------|---------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
|--|------------------|----------------------------|--------------------|---------------------|

- **Goal 2:** Complete a groundwater dependent natural resource (GDNR) inventory.

| | | | | |
|--|------------------|----------------------------|--------------------|---------------------|
| Priority Ranking by Lake Management District (LMD) | Bone LMD: Medium | Little Comfort LMD: Medium | Forest LMD: Medium | Comfort LMD: Medium |
|--|------------------|----------------------------|--------------------|---------------------|

5600 Progress Evaluation Metrics

- Number of best management practices implemented to protect groundwater (drinking water) from nitrate contamination in three areas of high aquifer vulnerability.
- Number of groundwater dependent natural resources (GDNRs) with groundwater supply as baseflow protected through District programs or projects.
- Number of GDNRs protected from degradation through District programs or projects.

5600 Evaluation in 2023

- **Goal 1:** Implement best management practices to protect groundwater (drinking water) from nitrate contamination in three areas of high aquifer vulnerability in order to maintain or improve groundwater quality.
 - **2023 Evaluation:** The District’s cost-share program offers financial and technical assistance for landowners to protect and conserve groundwater. Cropland conversion projects result in reduced nitrogen inputs from not using fertilizer, reduced sediment runoff due to the perennial vegetation stabilizing the soil, and carbon sequestration.

Groundwater protection projects in 2022/2023 included:

- **Bone Lake Cropland Conversion:** Maintained 30 acres of cropland conversion to perennial cover. In addition to groundwater protection, this project reduces phosphorus loading by 34 lbs/yr.
 - **Lake Keewahtin Hay/Pasture Planting:** Provided technical assistance for the conversion of 31 acres of cropland to hay and forage production. In addition to groundwater protection, this project is estimated to reduce 5.6 lbs/yr phosphorus and 3.27 tons/yr total suspended solids.
 - **Lake Keewahtin Prairie Planting:** Converted 1 acre of row crops to conservation cover. In addition to groundwater protection, this project is estimated to reduce 1.2 lbs/yr phosphorus and 0.6 tons/yr total suspended solids.
 - **Heims Lake Irrigation Control System:** This project is estimated to reduce groundwater consumption by 300,000 gallons/yr.
 - **Shields Lake Irrigation Reuse:** Partnered with Forest Hills Golf Club to maintain the stormwater harvest and irrigation reuse system, reducing groundwater consumption by up to 26 million gallons/yr.
- **Goal 2:** Complete a groundwater dependent natural resource (GDNR) inventory.
 - **2023 Evaluation:** This activity was completed in 2023.

REFERENCES

CLFLWD 2022-2031 Watershed Management Plan: https://www.cflwd.org/documents/2022-2031CLFLWDWatershedManagementPlan_Full.pdf

McComas, Steve. Curlyleaf Pondweed Growth Characteristics: http://www.cflwd.org/documents/CLPgrowthcharacteristics_BWS.pdf

Metropolitan Council. 2018. Thrive MSP 2040 - Forecasts as of January 1, 2018: [https://metro council.org/Data-and-Maps/Publications-And-Resources/Files-and-reports/Thrive-MSP-2040-Local-Forecasts-\(January-2018\)-\(1\).aspx](https://metro council.org/Data-and-Maps/Publications-And-Resources/Files-and-reports/Thrive-MSP-2040-Local-Forecasts-(January-2018)-(1).aspx)

APPENDICES

Appendix A - Annual Newsletter

Comfort Lake-Forest Lake Watershed District ■ Summer 2023

Newsletter



Living in our lakes

District staff have been hosting a weekly booth at Forest Lake's Arts in the Park. We're providing an opportunity for people of all ages to learn about the plants and animals that call our lakes home, like the damselfly featured in this issue's cover photo.

Learn more about upcoming activities and workshops on page 4.



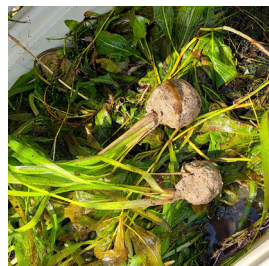
A new look

The District adopted a new logo and website earlier this year to improve the usability and accessibility of District materials. Explore the new website at www.clflwd.org.



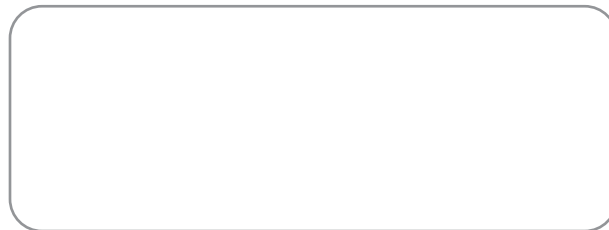
CLFLWD
WATERSHED DISTRICT

More native plants coming to Moody Lake



Moody Lake, located north of Bone Lake in Chisago City, is the focus of a native aquatic plant research project. The CLFLWD partnered with researchers from the University of Minnesota to transplant a variety of native aquatic plants into Moody Lake in early August. The goal of this project is to improve the diversity of the lake's plant community which had been previously damaged by invasive species.

Comfort Lake-Forest Lake
Watershed District
44 Lake St. South, Suite A
Forest Lake, MN 55025





Watersheds & Watershed Districts

About Us

The Comfort Lake-Forest Lake Watershed District (CLFLWD) is a special purpose unit of local government that was formed by citizen petition in 1999. The District covers 49 square miles in northern Washington county and southern Chisago county. The District is tasked with maintaining and improving the area's water resources.



Learn more about our history online!

A watershed is an area of land where all water falling or flowing will drain to a common point. Watersheds aren't divided by political boundaries but by topography and flow of water. In the Comfort Lake-Forest Lake Watershed, water flows through a series of lakes, rivers, and public drainage systems to the Sunrise River and finally the St. Croix River.

In Minnesota, water resources are managed by watershed districts and watershed management organizations. Watershed districts work to solve and prevent water-related problems. Watershed districts are special purpose units of local government authorized by the 1955 Watershed Act (MSA103D).

Watershed districts exist because water management issues frequently cannot be addressed solely within a single municipality or county. Solving these issues requires prioritization based on geographic and hydrologic needs and not political boundaries. The interconnected nature of waterways means that dollars spent in one city or county result in benefits for all other cities and counties in the watershed.

TOTAL GRANT DOLLARS

\$5,000,000

2023 GRANT DOLLARS

\$533,600



Progress

As a whole, the District is 92% of the way to meeting the state standards for phosphorus reductions and 78% of the way to meeting the District's phosphorus goals.

The District's goals often exceed the state standards. Based on historic lake data that provides realistic and sustainable phosphorus data, the District's goals ensure our local lakes reach their full potential.

Using Clean Water Fund grants to improve local water quality

The Comfort Lake-Forest Lake Watershed District (CLFLWD) is the biggest winner of Clean Water Fund Projects & Practices grants over the past ten years with a cumulative award of \$5 million between fiscal years 2014-2023.

In 2022 the District submitted 13 grant applications for a total request of \$1.4 million in grant funds. \$1.35 million in grant funds was awarded. The District was awarded a \$533,600 Clean Water Fund grant for the Forest Lake Alum Treatment Project (page 4) in fiscal year 2023.

The District's use of diagnostic monitoring to identify the most cost-effective water quality

projects has been key to its success in winning Clean Water Fund grants.

The District implements water quality projects based on the economic principles of cost-benefit. This process ensures that only the best projects, with the highest water quality benefits and return on investment, are brought forward and constructed.

The District has also received grant funding from the Lessard-Sams Outdoor Heritage Fund, the Section 319 Small Watersheds Focus Program, and the Lower St. Croix Partnership's Watershed Based Implementation Funding.



Love your lake? Love your shoreline.

Many of Minnesota’s lakes are in trouble. Nearly half of Minnesota’s natural shorelines have already been lost, and natural shoreline continues to vanish at an alarming rate.

Mowed shorelines allow 7 to 9 times more pollutants to enter the lake than a naturally vegetated shoreline. These pollutants accumulate in lakes, often creating serious water quality problems while also promoting algal blooms.

In addition to removing pollutants, Natural shorelines provide valuable habitat for fish and loons, frogs, butterflies, and more.

