



Bassett Creek Watershed Management Commission

Regular Meeting
Thursday, July 21, 2022
8:30 – 11:00 a.m.

Plymouth Maintenance Facility
14900 23rd Ave. N., Plymouth

AGENDA

1. CALL TO ORDER and ROLL CALL

2. **PUBLIC FORUM ON NON-AGENDA ITEMS** – *Members of the public may address the Commission about any item not contained on the regular agenda. A maximum of 15 minutes is allowed for the Forum. If the full 15 minutes are not needed for the Forum, the Commission will continue with the agenda. The Commission will take no official action on items discussed at the Forum, with the exception of referral to staff or a Commissions Committee for a recommendation to be brought back to the Commission for discussion/action.*

3. APPROVAL OF AGENDA

4. CONSENT AGENDA (10 minutes)

- A. Approval of Minutes – June 16, 2022 Commission Meeting
- B. Acceptance of July 2022 Financial Report
- C. Approval of Payment of Invoices
 - i. Keystone Waters, LLC – June 2022 Administrative Services
 - ii. Keystone Waters, LLC – June 2022 Meeting Expenses
 - iii. Barr Engineering – June 2022 Engineering Services
 - iv. Kennedy & Graven – May 2022 Legal Services
 - v. Redpath – June 2022 Accounting Services
 - vi. Stantec – WOMP Services
 - vii. Triple D Espresso – Meeting Catering
 - viii. MPCA Invoice – Review Fee for Main Stem Erosion Repair Project
 - ix. MMKR – 2021 Financial Audit
 - x. Jan Voit – June Meeting Minutes
 - xi. HDR – Website Services
 - xii. Metro Blooms – Lawns to Legumes Phase 2 Grant Project
 - xiii. Juan Del Valle Lopez – BCWMC Intern
- D. Receipt of Communications Related to 2012 Financial Audit
- E. Acceptance of 2021 Financial Audit
- F. Approval to Direct Commission Staff to Prepare Bid Package and Advertise for Bids for Sweeney Lake Alum Treatment
- G. Approval of Amendment to Grant Agreement with Hennepin County to Extend Deadline

5. BUSINESS

- A. Receive Report on Parkers Lake Chloride Reduction Technical Findings Study & Consider Options for Implementation (PL-7) (30 min)
- B. Consider Recommendation from Technical Advisory Committee to Adopt Updated XP-SWMM Model (15 min)

BREAK (at Chair's discretion)

- C. Receive Results of 2021 Water Quality Monitoring (40 min)
- D. Review Results of Plan Steering Committee Workshop and Consider Directing Commission Engineer to Develop Scope for Deeper Analysis of Issues (15 min)
- E. Consider Submitting Resolutions to Minnesota Association of Watershed Districts (MAWD) (10 min)
- F. Consider Administrator's Request to Attend One Water Summit with Met Council Delegation (10 min)

6. COMMUNICATIONS (10 minutes)

- A. Administrator's Report
 - i. Reminder August Meeting at Westwood Nature Center; includes tour after meeting
- B. BCWMC Intern
 - i. Brief Review of Public Input Received to Date
- C. Chair
 - i. Report on Freshwater Event
- D. Commissioners
- E. TAC Members
 - i. August Meeting Cancelled
- F. Committees
- G. Legal Counsel
- H. Engineer

7. INFORMATION ONLY (Information online only)

- A. BCWMC Administrative Calendar
- B. CIP Project Updates www.bassettcreekwmo.org/projects
- C. Grant Tracking Summary and Spreadsheet
- D. WCA Notices – Minnetonka, Plymouth

8. ADJOURNMENT

Upcoming Meetings & Events

- Metro MAWD Meeting: Tuesday July 19, Virtual 7:00 p.m.
- Salt Symposium Livestreamed August 2 & 3, www.bolton-menk.com/resources/salt-symposium/
- BCWMC Regular Meeting: Thursday August 18, 8:30 a.m., Westwood Nature Center



Bassett Creek Watershed Management Commission

AGENDA MEMO

Date: July 14, 2022

To: BCWMC Commissioners

From: Laura Jester, Administrator

RE: **Background Information for 7/21/22 BCWMC Meeting**

1. **CALL TO ORDER and ROLL CALL**
2. **CITIZEN FORUM ON NON-AGENDA ITEMS**
3. **APPROVAL OF AGENDA – ACTION ITEM with attachment**

4. **CONSENT AGENDA**
 - A. Approval of Minutes – June 16, 2022 Commission Meeting- **ACTION ITEM with attachment**

 - B. Acceptance of July Financial Report - **ACTION ITEM with attachment**

 - C. Approval of Payment of Invoices - **ACTION ITEM with attachments (online) – I reviewed the following invoices and recommend payment.**
 - i. Keystone Waters, LLC – June 2022 Administrative Services
 - ii. Keystone Waters, LLC – June 2022 Meeting Expenses
 - iii. Barr Engineering – June 2022 Engineering Services
 - iv. Kennedy & Graven – May 2022 Legal Services
 - v. Redpath – June 2022 Accounting Services
 - vi. Stantec – WOMP Services
 - vii. Triple D Espresso – Meeting Catering
 - viii. MPCA Invoice – Review Fee for Main Stem Erosion Repair Project
 - ix. MMKR – 2021 Financial Audit
 - x. Jan Voit – June Meeting Minutes
 - xi. HDR – Website Services
 - xii. Metro Blooms – Lawns to Legumes Phase 2 Grant Project
 - xiii. Juan Del Valle Lopez – BCWMC Intern

 - D. Receipt of Communications Related to 2012 Financial Audit – **INFORMATION ITEM with attachment –**
Due to new audit standards effective for the BCWMC’s 2021 fiscal year audit, the auditors are required to communicate some additional information relating to their audit planning, risk assessment, and responsibilities as the auditor. As some of this information was subject to change until the planning and risk assessment portion of the audit was complete, they opted to provide these communications separately rather than in the original engagement letter. The attached letter contains the additional required communications.

 - E. Acceptance of 2021 Financial Audit – **INFORMATION ITEM with attachment (full document online) –**
The audit of the Commission’s finances for the period February 1, 2021 to January 31, 2022 is complete. The auditor found no deficiencies in internal financial control and no findings based on testing of the Commission’s compliance with laws and regulations. Deputy Treasurer Virnig and I recommend the Commission accept the audit. The audit documents have been submitted to the state auditor and the MN Board of Water and Soil Resources. They are also posted on the [BCWMC website](#).

 - F. Approval to Direct Commission Staff to Prepare Bid Package and Advertise for Bids for Sweeney Lake Alum Treatment – **ACTION ITEM with no attachment –**
The [Sweeney Lake Water Quality Improvement Project](#) includes an alum treatment in the lake to significantly reduce the release of phosphorus from lake

bottom sediments – a significant cause of algae blooms. The first phase of the alum treatment was performed in fall 2020. A second alum treatment is slated for this fall. Due to the anticipated cost of the alum treatment, the BCWMC must advertise for bids for the work. Bid documents are currently being drafted and will be very similar to the documents from the [September 2020 Commission meeting packet](#). However, in order to stay within the project budget and also account for rising costs of the treatment, the volume of alum used this year is expected to be about 25% lower than originally designed for the second treatment. The Commission Engineer ensures that despite the lower volume, the alum treatment will still be very effective at locking phosphorus in the sediments. The Commission should direct staff to finalize the documents with Commission attorney and administrator review and then submit for official advertisement. At the September meeting, the Commission will select a bidder and approve a contract for the work.

- G. Approval of Amendment to Grant Agreement with Hennepin County to Extend Deadline – **ACTION ITEM with attachment** – In 2017, the BCWMC received an Environmental Response Fund (ERF) grant from Hennepin County to help pay for costs associated with removing and hauling contaminated sediment during the [Main Stem Bassett Creek Erosion Repair Project \(2017CR-M\)](#) in Minneapolis. The project is now complete, however due to delays in the project schedule, the grant agreement has been twice amended to extend the term of the grant period. Staff recommends approval of the latest amendment which was reviewed by Attorney Anderson.

5. BUSINESS

- A. Receive Report on Parkers Lake Chloride Reduction Technical Findings Study & Consider Options for Implementation (PL-7) (30 min) – **DISCUSSION/ACTION ITEM with attachment** - At their meeting in September 2020, the Commission approved a feasibility study for the Parkers Lake Chloride Reduction Project and directed the City of Plymouth to develop more specific recommendations on projects to reduce chlorides in Parkers Lake. See the attached memo and executive summary from the city regarding a recent technical evaluation (complete report online, if desired) and a list of options for the Commission to consider evaluating further with the goal of future implementation. At this meeting city staff will present the technical findings along with more information on the options recommended for consideration.
- B. Consider Recommendation from Technical Advisory Committee (TAC) to Adopt Updated XP-SWMM Model (15 min) – **ACTION ITEM with attachment** - The TAC met three times since May to discuss the Commission’s hydraulic and hydrologic (H&H) model and review how it compares with previous model results. The attached memo outlines their recommendation to the Commission to formally adopt the new model.

BREAK (at Chair’s discretion)

- C. Receive Results of 2021 Water Quality Monitoring (40 min) – **INFORMATION ITEM with attachments** – In 2021, the Commission’s water monitoring program included monitoring of Parkers, Westwood, and Crane Lakes and the second (final) year of monitoring for the Sweeney Lake Branch of Bassett Creek. The monitoring reports are attached. Commission Biologist Meg Rattei with Barr Engineering will present monitoring results and recommendations.
- D. Review Results of Plan Steering Committee Workshop and Consider Directing Commission Engineer to Develop Scope for Deeper Analysis of Issues (15 min) – **ACTION ITEM with attachment** - At the Plan Steering Committee workshop on July 11th commissioners, alternates, and city staff reviewed early input on the watershed plan from cities, agencies, and partners; and reviewed results of the gaps analysis. Results of the small group issue categorization exercise are attached along with a request to direct staff

to develop a scope for further analysis of several challenging issues (as included in the original plan development scope).

- E. Consider Submitting Resolutions to Minnesota Association of Watershed Districts (MAWD) (10 min) – **DISCUSSION ITEM with attachment** – *The Commission could consider drafting and submitting policy recommendations to the MN Association of Watershed Districts for consideration in MAWD’s resolutions process. After review the MAWD Resolutions Committee, resolutions would be evaluated by the MAWD membership and voted on at the annual meeting in December. Approved resolutions would become part of MAWD’s 2022 legislative platform. Staff does not have any recommended resolutions at this time.*
- F. Consider Administrator’s Request to Attend One Water Summit with Met Council Delegation (10 min) – **ACTION ITEM with attachment** - *I was recently invited to join the Met Council’s delegation to the U.S. Water Alliance’s One Water Summit conference in Milwaukee this fall. See the attached memo for more details and my request to accept the invitation.*

6. COMMUNICATIONS (10 minutes)

- A. Administrator’s Report - **INFORMATION ITEM with attachment**
 - i. Reminder August Meeting at Westwood Nature Center; includes tour after meeting
- B. BCWMC Intern
 - i. Brief Review of Public Input Received to Date
- C. Chair
 - i. Report on Freshwater Event
- D. Commissioners
- E. TAC Members
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8. ADJOURNMENT

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Bassett Creek Watershed Management Commission

DRAFT Minutes of Regular Meeting
Thursday, June 16, 2022
8:30 a.m.
Plymouth Maintenance Facility

1. CALL TO ORDER and ROLL CALL

On Thursday, June 16, 2022 at 8:38 a.m. Chair Cesnik brought the Bassett Creek Watershed Management Commission (Commission) to order.

Commissioners, city staff, and others present

City	Commissioner	Alternate Commissioner	Technical Advisory Committee Members (City Staff)
Crystal	Dave Anderson	<i>Absent</i>	Mark Ray
Golden Valley	<i>Absent</i>	Jane McDonald Black	Drew Chirpich
Medicine Lake	Clint Carlson	Shaun Kennedy	<i>Absent</i>
Minneapolis	Michael Welch	Jodi Polzin	<i>Absent</i>
Minnnetonka	<i>Vacant Position</i>	<i>Vacant Position</i>	<i>Absent</i>
New Hope	Jere Gwin-Lenth	Jennifer Leonardson	<i>Absent</i>
Plymouth	Catherine Cesnik	Monika Vadali	Ben Scharenbroich
Robbinsdale	<i>Absent</i>	<i>Vacant Position</i>	Mike Sorenson, Richard McCoy
St. Louis Park	<i>Vacant Position</i>	<i>Absent</i>	<i>Absent</i>
Administrator	Laura Jester, Keystone Waters		
Engineers	Karen Chandler, Barr Engineering		
Recording Secretary	<i>Absent</i>		
Legal Counsel	Dave Anderson, Kennedy & Graven		
Presenters/ Guests/Public	None		

Introductions were done.

2. PUBLIC FORUM ON NON-AGENDA ITEMS

No comments from the public were made.

3. APPROVAL OF AGENDA

MOTION: Commissioner Welch moved to approve the agenda with the addition of consideration of registrations for the Salt Symposium. Commissioner Gwin-Lenth seconded the motion. The motion carried 6-0, with the cities of Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

4. CONSENT AGENDA

The consent agenda was amended to remove item 4D. The following items were approved as part of the consent agenda.

- Approval of May 19, 2022 Meeting Minutes
- Acceptance of June Financial Report
- Approval of Payment of Invoices
 - i. Keystone Waters, LLC – May 2022 Administrative Services
 - ii. Keystone Waters, LLC – May 2022 Meeting Expenses
 - iii. Barr Engineering – May 2022 Engineering Services
 - iv. Kennedy & Graven – April 2022 Legal Services
 - v. Redpath – May 2022 Accounting Services
 - vi. Stantec – WOMP Services
 - vii. Triple D Espresso – Meeting Catering
 - viii. PLM Land and Lake Management – Curly=leaf Pondweed Herbicide Treatment
 - ix. MPCA Invoice – VIC Reimbursement for Main Stem Erosion Repair Project
 - x. MMKR – 2021 Financial Audit
 - xi. Jan Voit – May Meeting Minutes
 - xii. LMCIT – Insurance Renewal

MOTION: Commissioner Welch moved to approve the consent agenda as amended. Commissioner Gwin-Lenth seconded the motion. The motion carried 6-0, with the cities of Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

5. BUSINESS

Moved off consent: **4D. Approval of Highway 55 and Highway 169 Apartments Project, Plymouth**

Commissioner Welch asked if the City of Plymouth has wetland buffer requirements and if they were being met for this project. Plymouth TAC Member Scharenbroich said that the buffer requirements are not currently being met. They are working with the contractor to ensure the requirements are met. The project will not be approved until it complies with the buffer requirements.

Commissioner Welch noted that this is a large project with a lot of impervious surface being added. He noted that although MIDS requirements are being met through flexible treatment options, there may be missed opportunities and that MIDS requirements may need to be reviewed in the future.

Commissioner Welch asked if buffer information could be included in future development review memos. Administrator Jester explained that buffer information isn't something the Commission reviews, so it isn't submitted to the Commission. She noted it would be necessary to update the review application to get that information from developers. Commission Engineer Chandler stated that she would like to speak with the cities to determine how to streamline this, since they would be providing the information.

MOTION: Commissioner Welch made a motion to approve the Highway 55 and Highway 169 Apartments Project with direction to the Commission Engineer to follow up on the buffer requirements. Alternate Commissioner McDonald Black seconded the motion. The motion carried 6-0, with the cities of Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

Added to the agenda: **Salt Symposium Registrations**

Chair Cesnik stated that this item is to approve registrations for those commissioners that would like to attend the Salt Symposium in August. At this time, she is interested, as well as Commissioner Harwell, Alternate Commissioner Kennedy, and Administrator Jester.

