



**Shingle Creek
Watershed Management Commission
2022 Annual Activity Report**

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This report was prepared for the
Shingle Creek Watershed Management Commission
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Crystal Lake Management Plan – Carp Removal Project
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2022 ANNUAL ACTIVITY REPORT

This annual report has been prepared by the Shingle Creek Watershed Management Commission in accordance with the annual reporting requirements of Minnesota Rules Chapter 8410.0150, Subps. 2 and 3. It summarizes the activities undertaken by the Commission during calendar year 2022.

THE COMMISSION

The Shingle Creek Watershed Management Commission is governed by a nine-member board comprised of representatives from each member city who are appointed for terms of three years. The nine member cities are Brooklyn Center, Brooklyn Park, Crystal, Maple Grove, Minneapolis, New Hope, Osseo, Plymouth and Robbinsdale. Commissioners who served in 2022 are shown in *Appendix 1*. Also shown there are members of the Technical Advisory Committee (TAC) who represent the member cities.

CONSULTANTS

The Commission has no employees. The names of the consultants currently retained by the Commission are also listed in *Appendix 1*.

MEETINGS

The Commission meets monthly at 12:45 p.m. on the second Thursday of the month. The meetings are open to the public. Meeting notices, agendas and approved minutes are posted on the Commission's website, www.shinglecreek.org.

In 2022, due to the COVID-19 pandemic, the January, February, and March Commission meetings were held virtually on www.zoom.us. The April, May, June, and July meetings were held in the Community Room, Crystal City Hall, 4141 Douglas Drive, Crystal, Minnesota. The August and subsequent meetings took place in the Plymouth Community Center, 14800 34th Avenue North, Plymouth, Minnesota.

WATERSHED MANAGEMENT PLAN

In 2013 the Shingle Creek and West Mississippi Watershed Management Commissions adopted their joint 2013-2022 Third Generation Watershed Management Plan. The Plan, approved by the Board of Water and Soil Resources (BWSR) on March 27, 2013, is the culmination of a two-year planning effort by the two Commissions, the cities that are members of these Joint Powers Organizations,

state agencies, and the public. The Plan sets forth goals and strategies that will guide water resources management activities in the two watersheds over the coming decade. Over the years the Commission, either individually or together with the West Mississippi Commission, has adopted a number of amendments to the Plan. They are described briefly in *Appendix 2*. In 2022, the Commissions began the process of developing their Fourth Generation Plan. It is anticipated that they will complete the Plan and it will be approved by BWSR early in the year 2023.

LOCAL PLANS

Revisions to Minnesota Rules 8410 adopted in 2015 include significant changes in the timing of local water plan revisions. Found under Rule 8410.0105 sub-paragraph 9 and 8410.0160 subparagraph 6. Local plan requirements are summarized in *Appendix 3*.

STATUS OF 2022 WORK PLAN

The Third Generation Watershed Management Plan states that the Shingle Creek and West Mississippi Watershed Management Commissions will annually review progress toward their Third Generation goals and that this evaluation will become part of the Annual Activity Report. The purpose of the annual review is two-fold: to determine progress towards the goals and to be sure the Commission stays on track to reach them. The annual review also provides an opportunity to discuss whether the goals and actions in the Plan still make sense or if they should be considered for modification or enhancement, perhaps to add new priorities.

The Shingle Creek Watershed Management Commission established its 2022 Work Plan at its January 13, 2022, meeting. Most of the activities of the Commission are ongoing, although some rotate around the watershed.

Capital Projects, Cost-Share Projects

- ✓ Continued to work on the 5-year performance review for the Bass and Shingle Creek Biotic and DO TMDL.
- ✓ Worked with the City of Plymouth to complete aquatic vegetation surveys on Bass Lake and provide aquatic invasive species treatment as necessary. Completed a grant-funded aquatic vegetation translocation project to test ways of increasing plant diversity in Bass Lake.
- ✓ Continued to partner with the City of Robbinsdale to implement the Crystal Lake Management Plan, including carp removal, aquatic vegetation management, and alum treatment.
- ✓ Following a drawdown in the winter 2021-2022, continued to work with the City of New Hope to implement the Meadow Lake Management Plan, including potential additional vegetation and fish management and preparation for an alum treatment.