Interested in supporting your lake’s health and ecosystems? Want to stop or prevent shoreline erosion? Or help pollinators and aquatic life? Or just perhaps figure out a way to finally get rid of those pesky pooping geese? Restoring your shoreline may be the solution for you!

Protecting and Restoring

The CLFLWD launched its new Comprehensive Shoreline Program in the spring of 2023. This program provides technical and financial resources to lake shore owners looking to restore and protect their shorelines. Technical resources include free site visits, planting maps, and tool rentals. Financial assistance includes grants, cost-sharing, and tax rebates.

To learn more about this program scan the QR code or visit our website www.clflwd.org.



Mini Grant

What: Up to \$500 reimbursement to improve water quality within the watershed, either directly or through targeted education and outreach. Examples include: native plantings, buffer strips, water spout diversions & rain barrels, turf replacement, etc.

Who: Residents, homeowner associations, schools, non-profits, and businesses



Community Water Cost-Share

What: A competitive grant offering funding of up to 75% of approved costs, for highly ranked projects with a maximum of \$7,500. Eligible projects must improve water quality in the watershed district. Examples include: shoreline restorations, wetland restorations, raingardens, and/or labor conducted by an approved contractor.

Who: Residents, homeowner associations, schools, non-profits, and businesses



Legacy Payment Program

What: Landowners who meet the criteria outlined in this program can receive payments of up to \$300/yr. Criteria include the presence of high quality natural resources, compliance with all District rules and local ordinances, and shoreline or streambank buffers where applicable. Contact the District for the full criteria list.

Who: Residential land owners



The search for a new office continues

The District’s current office space has transferred ownership and no longer meets our needs. Attend our upcoming open house to learn more about the District’s search for an office space and provide your feedback.

November 8th | 4:30 - 6:00pm
44 Lake St. South, Suite A, Forest Lake

Coming Soon! A cleaner and clearer Forest Lake

The CLFLWD will be conducting an alum treatment on Forest Lake in mid-September. This is an exciting milestone project that will result in cleaner and clearer water throughout all three basins of Forest Lake.

The lake will be treated with alum, a non-toxic chemical compound, that will bind to phosphorus in the water and make it unavailable for algae growth.

The watershed district targets phosphorus, because in excess amounts, it can promote algae growth and lower water quality. One pound of phosphorus can support the growth of up to 500 pounds of algae.

Information Session

The District will be holding an alum treatment information on Saturday, August 26th from 10:00am to 12:00pm at the Hardwood Creek Library in Forest Lake. Stop by to learn more about this exciting project!

Alum Facts

- ✓ Alum is safe for people, pets, and wildlife
- ✓ Alum has been used to treat drinking water for hundreds of years.
- ✓ Alum is applied by licensed professionals
- ✓ Only the middle basin will be treated, but all three basins will see benefits.
- ✓ Recreation will not be restricted during the treatment.
- ✓ Benefits are expected to last 10-15 years. Shoreline restorations can extend these benefits even longer (page 3).



Scan the QR code to learn more about this exciting project!



Alum application barge on Shields Lake

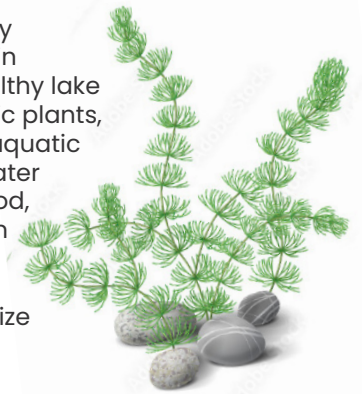


Moody Lake before (left) and after (right) alum treatment

More Aquatic Plants?

Some additional aquatic plant growth may occur after the alum treatment. However, it is not expected to be a significant increase in plant abundance or distribution.

Aquatic plants play an important role in maintaining a healthy lake ecosystem. Aquatic plants, especially native aquatic plants, improve water quality, provide food, shelter and oxygen for fish, protect shorelines from erosion, and stabilize lake sediments.



We're going digital! Sign-up for our online newsletter.

Beginning in 2024 the CLFLWD will be switching from one annual newsletter to four quarterly newsletters. These newsletters will be distributed digitally to reduce costs and provide more in-depth updates on watershed activities. Scan the QR code below to sign-up for the digital newsletter.

You can also follow us on social media @clflwd to receive the latest updates.



August

8/26 Alum Info Session
10:00am - 12:00pm
Hardwood Creek Library

8/30 Project Celebration
9:00 - 11:00am
Lakeside Memorial Park

September

9/14 Aquatic Plants for Kids
3:00 - 5:00pm
Hardwood Creek Library

9/14 Aquatic Plant Workshop
5:30 - 6:30pm
Hardwood Creek Library

9/25 Shoreline Workshop
4:30 - 6:00pm
CLFLWD Office

October

10/21 Fall Yard Maintenance
10:00am-12:00pm
Hardwood Creek Library

November

11/8 Open House
4:30pm - 6:00pm
CLFLWD Office



Learn more & RSVP online
clflwd.org/events

Upcoming Activities & Workshops

The District hosts free workshops and hands-on activities for audiences of all ages including classroom visits, adult education, and service learning. If you're interested in learning more about these educational opportunities contact our Education & Outreach Coordinator, Jessica Lindemyer, at (651) 395-5858 or jessica.lindemyer@clflwd.org.

Appendix B - Clean Water Fund Grant Awards (FY 2014-2024)

(Grant program from 2008 MN constitutional amendment. Projects and Practices category only.)

| | Organization | Total Projects and Practices Grants Awarded (FY 2014-2024) |
|----|------------------------------------|--|
| 1 | Comfort Lake-Forest Lake WD | \$5,157,334 |
| 2 | Becker SWCD | \$4,433,710 |
| 3 | Benton SWCD | \$3,658,210 |
| 4 | Bois de Sioux WD | \$3,355,010 |
| 5 | Crow Wing SWCD | \$3,335,000 |
| 6 | Vermillion River JPB/JPO | \$2,953,950 |
| 7 | Chisago SWCD | \$2,952,500 |
| 8 | Rice Creek WD | \$2,732,104 |
| 9 | Coon Creek WD | \$2,469,023 |
| 10 | Stearns SWCD | \$2,369,737 |
| 11 | Pope SWCD | \$2,361,300 |
| 12 | Anoka Conservation District | \$2,255,825 |
| 13 | Shingle Creek WMC | \$2,057,550 |
| 14 | Capitol Region WD | \$1,835,000 |
| 15 | Red Lake SWCD | \$1,772,973 |
| 16 | Douglas SWCD | \$1,666,908 |
| 17 | City of Anoka | \$1,662,146 |
| 18 | Pomme de Terre River Association | \$1,635,325 |
| 19 | Wilkin SWCD | \$1,541,000 |
| 20 | Bassett Creek WMC | \$1,500,000 |
| 21 | Buffalo-Red River WD | \$1,500,000 |
| 22 | Lower Mississippi River WMO | \$1,472,000 |
| 23 | Pelican River WD | \$1,470,108 |
| 24 | Minnehaha Creek WD | \$1,400,240 |
| 25 | Okabena-Ocheda WD | \$1,398,312 |
| | | |

| | Organization | Total Projects and Practices Grants Awarded (FY 2014-2024) |
|----|---------------------------------|--|
| 26 | Middle St. Croix River WMO | \$1,370,450 |
| 27 | Carlton SWCD | \$1,341,444 |
| 28 | Dakota County | \$1,295,724 |
| 29 | Dakota SWCD | \$1,285,000 |
| 30 | Pennington SWCD | \$1,255,142 |
| 31 | Valley Branch WD | \$1,216,000 |
| 32 | Cedar River WD | \$1,208,000 |
| 33 | Middle Fork Crow River WD | \$1,176,250 |
| 34 | City of Forest Lake | \$1,107,000 |
| 35 | Scott SWCD | \$1,101,430 |
| 36 | Redwood-Cottonwood Rivers Contr | \$1,048,880 |
| 37 | Carnelian-Marine-St. Croix WD | \$996,481 |
| 38 | Isanti SWCD | \$950,055 |
| 39 | Wright SWCD | \$928,375 |
| 40 | Brown's Creek WD | \$927,950 |
| 41 | Martin County | \$882,000 |
| 42 | Pioneer-Sarah Creek WMC | \$821,000 |
| 43 | Fillmore SWCD | \$804,385 |
| 44 | Mississippi WMO | \$800,000 |
| 45 | Renville SWCD | \$773,133 |
| 46 | Nine Mile Creek WD | \$750,000 |
| 47 | Clearwater River WD | \$712,906 |
| 48 | Le Sueur SWCD | \$697,350 |
| 49 | City of St. Paul | \$695,000 |
| 50 | Prior Lake-Spring Lake WD | \$638,700 |
| | Total | \$83,727,920 |

WD = Watershed District SWCD = Soil and Water Conservation District CA = Control Area
WMB = Watershed Management Board WMC = Watershed Management Commission WMO = Watershed Management Org.