MOTION: Commissioner Carlson made a to approve the attendance and reimbursement of registration of commissioners, alternate commissioners and the administrator for the Salt Symposium. Commissioner Welch seconded the motion. The motion carried 6-0, with the cities of Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

A. Consider Approval of 90% Design Plans for Main Stem Lagoon Dredging Project (BC-7)

Commission Engineer Chandler said that Engineer Pat Brockamp could not be in attendance. This is a project to dredge Lagoons D, E, and F in Theodore Wirth Regional Park.

Unlike typical CIP projects, this project is being designed and constructed by the BCWMC. The overall budget for the project is \$2.759M. Funds will come from Capital Improvement Project (CIP) levies, grants, and closed projects. The property is owned by the Minneapolis Park and Recreation Board (MPRB) and it is located in the City of Golden Valley.

Engineer Chandler reviewed 90% plans and highlighted differences from the 50% plans previously approved. The dredging amount remains at 39,000 cubic yards of accumulated sediment. The sediment removal will be done in public waters. The estimated phosphorus reduction is 600 pounds per year at \$226 per pound. Islands are being removed and the lagoons deepened to six feet.

The access to Lagoon D was revised and will now be done through the creek channel to avoid impacts with BNSF railroad property and the MPRB Grand Rounds trail. The Commission Engineer discussed this change with the Department of Natural Resources (DNR) and they did not indicate any issues with it. However, the Engineer will need to survey the channel to better define the access and provide that information to the DNR. The channel survey will be done when the water levels drop.

During the stakeholder involvement, requests were made to include aquatic benches and wildlife fencing. In working with the MPRB and discussing maintenance, permitting, and other issues, no changes were recommended to wildlife exclusion plans and aquatic benches were deemed not necessary.

No changes were recommended for the restoration around the lagoons. The areas disturbed by construction will be restored with a native seed mix. Buffer requirements for the city and the Commission are being met. Discussions are underway with the MPRB about areas that could potentially be improved with a pollinator mix rather than turf grass. There will be no trail closures during construction. One trail crossing will be impacted. The Commission Engineer is coordinating with the Loppet to avoid construction during events.

The MPRB hires a company to conduct pre- and post-construction inspection of the road condition. The roads are not built for trucks and have poor underlying soils. The MPRB assesses a pavement damage fee based on the damage done to the road and for reimbursement of the consultant's pre- and post-construction inspection costs. The Commission Engineer estimates these costs to be about \$20,000.

Construction is planned to begin in January of 2023. The means and methods for dewatering will be determined by the contractor. With the dredge material, the Commission Chair will sign a waste manifest because the Commission is the project owner. Signature authority cannot be delegated. The contractor signs as the transporter.

Three years has passed since the survey of the lagoons was conducted. Contractors may not be comfortable using that survey as a basis for how much they are being paid. The Commission Engineer will perform another survey to evaluate if there has been a change in sediment accumulation.

The permit requirements were reviewed. The State Historic Preservation Office review and EAW have been completed. An MPCA stormwater permit is not required, although the Commission Engineer is following the requirements for this permit. The USACE Section 404 permit certification is nearly complete. The DNR work in public waters permit has been submitted and we are waiting for confirmation of the start of the 30-day comment period. The contractor will submit the MPRB permits. The Commission Engineer will apply for the City of Golden Valley's stormwater permit after bidding.

Coordination with the Commission attorney continues. Stakeholder engagement continues through meetings and other communications. Commission staff will need to reach out to neighborhood associations. The point of the engagement is to inform people about the project and direct them to the project website for more information.

The construction cost shows an increase of \$18,960 over the 50% design cost. The cost is still within the overall budget. The reason for the increase is the unit price for the control of water and dewatering, and access to Lagoon D. The cost for the pollinator lawn is not included. A construction contingency of 10% is included in the cost to account for the ongoing uncertainty in the bidding climate and pending the results of the dredging verification survey. The MPRB fees are also included.

For the schedule, the permitting is happening now. Public engagement will continue through construction. The plan is to come back in August with 100% design plans and specifications for Commission approval authorization to go out for bid. The bid award would be done at the Commission meeting in October. Construction will occur over the winter.

The engineer recommends considering approval of the 90% drawings, authorization to continue design, permitting, and moving forward to get to bidding, and authorization to perform the additional creek channel survey and survey of the lagoons.

An issue was raised about hauling on roadways through North Minneapolis and the potential impact to air quality in the surrounding neighborhoods. The other hauling routes include a longer route on park roadways with potential for pedestrian encounters and more park road impacts, or routes through other residential neighborhoods. These haul route options do not appear to be good choices. There was some discussion about asking the MPRB to review their preferred haul routes and their estimated \$20,000 permit fee. Commission Engineer Chandler stated that it does help that the construction will be done in winter. Windows will be closed and the hauling will occur over a short period of time. No project changes were requested regarding this item.

MOTION: Commissioner Carlson made a motion to approve the 90% plans and the Commission Engineer's recommendations. Commissioner Welch seconded the motion. Discussion was held regarding the 100% design approval and the Commission's approval for the bid process, which could be an item on the consent agenda.

Commissioner Welch requested to amend the motion to approve the 90% drawings, authorizing the Commission Engineer to continue design, permitting, and coordination with BCWMC attorney, and to issue a request for bids at the discretion of the Commission Engineer and Administrator when 100% plans are prepared, and to authorize the Commission Engineer to perform the additional survey in the creek channel between Lagoons E and D, and a verification survey in the lagoons. Commissioner Carlson seconded the amended motion. The motion carried 6-0, with the cities of Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

B. Set Maximum Levy for 2023 CIPs

Administrator Jester explained that this meeting is the deadline for setting the maximum levy for 2023 CIP projects which happens through Hennepin County. Toward the end of the year, when the final levy is set, the CIP levy could be lowered, but it cannot be increased. This maximum levy is considerably higher than past levies. She will be meeting with Hennepin County Commissioner Fernando before the county considers this at their July meeting. She recommended the Commission set a maximum CIP levy of \$2.207M for the SEA School-Wildwood Park Flood Reduction Project, Medley Park Stormwater Treatment Facility, water quality improvements in Bryn Mawr Meadows Park, and dredging accumulated sediment in Main Stem Bassett Creek Lagoons, Wirth Park. She noted that 30% of project costs are being levied through city funds and grants. Without those funds, doing these projects would be difficult.

There was brief discussion about the need to have cash on hand to reimburse cities for project costs and to pay the contractor for the dredging project early next year. It was also noted that future levies may continue to be higher than in the past due to inflation and other market forces.

[Commissioner Anderson left the meeting.]

MOTION: Commissioner Welch made a motion to authorize the Administrator to issue to Hennepin County the maximum CIP levy for 2023 of \$2,207,000. Alternate Commissioner McDonald Black seconded the motion. The motion carried 5-0, with the cities of Crystal, Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

C. Report on Haha Wakpandan Community Event and Update on Watershed Plan Development Process

Chair Cesnik reported that she, Commissioner Welch, and Administrator Jester attended the event. It was a wonderful event hosted by Valley Community Presbyterian Church that provided an oral history of Native Americans in the Bassett Creek area. BCWMC had a table display with materials about the Commission. Native community members spoke at the event and the church's land acknowledgement statement was presented. The event felt like this is how change happens and could be truly impactful. Administrator Jester noted that this could dovetail into the Commission's work and Native voices should be included in the next watershed plan. Transcripts and recordings from the project will be available later in the summer.

Administrator Jester gave an update on the Watershed Management Plan (WMP) development process. There will be a Plan Steering Committee workshop on July 11 to review the process and importance of a WMP, to review input

received to date, and review the gaps analysis. Commissioners will also work on a high-level prioritization of issues. A webpage has been created for the WMP update. All the documents the Commission will consider will be posted on this page. A public survey has been created to get input from the public about water resources. There is a QR code that takes a person directly to the survey. It will be available through December 31. The QR code will be added to the website.

Administrator Jester also reported Juan Del Valle, the intern from Dougherty Family College, intern has been working for two weeks. He has been doing job shadowing and is working well on various tasks.

D. Update on 2022 Operating Budget Status

Administrator Jester gave an update on the status of the 2022 Operating Budget. She noted the Commission is on track with almost every budget item. The XP-SWMM model update process cost was more than expected and the APM/AIS activities will be about \$5,000 over budget. Legal fees are running above budget due to longer meetings and increased project involvement. There were no questions or comments.

E. Discuss Membership in Minnesota Association of Watershed District (MAWD)

Administrator Jester spoke with MAWD Executive Director Javens and reviewed information she provided. MAWD lobbies for legislative priorities and follows lawsuits that could potentially impact watershed organizations statewide. She noted MAWD is working to strengthen partnerships and is updating the strategic plan which will be available later this summer for comment. The Commission can strengthen and improve MAWD. They are always looking for committee members, which is an opportunity for the Commission, too. Having representation in this broader organization is important and she recommended keeping the cost for dues in the budget for 2023.

Administrator Jester reviewed some history of WMO involvement in MAWD; WMOs have only been asked to become MAWD members in the last three or four years. The membership dues were originally \$500. The cost has increased over the years. There is a formula for the dues based on estimated watershed market value.

There was some discussion about the benefits to MAWD membership, some of the frustrations (particularly regarding the chloride legislation), and the overall cost. It was noted that the Administrator Jester has been asked to participate on various MAWD committees and meetings. It is nice to have a seat at the table.

Commissioner Gwin-Lenth agreed with the conclusions in Administrator Jester's memo. It is important to provide input on watershed work, priorities, and policies. Commissioner Welch serves on the MAWD Strategic Plan Committee and also agrees with Administrator Jester's recommendations. There is a defensive capacity that MAWD serves. Some of the dynamic about what happens with lobbying is the way one person does the job. You will see the Strategic Plan in September. It is a progressive new direction.

Alternate Commissioner McDonald Black was grateful that there was discussion with MAWD. She is thankful that Commissioner Welch is on the Strategic Plan Committee. Having the ability to set state level policy and legislation can have a huge impact. She is in favor of continuing membership.

Chair Cesnik said that as a commissioner for the City of Plymouth, she recognizes the value of a legislative advocacy organization. She thinks \$7,500 is quite high for membership dues for an organization that is not focused on issues important to BCWMC. There is something to be said for keeping it in the budget and deciding later. Given that it is such a tight budget year, this is an easy item to let go.

F. Consider Approval of 2023 Proposed Operating Budget and Changes to Review Fee Schedule

Administrator Jester stated that she updated the proposed budget based on discussion at the May meeting and that the Budget Committee had not met since the May Commission meeting. The TAC met and recommended changes to the project review fees as described in the proposed fee schedule. This budget reflects keeping MAWD dues and changing review fees to the TAC recommendation, which increases income. For the APM/AIS work, she has received calls from Medicine Lake residents requesting more control of curlyleaf pondweed. This budget item is already three times higher than in the past because the Commission is doing more work in this area. This is in line with the Commission policy to work on AIS that is impacting water quality and a lake's overall ecology.

Commissioner Welch asked for clarification of the fee changes. Crystal TAC Member Ray explained the discussion held at the TAC meeting. The TAC determined that fees for city projects should include the add-ons fees. All projects are not equal, some are more complex than others. To use the add-on fee closes the budgetary difference. Cities without projects won't be subsidizing projects in other cities. The more complex projects are paying a more equitable fee.

Alternate Commissioner McDonald Black said that the TAC recommendations do a nice job of matching the actual expenses to revenues. Commission Attorney Anderson stated that this closes the gap. Add-on fees were not previously charged to city projects.

MOTION: Alternate Commissioner McDonald Black made a motion to approve the 2023 Proposed Operating Budget with MAWD Dues and the Changes to the Review Fees. Alternate Commissioner Kennedy seconded the motion. Chair Cesnik stated that she is voting no because the MAWD dues are included. The motion carried 4-1, with the cities of Medicine Lake, Golden Valley, Minneapolis, and New Hope in favor and the city of Plymouth opposed. The cities of Crystal, Minnetonka, Robbinsdale, and St. Louis Park were absent from the vote.

G. Consider Purchase of Dissolved Oxygen Sensor for Annual Stream Monitoring

Commission Engineer Chandler gave an overview of the recommendation to purchase a new sensor/datalogger for collecting continuous dissolved oxygen measurements. It would be only for the Commission’s use in the stream monitoring program. Because of the way it is made, it will save time and money. The cost is \$1,350.

MOTION: Alternate Commissioner McDonald Black made a motion to purchase a dissolved oxygen sensor for annual stream monitoring. Commissioner Welch seconded the motion. The motion carried 5-0, with the cities of Crystal, Minnetonka, Robbinsdale, and St. Louis Park absent from the vote.

6. COMMUNICATIONS

A. Administrative Report

- i. Freshwater Event at Utepils
Administrator Jester said that Freshwater is holding a membership appreciation event at Utepils on Bassett Creek. They are hoping that someone from the Commission will speak at the event. Chair Cesnik is available. All commissioners are welcome to attend. Information about the event will be sent to commissioners.

B. BCWMC Intern - The intern was not present.

C. Chair – No report

D. Commissioners – No reports

E. TAC Members

- i. June 1 Meeting Report
There was robust discussion at the June meeting about the XP-SWMM model update.
- ii. Next Meeting July 6 – Need Liaison Committees
Alternate Commissioner Kennedy will attend.

F. Committees – No reports

G. Legal Counsel – No report

H. Engineer

- i. Update on Sweeney Lake and Schaper Pond Activities
Commission Engineer Chandler reported that Carp Solutions would like to start their electrofishing next week. Administrator Jester is coordinating with the lake association. Bluegill stocking was completed on May 24.
- ii. Update on Water Monitoring Activities
Commission Engineer Chandler reported that water quality reports will be available in July. For 2022, ice out monitoring was done and the June monitoring is complete. Monitoring was done on Northwood, Lost and Sweeney Lakes. There was high chloride in Northwood at ice out. Monitoring is also being done on Plymouth Creek with the Three Rivers Park District and the City of Plymouth.