- ✓ Continued to partner with the cities of Brooklyn Park and Brooklyn Center to undertake Connections II streambank improvements for Shingle Creek from Regent Avenue to Brooklyn Boulevard.



Pike Creek Channel Stabilization

- ✓ Continued to partner with the City of Brooklyn Park to undertake Bass Creek Park streambank improvements from Cherokee Drive to I-694.
- ✓ Executed a Clean Water Fund Grant with BWSR and a cooperative agreement with the City of Plymouth for the Palmer Creek Estates channel stabilization project. Project is expected to be constructed in winter 2022-2023.
- ✓ By Minor Plan Amendment created a new Capital Projects Maintenance Fund intended to support the completion of ongoing activities needed to continue the benefits achieved by capital projects.
- ✓ Shingle Creek had previously awarded a Partnership Cost Share grant to the City of Brooklyn Park and Metro Blooms for water quality and sustainable landscaping site improvements at the Brooks Gardens Apartments near Shingle Creek. In 2022, that work was awarded a Local Sustainability Impact award by the Minnesota Environmental Initiative.
- ✓ Continued to seek permission from MAC to partner with the City of Crystal to extend the SRP Reduction filter along the Wetland 639W overflow channel.

Grants

- ✓ Prepared an application to the MPCA to complete a Flood Resiliency and Mapping study in 2023.
- ✓ Met four times with the Shingle Creek and West Mississippi Watershed Based Implementation Funding (WBIF) Convene Groups to identify and select funding priorities for their \$95,501 and \$75,000 2022 WBIF awards. As part of that work, the four WMOs in WMWA plus the

Richfield-Bloomington WMO agreed to pool some of their WBIF resources to fund a shared Education and Outreach Coordinator with Hennepin County.

- ✓ In 2018, the eleven WMOs in Hennepin County elected to pool 10% of their WBIF grants to fund the Hennepin County Chloride Initiative (HCCI), recognizing that properly managing chloride use was a common water quality issue. The group continued to explore various management topics and approaches, culminating in the development of a professional marketing campaign called “Low Salt No Salt Minnesota,” which will be rolled out in 2023 by each of the WMOs and many cities.

Partner with other organizations to increase reach and cost-effectiveness

- ✓ Participated in the West Metro Water Alliance (WMWA) joint education and outreach group. Due to the pandemic, Watershed PREP (Protection, Restoration, Education, and Prevention) classes were cancelled or conducted virtually. Classes resumed in the fall of 2022 with 1551 students in 51 classrooms. A video of the Watershed PREP class is available for home school or classroom viewing at <http://www.westmetrowateralliance.org/>.

In 2022 WMWA and its member WMOs partnered with Hennepin County and the Richfield-Bloomington WMO to develop a shared education and outreach coordinator position funded by Watershed-Based Implementation Funding (WBIF) and the WMWA special projects budget. This two-year limited duration position will focus on engaging with various stakeholder groups in the five watersheds on clean water and chloride management issues. WMWA also drafted a long-term vision for the organization to help transition from a part-time to a full-time coordinator.

- ✓ Sponsored volunteer lake monitoring through CAMP (Met Council) on Bass Lake and the three basins of Twin Lake
- ✓ Continued to partner with the USGS to operate the Queen Avenue monitoring site. (See *Appendix 4* for the location of the Shingle Creek monitoring sites.)
- ✓ Partnered with the USGS, DNR, and other interested parties to stay abreast of groundwater issues.
- ✓ Continued the HUC study in partnership with the DNR. The updated flood mapping is still working through the DNR/FEMA process.
- ✓ Completed reviews of six development projects; conducted compliance review of a 2017 project. (*Appendix 5*)
- ✓ Prepared an annual water quality report. The 2022 report was accepted by the Commission on March 10, 2022.
- ✓ Solicited cost-share projects from member cities funded from the Cost Share Fund and the annual \$100,000 levy and the Partnership Cost Share Fund and the annual \$50,000 levy.