CLFLWD assisted the City of Forest Lake with its FY18 CWF grant proposal for Forest Lake Enhanced Street Sweeping Implementation (award = \$220,000) by performing the comprehensive street sweeping study and report in 2017 and assisting with the FY18 grant proposal and work plan. CLFLWD also assisted the City of Forest Lake with its FY17 CWF grant proposal for Forest Lake High School Stormwater Reuse (award = \$505,000) by performing initial coordination with the Forest Lake High School and project engineers.

Appendix C – Project Implementation Update

| Project Name (2023 Active Projects) | Project Description | Project Outcomes/Outputs Phosphorus (P), Sediment, Storage, Restored Feet/Acres | Progress Update (Project Phase as of 12/31/23) |
|---|--|--|---|
| District-Wide Shoreline Restoration Program | Utilizes public-private partnerships to implement a shoreline buffer restoration program to prevent erosion, improve water quality, and improve habitat on lakeshore properties. | Restore at least 75% of shoreline buffers on priority District lakes to achieve multiple benefits. Comfort Lake: 1,900 ft to restore Bone Lake: 3,300 ft to restore Forest Lake: 30,300 ft to restore | (Multiple Projects In Progress) Shoreline inventories completed for Bone Lake, Forest Lake, and Comfort Lake. Implement CLFLWD Education & Outreach, Cost-Share, and Interagency Communication programs to implement shoreline restoration and protection projects. |
| Moody Lake Capstone Projects | Target projects to achieve the remaining phosphorus load reduction to Moody Lake in order for Moody Lake to maintain long-term water quality goals. Proposed projects include: excavation of phosphorus-laden soils, raingarden and other park improvements, and wetland dredging. | To Moody Lake: 58 lb/yr P reduction 8,940 lb/yr sediment reduction Storage added: 1.3 acre-ft (estimated) Wetland restored: 0.5 acres | (Phase 4. Implementation) Executed the Clean Water Fund grant agreement in spring 2023. Began landowner coordination and project agreements/legal coordination. Completed project design and began project construction. Project slated for completion in 2024. |
| Bone Lake South Property Acquisition | Phase 1: Purchase property south of Bone Lake containing 119 acres of wetland and 110 acres of restorable upland habitat. Phase 2: Restore wetland and upland. | Potential outcomes: P/TSS removal: TBD Storage added: up to 300 ac-ft Wetland restored: up to 119 acres Upland restored: up to 110 acres | (Phase 1. Planning) Landowner discussions regarding acquisition in progress. Lessard-Sams OHF and Conservation Partners Legacy grants have been awarded. |
| Little Comfort Lake/Heath Ave Iron Enhanced Sand Filter | Address nutrient loading from the Heath Avenue subwatershed, which is one of the major pollutant loading sources to Little Comfort Lake. This project will likely entail a 2.75-acre stormwater treatment basin and iron enhanced sand filter. | To Little Comfort Lake: 79 lb/yr P reduction | (Phase 2. Feasibility) Grant seeking, landowner coordination and land subdivision/acquisition underway. |

| Project Name (2023 Active Projects) | Project Description | Project Outcomes/Outputs Phosphorus (P), Sediment, Storage, Restored Feet/Acres | Progress Update (Project Phase as of 12/31/23) |
|---|--|---|--|
| July Avenue Agricultural Practices and Wetland Restoration | Address nutrient loading from an agricultural operation draining to School Lake, which ultimately flows to Little Comfort Lake. | To School Lake: 61 lb/yr P reduction 117,000 lb/yr sediment reduction 184 lb/yr nitrogen reduction | (Phase 3. Design) Grant application awarded. Landowner coordination and project design in progress. |
| Washington Judicial Ditch 6 Western Tributary Wetland Restoration | Restore wetland including sediment excavation and vegetation rehabilitation. The current wetland condition is partially drained by a small private ditch that flows into WJD-6 and eventually into Forest Lake, and 100% dominated by a monotype of reed canary grass. | To Forest Lake: 20 lb/yr P reduction 3,200 lb/yr sediment reduction Storage added: 8.7 acre-ft Wetland restored: 3.7 acres | (Phase 4. Implementation) Executed the Clean Water Fund grant agreement in spring 2023. Completed project design and began construction. Project is slated for completion in 2024. |
| Washington Judicial Ditch 6 Country Road 50 Iron Enhanced Sand Filter | Treat 50% of the WJD-6 subwatershed runoff with an offline, multi-cell iron enhanced sand filtration (IESF) treatment system. | To Forest Lake: 97 lb/yr P reduction 3,000 lb/yr sediment reduction | (Phase 5. O&M) Project was completed and closed out in 2023. Project is now in Operations & Maintenance phase. |
| North Shore Trail Nature Area Restoration | Preserve and restore native vegetation on a CLFLWD-owned public property adjacent to Forest Lake's 3 rd basin. | Buckthorn removal/management, hazard tree removal and brush pile disposal, tree and shrub planting, prescribed burn, pollinator seeding and planting. | (Phase 4. Implementation) Restoration work in progress. Vegetation management will take multiple years. |
| Forest Lake Public Shoreline Restorations | Partner with the City of Forest Lake to restore natural shoreline buffers on city-owned shoreline properties. | Shields Lake Park: 65 feet of shoreline restored with a 10-ft wide native planting buffer in 2023. Forest Lake North Shore Circle Park: 100 feet of shoreline restored with a 20-ft wide native planting buffer in progress. | (Multiple Projects) Shields Lake City Park Shoreline Restoration project was completed in 2023. North Shore Circle City Park Shoreline Restoration in progress, grant awarded – to be completed in 2024/2025. CLFLWD will work with City of Forest Lake to identify additional opportunities for shoreline restoration on city-owned properties. |

| Project Name (2023 Active Projects) | Project Description | Project Outcomes/Outputs Phosphorus (P), Sediment, Storage, Restored Feet/Acres | Progress Update (Project Phase as of 12/31/23) |
|--|--|--|--|
| Forest Lake Enhanced Street Sweeping Plan and Implementation | CLFLWD created a comprehensive street sweeping plan to quantify and optimize phosphorus removal. City of Forest Lake implements the Enhanced Street Sweeping Plan by utilizing a newly purchased a vacuum sweeper and hiring in-house staff to operate it according to frequencies identified in the plan. | <p>Estimated reductions, by lake subwatershed, based on actual 2019 sweeping data. Reductions achieved at the lake are estimated to be approximately 50% of reductions achieved at the source (sweeper).</p> <p>Reductions achieved at the sweeper: Forest Lake: 143 lb/yr P Forest Lake: 381,648 lb/yr solids</p> <p>Shields Lake: 11 lb/yr P Shields Lake: 32,802 lb/yr solids</p> <p>Keewahtin Lake: 2 lb/yr P Keewahtin Lake: 4,831 lb/yr solids</p> <p>Comfort Lake: 65 lb/yr P Comfort Lake: 154,814 lb/yr solids</p> | (Phase 5. O&M) City continued street sweeper operation in 2023. This program received two awards in 2022: League of Minnesota Cities City of Excellence Award, and Comfort Lake-Forest Lake WD’s Watershed Champion Award. |
| Sunrise River-Highway 61 (Tax Forfeit) Wetland Enhancement – Chisago County Petitioned Project | Modify an existing ditched wetland complex located on District-owned tax forfeited property to increase water quality treatment and storage capacity. | <p>To Comfort Lake: 65 lb/yr P reduction 18,630 lb/yr sediment reduction</p> <p>To Sunrise River: 89 lb/yr P reduction 154,814 lb/yr sediment reduction</p> <p>Storage added: 26.3 acre-ft Wetland restored: 22.1 acres</p> | (Phase 5. O&M) Project was completed and closed out in 2023. Project is now in Operations & Maintenance phase. |