7. INFORMATION ONLY (Information online only)

- A. BCWMC Administrative Calendar
- B. CIP Project Updates <http://www.bassettcreekwmo.org/projects>
- C. Grant Tracking Summary and Spreadsheet
- D. Wetland Conservation Act Notices
- E. Stormwater Summit www.wef.org/StormwaterSummit
- F. Salt Symposium Early Registration bolton-menk.regfox.com/salt-symposium-2022

8. ADJOURNMENT - MOTION: Commissioner Welch made a motion to adjourn the meeting at 10:55 a.m.

Bassett Creek Watershed Management Commission						
Statement of Financial Position						
				Capital Improvement Projects	General Fund	TOTAL
ASSETS						
Current Assets						
Checking/Savings						
		101 · Wells Fargo Checking		-703,187.42	686,105.95	-17,081.47
		102 · 4MP Fund Investment		3,501,986.62	5,381.57	3,507,368.19
		103 · 4M Fund Investment		2,483,650.36	3,490.82	2,487,141.18
		Total Checking/Savings		5,282,449.56	694,978.34	5,977,427.90
Accounts Receivable						
		111 · Accounts Receivable		0.00	600.67	600.67
		112 · Due from Other Governments		52,806.40	-0.26	52,806.14
		113 · Delinquent Taxes Receivable		11,396.55	0.00	11,396.55
		Total Accounts Receivable		64,202.95	600.41	64,803.36
Other Current Assets						
		114 · Prepays		0.00	2,978.75	2,978.75
		116 · Undeposited Funds		0.00	1,500.00	1,500.00
		Total Other Current Assets		0.00	4,478.75	4,478.75
		Total Current Assets		5,346,652.51	700,057.50	6,046,710.01
TOTAL ASSETS				5,346,652.51	700,057.50	6,046,710.01
LIABILITIES & EQUITY						
Liabilities						
Current Liabilities						
Accounts Payable						
		211 · Accounts Payable		0.00	31,109.75	31,109.75
		Total Accounts Payable		0.00	31,109.75	31,109.75
Other Current Liabilities						
		212 · Unearned Revenue		438,823.00	0.00	438,823.00
		251 · Unavailable Rev - property tax		11,396.55	0.00	11,396.55
		Total Other Current Liabilities		450,219.55	0.00	450,219.55
		Total Current Liabilities		450,219.55	31,109.75	481,329.30
		Total Liabilities		450,219.55	31,109.75	481,329.30
Equity						
		311 · Nonspendable prepaids		0.00	2,978.75	2,978.75
		312 · Restricted for improvements		4,562,582.00	0.00	4,562,582.00
		315 · Unassigned Funds		0.00	375,424.57	375,424.57
		32000 · Retained Earnings		1,075,938.11	15,876.48	1,091,814.59
		Net Income		-742,087.41	274,668.21	-467,419.20
		Total Equity		4,896,432.70	668,948.01	5,565,380.71
TOTAL LIABILITIES & EQUITY				5,346,652.25	700,057.76	6,046,710.01
UNBALANCED CLASSES				544,621.23	-544,621.23	0.00

Bassett Creek Watershed Management Commission				
Statement of Revenues, Expenditures and Changes in Fund Balances - General				
		Annual Budget	Jun 16 - Jul 21, 22	Feb 1 - Jul 21, 22
				Budget Balance
Ordinary Income/Expense				
	Income			
	411 · Assessments to Cities	565,998.00	0.00	565,998.00
	412 · Project Review Fees	60,000.00	1,500.00	26,500.00
	413 · WOMP Reimbursement	5,000.00	0.00	0.00
	414 · State of MN Grants	0.00	0.00	0.00
	415 · Investment earnings	0.00	4,589.88	8,872.39
	416 · TRPD Reimbursement	1,400.00	0.00	0.00
	Total Income	632,398.00	6,089.88	601,370.39
	Expense			
	1000 · Engineering			
	1010 · Technical Services	145,000.00	7,986.00	56,218.50
	1020 · Development/Project Reviews	75,000.00	5,919.56	52,033.92
	1030 · Non-fee and Preliminary Reviews	22,000.00	1,339.00	8,200.00
	1040 · Commission and TAC Meetings	14,000.00	1,747.00	6,040.71
	1050 · Surveys and Studies	10,000.00	0.00	0.00
	1060 · Water Quality / Monitoring	110,000.00	28,183.48	41,315.83
	1070 · Water Quantity	8,000.00	1,088.50	2,721.76
	1080 · Annual Flood Control Inspection	12,000.00	683.50	6,894.00
	1090 · Municipal Plan Review	2,000.00	741.50	741.50
	1100 · Watershed Monitoring Program	28,500.00	1,692.99	8,551.80
	1110 · Annual XP-SWMM Model Update	5,000.00	0.00	8,983.50
	1120 · TMDL Implementation Reporting	7,000.00	157.50	1,050.00
	1130 · APM/AIS Work	13,000.00	0.00	36,844.06
	1140 · Erosion Control Inspections	0.00	0.00	0.00
	1000 · Engineering - Other		0.00	0.00
	Total 1000 · Engineering	451,500.00	49,539.03	229,595.58
	2000 · Plan Development			
	2010 · Next Gen Plan Development	18,000.00	4,084.00	15,595.00
	2000 · Plan Development - Other		0.00	0.00
	Total 2000 · Plan Development	18,000.00	4,084.00	15,595.00
	3000 · Administration			
	3010 · Administrator	70,848.00	5,634.00	31,734.00
	3020 · MAWD Dues	7,500.00	0.00	7,500.00
	3030 · Legal	17,000.00	0.00	9,526.00
	3040 · Financial Management	13,500.00	2,500.00	6,500.00
	3050 · Audit, Insurance & Bond	18,700.00	0.00	11,393.00
	3060 · Meeeting Catering	1,300.00	161.23	863.37
	3070 · Administrative Services	8,000.00	424.87	3,103.59
	3000 · Administration - Other		0.00	0.00
	Total 3000 · Administration	136,848.00	8,720.10	70,619.96
	4000 · Education			
	4010 · Publications / Annual Report	1,300.00	0.00	1,164.00
	4020 · Website	1,800.00	546.13	546.13
	4030 · Watershed Education Partnership	18,350.00	0.00	3,850.00
	4040 · Education and Public Outreach	28,000.00	5,331.51	5,331.51
	4050 · Public Communications	1,100.00	0.00	0.00
	4000 · Education - Other		0.00	0.00
	Total 4000 · Education	50,550.00	5,877.64	10,891.64
	5000 · Maintenance			
	5010 · Channel Maintenance Fund	25,000.00	0.00	0.00
	5020 · Flood Control Proj-LT Maint	25,000.00	0.00	0.00
	Total 5000 · Maintenance	50,000.00	0.00	0.00
	Total Expense	706,898.00	68,220.77	326,702.18
	Net Ordinary Income	-74,500.00	-62,130.89	274,668.21
	Net Income	-74,500.00	-62,130.89	-380,195.82



Item 4D.
BCWMC 7-21-22

PRINCIPALS

Thomas A. Karnowski, CPA
Paul A. Radosevich, CPA
William J. Lauer, CPA
James H. Eichten, CPA
Aaron J. Nielsen, CPA
Victoria L. Holinka, CPA/CMA
Jaclyn M. Huegel, CPA
Kalen T. Karnowski, CPA

June 13, 2022

To the Board of Commissioners and Management
of the Bassett Creek Watershed Management Commission
16145 Hillcrest Lane
Eden Prairie, MN 55346

Dear Board of Commissioners and Management:

We are engaged to audit the financial statements of the governmental activities and each major fund, which collectively comprise the basic financial statements of the Bassett Creek Watershed Management Commission (the Commission) as of and for the year ended January 31, 2022. Professional standards require that we provide you with certain information related to our audit. We have communicated such information in our audit engagement letter prior to the start of the audit. However, recent changes to audit standards require additional communication with those charged with governance of the Commission during audit planning, which will be communicated to you verbally and in this letter.

OUR RESPONSIBILITY UNDER AUDITING STANDARDS GENERALLY ACCEPTED IN THE UNITED STATES OF AMERICA AND GOVERNMENT AUDITING STANDARDS

As stated in our engagement letter dated January 6, 2022, our responsibility, as described by professional standards, is to express opinions about whether the financial statements prepared by management with your oversight are fairly presented, in all material respects, in conformity with U.S. generally accepted accounting principles. Our audit of the financial statements does not relieve you or management of your responsibilities.

We have not been engaged to report on the introductory section, which accompanies the financial statements, but is not RSI. Our responsibility with respect to this other information in documents containing the audited financial statements and auditor's report does not extend beyond the financial information identified in the report. We have no responsibility for determining whether this other information is properly stated. This other information will not be audited and we will not express an opinion or provide any assurance on it.

We expect the Commission to provide the final version of all documents comprising the annual report, including other information, prior to the date of the auditor's report so that required audit procedures can be completed prior to the issuance of the auditor's report. If obtaining the final version of these documents is not possible prior to the date of the auditor's report, we expect that the documents will be provided as soon as practicable, and that the Commission will not issue the annual report prior to providing them to us. If we become aware that the final version of all documents determined to be part of the annual report were not provided to us prior to the issuance of those documents to third parties, we will be required to take additional action, which may include: obtaining those documents from Commission management and performing the required audit procedures on them as soon as practical; communicating the matter to those charged with governance of the Commission, if applicable; and other actions deemed appropriate in the circumstance.

Malloy, Montague, Karnowski, Radosevich & Co., P.A.

5353 Wayzata Boulevard • Suite 410 • Minneapolis, MN 55416 • Phone: 952-545-0424 • Fax: 952-545-0569 • www.mmkr.com

If we conclude that a that a material misstatement exists in other information obtained after the date of the auditor's report, we will be required to perform procedures to determine that the misstatement has been corrected, and reviewing the steps taken by management to communicate with those in receipt of the other information, if previously issued, to inform them of the revision. If the Commission's management and those charged with governance do not agree to revise the other information, we may take action to have the uncorrected misstatement appropriately brought to the attention of anyone in receipt of the financial statements and auditor's report, if considered appropriate based on our professional judgement and relevant law or regulations. In addition, we may provide a new or amended auditor's report to management, and request that management provide this new or amended auditor's report to anyone in receipt of the financial statements and auditor's report.

We will also assist in preparing the financial statements and related notes of the Commission in conformity with accounting principles generally accepted in the United States of America based on information provided by you. These nonaudit services do not constitute an audit under *Government Auditing Standards* and such services will not be conducted in accordance with *Government Auditing Standards*. We gave significant consideration to these nonaudit services we expect to provide, which may reasonably be thought to bear on independence, in reaching the conclusion that independence has not been impaired.

As part of our audit, we will consider the internal control of the Commission. Such considerations are solely for the purpose of determining our audit procedures and not to provide any assurance concerning such internal control.

As part of obtaining reasonable assurance about whether the financial statements are free of material misstatement, we will also perform tests of the Commission's compliance with certain provisions of laws, regulations, contracts, and grants. However, providing an opinion on compliance with those provisions is not an objective of our audit.

PLANNED SCOPE, TIMING OF THE AUDIT, SIGNIFICANT RISKS, AND OTHER

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve judgment about the number of transactions to be examined and the areas to be tested.

Our audit will include obtaining an understanding of the Commission and its environment, including internal control, sufficient to assess the risks of material misstatement of the financial statements and to design the nature, timing, and extent of further audit procedures. Material misstatements may result from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the entity or to acts by management or employees acting on behalf of the entity. We will generally communicate our significant findings at the conclusion of the audit. However, some matters could be communicated sooner, particularly if significant difficulties are encountered during the audit where assistance is needed to overcome the difficulties or if the difficulties may lead to a modified opinion. We will also communicate any internal control related matters that are required to be communicated under professional standards.

We have identified the following significant risk of material misstatement as part of our audit planning:

- 1) Management override of controls, which is a risk presumed to be applicable to every audit.

Areas identified during the planning process as having higher risks of material misstatement generally impact the planned amount or precision of substantive audit evidence to be gathered in those areas, and/or the relative experience of the audit staff assigned to perform or review the audit procedures for those areas. The risk identified above was addressed through the application of safeguards or specific procedures to reduce audit risk to an acceptable level.

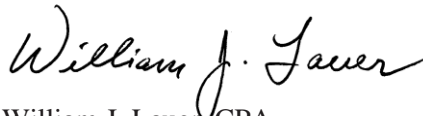
During the course of the audit, if modifications are made to significant risks of material misstatement, we will communicate them to you in writing.

We began our audit in March 2022, and expect to issue our report prior to June 30, 2022. William J. Lauer, CPA, is the engagement partner and is responsible for supervising the engagement and signing the report or authorizing another individual to sign it.

This information is intended solely for the use of the Board of Commissioners and management of the Commission and is not intended to be, and should not be, used by anyone other than these specified parties.

Sincerely,

MALLOY, MONTAGUE, KARNOWSKI, RADOSEVICH & CO., P.A.

A handwritten signature in cursive script that reads "William J. Lauer".

William J. Lauer, CPA
Principal

WJL:wls

March 19, 2021

To the Board of Commissioners and Management
Bassett Creek Watershed Management Commission

The following is a summary of our audit work, key conclusions, and other information that we consider important or that is required to be communicated to the Board of Commissioners, administration, or those charged with governance of the Bassett Creek Watershed Management Commission (the Commission).

OUR RESPONSIBILITY UNDER AUDITING STANDARDS GENERALLY ACCEPTED IN THE UNITED STATES OF AMERICA AND *GOVERNMENT AUDITING STANDARDS*

We have audited the financial statements of the governmental activities and each major fund of the Commission as of and for the year ended January 31, 2021. Professional standards require that we provide you with information about our responsibilities under auditing standards generally accepted in the United States of America and *Government Auditing Standards*, as well as certain information related to the planned scope and timing of our audit. We have communicated such information to you verbally and in our audit engagement letter. Professional standards also require that we communicate to you the following information related to our audit.

PLANNED SCOPE AND TIMING OF THE AUDIT

We performed the audit according to the planned scope and timing previously discussed and coordinated in order to obtain sufficient audit evidence and complete an effective audit.

AUDIT OPINION AND FINDINGS

Based on our audit of the Commission's financial statements for the year ended January 31, 2021:

- We have issued an unmodified opinion on the Commission's financial statements. The Commission has elected not to present management's discussion and analysis, which accounting principles generally accepted in the United States of America have determined necessary to supplement, although not required to be a part of, the basic financial statements. Our opinion on the Commission's basic financial statements is not affected by this missing information.
- We reported no deficiencies in the Commission's internal control over financial reporting that we considered to be material weaknesses.
- The results of our testing disclosed no instances of noncompliance required to be reported under *Government Auditing Standards*.
- We reported no findings based on our testing of the Commission's compliance with Minnesota laws and regulations.

SIGNIFICANT ACCOUNTING POLICIES

Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by the Commission are described in Note 1 of the notes to basic financial statements. No new accounting policies were adopted, and the application of existing policies was not changed during the year.

We noted no transactions entered into by the Commission during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

ACCOUNTING ESTIMATES AND MANAGEMENT JUDGMENTS

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected.

We evaluated the key factors and assumptions used to develop these accounting estimates in determining that they are reasonable in relation to the basic financial statements taken as a whole.

The financial statement disclosures are neutral, consistent, and clear.

CORRECTED AND UNCORRECTED MISSTATEMENTS

Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. There were no misstatements detected as a result of audit procedures that were material, either individually or in the aggregate, to each opinion unit's financial statements taken as a whole.

DIFFICULTIES ENCOUNTERED IN PERFORMING THE AUDIT

We encountered no significant difficulties in dealing with management in performing and completing our audit.

DISAGREEMENTS WITH MANAGEMENT

For purposes of this report, a disagreement with management is a financial accounting, reporting, or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditor's report. We are pleased to report that no such disagreements arose during the course of our audit.

MANAGEMENT REPRESENTATIONS

We have requested certain representations from management that are included in the management representation letter dated March 19, 2021.

MANAGEMENT CONSULTATIONS WITH OTHER INDEPENDENT ACCOUNTANTS

In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a “second opinion” on certain situations. If a consultation involves application of an accounting principle to the Commission’s financial statements or a determination of the type of auditor’s opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no consultations with other accountants.

OTHER AUDIT FINDINGS OR ISSUES

We generally discuss a variety of matters, including the application of accounting principles and auditing standards, with management each year prior to retention as the Commission’s auditors. However, these discussions occurred in the normal course of our professional relationship and our responses were not a condition to our retention.

OTHER MATTERS

We were not engaged to report on the introductory section, which accompanies the financial statements but is not required supplementary information. Such information has not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

CLOSING

We would be pleased to further discuss any of the information contained in this report or any other concerns that you would like us to address. We would also like to express our thanks for the courtesy and assistance extended to us during the course of our audit.

The purpose of this report is solely to provide those charged with governance of the Commission, management, and those who have responsibility for oversight of the financial reporting process required communications related to our audit process. Accordingly, this report is not suitable for any other purpose.

Malloy, Montague, Karnowski, Radosevich & Co., P. A.