In November the Commission approved a cost share request of \$50,000 from the City of Minneapolis for its 46th Avenue Outfall Project. The proposed improvements would replace a failed and eroded outlet to Shingle Creek and incorporate green infrastructure to manage and convey runoff to the creek rather than traditional pipes. The approval was contingent on inclusion of design changes recommended by the Commission's technical staff and concurrence by the Technical Advisory Committee (TAC).

At their December 8, 2022, meeting, the Commission approved a Partnership Cost-Share request from Metro Blooms in the amount of \$49,992.67 for improvements at Highland Gables Apartments in Brooklyn Park. The proposed improvements include two rain gardens and a playground constructed out of natural products. The approval was contingent on inclusion of recommendations by the Commission's technical staff and concurrence by the TAC.

- ✓ On May 12, 2022, the Commissioners approved the first of two minor Plan Amendments. This amendment would revise Appendix C of the Plan, the Rules and Standards, to 1) make the rules consistent with the most recent Minnesota General Stormwater Permit; and 2) make other various housekeeping revisions to the Rules.

On July 14, 2022, a second Minor Plan Amendment was approved which would revise the Shingle Creek CIP to add a new project – "Project Maintenance Fund." This would create a segregated fund similar to the Cost Share programs that would be funded by an annual levy and would be used for nonstructural and maintenance activities to improve or maintain water quality.

On September 8, 2022, a public hearing was called wherein five capital projects were approved – three in the Shingle Creek watershed and two in the West Mississippi watershed. The three in Shingle Creek included the City Cost Share BMPs (\$200,000, levy \$106,050), the Shingle Creek Partnership Cost Share Project (\$50,000, levy \$53,025), and the Maintenance Fund Project (\$50,000, levy \$53,025)

Continue ongoing administration and programming

- ✓ Conducted routine Commission lake water quality monitoring and aquatic vegetation and fish surveys on Magda and Ryan Lakes and grant funded monitoring on Crystal and Meadow Lakes.
- ✓ Conducted Commission routine flow and water quality monitoring at SC-0 and SC-3 on Shingle Creek and Bass Creek Park (BCP) on Bass Creek as well as two DO longitudinal studies as part of the Shingle and Bass Creeks Dissolved Oxygen (DO) and Biotic Integrity TMDL 5 Year Review.
- ✓ Sponsored volunteer lake monitoring through CAMP (Met Council) on Bass Lake and the three basins of Twin Lake.
- ✓ Did not sponsor volunteer stream monitoring through RiverWatch in 2022.

- ✓ Wetland monitoring through WHEP (Hennepin County) was discontinued.
- ✓ Prepared a 2023 annual budget. At its May 12, 2022, meeting, the Shingle Creek Watershed Management Commission adopted a \$385,250 operating budget for calendar year 2023. Assessments to the member cities total \$370,000, a 1.8% increase over 2022 assessments.
- ✓ Invited three guest speakers to make lunchtime water resources presentations:

January 13, 2022 - Dr. Kenneth Blumenfeld, Senior Climatologist with the Minnesota State Climate Office and an Adjunct Assistant Professor at the University of Minnesota, discussed how the Commissions can plan for changing precipitation.

February 10, 2022 – A team from Metro Blooms presented a visual tour of the Brooks Gardens Apartments and Townhomes Community in Brooklyn Park. As a result of their work with the residents, together they have created 4,282 square feet of new habitat and annually capture 1.17 million gallons of runoff, 2,000 lbs. of solids and 4.5 lbs. of total phosphorus. Planting continued in 2022. The Commission provided \$30,000 cost-share funding for the \$86,107 project.

July 14, 2022 - James Fallon, Data Chief, Minnesota portion of Upper Midwest Water Science Center of the U.S. Geological Survey, gave an update on USGS activities in Shingle Creek and nearby watersheds. The new USGS National Water Dashboard interactive map allows viewers to access real-time water data from over 13,500 stations nationwide.