| Project Name (2023 Active Projects) | Project Description | Project Outcomes/Outputs Phosphorus (P), Sediment, Storage, Restored Feet/Acres | Progress Update (Project Phase as of 12/31/23) |
|--|--|---|--|
| Regional Stormwater Treatment Facility | Construct a regional stormwater treatment facility to treat runoff from urban areas and increase floodplain storage. The City of Forest Lake contains the most concentrated urban portion of the District which drains to Comfort Lake and is the top priority for implementation. | To Comfort Lake: TBD Storage added: TBD | (Phase 2. Feasibility) Continued coordinating this project closely with the City of Forest Lake. Several potential projects have been identified. Additional feasibility and coordination with the City of Forest Lake is necessary prior to continuing to project design. |
| Wyoming Enhanced Street Sweeping | CLFLWD created a comprehensive street sweeping plan to quantify and optimize phosphorus removal. 2023 marked the first year the City of Wyoming implemented the Enhanced Street Sweeping Plan utilizing its own sweeper. | To Comfort Lake: 5-10 lb/yr P removal 5,000-10,000 lb/yr sediment | (Phase 5. O&M) City implemented street sweeping plan in 2023. City has 3-year funding agreement with Lower St. Croix Watershed Partnership. |

Projects are color-coded by lake management district: *green = Bone Lake, yellow = Little Comfort Lake, pink = Forest Lake, purple = Comfort Lake*

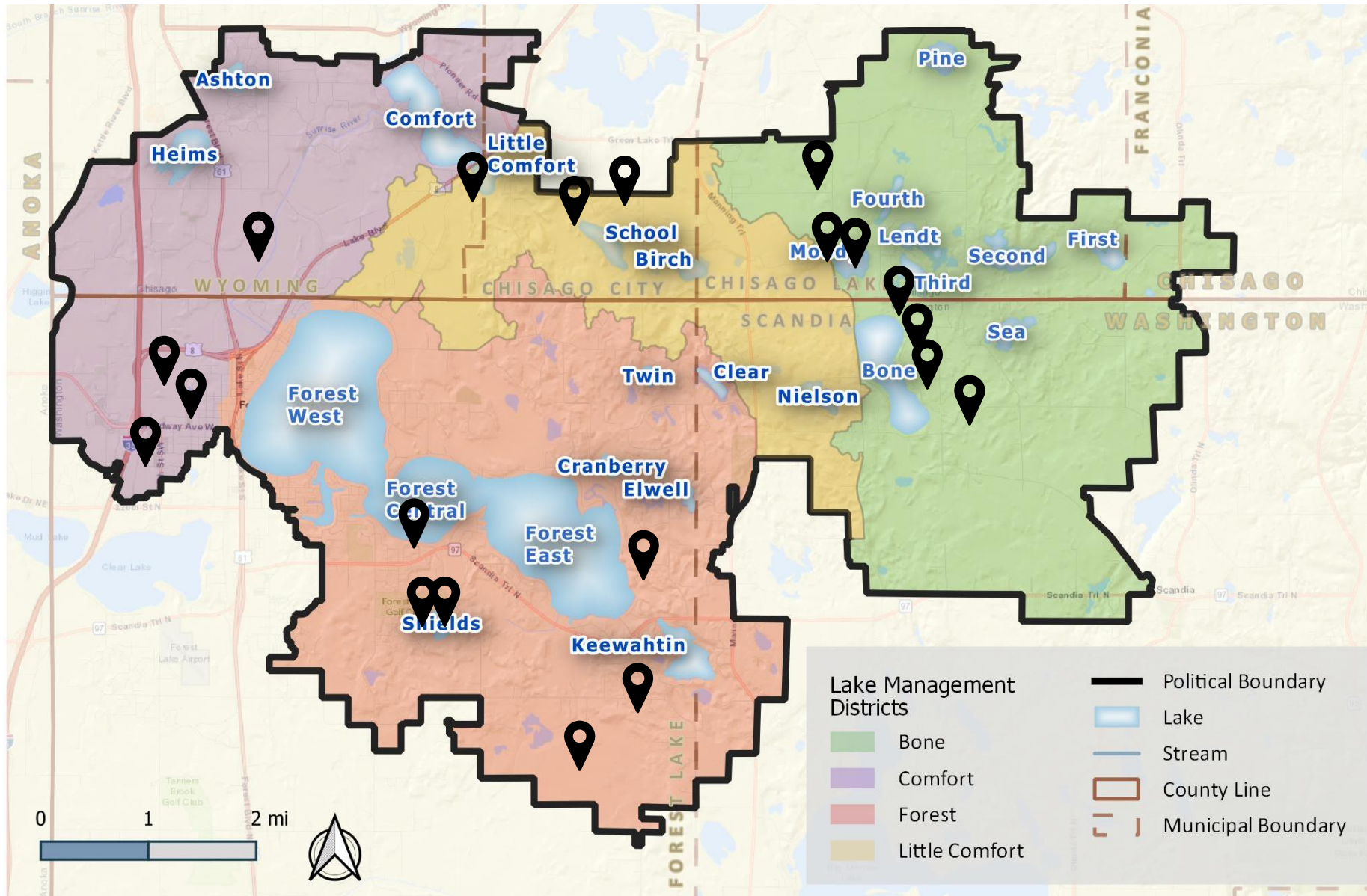
Project Phases:

- *Phase 0. Not Started*
- *Phase 1. Planning*
- *Phase 2. Feasibility*
- *Phase 3. Design*
- *Phase 4. Implementation*
- *Phase 5. Operations & Maintenance (O&M)*

Appendix D – Portfolio of Completed & In-Progress Projects



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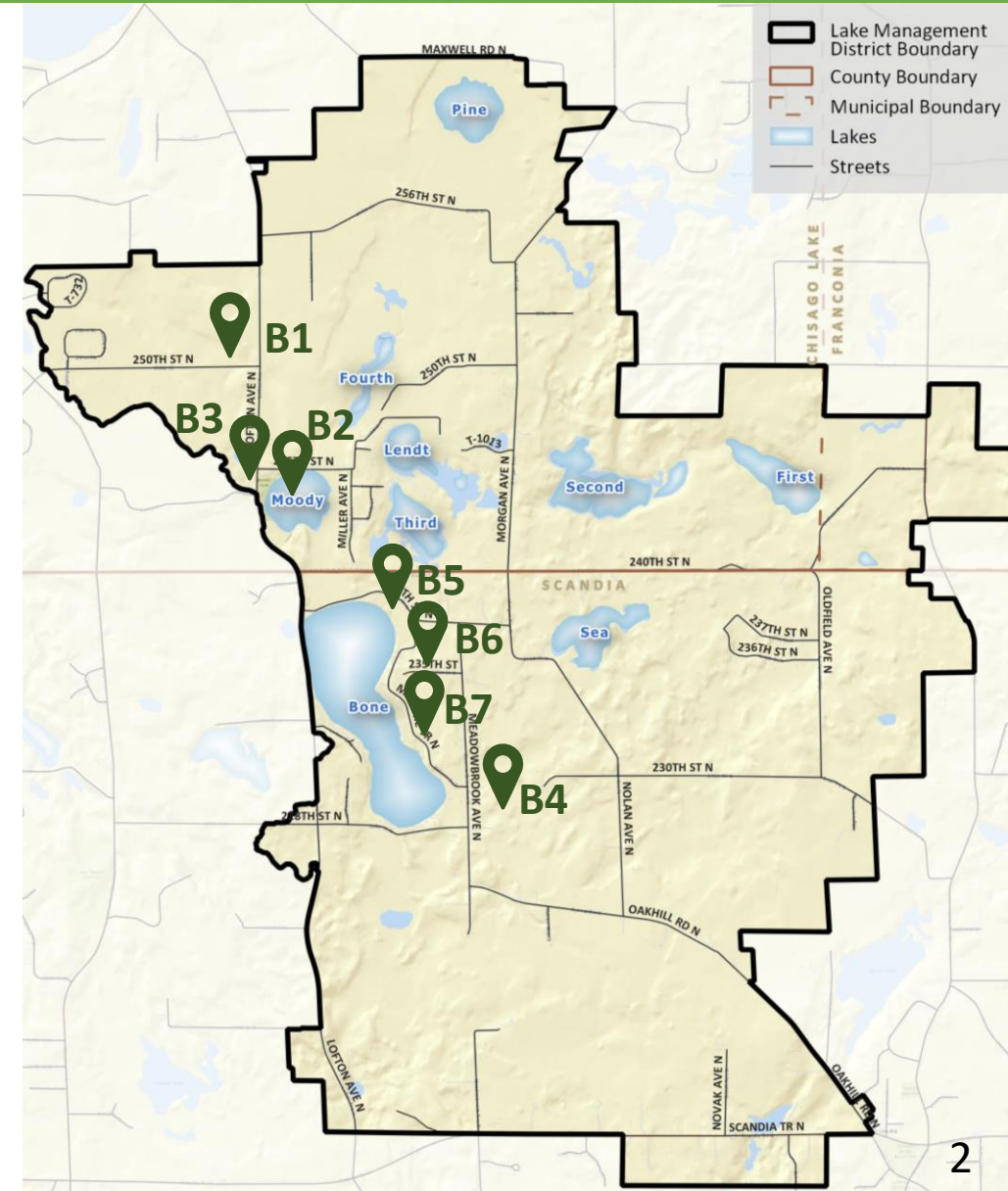