Minneapolis, Minnesota
March 19, 2021

**BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION**

**Financial Statements and
Supplemental Information**

**Year Ended
January 31, 2021**

BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION

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BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION

Statement of Net Position
as of January 31, 2021
(With Partial Comparative Information as of January 31, 2020)

	Governmental Activities	
	2021	2020
Assets		
Cash and temporary investments	\$ 5,271,720	\$ 5,649,384
Delinquent taxes receivable	20,717	8,856
Due from other governments	360,577	337,209
Prepays	3,223	2,143
Total assets	\$ 5,656,237	\$ 5,997,592
Liabilities		
Accounts payable	\$ 91,735	\$ 873,404
Unearned revenue	571,690	266,878
Total liabilities	663,425	1,140,282
Net position		
Restricted for watershed improvements	4,583,299	4,448,634
Unrestricted	409,513	408,676
Total net position	4,992,812	4,857,310
Total liabilities and net position	\$ 5,656,237	\$ 5,997,592

BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION

Statement of Activities
Year Ended January 31, 2021
(With Partial Comparative Information for the Year Ended January 31, 2020)

	Governmental Activities	
	2021	2020
Expenses		
Watershed management		
Administration	\$ 675,702	\$ 697,931
Improvement projects	1,746,495	2,054,732
Total expenses	2,422,197	2,752,663
Program revenues		
Watershed management		
Charges for services – member assessments	550,450	529,850
Charges for services – permit fees	59,500	52,597
Operating grants and contributions	34,439	130,731
Capital grants and contributions	403,091	253,961
Total program revenues	1,047,480	967,139
Net program revenue (expense)	(1,374,717)	(1,785,524)
General revenues		
Property taxes	1,501,425	1,424,217
Unrestricted state aids	2	2
Investment earnings	8,115	51,828
Other	677	303
Total general revenues	1,510,219	1,476,350
Change in net position	135,502	(309,174)
Net position		
Beginning of year	4,857,310	5,166,484
End of year	\$ 4,992,812	\$ 4,857,310

BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION

Balance Sheet
Governmental Funds
as of January 31, 2021
(With Partial Comparative Information as of January 31, 2020)

	General Fund	Improvement Capital Projects Fund	Total Governmental Funds	
			2021	2020
Assets				
Cash and temporary investments	\$ 831,828	\$ 4,439,892	\$ 5,271,720	\$ 5,649,384
Delinquent taxes receivable	-	20,717	20,717	8,856
Due from other governments	6,777	353,800	360,577	337,209
Prepays	3,223	-	3,223	2,143
Total assets	\$ 841,828	\$ 4,814,409	\$ 5,656,237	\$ 5,997,592
Liabilities				
Accounts payable	\$ 60,625	\$ 31,110	\$ 91,735	\$ 873,404
Unearned revenue	371,690	200,000	571,690	266,878
Total liabilities	432,315	231,110	663,425	1,140,282
Deferred inflows of resources				
Unavailable revenue – property taxes	-	20,717	20,717	8,856
Fund balances				
Nonspendable for prepaids	3,223	-	3,223	2,143
Restricted for watershed improvements	-	4,562,582	4,562,582	4,439,778
Assigned for SWLRT and METRO Blue Line extension	-	-	-	15,000
Assigned for subsequent year budget	5,000	-	5,000	-
Unassigned	401,290	-	401,290	391,533
Total fund balances	409,513	4,562,582	4,972,095	4,848,454
Total liabilities, deferred inflows of resources, and fund balances	\$ 841,828	\$ 4,814,409	\$ 5,656,237	\$ 5,997,592

Amounts reported for governmental activities in the Statement of Net Position are different because:

Fund balances – governmental funds		\$ 4,972,095	\$ 4,848,454
Certain revenues (including delinquent taxes) are included in net position, but are excluded from fund balances until they are available to liquidate liabilities of the current period.		20,717	8,856
Net position of governmental activities		\$ 4,992,812	\$ 4,857,310

BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION

Statement of Revenue, Expenditures, and Changes in Fund Balances
Governmental Funds
Year Ended January 31, 2021
(With Partial Comparative Information for the Year Ended January 31, 2020)

	General Fund	Improvement Capital Projects Fund	Total Governmental Funds	
			2021	2020
Revenue				
Member contributions	\$ 550,450	\$ –	\$ 550,450	\$ 529,850
Permit fees	59,500	–	59,500	52,597
Property taxes	–	1,489,564	1,489,564	1,423,158
Intergovernmental	34,439	403,093	437,532	384,694
Investment earnings	101	8,014	8,115	51,828
Miscellaneous	677	–	677	303
Total revenue	645,167	1,900,671	2,545,838	2,442,430
Expenditures				
Current				
Engineering	476,378	–	476,378	522,116
Legal	20,996	–	20,996	14,428
Professional services	17,504	–	17,504	16,707
Administrative services	77,151	–	77,151	77,918
Public relations and outreach	24,283	–	24,283	23,158
Financial management	3,500	–	3,500	3,500
Education	54,856	–	54,856	37,498
Miscellaneous	549	485	1,034	2,606
Capital outlay				
Improvement projects	262	1,746,233	1,746,495	2,054,732
Total expenditures	675,479	1,746,718	2,422,197	2,752,663
Excess (deficiency) of revenue over expenditures	(30,312)	153,953	123,641	(310,233)
Other financing sources (uses)				
Transfers in	99,149	68,000	167,149	135,313
Transfers (out)	(68,000)	(99,149)	(167,149)	(135,313)
Total other financing sources (uses)	31,149	(31,149)	–	–
Net change in fund balances	837	122,804	123,641	(310,233)
Fund balances				
Beginning of year	408,676	4,439,778	4,848,454	5,158,687
End of year	\$ 409,513	\$ 4,562,582	\$ 4,972,095	\$ 4,848,454
Amounts reported for governmental activities in the Statement of Activities are different because:				
Net change in fund balances – governmental funds			\$ 123,641	\$ (310,233)
Certain revenues (including delinquent taxes) are included in net position, but are excluded from fund balances until they are available to liquidate liabilities of the current period.			11,861	1,059
Change in net position of governmental activities			\$ 135,502	\$ (309,174)

BASSETT CREEK WATERSHED
MANAGEMENT COMMISSION

Statement of Revenue, Expenditures, and Changes in Fund Balances
Budget and Actual
General Fund
Year Ended January 31, 2021

	Original and Final Budget	Actual	Over (Under) Budget
Revenue			
Member contributions	\$ 550,450	\$ 550,450	\$ -
Permit fees	50,000	59,500	9,500
Intergovernmental	5,000	34,439	29,439
Investment earnings	-	101	101
Miscellaneous	-	677	677
Total revenue	605,450	645,167	39,717
Expenditures			
Current			
Engineering	400,100	476,378	76,278
Legal	15,000	20,996	5,996
Professional services	18,000	17,504	(496)
Administrative services	84,700	77,151	(7,549)
Public relations and outreach	23,800	24,283	483
Financial management	3,500	3,500	-
Education	37,850	54,856	17,006
Miscellaneous	1,500	549	(951)
Capital outlay			
Improvement projects	10,000	262	(9,738)
Total expenditures	594,450	675,479	81,029
Excess (deficiency) of revenue over expenditures	11,000	(30,312)	(41,312)
Other financing sources (uses)			
Transfers in	42,000	99,149	57,149
Transfers (out)	(68,000)	(68,000)	-
Total other financing sources (uses)	(26,000)	31,149	57,149
Net change in fund balances	\$ (15,000)	837	\$ 15,837
Fund balances			
Beginning of year		408,676	
End of year		\$ 409,513	

AMENDMENT NO. 2 TO CONTRACT NO. A166805

THIS AGREEMENT is between the COUNTY OF HENEPIN, STATE OF MINNESOTA, (“COUNTY”) at A2300 Government Center, Minneapolis, Minnesota 55487, on behalf of the Hennepin County Environment and Energy Department, (“Department”) and the Bassett Creek Watershed Management Commission or Affiliated Entity (“Grantee”) with offices located at 16145 Hillcrest Lane, Eden Prairie MN, 55346.

IT IS HEREBY AGREED that Contract No. A166805 (the “Agreement”) providing One Hundred Fifty Thousand Three Hundred Dollars (\$150,300.00) for contaminated soil removal and disposal, placement of clean fill, oversight/on-site monitoring and characterization, associated environmental consulting activities and agency fees at the Bassett Creek Main Stem Erosion Repair project site located along segments of Bassett Creek in Minneapolis be amended as follows:

The second paragraph of Section 1. GRANT AMOUNT AND COMPLETION, shall be amended to read as follows:

Grantee agrees to complete the Project within the terms stated herein by the 11th of January, 2022. Any material change in the scope of the Project, including time schedule and budget, must be approved in writing by the County.

Except as amended, the terms, conditions and provisions of the Agreement shall remain in full force and effect.

COUNTY ADMINISTRATOR APPROVAL

Reviewed for COUNTY by
the County Attorney's Office:

COUNTY OF HENNEPIN
STATE OF MINNESOTA

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By:

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GRANTEE

GRANTEE warrants that the person who executed this Agreement is authorized to do so on behalf of GRANTEE as required by applicable articles, bylaws, resolutions or ordinances.*

By:

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By:

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*GRANTEE represents and warrants that it has submitted to COUNTY all applicable documentation (articles, bylaws, resolutions or ordinances) that confirms the signatory's delegation of authority. Documentation is not required for a sole proprietorship.

MEMORANDUM

To: Bassett Creek Watershed Management Commission (BCWMC)
From: City of Plymouth
Subject: Parkers Lake Chloride Reduction Project (PL-7)
Date: July 14, 2022

Background

In May 2020 the Commission received a presentation of the feasibility study for water quality improvements for Medicine Lake and Parkers Lake. This study included a recommendation (Alternative 6) to complete a chloride demonstration project in the northern watershed tributary to Parkers Lake to reduce salt usage and chloride loads to the lake. The specifics of this portion of the project were vague and resulted in the need to further study the area. See page 68 of the feasibility seen here: (https://www.bassettcreekwmo.org/application/files/3316/0398/7260/Mt.Olivet_Parkers_Feasibility_Report_Final_June2020_NoAppendices_.pdf)

In September 2020 the Commission entered into a cooperative agreement with the City of Plymouth for the implementation of this project following development of a list of viable, impactful chloride reduction measures. Since that time, the city facilitated a data evaluation project to further understand how chloride is transported within the sub-watersheds upstream of the lake and possible capital best management practices (BMPs) that could be viable in improving water quality in the lake. With funding from the Hennepin County Chloride Initiative and the City of Plymouth, the city and their consultants facilitated the data evaluation project over the last 1.5 years. In addition to a thorough literature review, a cohort of 14 technical experts from various cities and watersheds participated in 4 workshop sessions from July 2021 to January 2022. The group reviewed chloride and landuse data from multiple watersheds in the Metro area and ultimately developed a list of 24 structural and non-structural best management practices (BMPs) that could be used to reduce or remove chloride from the watershed and Parkers Lake. A copy of the executive summary of this effort is attached and the complete technical findings memorandum is with the online meeting materials.

Plymouth staff refined the list of potential structural BMPs that are viable for city operations and which would be eligible for BCWMC Capital Improvement Funds (see matrix below). Plymouth requests direction from the Commission on which BMPs the City should further analyze for implementation. If the Commission pursues one of these projects the next step would be to hire a consulting firm to update the feasibility study with this alternative, estimate chloride load reductions, prepare estimates including cost benefit, and bring back a 30% preliminary design to the Commission. City staff will provide a brief overview of the data evaluation process and details on these options at the meeting.



Matrix of Three BMP Alternatives for Consideration

	Design & Admin. Cost	Operational Cost	LBS Removed Per Year	Remove Impairment	Addresses Source
1A. Grant Program (Impervious Reduction)	Low	Low	Low	Low	Medium
1B. Grant Program (Equipment)	Medium	High	Medium	Low	High
2. On-site Capture	Medium	Medium	Medium	Low	Medium
3. In-lake Removal	High	Low	High	High	Low

Details of Three BMP Alternatives for Consideration

<p>1. Development of a targeted chloride reduction grant program.</p> <p><i>Description:</i> This BMP would develop a grant program targeting property owners in the northeast sub-watershed to reduce the amount of salt leaving their site. This program would include implementing low-chloride site design elements [ex. impervious reduction, heating sidewalks, plazas, parking lots, etc.], purchasing/renting chloride reducing equipment [ex. sweepers or liquid deicing sprayers], or both.</p> <p>Cost: Low cost to develop. Total cost variable based on fund availability, demand, and match required.</p> <p>Potential Reduction: Low or high levels of reduction based on cooperation.</p> <p>Opportunities: Reductions at businesses is a challenge, also serves as education, & could be repeatable.</p> <p>Risks: Benefits and maintenance require private cooperation. Unknown if this is a barrier to applicators.</p> <p>Next Steps: Estimate reduction by grant item and participation.</p> <p>Timeframe: 12 - 24 Months</p>

<p>2. Construct pilot on-site collection system.</p> <p><i>Description:</i> This BMP would plan, construct, and monitor an on-site chloride effluent collection system at the Plymouth or MnDOT public works facility (in northeast sub-watershed) to reduce the amount of salt leaving the site. This pilot is expected to involve using connectivity to collect the highest concentrated effluent into an on-site storage facility. Effluent would be tested to be either discharged into the sanitary sewer, diluted, and used in irrigation, or concentrated and cleaned to be used in the brine making process.</p> <p>Cost: Medium cost to develop. Medium cost to construct. Medium operational.</p> <p>Potential Reduction: Highest at storage facilities.</p> <p>Opportunities: <i>Locating would be easier at storage facility.</i></p> <p>Risks: Unknown levels leaving the site and ability to use/discharge effluent. Permitting needs unknown.</p> <p>Next Steps: Engage with MnDOT & MCES, begin sampling effluent, & topo survey.</p> <p>Timeframe: 18 - 36 Months</p>



3. Complete a lake dilution / effluent removal project.

Description: This project would be specific to Parkers Lake and would address the existing elevated chloride levels in the lake through dilution or by removing and moving the chloride laden-water. This project would look at introducing additional clean water into the lake strategically to dilute chlorides downstream, remove chloride effluent and transport for irrigation, or remove chloride effluent and transport to the Mississippi river which is able to accommodate the additional loading.

Cost: High cost to develop. High cost to complete. No operational.

Potential Reduction: 1-time removal.

Opportunities: Could result in removal of lake from impaired waters list. Could remove from watershed.

Risks: Relies on others to reduce loading to the lake (similar to Alum Treatment), permitting needs unknown, special care to not impact aquatic life.

Next Steps: Initiate lake study, engage with MCES, begin additional sampling in-lake.

Timeframe: 36-60 Months



Executive Summary

Parkers Lake Chloride Facilitation and Data Evaluation Project

Project Overview and Purpose

The City of Plymouth in partnership with the Hennepin County Chloride Initiative (HCCI) convened a cohort of individuals with technical experience in studying chloride transport and loading of local waterbodies in Hennepin County. The overall goal of the cohort was to use peer data to provide resources to Plymouth and the HCCI on trends in chloride transport by land use and the risks and opportunities of various best management practices that could be implemented to reduce chloride loading to Parkers Lake. The group met over a six-month period to share data, review consistencies and inconsistencies in their respective data based on land use, and look at the likely success of potential best management practices which could be further studied for implementation.

Parkers Lake is an approximately 100-acre recreation lake located in Plymouth within the Bassett Creek Watershed Management Commission (BCWMC) watershed boundary. The lake is on the impaired waters list for chloride and has commonly exceeded the state standard for chronic chloride concentration. The lake outlet elevation is relatively high compared to typical lake levels, thus hydraulically the group treated the lake as land locked.

Available Data

Plymouth has been monitoring in-lake chloride levels in Parkers Lake since 2000 and began monitoring outlets into the lake in 2013, including adding additional sites in 2019. Land uses to the south of the lake are primarily residential, northwest are primarily park and multifamily, and northeast are industrial/commercial.

Cohort members presented data from Shingle Creek, Nine Mile Creek, Bassett Creek, Sweeney Lake, the Ridgedale Mall Stormwater Ponds upstream of Crane Lake, Southdale Mall, preliminary data from the Minnesota Pollution Control Agency (MPCA), as well as articles and resources from cohort members.