- ✓ Due to continuing concerns regarding group activities during the Covid-19 pandemic, tours of the watershed were not conducted in 2022.

Fourth Generation Plan

The Shingle Creek and West Mississippi Watershed Management Commissions spent considerable time developing their joint Fourth Generation Plan, completing a draft that was made available for informal review and then starting the formal review period, which spanned November 2022 to January 2023. Aside from preparing the actual plan document and the 10-Year Implementation Plan, the Commissions:

- ✓ Participated in a joint Equity in Watershed Management workshop with the Bassett Creek WMO to talk about strategies for enhanced inclusion and equity in our work as stewards of natural and water resources in the watersheds. The workshop included presentations by County, Metro Blooms, and Mississippi WMO staff, personal reflections on Environmental Justice work by the Executive Director of a nonprofit that serves diverse and underrepresented communities, as well as small group discussions and reflections.
- ✓ Undertook a major update to both the legal and hydrologic boundaries between the watersheds and neighboring Elm Creek, Bassett Creek, and Mississippi WMOs.

- ✓ Refreshed the website and added an interactive Story Map providing users map-based links to water quality, natural resource, and project data..

CONSULTANT SERVICES SELECTION

Every two years, a solicitation of interest proposals for technical, legal and administrative services is published in the *State Register*. Solicitations were published in the November 8, 2022, edition of the *State Register*. Commissioners will consider the responses at their January 11, 2023, meeting.

2022 WATER MONITORING

Minnesota Administrative Rule 8410.0100 Subp.5 requires watershed management organizations to conduct monitoring programs “capable of producing accurate data to the extent necessary to determine whether the water quality and quantity goals of the organization are being achieved.”

The Shingle Creek and West Mississippi Watershed Management Commissions (WMCs) annually monitor water quality in the lakes, streams, and outfalls of the watersheds. The Commissions’ technical staff obtain the stream and some lake water quality, fisheries, and vegetation data while volunteers collect lake water quality and stream macroinvertebrate data.

Together the Commissions have established monitoring objectives to guide their monitoring programs. The following objectives have been established for stream, outfall, and lake monitoring in both watersheds:

To quantify the current status of streams/outfalls and lakes (Shingle Creek only) throughout the watershed in comparison to state water quality standards established for nutrients, turbidity, chloride, bacteria, and other parameters currently regulated by the State.

To quantify changes, over time, of trends in stream and lake water quality in the watersheds.

To quantify the effectiveness of implemented BMPs throughout the watersheds for the protection of water quality.

Surface water quality in the watersheds is typical of urban lakes and streams in the Twin Cities metropolitan area. Agriculture, followed by urban development, has changed drainage patterns, increased pollutants to the waters, and reduced habitat for aquatic and terrestrial life. Neither Shingle Creek nor Bass Creek meet state water quality standards for chloride, bacteria, and dissolved oxygen, and both have severely impacted fish and macroinvertebrate communities. Thirteen of the 16 lakes were originally listed as Impaired Waters of the State due to their high concentrations of phosphorus.

TMDLs and Implementation Plans have been approved for all the Impaired Waters and the Commission and member cities have been actively implementing improvements. Ryan, Lower Twin and Schmidt lakes have subsequently been delisted, or removed, from the Impaired Waters list due

to improved water quality. Bass and Pomerleau lakes now meet the standards and the MPCA is recommending removal. Long-term stream monitoring shows a clear improvement in suspended sediment and nutrient concentrations in both Shingle and Bass Creeks, a result of ongoing efforts to stabilize streambanks, increase the frequency of street sweeping, enhance erosion control on construction sites, and install Best Management Practices (BMPs) to treat stormwater before it is discharged into the streams. However, chloride concentrations in the streams, mostly from road salt applied in the winter for snow and ice control, continue to be high.

2022 monitoring activities in the two watersheds included stream and outfall monitoring and lake monitoring. Each monitoring effort is described later in this section.