This appendix summarizes programs and projects undertaken by the District and its partners. It is not an exhaustive list of all projects and practices within the watershed, but is merely a summary of some of the activities resulting in significant progress toward nutrient reduction goals.

Bone Lake Management District



| Completed and In-Progress Projects | Outcomes at Moody or Bone Lake (reductions) | Outcomes at Edge of Project (reductions) |
|--|--|--|
| B1: Moody Wetland Rehabilitation - Completed | 455 lb/yr phosphorus (P) 457,120 lb/yr total suspended solids (TSS) | 455 lb/yr P 457,120 lb/yr TSS |
| B2: Moody Lake Alum Treatment - Completed | 324 lb/yr P | 324 lb/yr P |
| B3: Moody Lake Capstone Projects – In Progress | 62 lb/yr P 12,257 lb/yr TSS | 62 lb/yr P 12,257 lb/yr TSS |
| B4: Bone Lake Southeast Drained Wetland Restorations - Completed | 35 lb/yr P 324,640 lb/yr TSS | 35 lb/yr P 324,640 lb/yr TSS |
| B5: Bone Lake Northeast Legacy Wetland Restoration – Completed | 15 lb/yr P | 15 lb/yr P |
| B6: Melanie Trail Cropland Conversion – Ongoing | 34 lb/yr P 27,600 lb/yr TSS | 34 lb/yr P 27,600 lb/yr TSS |
| B7: Melanie Trail Roadside Practices – Completed | 2 lb/yr P | 2 lb/yr P |
| Fish Barriers & Rough Fish Harvest – Completed | Necessary to maintain water quality | Necessary to maintain water quality |
| Moody/Bone Ag Practices – In Progress | 83 lb/yr P 177,293 lb/yr TSS | 147 lb/yr P 314,000 lb/yr TSS |
| TOTAL | 1,010 lb/yr P or 504,900 lbs of algae growth | 910 lb/yr P |



*Many projects result in multiple additional benefits such as wildlife habitat and flood storage creation.

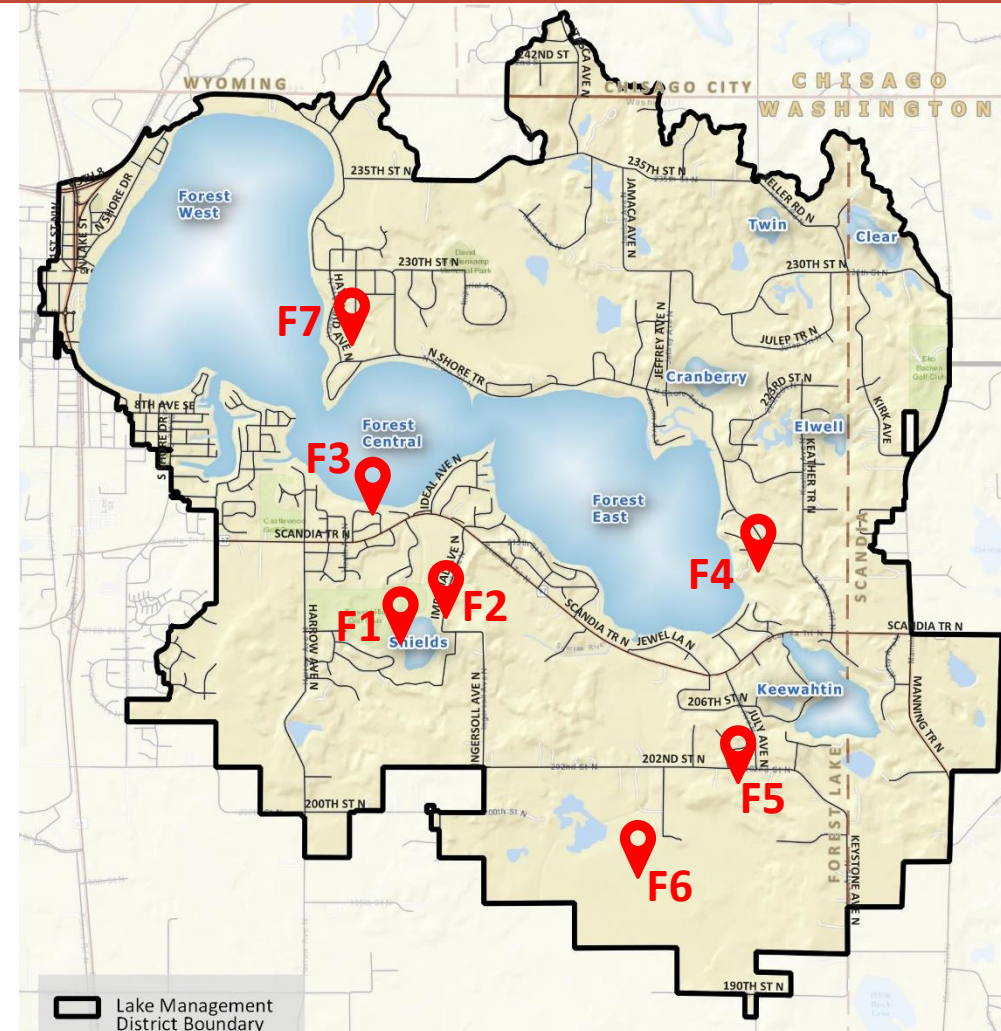
*Literature values indicate 1 lb of phosphorus can support up to 500 lbs of algae growth.

*See TSS Footnotes slide after project summary slides.

Forest Lake Management District



| Completed and In Progress Projects | Outcomes at Forest Lake (reductions) | Outcomes at Edge of Project (reductions) |
|---|--|--|
| F1: Shields Lake Stormwater Reuse & Alum - Completed | 531 lb/yr phosphorus (P) to Forest Lake | 1,000 lb/yr P to Shields Lake (edge of project) 185 lb/yr TSS |
| F2: Shields Lake Fish Barrier, Aerator - Completed Shoreline Restoration – In Progress | Necessary to maintain water quality | Necessary to maintain water quality |
| F3: Hilo Lane Stormwater Retrofit - Completed | 12 lb/yr P | 12 lb/yr P |
| F4: 3 rd Lake Pond Restoration - Completed | 56 lb/yr P 1,696 lb/yr TSS | 56 lb/yr P 1,696 lb/yr TSS |
| F5: CR50 Iron Enhanced Sand Filter – Completed | 97 lb/yr P 3,000 lb/yr TSS | 97 lb/yr 6,000 lb/yr TSS |
| F6: Washington Judicial Ditch 6 Wetland Restoration – In Progress | 20 lb/yr P 5,558 lb/yr TSS | 38 lb/yr 5,558 lb/yr TSS |
| F7: N. Shore Circle BMPs (City Forest Lk) - Completed | 6 lb/yr P | 6 lb/yr P |
| Enhanced Street Sweeping – Ongoing | ≤ 72 lb/yr P ≤ 190,824 lb/yr sediment | 143 lb/yr P 381,648 lb/yr sediment |
| Forest Lake Alum Treatment – In Progress | 527 lb/yr P | 527 lb/yr P |
| TOTAL** | 1,321 lb/yr P or 660,300 lbs of algae | 1,745 lb/yr P |



*Many projects result in multiple additional benefits such as wildlife habitat and flood storage creation.