Literature review of best management practices included (1) dilution of chloride currently in Parkers Lake, (2) capture and reuse of high-saline runoff for brine deicing applications, and (3) capture of high-saline runoff in above-ground storage tanks.



Transport by Land Use for Targeting Education & Outreach

After reviewing and evaluating chloride monitoring data from the cohort, the following land use items emerged as being useful in reviewing chloride transport in the county and targeting chloride reduction outreach.

- *Residential:* Chloride rates/acre were consistently the lowest contributors of chloride across multiple datasets and rates in general were consistent. Continued education to residents and local public works agencies on the importance of correctly applying deicing chemicals should keep these levels low.
- *Medium Density (Townhomes):* Chloride rates/acre were higher than residential, but data was inconsistent between available datasets. This indicated that general assumptions on loading cannot always be made. For homeowner association scenarios with private applicators, it would be expected that similar strategies to Industrial/Commercial may be effective.
- *Industrial/Commercial:* Chloride rates/acre here were the highest of all watershed monitoring entering the lake, which was consistent with other largely impervious areas. No correlation was found between the analyzed data sets on a rate/acre. A best management practice which was discussed as potentially being effective for these areas is the creation of a special use district or joint powers agreement to streamline deicing activities and make sure certified operators were being used. This tool used in conjunction with outreach and education may be beneficial.
- *Park/Institutional:* Data specific to this landuse was unable to be strictly segregated, but a best management practice that was discussed was the type of fertilizer being used on large, manicured turf areas (such as ballfields). Typical fertilizers include Potassium Chloride (KCL) as a source of supplementing potassium into the soil. This is typically used because the percentage of K per unit weight is higher than other compounds typically blended with fertilizer. Sulfate and Nitrate are other more common additives but result in higher application rates to meet K goals. Targeted chloride education could also be to those that maintain turf, especially upstream or adjacent to lakes.
- *Local & County Right-of-Way:* The amount of chloride/lane mile/year varies by agency, but through new technology and training public works agencies have shown that de-icing applications can be reduced from levels 5-years ago. Levels varied from 4.9 to 25.1 tons/mile/year with two larger agencies able to apply between 4.9-5.9 tons/mile/year. Using achievable targets could be a good additional outreach tool to agencies. A water quality monitoring snapshot of county data did not show a significant contributor to the lake chloride levels in this situation, but similar targets could be set for counties with more data.

Within monitoring locations where land uses are mixed it was difficult to find any underlying trends without adding further monitoring locations. The MPCA chloride transport tool would provide a good



resource until further study is completed. Generally speaking, the data supports current thinking that with more impervious surface the more chloride is applied and thus transported to the lake.

Although the following items above emerged from discussions of the data, one clear take away is that the sampling/monitoring frequency and procedure as well as method of evaluating data are not consistent between agencies which could result in variability in data.

Best Management Practice Opportunities

The cohort brainstormed and brought outside resources into the group to establish 23 different BMPs for discussion and consideration. Throughout evaluation there was consensus that reducing the use of chloride is the best way to solve the problem, and the group believed continuing education efforts, training, and limited liability legislation would be impactful. Although having the most impact these efforts may hit a point of diminishing returns, thus structural BMPs of a capital improvement nature were discussed in the greatest detail. The group selected six as having the highest likelihood of reducing the concentration of chloride in Parkers Lake. The selected BMPs are a combination of source reduction practices and in-lake chloride reduction. Many of these BMPs would require outreach and education to market the programs. The BMPs selected were:

1. Development of low-chloride design or private sweeper investment grant program
2. Construction of publicly available salt recycling or reuse center
3. Construction of publicly available brine tank
4. Development of watershed business district or JPA for joint winter maintenance
5. Development of on-site storage tank for chloride-contaminated effluent
6. Lake dilution

Cohort discussion and literature review indicated the following general conclusions about these BMPs:

	Design & Administration Capital Cost	Ongoing Operational Cost	Potential Chloride Loading Reduction	Potential Addressing Chloride in Lake	Addresses Chloride Source	Level of Community Involvement	Potential Hurdles	Notes
1. Grant Program	L	L	L	L	ML	H	ML	HCCI interviews indicate access to equipment is not a barrier.
2. Recycling/Reuse Center	ML	ML	L	L	ML	H	ML	Small case studies show limited use.
3. Public Brine Tank	MH	H	ML	L	ML	H	MH	
4. District/JPA	L	L	MH	MH	MH	H	ML	Requires either political or business support.
5. On-Site Collection	MH	ML	MH	MH	L	L	MH	Disposal of effluent would need to be coordinated.
6. Lake Dilution	H	L	L	H	L	L	H	Disposal of effluent would need to be coordinated.

Notes:

L = Low, ML = Medium Low, MH = Medium High, H = High





Bassett Creek Watershed Management

MEMO

To: BCWMC Commissioners and Alternate Commissioners
From: BCWMC Technical Advisory Committee
Date: July 12, 2022

RE: Recommendations on the XPSWMM Model

The BCWMC Technical Advisory Committee met on May 4th, June 1st, and July 6th to discuss the Commission’s hydraulic and hydrologic model (XP-SWMM model). Recommendations are shown below. Attendees included:

City/Partner	Technical Advisory Committee Members and Others
Crystal	Mark Ray, Chair (May, June, July)
Golden Valley	Eric Eckman (May, June, July), RJ Kakach (June, July), Drew Chirpich (June, July)
Medicine Lake	Susan Wiese (May, June, July)
Minneapolis	Liz Stout (May, July), Katie Kowalczyk (May, June, July), Heidi Ranschau (May, June, July)
Minnetonka	Sarah Schweiger (May, June, July)
New Hope	Nick Macklem (May, June, July)
Plymouth	Ben Scharenbroich (June, July), Chris LaBounty (July)
Robbinsdale	Richard McCoy (May, June, July); Mike Sorensen (May, June, July)
St. Louis Park	Erick Francis (May, June)
Others	Laura Jester (May, June, July); Karen Chandler (May, June, July) Jim Herbert (May, June), Jen Koehler (May, June, July); Commissioner Cesnik (June); Alt. Commissioner Kennedy (May)

1. XP-SWMM Model Update

The Commission’s XP-SWMM model is a hydraulic and hydrologic model that provides important information about floodplain boundaries and the extent of flooding potential with varying storm events (or amounts of precipitation). The model is used for the management of the [BCWMC Trunk System](#) and is used by the BCWMC, member cities, and developers (through a user agreement) to determine where potential development, redevelopment, or other projects might be subject to flooding and where floodplain regulations apply. The model was last updated in 2017.

At their meeting in August 2021, the Commission approved a TAC recommendation and directed the Commission Engineers to update the XP-SWMM model with the latest data.

In late 2021 and early 2022, Commission Engineers gathered information on developments, redevelopments, and other projects from member cities. Those projects were reviewed and projects that resulted in significant changes to drainage or water storage were incorporated into the model. Of the 53 projects submitted by cities for consideration, data from 23 of the projects were incorporated into the model. The updated model reflects current conditions through 2021, including areas where water is likely stored on the landscape.

When compared with the 2017 (“Phase 2”) model, the updated model shows some differences in the 100-year peak flood elevations including seven areas where the peak elevation was reduced by at least 0.1 feet and five areas where the peak elevation increased by at least 0.1 feet. Overall, there were:

- No differences in elevations on BCWMC lakes
- Increases upstream but decreases downstream of Wisconsin Ave Control Structure
- Both increases and decreases along North Branch and Plymouth Creek
- Decreases along Sweeney Lake Branch of Bassett Creek

The TAC recommendations that the Commission:

- A. Adopt the updated model as the official BCWMC model along with associated flood elevations; update [Table 2-9](#) in the 2015 Bassett Creek Watershed Management Plan with new flood elevations (no plan amendment required).
- B. Direct the Commission Engineer to finalize the model, subdivide the whole model into the 3 areas for easier transmission to users, and prepare new flood inundation maps for use by cities and others (BCWMC 2022 Surveys and Studies Budget could be used for this activity)

The TAC and Commission Engineers also discussed ways in which to streamline the process for requesting and gathering information from cities for future model updates. The group agreed that the current process (including signatures on a user agreement) for lending the model to others is appropriate and should remain in place. The TAC will work with the Commission Engineer and Administrator to monitor this process and see if potential opportunities are identified in the future to streamline the process.



Crane Lake 2021 water quality monitoring

The Bassett Creek Watershed Management Commission (BCWMC) has monitored water quality conditions in the watershed's 10 priority lakes since 1972. This monitoring is done to detect changes or trends in water quality and evaluate the effectiveness of efforts to preserve or improve water quality. A summary of 2021 monitoring efforts on Crane Lake is provided below; more comprehensive information can be found on pages 2–6.

At a glance: 2021 monitoring results

In 2021, the BCWMC monitored Crane Lake for:

- Water chemistry (nutrients, chlorophyll a, chloride).
- Water clarity and dissolved oxygen.
- Phytoplankton and zooplankton (microscopic plants and animals).
- Macrophytes (aquatic plants).

Results of 2021 monitoring show that Crane Lake has very high chloride levels that do not meet Minnesota Pollution Control Agency (MPCA) water quality standards. Trend analyses show a statistically significant increase in chlorides over the past 50 years. The significant increases in chloride concentrations have reduced zooplankton diversity. The abundance of zooplankton in the lake also declined over the past 22 years, but a trend analysis indicates the decline is not significant.

Crane Lake does meet MPCA and Bassett Creek Watershed Management Commission (BCWMC) water quality standards for total phosphorus and chlorophyll a. Secchi depth did not meet the MPCA/BCWMC standard in 2021; however, the low value was due to the dense growth of aquatic plants, which limited the Secchi disc depth to the top of the plants. Trend analyses show a statistically significant decline in total phosphorus but no significant changes in Secchi disc and chlorophyll a over the past 25 years. Other results include:

- The lake plant community was of fair-to-good quality, based on the number of species in the lake and the FQI values compared to the Minnesota Department of Natural Resources (MNDNR) Plant IBI thresholds.
- 2021 phytoplankton and numbers were within the range observed since 1982.
- An aquatic invasive species (AIS) suitability analysis indicates that the water quality of Crane Lake meets the suitability requirements for rusty crayfish, zebra mussel,



About Crane Lake

BCWMC classification	Priority-2 shallow lake
Watershed area	591 acres
Lake size	30 acres
Average depth	3.3 feet
Maximum depth	5 feet
Ordinary high water level	920.5 feet (NGVD29)
Normal water level	917.1 feet (NAVD88)
Downstream receiving waterbody	Medicine Lake
Location (city)	Minnetonka
MPCA impairments	None
Aquatic invasive species	Curly-leaf pondweed, purple loosestrife, hybrid cattail
Public access	No

spiny waterflea, and starry stonewort. However, the sodium and specific conductance levels were too high to be suitable for faucet snail and Chinese mystery snail. Hence, these species would likely survive but may not thrive in Crane Lake.

Recommendations

- Work with cities, businesses, Ridgedale Center property management, the Minnesota Department of Transportation, and Hennepin County to improve winter maintenance practices and reduce the chloride load conveyed to Crane Lake from streets and parking lots in its watershed.
- Continue water quality and biological monitoring at a 5-year frequency.

Water chemistry monitoring: 2021

Total phosphorus levels

While phosphorus is necessary for plant and algae growth, excessive phosphorus leads to excessive algal growth, decreased water clarity, and water quality impairment.

- BCWMC/MPCA standard: 60 micrograms per liter ($\mu\text{g/L}$) or less
- Range: Low of 13 $\mu\text{g/L}$ in early August to 38 $\mu\text{g/L}$ in June
- Summer average: 23 $\mu\text{g/L}$ (met BCWMC/MPCA standard)

Chlorophyll a levels

Chlorophyll a is a pigment in algae and generally reflects the amount of algae growth in a lake. Lakes with clear water generally have chlorophyll a levels less than 15 micrograms per liter ($\mu\text{g/L}$).

- BCWMC/MPCA standard: 20 $\mu\text{g/L}$ or less
- Range: Low of 2.3 $\mu\text{g/L}$ in early August to high of 6.6 $\mu\text{g/L}$ in April
- Summer average: 4.0 $\mu\text{g/L}$ (met BCWMC/MPCA standard)

Water clarity

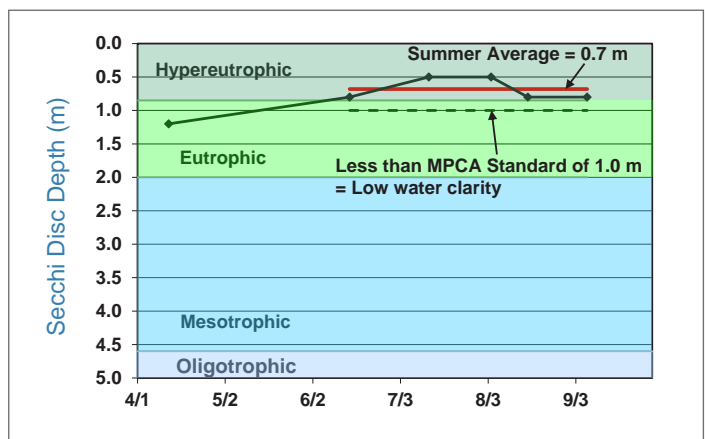
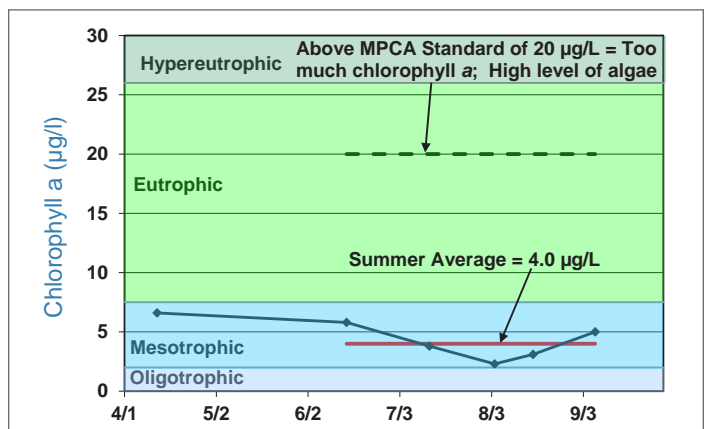
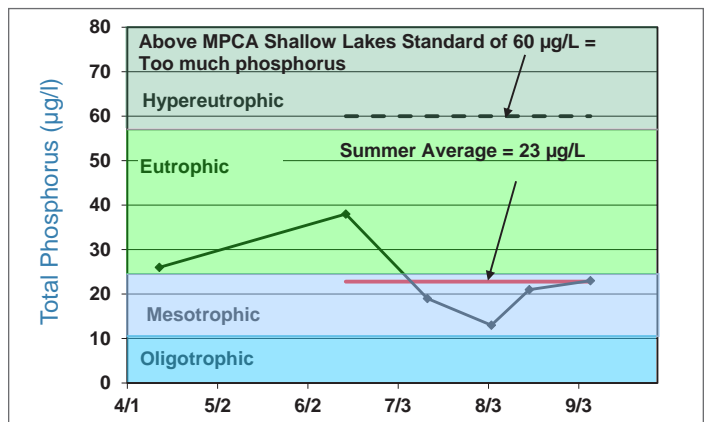
Water clarity is affected by the amount of algae and other suspended materials in a lake. It is usually measured by lowering an 8-inch "Secchi" disc into the lake (see bottom photo); the depth at which the disc's alternating black-and-white pattern is no longer visible is considered a measure of the water's transparency or clarity.