Stream Monitoring

In 2022 three sites along Bass/Shingle Creek were monitored biweekly April-October: the outlet in Minneapolis (SC-0); mid-watershed in Brooklyn Park (SC-3); and in Bass Creek (BCP) in the upper watershed. (Longitudinal studies did not occur in 2022.) Winter chloride was sampled monthly from November to March at the three locations and at the USGS gauge site located near the outlet of Shingle Creek. Real-time data from that site is available through the USGS website: <http://waterdata.usgs.gov/mn/nwis/uv?05288705>.

Due to the COVID 19 pandemic volunteer stream macroinvertebrate monitoring, conducted through the Hennepin County RiverWatch program, did not occur in 2022.

Lake Monitoring

Routine water quality monitoring in Schmidt and Magda lakes was conducted biweekly in 2022. Aquatic vegetation surveys were also conducted on those lakes, once in late spring and once in late summer. Grant-funded monitoring also occurred on Crystal and Meadow Lakes.

Thirteen of the sixteen lakes in Shingle Creek are periodically monitored for water quality by volunteers through the Citizen Assisted Monitoring program (CAMP). Volunteers in the program monitor their lake every other week from mid-April to mid-October. They measure surface water temperature, Secchi depth, and collect surface water samples that are analyzed by the Metropolitan Council for Total Phosphorus (TP), Total Kjeldahl Nitrogen (TKN), and chlorophyll-a. In 2022, Bass Lake and the three basins of Twin Lake were monitored through CAMP.

Water quality monitoring in the lakes has helped our understanding of changes in lake health following management activities.

Wetland Monitoring

The Wetland Health Evaluation Program (WHEP) is administered by Hennepin County. The County has discontinued this program and no wetland monitoring through WHEP occurred in 2022.

The 2022 *Water Quality Monitoring Report* provides more detail on the Commission's stream and lake monitoring activities. The report will be forwarded to the Board of Water and Soil Resources as a companion to this report and will also be made available on the Commissions' website, www.shinglecreek.org.

FINANCES

The Commission's Joint Powers Agreement provides that each member city contributes toward the annual operating budget based 50% on the area located within the watershed boundary and 50% on the tax capacity of all property within the watershed. The 2022 cost allocations to the members are shown as part of the 2022 Operating Budget found in *Appendix 6*.

Of the \$388,590 operating budget approved by the Commission for 2022 revenue consisting of \$20,000 in application fees and reimbursements, and \$5,000 in interest income resulted in assessments to members totaling \$363,590.

The 2021 Audit Report, which was prepared by Johnson & Company, Ltd., Certified Public Accountants, may be viewed on the Commission's website, www.shinglecreek.org. The 2022 Audit Report will be posted there after June 30, 2023.

The Commission follows Rule 54 of the Government Accounting Standard Board (GASB) to report Fund Balances. The fund balance classifications include:

- *Nonspendable* – amounts that are not in a spendable form. The Commission does not have any items that fit this category.
- *Restricted* – amounts constrained to specific purposes by their providers. One example would be ad valorem levy funds received from the County for capital improvements projects. The unused portion of these funds must be set aside in a restricted account for similar projects. Another example would be BWSR Legacy Grant proceeds where the funds are received prior to the onset of a project and where any unused portion must be returned to the grantor.
- *Committed* – amounts constrained to specific purposes by the Commission itself. An example would be residual funds carried over from one year to the next for Studies, Project Identification and Subwatershed Assessments.
- *Assigned* – amounts the Commission intends to use for specific purposes. Most line items in the Commission's Operating Budget fall under this category.
- *Unassigned* – amounts that are available for any purpose. These amounts are reported only in the general fund.

Amounts paid by the Commission per the Commission's 2021 Annual Audit are:

General Engineering	105,990
General Administration	111,629
Education	23,645
Programs	107,147
Projects	206,859
Capital Projects	<u>204,263</u>
Total	\$759,533

General engineering work includes review of local plans, review of development/redevelopment projects, tracking grant opportunities, attendance at meetings and other technical services.