*Literature values indicate 1 lb of phosphorus can support up to 500 lbs of algae growth.

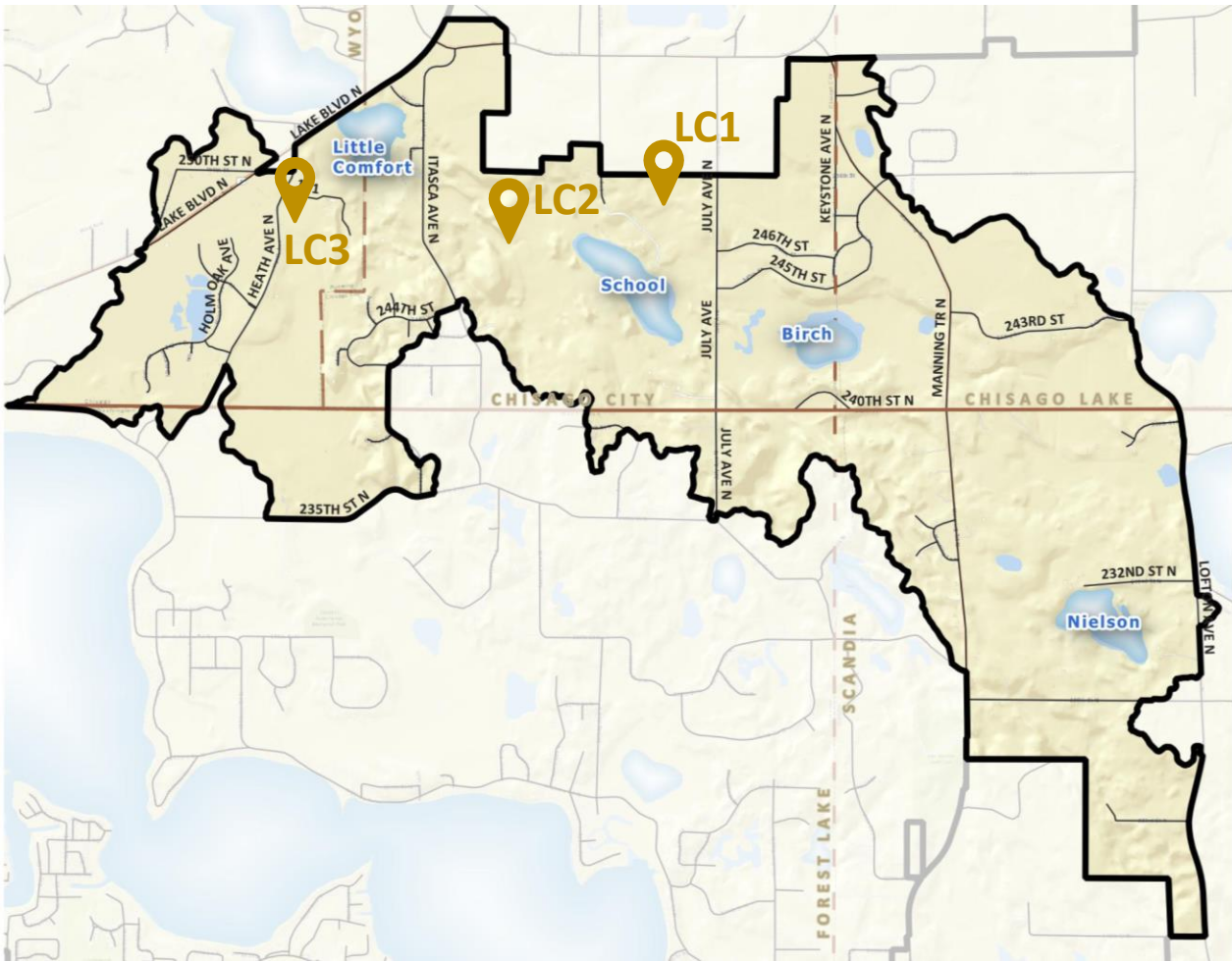
*Street sweeping estimates are based on material removed from the street surface and do not reflect total load reductions to the downstream lakes. The actual load reduction to downstream water resources is generally 50% or less than the total load recovery and depends on the number and type of BMPs along the treatment train.

*See TSS Footnotes slide after project summary slides.

Little Comfort Lake Management District



| Completed and In-Progress Projects | Outcomes at Little Comfort Lake (reductions) | Outcomes at Edge of Project (reductions) |
|---|--|--|
| LC1: July Avenue Ag BMPs & Wetland Restorations – In Progress | TBD pending feasibility | TBD pending feasibility |
| LC2: School Lake Outlet Channel Improvements – In Progress | TBD pending feasibility | TBD pending feasibility |
| LC3: Heath Avenue Iron Enhanced Sand Filter– In Progress | 80 lb/yr phosphorus | 80 lb/yr phosphorus |
| Little Comfort Alum Treatment – On Hold Until Other Projects Complete | TBD | TBD |
| TOTAL | 80-100 lb/yr or 40,000-50,000 lb of algae growth | |

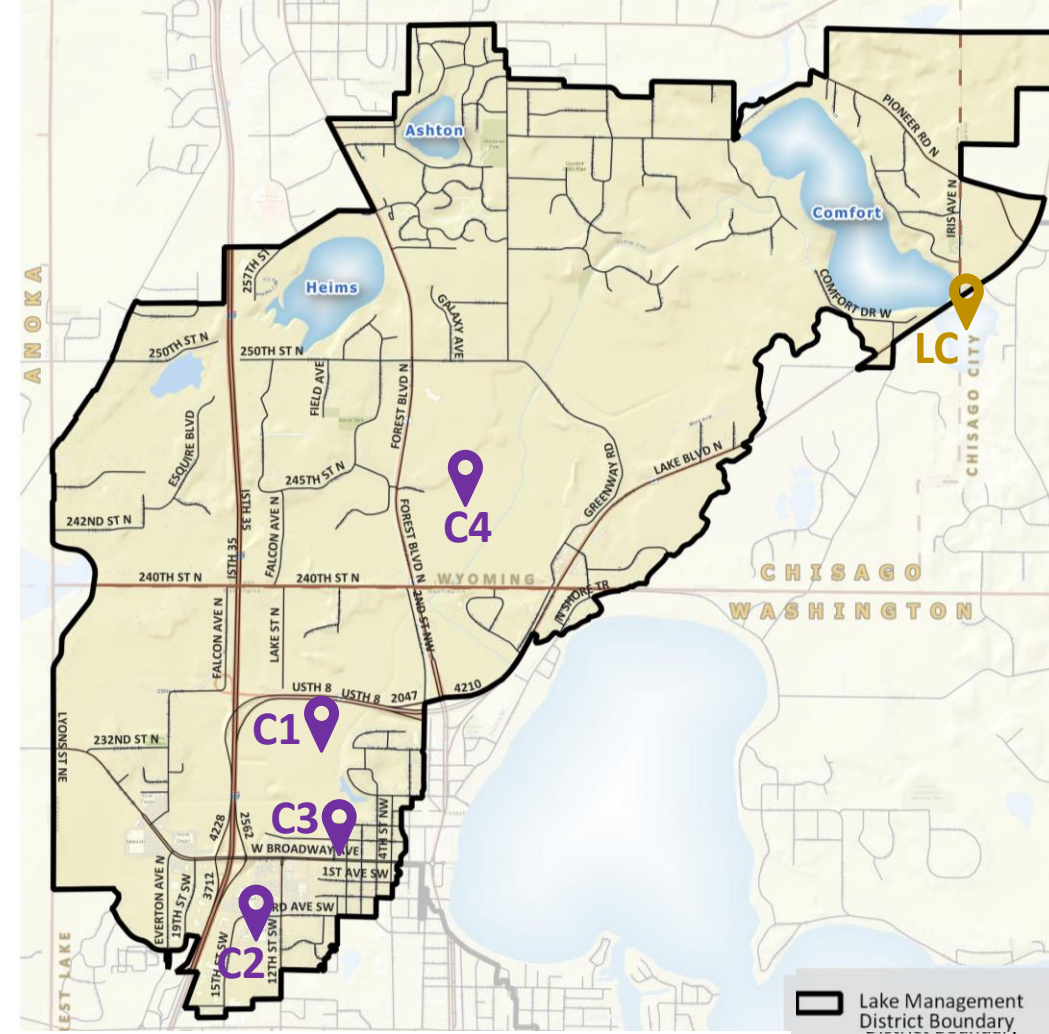


*Many projects result in multiple additional benefits such as wildlife habitat and flood storage creation.
 *Literature values indicate 1 lb of phosphorus can support up to 500 lbs of algae growth.
 *See TSS Footnotes slide after project summary slides.