- BCWMC/MPCA standard: 1.0 meter or more.
- Range: From low of 0.5 meters (July and early August) to high of 1.2 meters (April)
- Summer average: 0.7 meters (did not meet BCWMC/MPCA standard, but the low value occurred because the dense growth of aquatic plants limited the Secchi disc depth to the top of the plants)



Definitions

- **Eutrophic:** Lake condition characterized by abundant accumulation of nutrients supporting dense growth of algae and other organisms; decay of algae can reduce lake oxygen levels
- **Hypereutrophic:** Nutrient-rich lake conditions characterized by frequent and severe algal blooms and low transparency
- **Mesotrophic:** Lake condition characterized by medium levels of nutrients and clear water
- **Oligotrophic:** Lake condition characterized by a low level of dissolved nutrients, high oxygen content, and sparse algae growth



Water chemistry monitoring from 1975–2021: historical trends

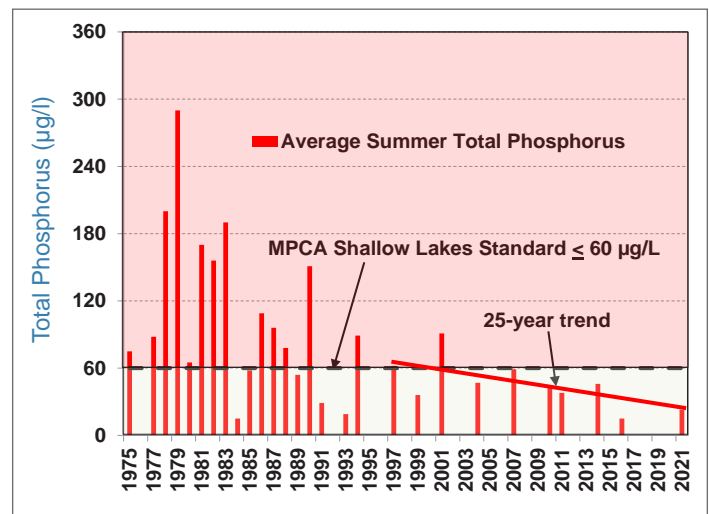
Summer water quality in Crane Lake has been monitored since 1975. Data have been collected by BCWMC (1977–2021), the City of Minnetonka (1993–2016), and Ridgedale Center (1975–1991).

Summer averages (June through September) of total phosphorus from 1975–2021 and chlorophyll *a* and Secchi disc depth from 1977–2021 are shown in the figures at right. During the monitored period, 46 percent of total phosphorus summer averages, 56 percent of chlorophyll *a* summer averages, and 57 percent of Secchi disc summer averages met Minnesota State Water Quality Standards for shallow lakes in the North Central Hardwood Forest Ecoregion, as published in Minnesota Rules (Minn. R. Ch. 7050.0222 Subp. 4). All total phosphorus and chlorophyll *a* summer averages from 2004 through 2021 met BCWMC/MPCA standards. Secchi disc summer averages from 2004 through 2014 met BCWMC/MPCA standards. However, the lake’s dense plant growth limited Secchi depth to the top of the plants in 2016 (0.9 meters) and 2021 (0.7 meters), and these depths failed to meet BCWMC/MPCA standards.

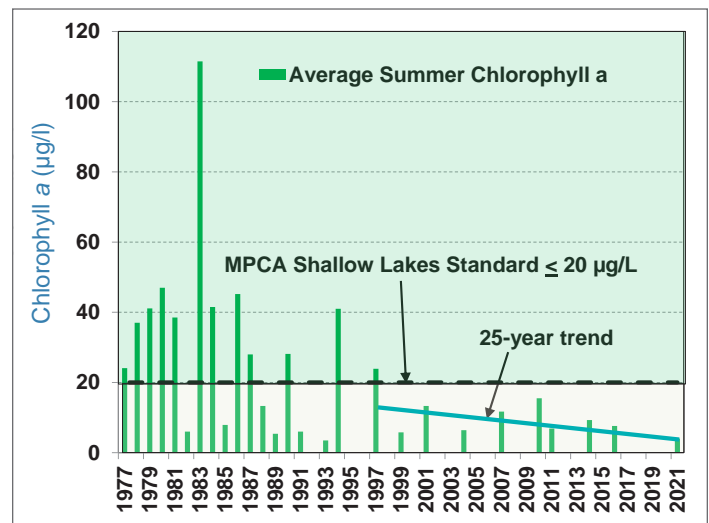
Trend analyses show a significant reduction (improvement) in summer average total phosphorus concentrations over the past 25 years (95-percent confidence level). Although summer average chlorophyll *a* concentrations and Secchi disc depths did not change significantly over the past 25 years, the data show:

- Declining (improving) summer average chlorophyll *a* concentrations.
- Declining (worsening) summer average Secchi disc depths.

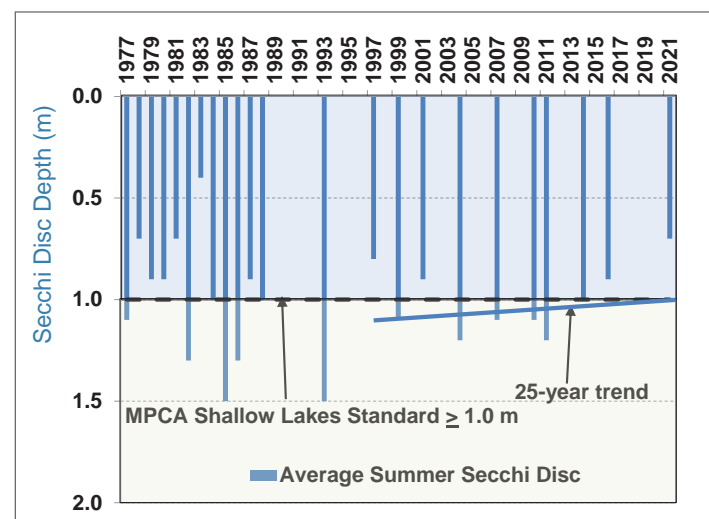
Total phosphorus trends



Chlorophyll *a* trends



Water clarity trends



Chloride levels from 1972 through 2021

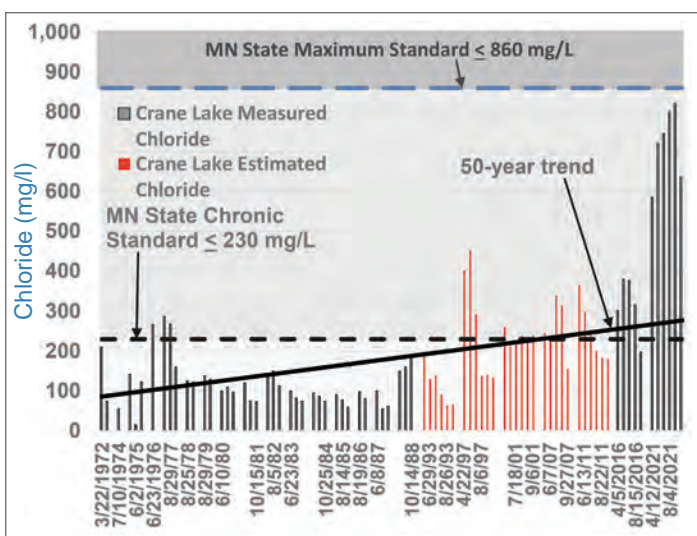
Chloride concentrations in area lakes have increased since the early 1990s, when many government agencies switched from sand or sand/salt mixtures to salt for winter road maintenance. When snow and ice melt, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of road salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride.

Because high chloride concentrations can harm fish and plant life, the MPCA established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms (zooplankton [see page 7], bugs, fish, frogs, etc.) can be exposed to for a brief time with zero-to-slight mortality. The chronic standard is the highest chloride concentration that aquatic life can be exposed to indefinitely without causing chronic toxicity. Chronic toxicity is defined as a stimulus that lingers or continues for a long period, often one-tenth the life span or more. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake is considered impaired if two or more measurements exceed the chronic criterion (230 mg/L) within a 3-year period or one measurement exceeds the maximum criterion (860 mg/L).

2021 chloride measurements ranged from 585 mg/L in April to 820 mg/L in late August. All measurements were well above the chronic chloride standard and below the maximum, although the late August measurement was close to the maximum. Although Crane Lake is not on the MPCA's impaired waters list, the data indicate the lake is impaired for chlorides. (The lake is slated to be included on the 2024 list of impaired waters.) Crane Lake is in the Medicine Lake watershed. The BCWMC lake -level data show that Crane Lake frequently discharges, which means that chlorides from Crane Lake could eventually reach Medicine Lake. This is a concern because Medicine Lake is close to being added to the impaired waters list for chlorides.

Trend analyses show a significant increase in chloride concentrations over the past 50 years (95-percent confidence level). Chloride measurements from 1972 through 1988 met the MPCA chronic chloride standard except for concentrations of 267 mg/L in June 1976, 287 mg/L in June 1977, and 268 mg/L in late August 1977 (see figure below). More than half of the chloride concentrations estimated from specific conductance measurements from 1997 through 2011 failed to meet the MPCA chronic chloride standard. 2016 chloride measurements failed to meet the MPCA chronic standard from April through August but met the standard in September. Chloride concentrations in the lake more than doubled between 2016 and 2021, and all 2021 concentrations failed to meet the MPCA chronic chloride standard.

Much of the area draining to Crane Lake comprises roads and parking lots, including the Ridgedale Mall area which is directly adjacent to the lake. Winter maintenance practices on these properties should be analyzed for potential improvements to reduce salt use. A 2026 BCWMC Capital Improvement Project also aims to reduce chlorides in the lake.



Increased use of chloride for road maintenance has had an impact on chloride levels in Twin Cities metro area lakes.

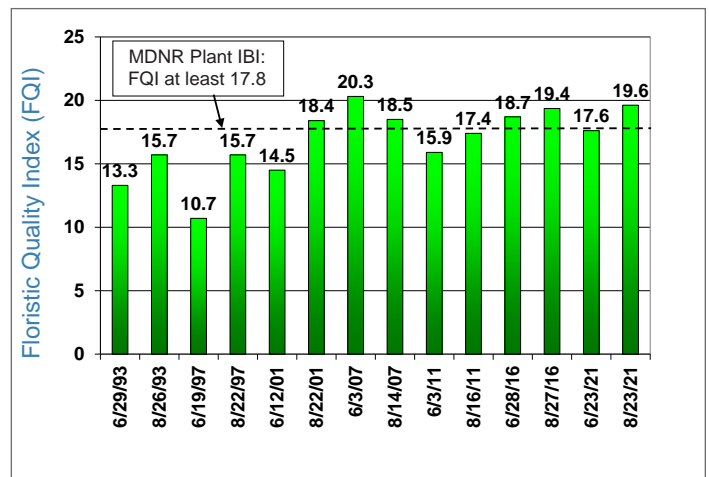
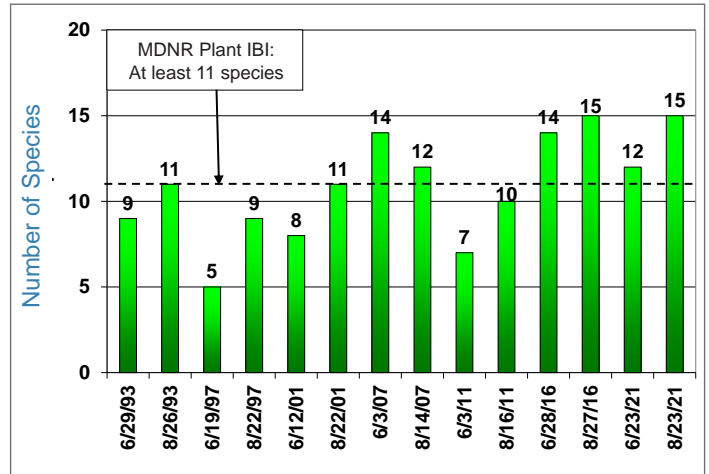
Macrophytes (aquatic plants)

Lake Plant Eutrophication Index of Biological Integrity (IBI)

Eutrophication (excessive nutrients) may have detrimental effects on a lake, including reducing the quantity and diversity of plants. The MNDNR developed a Lake Plant Eutrophication Index of Biological Integrity (IBI) to measure the response of a lake plant community to eutrophication. The Lake Plant Eutrophication IBI includes two metrics: (1) the number of species in a lake and (2) the “quality” of the species, as measured by the Floristic Quality Index (FQI). The MNDNR determined a threshold for each metric. Lakes that score below the thresholds contain degraded plant communities and are likely stressed from anthropogenic (human-caused) eutrophication.

Plant survey data from 1993 to 2021 were assessed to determine Plant IBI trends. The figures at right show Crane Lake FQI scores and the number of species for that period compared to the MNDNR Plant IBI thresholds.

- Number of species:** A shallow lake such as Crane Lake meets the MNDNR Plant IBI threshold when at least 11 species exist. During the period examined, the number of species in Crane Lake ranged from 5 to 15, meeting or exceeding the MNDNR Plant IBI threshold 57 percent of the time. Fifteen species were observed in the lake in August 2016 and 2021, the highest number to date.
- FQI values (quality of species):** The MNDNR Plant IBI threshold for shallow lakes, as measured by FQI, is a minimum value of 17.8. During the period examined, FQI values in Crane Lake ranged from 10.7 to 20.3, bettering the MNDNR Plant IBI threshold 43 percent of the time. The FQI value of 19.6 in August of 2021 was the second-highest to date.
- 2021 results:** The number of species in the lake was better than the MNDNR Plant IBI threshold in June and August. The FQI value was better than the MNDNR Plant IBI threshold in August but poorer than the MNDNR Plant IBI threshold in June.



Bearded stonewort in Crane Lake

In 2016, *Lychnothamnus barbatus* (bearded stonewort) was first observed in Crane Lake. This plant was found in nearby Westwood Lake (and Minnesota) for the first time in 2015. Bearded stonewort is in the family Characeae, algae that resemble rooted aquatic plants. Bearded stonewort obtains all of its nutrients from the water and can reduce phosphorus concentrations and improve water quality.

In 2016, bearded stonewort grew densely throughout the lake, dominating the lake's plant community. Nonetheless, the lake supported a diverse community that met plant IBI standards. Bearded stonewort frequency was relatively similar in June (84 percent) and August (87 percent) of 2016 and June of 2021 (84 percent). Between June and August of 2021, bearded stonewort increased significantly and was found at 98 percent of sample points in August. Bearded stonewort also increased significantly in density between June and August of 2021. The frequency of sample points with the maximum rake fullness of 3 increased from 71 percent in June to 89 percent in August.

Aquatic invasive species

In 2021, three aquatic invasive species (AIS) were present in Crane Lake; no species was considered problematic.

- **Curly-leaf pondweed (*Potamogeton crispus*):** Curly-leaf pondweed was first observed in 1993 and has since been found in 25 percent of the plant surveys. It was observed at one location in August 2021 but not in June.
- **Purple loosestrife (*Lythrum salicaria*):** This emergent species has consistently been found at one or two locations along the lake's shoreline since 1993. In June and August of 2021, it was observed at one location along the southern shoreline.
- **Hybrid cattail (*Typha glauca*):** Hybrid cattail was first observed at one location along the northern shoreline in 2016. In 2021, it was found at one location along the southern shoreline.

Suitability of Crane Lake for AIS

Many AIS currently residing in Minnesota have not been observed in Crane Lake but could be introduced. For example, both zebra mussels and starry stonewort are present in nearby Medicine Lake but have not yet been found in Crane Lake. To evaluate whether Crane Lake water quality would support the introduction of six AIS (starry stonewort, zebra mussels, spiny waterflea, faucet snail, Chinese mystery snail, and rusty crayfish), a suitability analysis for each species was performed.

The analysis compared 2021 water quality in Crane Lake with the water quality conditions required for each species, specifically evaluating total phosphorus, chlorophyll *a*, Secchi disc depth, trophic state index (TSI), water

temperature, dissolved oxygen, specific conductance, calcium, magnesium, sodium, alkalinity, hardness, and calcium carbonate. The results indicate that the water quality of Crane Lake meets the suitability requirements for rusty crayfish, zebra mussel, spiny waterflea, and starry stonewort. However, the sodium and specific conductance levels were too high to be suitable for faucet snail and Chinese mystery snail. Hence, these species would likely survive but may not thrive in Crane Lake.