General administration includes support to technical staff, attendance at meetings, insurance premiums, bookkeeping and annual audit, legal counsel, and other non-engineering services.

2023 WORK PLAN

The following are the adopted activities for the 2023 Work Plan, organized by Goal Areas identified in the Fourth Generation Plan and as general, routine Commission business. There are routine, ongoing activities as well as some Commission-funded construction projects expected. These activities were approved at the Commission's January 12, 2023, meeting with the addition of a goal to develop a process to add a diversity and equity evaluation to projects undertaken by the Commission.

GOAL 1. Protect, maintain, and improve the water quality and ecological integrity of the water and natural resources within the watersheds and the downstream receiving waters.

- § Complete the 5-year performance review for the Bass and Shingle Creek Biotic and DO TMDL.
- § Complete an aquatic vegetation survey on Bass Lake to assess success of vegetation transplants.
- § Partner with the City of Robbinsdale to complete the Crystal Lake Management Plan, including final sediment cores, and curly-leaf pondweed monitoring and potential treatment.
- § Partner with the City of New Hope to implement the Meadow Lake Management Plan, including potential additional vegetation and fish management and preparation for an alum treatment.
- § Partner with the City of Brooklyn Park and Three Rivers Park District to undertake feasibility assessment for stream restoration on Shingle Creek from the end point of the Connections project in Brookdale Park to just downstream of Xerxes Avenue.
- § Continue to partner with the USGS to operate the Queen Avenue monitoring site.
- § Stay abreast of other regional and state TMDLs.
- § Complete the Gaulke Pond and Eagle Lake subwatershed assessments
- § Use funding from the new Project Maintenance Fund to upkeep past project improvements.

GOAL 2. Reduce stormwater runoff rates and volumes to limit flood risk, protect conveyance systems, protect surficial groundwater, and reduce or mitigate impacts that have already occurred.

- § Complete reviews of development and redevelopment projects as necessary.

GOAL 3. Educate and engage all stakeholders in the watersheds on surface water issues and opportunities.

- § Participate in the West Metro Water Alliance joint education and outreach group.
- § Partner with Hennepin County and other local watersheds to fund a shared Education and Outreach Coordinator.
- § Develop a Chloride Management Plan for the watershed.

GOAL 4. Anticipate and proactively work to withstand adverse impacts from changing environmental and climate conditions.

- § Apply for a Climate Resiliency Grant to model future precipitation scenarios and, if awarded, begin work.

Continue ongoing administration and programming.

- § Conduct routine Commission lake water quality monitoring and aquatic vegetation and fish surveys on Upper and Middle Twin Lakes and grant funded aquatic vegetation monitoring on Crystal and Meadow Lakes.
- § Conduct Commission routine flow and water quality monitoring at SC-0 and SC-3 on Shingle Creek and Bass Creek Park (BCP) on Bass Creek as well as two DO longitudinal studies as part of the Shingle and Bass Creeks Dissolved Oxygen (DO) and Biotic Integrity TMDL 5 Year Review.
- § If available in 2023, sponsor volunteer stream monitoring through RiverWatch.
- § Sponsor volunteer lake monitoring through CAMP (Met Council) on Meadow, Ryan and Lower Twin lakes.
- § Prepare an annual water quality report.
- § Solicit cost-share projects from member cities funded from the Cost Share Fund and the annual \$100,000 levy and the Partnership Cost Share Fund and the annual \$50,000 levy.
- § Review feasibility studies for 2023 proposed capital projects, undertake Plan Amendments, hold public hearings, order projects and certify levies.
- § Prepare a 2024 annual budget.
- § Finalize and adopt the Fourth Generation Management Plan.
- § Invite three guest speakers to make lunchtime water resources presentations.
- § Complete the legal watershed boundary update.
- § Tour project sites in the watershed.