Comfort Lake Management District



| Completed and In Progress Projects | Outcomes at Comfort Lake (reductions) | Outcomes at Edge of Project (reductions) |
|--|---|---|
| C1: Bixby Park Wetland Enhancement (Chisago Co. Petition) - Completed | 93 lb/yr phosphorus (P) 5,546 lb/yr total suspended solids (TSS) | 206 lb/yr P 55,458 lb/yr TSS |
| C2: Target Retrofits - Completed | 5 lb/yr P | 11 lb/yr P |
| C3: Broadway Ave Iron Sand Filter – Completed | 15 lb/yr P 683 lb/yr TSS | 33 lb/yr P 6,834 lb/yr TSS |
| C4: Sunrise River Hwy 61 Wetland Enhancement (Chisago Co Petition) – Completed | 65 lb/yr P 18,630 lb/yr TSS | 89 lb/yr P 51,740 lb/yr TSS |
| Enhanced Street Sweeping (Cities of Forest Lake & Wyoming) – Ongoing | ≤ 37 lb/yr P ≤ 83,407 lb/yr TSS | 70 lb/yr P 159,814 lb/yr TSS |
| Regional Treatment Facility (Location TBD) – In Progress | TBD | TBD |
| Stormwater Permits (Multiple Locations) | 28 lb/yr P | 33 lb/yr |
| LC: Little Comfort Lake Projects – In Progress | 64 lb/yr to Comfort Lake | (See Little Comfort Lake Management District) |
| TOTAL** | 301 lb/yr P or 150,600 lbs of algae growth | 499 lb/yr P |



*Many projects result in multiple additional benefits such as wildlife habitat and flood storage creation.

*Literature values indicate 1 lb of phosphorus can support up to 500 lbs of algae growth.

*Street sweeping estimates are based on material removed from the street surface and do not reflect total load reductions to the downstream lakes. The actual load reduction to downstream water resources is generally 50% or less than the total load recovery and depends on the number and type of BMPs along the treatment train.

*See TSS Footnotes slide after project summary slides.



Total Suspended Solids (TSS) Footnotes

The following notes accompany the total suspended solids (TSS) loading figures on the previous slides

- The District monitors sediment loading annually. View the latest monitoring report at www.clflwd.org/monitoring.php. [View the presentation on Comfort Lake sediment loading from the 3/24/22 regular board meeting here.](#)
- Moody Lake Wetland Rehabilitation: TSS loading estimated from RUSLE raster layer created by EOR. Assumes 80% TSS removal for the wetland and 85% for the buffer. Removal due to buffer was subtracted from load to wetland (the drainage area to the latter includes that for the former).
- Moody Lake Capstone Projects: TSS loading estimated from RUSLE raster layer created by EOR. Value is for buffer establishment only assuming 85% removal. Not enough information on the gully repair to estimate TSS benefits at this time.
- Bone Lake Southeast Drained Wetland Restorations: TSS loading estimated from RUSLE raster layer created by EOR. Assumes 80% TSS removal for each of the wetland restoration projects.
- Shields Lake Stormwater Reuse Project: TSS loading estimated from modeled flows and TSS grab samples. Ponds immediately upstream and downstream significantly reduce the TSS load reduction impact of this pond on the lake.
- 3rd Lake Pond Restoration: TSS loading estimated from RUSLE raster layer created by EOR. Assumes 80% TSS removal for the immediate drainage area only due to the pond immediately upstream.
- CR50 Iron Enhanced Sand Filter: TSS load reductions from the feasibility report. Assumes a 50% impact reduction factor due to the downstream wetland.
- WJD-6 Wetland Restoration: TSS loading estimated from measured flows and TSS grab samples from 2018. Assumes 80% TSS removal.
- Bixby Park Wetland Enhancement (Chisago Co Petition): TSS load reductions from the P8 model. Assumes a 90% impact reduction factor due to the distance from the lake.
- Broadway Avenue Iron Enhanced Sand Filter: TSS loading using the simple method, Met Council Generalized Land Use, and unit area loading values from the MN Stormwater Manual. Assumes 100% TSS removal and a 90% impact reduction factor due to the distance from the lake.

*Disclaimer: These values represent rough approximations of sediment load reductions based on generalized land use and land cover characteristics and limited monitoring data.

APPENDIX E – PROGRESS AT A GLANCE

The following table provides a brief overview of progress toward the goals set out in the Watershed Management Plan (WMP). See the full Progress Report for a detailed description of progress toward each goal.

Progress Rating Key: = not started = in-progress = ongoing activity w/ milestones achieved = completed/target met

| WMP Code | Goal | Priority Level (same for all Lake Mgmt Districts) | Progress Rating for 2023 |
|--------------------|---|---|-------------------------------------|
| 3000 | Programs | | |
| 3001 Rules | Goal 1: Ensure fair and effective implementation of District Rules through the Permitting Program (see goals under 3002 Permitting). | High | <input checked="" type="radio"/> |
| 3001 Rules | Goal 2: Review and update District Rules and standards at least once every ten years, or more often as needed. | High | N/A |
| 3002 Permitting | Goal 1: Hold a meeting prior to permit approval for 100% of stormwater management permit applications to maximize efficiency of the application process and reduce variance requests. | High | <input checked="" type="radio"/> |
| 3002 Permitting | Goal 2: Inspect 90% or more of active permits at least once every two weeks. | High | <input checked="" type="radio"/> |
| 3002 Permitting | Goal 3: Inspect 90% or more of permitted best management practices (BMPs) associated with maintenance instruments at least once a year. | High | <input type="radio"/> |
| 3002 Permitting | Goal 4: Work with permittees to maintain compliance with District rules to achieve an average annual inspection compliance rating of at least 90%. | High | <input type="radio"/> |
| 3002 Permitting | Goal 5: Work with maintenance instrument holders to maintain compliance with BMP maintenance instrument requirements to achieve an average annual inspection compliance rating of at least 90%. | High | <input type="radio"/> |
| 3002 Permitting | Goal 6: Obtain 90% or more annual reports from permitted BMP maintenance instrument holders. | High | <input type="radio"/> |
| 3003 Monitoring | Goal 1: Annually perform water monitoring in accordance with the Comprehensive Monitoring Plan to inform future management actions, identify water quality improvement opportunities, and evaluate progress toward goals. | High | <input checked="" type="radio"/> |
| 3004 NPS Abatement | Goal 1: Implement program to achieve shoreline and streambank restoration and maintenance goals under sections 5200 Lakes and 5300 Streams. | High | <input type="radio"/> |
| 3004 NPS Abatement | Goal 2: Reach out to 100% of high priority agricultural landowners identified in District diagnostic studies. | High | <input checked="" type="checkbox"/> |