Phytoplankton and zooplankton

Samples of phytoplankton, microscopic aquatic plants, were collected from Crane Lake to evaluate water quality and the quality of food available to zooplankton (microscopic animals). 2021 phytoplankton numbers followed a pattern similar to chlorophyll *a*, both reflecting good water quality. As shown in the figure on page 7, these numbers declined from April through early August and then increased through early September. Cryptomonads and green algae, good food sources for the lake's zooplankton, were dominant throughout the 2021 monitoring period, except during June, when blue-green algae were dominant. Blue-green algae, which are associated with water quality problems and can be a health concern, were present in low numbers in 2021. As shown in the figure on page 7, numbers of phytoplankton in 2021 were within the range observed since 1980. However, the 2021 average number of phytoplankton (4,181 units per mL) was the second-lowest summer average since 1980.

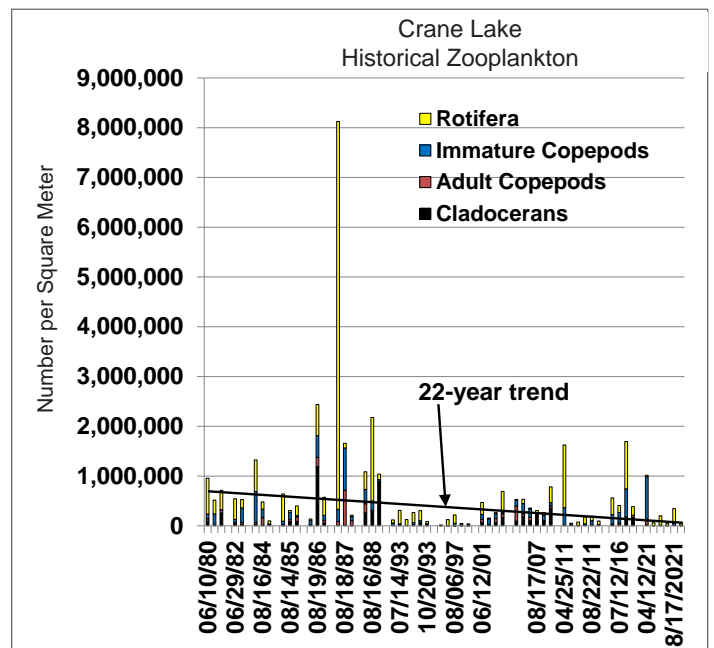
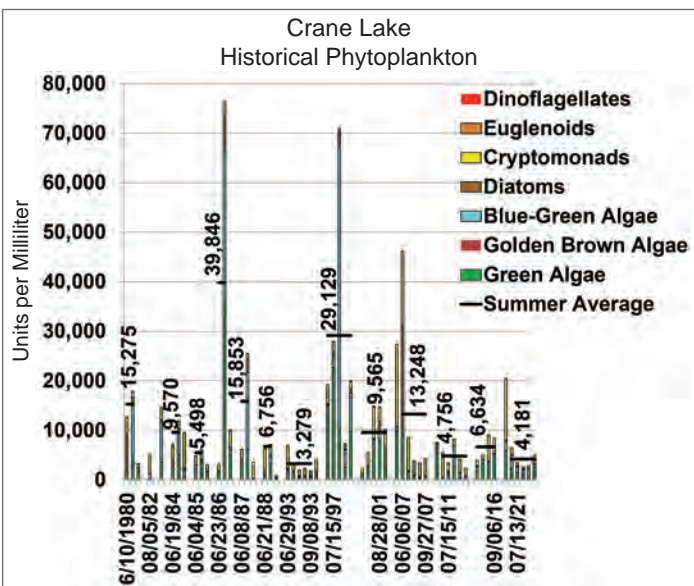
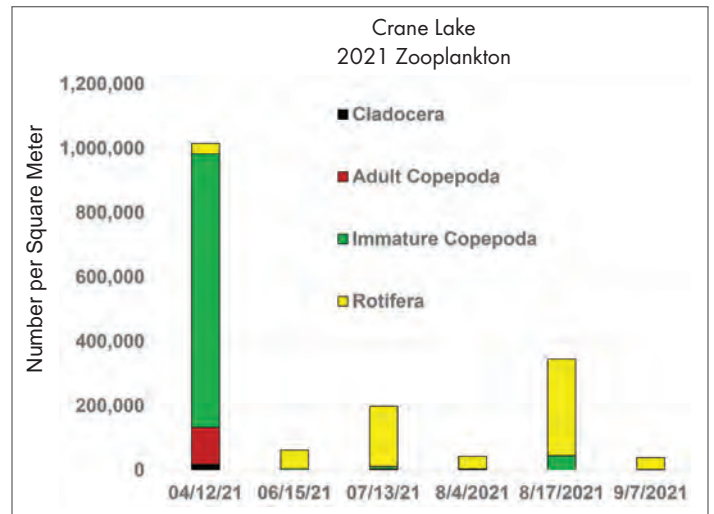
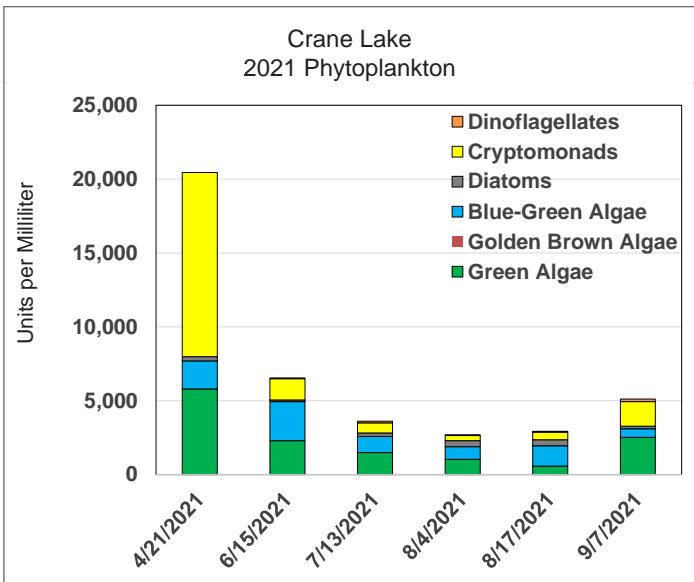
Unlike phytoplankton, zooplankton do not produce their own food. As "filter feeders," they eat millions of small algae; given the right quantity and species, they can filter the

volume of an entire lake in a matter of days. They are also valuable food for planktivorous fish and other organisms.

It's likely that fish predation impacted the 2021 zooplankton community, but the lake's high chloride concentrations likely caused a greater impact. Studies have documented reductions in adult cladocerans and copepods when chloride concentrations were within the range measured in Crane Lake in 2021; immature copepods (nauplii) and rotifers were less impacted by chlorides within this range. Consistent with these findings, zooplankton capable of surviving the high chloride concentrations in the lake dominated the 2021 zooplankton community. As shown in the figure below, immature copepods and rotifers comprised 87 percent of the April zooplankton community and from 90 to 100 percent of the June through September zooplankton community. Zooplankton most vulnerable to harm from the high chloride concentrations in the lake were either not observed or seen in low numbers.

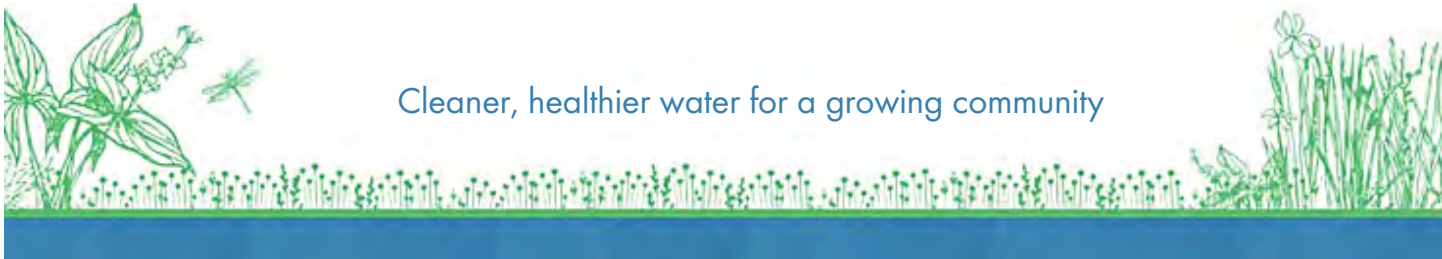
Adult copepods were not observed from June through September. Cladocerans were not observed in June, mid-August, and September and were seen in low numbers during April, July, and early August.

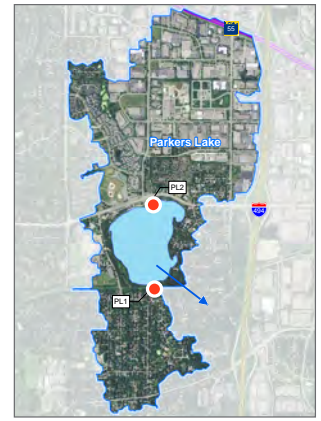
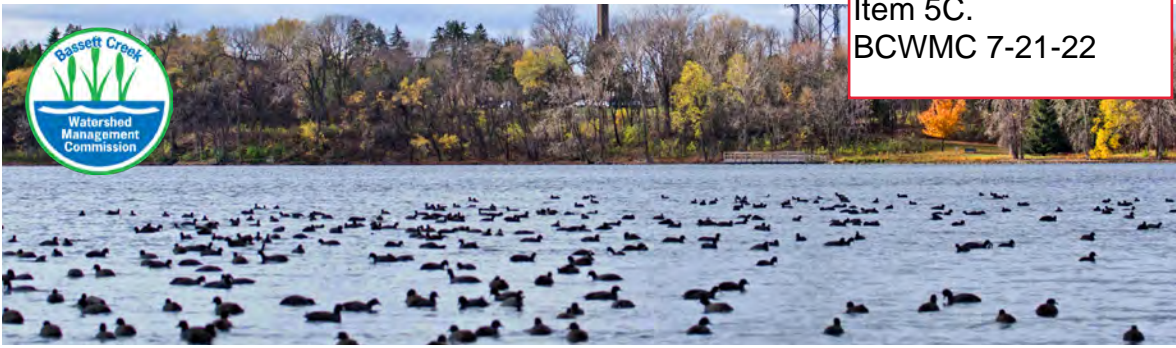
Significant increases in chloride concentrations over the past 50 years (95-percent confidence level) have reduced zooplankton species diversity in Crane Lake. Declines in number of species and abundance reduce the food supply for planktivorous fish and other organisms in the lake. Studies have documented reductions in zooplankton diversity with increasing chloride concentrations. Consistent with these studies, the number of zooplankton species in Crane Lake during the past 22 years has declined, and a trend analysis indicates the decline is significant (at the 95-percent confidence level). The abundance of zooplankton in Crane Lake also declined during the past 22 years, but a trend analysis indicates the decline is not significant (see figure below).





Bassett Creek Watershed Management Commission
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bassettcreekwmo.org





Parkers Lake 2021 water quality monitoring

Monitoring water quality in Parkers Lake

The Bassett Creek Watershed Management Commission (BCWMC) has monitored water quality conditions in the watershed's 10 priority lakes and six ponds since 1972. This monitoring is done to detect changes or trends in water quality and evaluate the effectiveness of efforts to preserve or improve water quality. A summary of 2021 monitoring efforts for Parkers Lake is provided below; more comprehensive information can be found on pages 2-8.

At a glance: 2021 monitoring results

In 2021, the BCWMC monitored Parkers Lake for:

- Water chemistry (nutrients, chlorophyll *a*, chloride).
- Water measurements (e.g., clarity, dissolved oxygen).
- Phytoplankton and zooplankton (microscopic plants and animals).
- Macrophytes (aquatic plants).

Results of 2021 monitoring show Parkers Lake met the applicable Minnesota Pollution Control Agency (MPCA) and Bassett Creek Watershed Management Commission (BCWMC) water quality standards for total phosphorus, chlorophyll *a*, and Secchi disc (a measure of clarity). Trend analyses show a significant reduction (improvement) in summer average total phosphorus concentrations over the past 10 years (95-percent confidence level) but no significant changes in chlorophyll *a* and Secchi disc.

Parkers Lake is considered impaired due to high chloride levels, particularly near the bottom of the lake. All chloride measurements were well below the MPCA maximum chloride standard. Chloride concentrations in the upper two meters (6.6 feet) were well below the MPCA chronic standard, but most near-bottom measurements failed to meet this standard. Other results include:

- The lake plant community was of fair-to-good quality, based on the number of species in the lake and the FQI values compared to the Minnesota Department of Natural Resources Plant IBI thresholds.
- Curly-leaf pondweed (CLP) was found less frequently in 2021 (compared to 2018), but density was similar.

About Parkers Lake

BCWMC classification	Priority-1 deep lake
Watershed area	1,065 acres
Lake size	97 acres
Average depth	12 feet
Maximum depth	37 feet
Ordinary high water level	935.9 feet (NGVD29)
Normal water level	934.2 feet (NAVD88)
Downstream receiving waterbody	Medicine Lake
Location (city)	Plymouth
MPCA impairments	Chloride, mercury in fish tissue
Aquatic invasive species	Eurasian watermilfoil, curly-leaf pondweed
Public access	Yes (boat launch)

- Observations of Eurasian watermilfoil (EWM) were similar in June 2018 and 2021, but the August 2021 frequency was slightly higher. EWM density was similar in both years.
- The 2021 numbers of phytoplankton and zooplankton were within the range observed since 1982.
- An aquatic invasive species (AIS) suitability analysis indicates the water quality of Parkers Lake meets the suitability requirements for rusty crayfish, faucet snail, zebra mussels, starry stonewort, and spiny waterflea. However, the sodium and specific conductance levels were too high to be suitable for the Chinese mystery snail. Hence, this species would likely survive but may not thrive in Parkers Lake.

Recommendations

- Implement best management practices to reduce chloride loading to the lake including those identified in the BCWMC Parkers Lake Chloride Reduction Project (CIP PL-7).
- Identify management measures to improve the quality of the lake's plant community and survey vegetation annually to facilitate early detection of aquatic invasive species.
- Continue water quality and biological monitoring at a 3-year frequency.

Water chemistry monitoring: 2021

Total phosphorus levels

While phosphorus is necessary for plant and algae growth, excessive phosphorus leads to excessive growth, decreased water clarity, and water quality impairment.

- **BCWMC/MPCA standard:** 40 micrograms per liter ($\mu\text{g/L}$) or less
- **Range:** Low of 16 $\mu\text{g/L}$ in July to a high of 36 $\mu\text{g/L}$ in late August
- **Summer average:** 24 $\mu\text{g/L}$ (met BCWMC/MPCA standard)

Chlorophyll a levels

Chlorophyll a is a pigment in algae and generally reflects the amount of algae growth in a lake. Clear lakes generally have chlorophyll a levels less than 15 micrograms per liter ($\mu\text{g/L}$).