2023 WATER MONITORING

Each year the Commission budgets and undertakes monitoring activities, including routine stream and lake monitoring and volunteer lake, stream, and wetland monitoring. Water quality and quantity monitoring on Shingle Creek and select lakes is performed by Stantec staff and the USGS and macroinvertebrate monitoring in Shingle Creek is performed by volunteers through the Hennepin County Environmental Services' (HCES) RiverWatch program. Lake monitoring is performed by volunteers through the Met Council's Citizen Assisted Lake Monitoring Program (CAMP). The activities outlined below are consistent with the soon-to-be adopted Fourth Generation Management Plan, which includes routine monitoring tasks, specific monitoring efforts to support Commission administered grants, and monitoring to evaluate progress toward the TMDLs. In 2023 the Commission will complete the 5-year biotic and DO TMDL review report for Shingle and Bass Creeks. Lakes have been prioritized by tiers and, under the Fourth Generation Plan, the TMDLs will be reviewed systematically by priority.

Tier 1 – Impaired lakes with management actions planned. These lakes are priority lakes for intensive monitoring under the Fourth Generation Plan. Intensive monitoring will be used to evaluate lakes for management projects.

Tier 2 - Impaired lakes with previous management or none planned. The lakes are second priority for intensive lake monitoring under this Plan, as they are impaired.

Tier 3 – Delisted lakes. These lakes are third priority and will be monitored primarily through the CAMP program unless declines in water quality are detected.

Review of Shingle and Bass Creek TMDLs will also be prioritized based on the impaired status of the streams.

2023 Monitoring Program

§ **Routine Stream Flow and Water Quality Monitoring.** The Commission has routinely monitored stream flow and water quality in Shingle Creek since 1996. Two locations, one downstream of Humboldt Avenue in Minneapolis (SC-0) and one upstream of Zane Avenue in Brooklyn Park (SC-2) have been monitored for water quantity and various water quality chemical parameters. In 2007, SC-2 was moved from upstream to just downstream of Brooklyn Boulevard in order to obtain a better stage-discharge relationship. This site is identified as SC-3 and SC-2 is no longer monitored.

In 2015 Bass Creek (BCP) was added as a third site to be routinely monitored for water quality and conductivity. The Bass Creek monitoring station has helped provide better information about water quality in Bass Creek, which is impaired for chloride and biota.

A fourth site at Queen Avenue in Minneapolis (SC-1/USGS) is monitored for flow by the US Geological Survey (USGS) as a part of its ongoing National Assessment of Water Quality

(NAWQA). Chemical parameters are no longer routinely measured at the USGS site, except for continuous conductivity and temperature. That data are available on-line in real-time at [SHINGLE CREEK AT QUEEN AVE IN MINNEAPOLIS, MN - USGS Water Data for the Nation](#). The Commission also partners financially with the USGS in the operation of the Queen Avenue monitoring station.

- § **Intensive Lake TMDL Monitoring.** To track the effectiveness of BMP implementation in improving lake water quality, the Commission routinely performs intensive lake monitoring to supplement the volunteer surface monitoring. Because the Commission's goals include achieving delisting of lakes that meet their TMDLs and water quality, the Fourth Generation monitoring plan continues more rigorous lake monitoring sufficient to demonstrate to the MPCA and EPA that conditions have improved.
- § **Water Quality Monitoring.** For 2023, Upper and Middle Twin Lakes will be monitored biweekly. The water quality data collected for the lakes will include surface and deep-water samples, water column temperature/DO profiles, and zooplankton and phytoplankton sampling.
- § **Aquatic Vegetation Surveys.** A component of the intensive monitoring is to obtain or update surveys of lake aquatic vegetation. As we have discussed with the Commission in the past, aquatic vegetation plays an important role in water quality and biotic integrity, and the vegetation community can change as water quality changes. For 2023, surveys for Upper and Middle Twin will be updated in tandem with the intensive monitoring.
- § **Fish Surveys.** A carp population assessment will be completed for Upper and Middle Twin in 2023 to guide future carp management.

Grant Projects

The following monitoring tasks are built into ongoing grant projects.