| WMP Code | Goal | Priority Level (same for all Lake Mgmt Districts) | Progress Rating for 2023 |
|--------------------|---|---|--------------------------|
| 3004 NPS Abatement | Goal 3: Establish a farmer-led council to inform and influence agricultural land management practices. | High | ☑ |
| 3004 NPS Abatement | Goal 4: Annually coordinate with District communities on potential Municipal Stormwater Remediation project partnerships. | High | ☑ |
| 3005 Education | Goal 1: Increase public knowledge of and appreciation for human impacts to surface water, groundwater and natural resources to increase target audiences' behaviors that positively impact water resources. | High | ☑ |
| 3005 Education | Goal 2: Communicate District programs, projects and other initiatives to the public in a clear, consistent and equitable manner. | High | ☑ |
| 3006 Interagency | Goal 1: Coordinate efforts with partners to ensure the most efficient and cost-effective use of funds for water resource management. | High | ☑ |
| 3006 Interagency | Goal 2: Act as the local office for facilitating public input on water resource-related issues, react in a timely manner to the concerns of citizens and operate in an open and transparent manner. | High | ☑ |
| 3006 Interagency | Goal 3: Participate in the evaluation of Total Maximum Daily Load (TMDL) studies and implementation of projects and programs to address impairments of waters within the District. | High | ☑ |
| 3006 Interagency | Goal 4: Work with Lower St. Croix River partners to achieve the goals of Lower St. Croix One Watershed One Plan, including associated TMDLs and WRAPS. | High | ☑ |
| 3007 Research | Goal 1: Initiate, advance or support at least one research initiative each year. | High | ☑ |
| 3007 Research | Goal 2: Provide at least four updates to the Board of Managers on research topics, whether initiated by the District or other organizations, each year. | High | ☑ |
| 3008 Measure | Goal 1: Annually complete a detailed Progress Report evaluating the previous year's progress toward all goals and metrics in this Plan. | High | ☑ |
| 3008 Measure | Goal 2: Every five years perform a comprehensive review of District goals and metrics to evaluate achievability and course-correction actions, if needed. | High | N/A |
| 3009 Grants | Goal 1: Obtain grant awards in an amount at least equal to 25% of the District's levy, as measured on a 3-year average. | High | ☑ |
| 3009 Grants | Goal 2: Research and apply to at least one new grant program each year. | High | ☑ |

| WMP Code | Goal | Priority Level (same for all Lake Mgmt Districts) | Progress Rating for 2023 |
|-----------------|---|---|--------------------------|
| 3009 Grants | Goal 3: Complete grant reporting in accordance with grant contracts to ensure timely disbursement of grant funds. | High | ☑ |
| 3010 O&M | Goal 1: Ensure all District projects and facilities achieve their designed lifespan. | High | ☑ |
| 3010 O&M | Goal 2: Develop a Comprehensive Operations & Maintenance Plan. | High | ☑ |
| 3010 O&M | Goal 3: Complete inspections and maintenance in accordance with the Comprehensive Operations & Maintenance Plan. | High | ☑ |
| 3011 AIS | Goal 1: Continue use and refinement of the District's prevention and early detection & rapid response initiatives to reduce the risk of new invasive species introductions to District waterbodies and prevent the spread of existing infestations to other waterbodies. | High | ☑ |
| 3011 AIS | Goal 2: Manage existing populations of AIS to reduce internal phosphorus loading. | High | ☑ |
| 3011 AIS | Goal 3: Manage existing populations of AIS to improve native plant diversity by managing AIS populations that pose a risk to native plant health. | High | ☑ |
| 3011 AIS | Goal 4: Ensure ecological integrity is protected by providing guidance and technical support to other organizations and residents who manage AIS for recreational benefits. | High | ☑ |
| 3012 Land Acq. | Goal 1: Implement the Land Acquisition & Management Program to cost-effectively support capital and other projects. | High | ☑ |
| 3013 Resiliency | Goal 1: Incorporate climate and flooding resiliency into annual District planning and budgeting efforts. | High | ☑ |
| 3013 Resiliency | Goal 2: Develop an emergency response plan for the District. | High | ○ |
| 5000 | Projects | | |
| 5100 Floodplain | Goal 1: Reduce or mitigate flooding in areas with known flooding and/or high water problems by achieving the interim measurable goal of increasing water storage by an additional 99 ac-ft (or 0.16 inches over 7,397 acres of upland) over the next 10 years (2022-2031) based on the Lower St. Croix 1W1P. The District will determine LMD-specific measurable goals from modeling floodplain conditions under future rainfall scenarios. | High | ○ |

| WMP Code | Goal | Priority Level (same for all Lake Mgmt Districts) | Progress Rating for 2023 |
|--------------------|---|---|--------------------------|
| 5100 Floodplain | Goal 2: Maintain and improve community preparedness and emergency response capacity to flooding and/or high water problems by sharing floodplain modeling and mapping results under future climate conditions with counties and District communities. | Medium | ☑ |
| 5200 Lakes | Goal 1: Adaptively manage District lakes to reduce phosphorus loads and de-list impaired lakes with Total Maximum Daily Loads (TMDLs) to achieve state water quality eutrophication standards (total phosphorus, Chlorophyll-a and Secchi). | High | ○ |
| 5200 Lakes | Goal 2: Adaptively manage District lakes to improve water quality by achieving the 10-year (2031) total phosphorus and Secchi goals. See Table 4-3. | High | ○ |
| 5200 Lakes | Goal 3: Partner with agencies to manage District lakes for healthy fish and aquatic plant communities. | High | ☑ |
| 5200 Lakes | Goal 4: Establish bottom water chloride trends in District lakes and provide resources to salt applicators on ways to reduce chloride inputs. See Table 4-3. | Medium | □ |
| 5200 Lakes | Goal 5: Promote natural, deep rooted, native vegetation buffers to ensure at least 75% of lakeshore parcels have at least 75% natural shoreline condition. For example, in its last shoreline survey 55% of parcels on Bone Lake were covered in at least 75% natural shoreline vegetation; the goal is to ensure 75% of parcels are vegetated thusly. See Table 4-3. | Medium | ○ |
| 5300 Streams | Goal 1: Adaptively manage District streams to achieve annual total suspended solids (TSS) flow-weighted mean concentrations less than the Ecoregion standard of 30 mg/L. See Table 4-3. | High | ○ |
| 5300 Streams | Goal 2: Confirm the headwaters of the Sunrise River. | High | ○ |
| 5300 Streams | Goal 3: Adaptively manage District streams to achieve stream chloride concentrations less than the State standard of 230 mg/L. See Table 4-3. | Medium | ○ |
| 5300 Streams | Goal 4: Promote natural, deep rooted, native vegetation buffers to ensure at least 75% of streambank parcels have at least 75% natural shoreline condition. Quantified streambank buffer goals will be assessed and established. | Medium | ○ |
| 5300 Streams | Goal 5: Decommission abandoned drainage systems to restore natural hydrology as opportunity arises (e.g., reconnecting ditched streams to their floodplains). | N/A | ○ |

| WMP Code | Goal | Priority Level (same for all Lake Mgmt Districts) | Progress Rating for 2023 |
|------------------|---|---|--------------------------|
| 5400 Wetlands | Goal 1: Restore or enhance at least 400 acres of wetlands that support water quality treatment. | High | ○ |
| 5400 Wetlands | Goal 2: Restore or enhance at least 200 acres of wetlands to support flood attenuation and storage. | High | ○ |
| 5400 Wetlands | Goal 3: Preserve existing wetland buffers and encourage the establishment of buffers for water quality and habitat benefits through District Programs. | High | ○ |
| 5400 Wetlands | Goal 4: Restore or enhance at least 80 acres of wetlands to support wildlife habitat and recreational opportunities. | Medium | ○ |
| 5500 Uplands | Goal 1: Partner with municipalities to establish at least 1 new natural park open space within a LMD priority area (see LMD profiles). | Medium | ○ |
| 5500 Uplands | Goal 2: Establish partnerships with agencies and municipalities within 1 greenway corridor in the District as identified in the Greenway Corridor Visioning and Assessment (5120B). | Medium | ○ |
| 5600 Groundwater | Goal 1: Implement best management practices to protect groundwater (drinking water) from nitrate contamination in three areas of high aquifer vulnerability and high pollution sensitivity of near surface materials. | Medium | ○ |
| 5600 Groundwater | Goal 2: Complete a groundwater dependent natural resource (GDNR) inventory. | Medium | ☑ |