- § **Bass Lake Alum Treatment.** A full curly-leaf pondweed (CLP) delineation will be done on Bass Lake in Spring 2023. CLP is a persistent invasive species in Bass Lake and has been treated with herbicide annually since 2020. Bass Lake will likely be treated with herbicide for CLP abundance in 2023. The delineation will cost approximately \$4,400 and will be paid from remaining Bass and Pomerleau Lakes Alum Treatment grant funds.
- § **Bass Lake Vegetation Improvement.** This project aimed to increase aquatic plant diversity in Bass Lake by transplanting desirable species from Big Cernelian to Bass Lake. After two transplant events in 2022, the final part of the grant project will be doing a late-summer point-intercept SAV survey on Bass Lake to assess plant diversity. This survey will cost approximately \$3,700 and will be paid from grant funds.
- § **The Crystal Lake Management Plan** began in 2020. This project includes carp assessment and tracking, alum applications, carp removal, SAV surveys, and water quality monitoring and

intends to address Crystal Lake's impairment for nutrients. The grant expires in August 2023. The final summer of this grant will be focused on collecting final sediment core data and assessing the aquatic vegetation community.

Aquatic Vegetation Surveys. Crystal Lake has received two alum treatments, with the most recent one occurring in September 2022. It is not uncommon for an increase in water clarity as a result of alum treatments to spur aquatic vegetation growth. Crystal Lake only has two previously observed aquatic plant species: waterlily and curly-leaf pondweed (CLP), both in extremely low abundance. To ensure that CLP does not take over the lake as a result of increased clarity, a visual survey of CLP abundance will be done in early Spring 2023. If necessary, CLP will be treated with herbicide. The visual survey will cost approximately \$1,500 and will be paid from grant funds.

Sediment Coring. In 2023 a follow-up round of sediment cores will be collected from Crystal Lake to assess success of the two alum treatments that were applied in Fall 2021 and 2022 in reducing internal phosphorus loading to the lake. The labor and laboratory expenses for collecting and processing sediment cores are approximately \$14,600 and will be paid from grant funds.

§ **The Meadow Lake Drawdown project** began in Fall 2021. The project includes adaptive management to control the fathead minnow and CLP populations in the lake and address the nutrient impairment. The second summer season of this project will include a Spring CLP delineation and potential treatment, and two vegetation surveys. The lake water quality will be monitored by a CAMP volunteer. The CLP and vegetation monitoring will cost \$7,700 and will be paid from grant funds.

Volunteer Monitoring

Lakes. The Shingle Creek Commission has participated in the Met Council's "Citizen Assisted Lake Monitoring Program" (CAMP) since 1993. This program trains volunteers to take surface water samples and make water quality observations from late spring to early fall, using standardized reporting techniques and forms. The CAMP program has been the Commission's primary means of obtaining ongoing lake water quality data. This program is also an NPDES Education and Outreach BMP.

CAMP was initiated by the Met Council to supplement the water quality monitoring performed by Met Council staff and to increase the Commission's knowledge of water quality of area lakes. Volunteers monitor the lakes every other week from mid-April to mid-October. They measure surface water temperature and Secchi depth, and collect surface water samples that are analyzed by the Met Council for total phosphorous, total Kjeldahl nitrogen, and chlorophyll-a. The volunteers also judge the appearance of the lake, its odor, and its suitability for recreation.

Lakes are monitored on a rotating schedule. The larger lakes are monitored every other year while the smaller lakes are monitored every three years. It is assumed that when a lake undergoes the intensive sampling program, no CAMP monitoring will be performed that year. Lakes scheduled for 2023 volunteer lake monitoring are Meadow Lake, Ryan Lake, and Lower Twin Lake. grades going back to 1996

Streams. In previous years high school student volunteers conducted macroinvertebrate monitoring through Hennepin County Environmental Services' RiverWatch Program at two locations on Shingle Creek. The County maintains an interactive online map showing locations throughout the county and stream: hennepin.us/riverwatch.

Have a question about this report? Need more information?

Want to know how to get involved?

Contact us: drop us an email, give us a call, we're happy to help:

<http://www.shinglecreek.org/contact-us.html>

APPENDICES