- **BCWMC/MPCA standard:** 14 $\mu\text{g/L}$ or less.
- **Range:** Low of 1.1 $\mu\text{g/L}$ in early May to a high of 11 $\mu\text{g/L}$ in late September
- **Summer average:** 6.3 $\mu\text{g/L}$ (met BCWMC/MPCA standard)

Water clarity

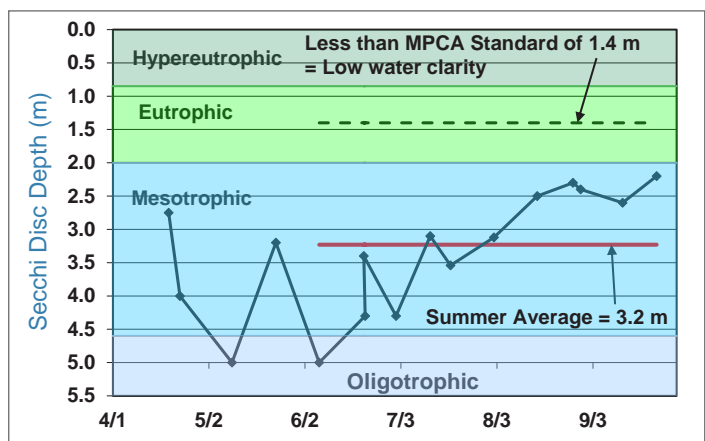
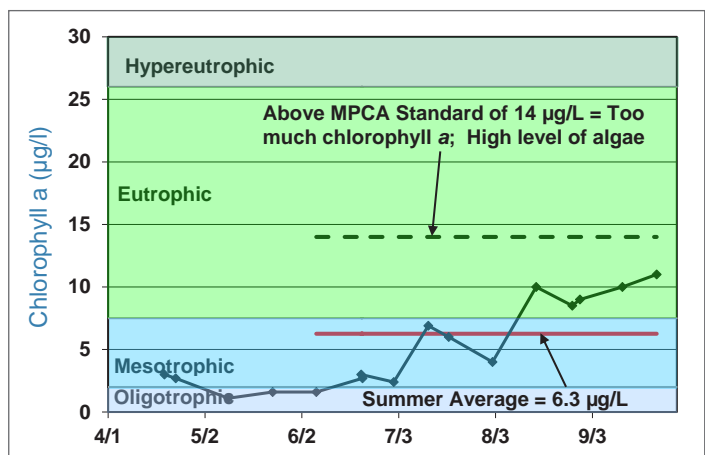
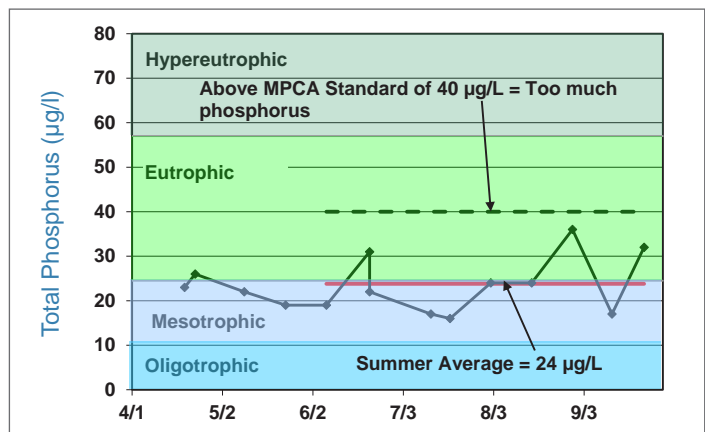
Water clarity is affected by the amount of algae and other suspended materials in a lake. It is usually measured by lowering an 8-inch "Secchi" disc into the lake (see photo below); the depth at which the disc's alternating black-and-white pattern is no longer visible is considered a measure of the water's transparency (or clarity).

- **BCWMC/MPCA standard:** 1.4 meters or more.
- **Range:** From 2.2 meters in late September to 5.0 meters in early May and early June
- **Summer average:** 3.2 meters (met BCWMC/MPCA standard)



Definitions

- **Hypereutrophic:** Nutrient-rich lake conditions characterized by frequent and severe algal blooms and low transparency
- **Eutrophic:** Lake condition characterized by abundant accumulation of nutrients supporting dense growth of algae and other organisms; decay of algae can reduce lake oxygen levels
- **Mesotrophic:** Lake condition characterized by medium levels of nutrients and clear water
- **Oligotrophic:** Lake condition characterized by a low level of dissolved nutrients, high oxygen content, and sparse algae growth



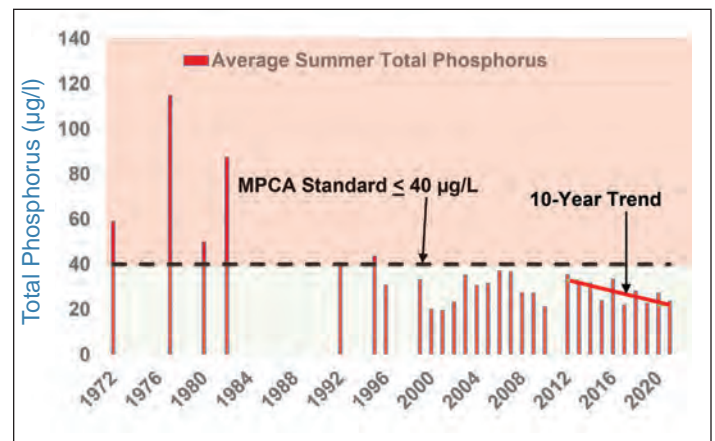
Water chemistry monitoring from 1972–2021: historical trends

Water quality in Parkers Lake has been monitored since 1972. Summer averages (June through September) of total phosphorus, chlorophyll *a*, and Secchi disc depth from 1972–2021 are shown in the figures at right. One or more of these parameters failed to meet BCWMC/MPCA standards from 1972 through 1995. Summer average total phosphorus and Secchi disc values have met the BCWMC/MPCA standard since 1996 and chlorophyll *a* concentrations since 1996 and chlorophyll *a* concentrations since 2016. From 1972–2021, 97 percent of summer average Secchi disc depths and 82 and 61 percent of summer average concentrations of total phosphorus and chlorophyll *a*, respectively, met the BCWMC/MPCA standards. Summer averages of total phosphorus, chlorophyll *a*, and Secchi depth met the BCWMC/MPCA standards in 2021.

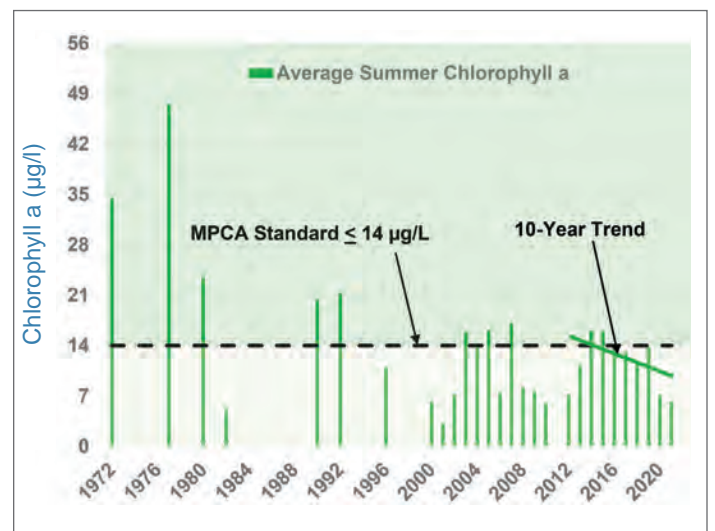
Trend analyses show a significant reduction (improvement) in summer average total phosphorus concentrations over the past 10 years (95-percent confidence level). Although summer average chlorophyll *a* concentrations and Secchi disc depths did not change significantly over the past 10 years, the data show:

- Declining (improving) summer average chlorophyll *a* concentrations.
- Increasing (improving) summer average Secchi disc depths.

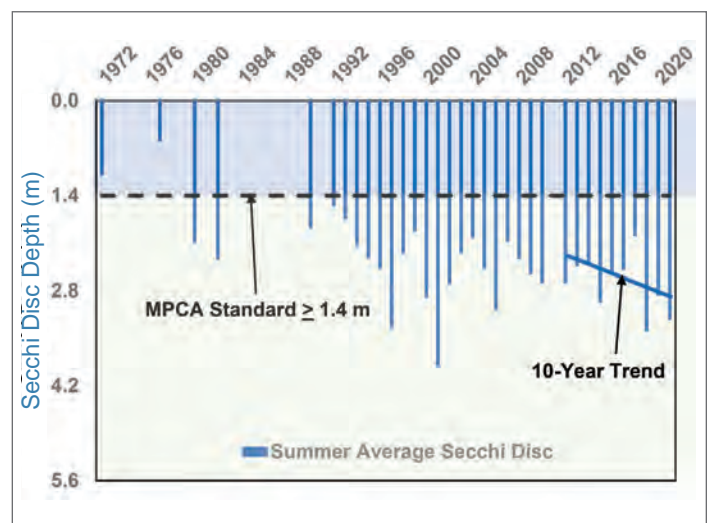
Total phosphorus trends



Chlorophyll *a* trends

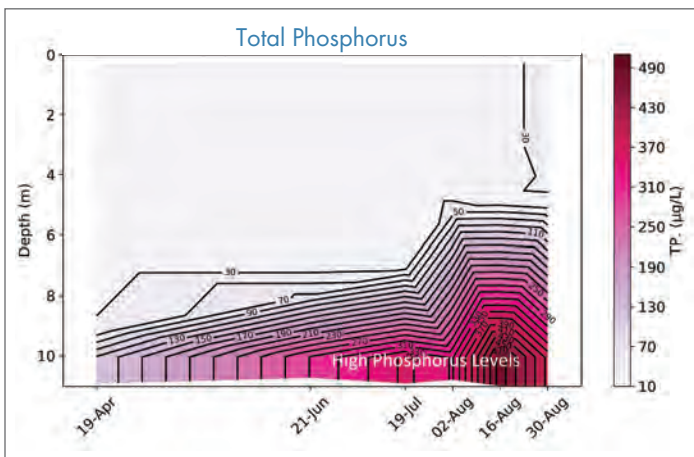
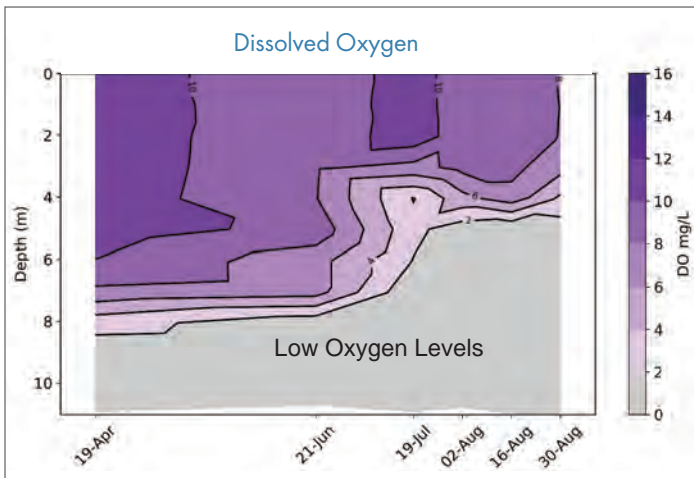


Water clarity trends



Phosphorus loading from sediment

The release of phosphorus stored in lake-bottom sediments when oxygen levels are low is described as “internal phosphorus loading from sediment.” Low oxygen levels (<2 mg/L) were found at depths from about 8 meters to the bottom of Parkers Lake from April through July and 5 meters to the bottom during August and September (see figure below). Internal phosphorus loading from sediment during this period caused near-bottom phosphorus concentrations to consistently increase (see figure below). Because the lake remained stratified (separated into layers) throughout the monitoring period, the high phosphorus concentrations were confined to the bottom of the lake. The surface water phosphorus concentrations reflected good water quality and met the MPCA standard throughout the monitoring period.



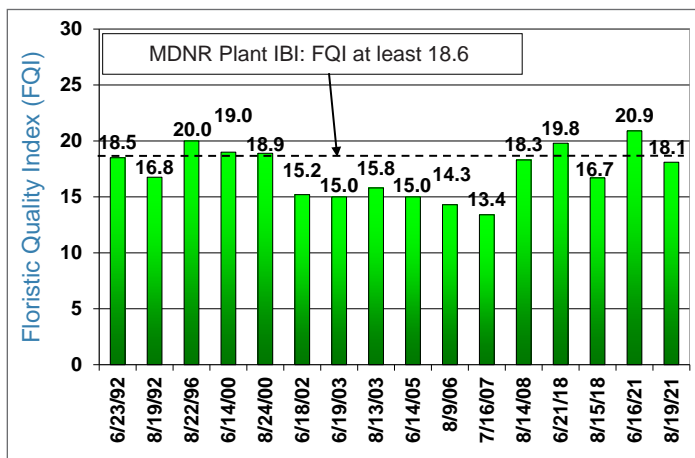
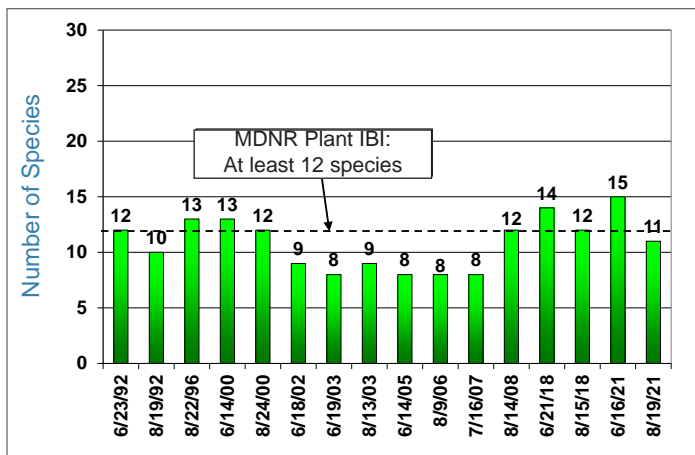
Macrophytes (aquatic plants)

Lake Plant Eutrophication Index of Biological Integrity (IBI)

Eutrophication (excessive nutrients) may have detrimental effects on a lake, including reductions in the quantity and diversity of plants. The MNDNR developed a Lake Plant Eutrophication Index of Biological Integrity (IBI) to measure the response of a lake plant community to eutrophication. The Lake Plant Eutrophication IBI includes two metrics: (1) the number of species in a lake and (2) the “quality” of the species, as measured by the Floristic Quality Index (FQI). The MNDNR determined a threshold for each metric. Lakes that score below the thresholds contain degraded plant communities and are likely stressed from anthropogenic (human-caused) eutrophication.

Plant survey data from 1992 to 2021 were assessed to determine Plant IBI trends. The figures on page 5 show Parkers Lake FQI scores and the number of species for that period compared to the MNDNR Plant IBI thresholds.

- **Number of species:** A deeper water lake, such as Parkers Lake, meets the MNDNR Plant IBI threshold when it has at least 12 species. During the period examined, the number of species in Parkers Lake ranged from eight to 15 and was better than the MNDNR Plant IBI threshold on eight occasions between June 1992 and June 2021. Fewer species were present from 2002 through 2007.
- **FQI values (quality of species):** The MNDNR Plant IBI threshold for deeper water lakes, as measured by FQI, is a minimum value of 18.6. During the period examined, FQI values ranged from 13.4 to 20.9 and were better than the MNDNR Plant IBI threshold in August 1996, June and August 2000, June 2018, and June 2021. The lake’s plant community was of poorer quality from 2002 through 2007.
- **2021 results:** Both the number of species and FQI values were better than the MNDNR Plant IBI thresholds in June. However, in August, the number of species and FQI values were poorer than the MNDNR Plant IBI thresholds.



Aquatic invasive species

In 2021, two aquatic invasive species were known to be present in Parkers Lake.

Curly-leaf pondweed (*Potamogeton crispus*): In 2021, curly-leaf pondweed (CLP) was found at 29 percent of sample points in June. It was not observed in August due to a natural die-off in late June, which added phosphorus to the lake. In June, 80 percent of the CLP-infested sample points had a low density of CLP (i.e., a density of 1 on a scale of 1–5); the remaining sample points had a medium density of CLP (i.e., 2–3 on a scale of 1–5).

CLP frequency declined between 2018 and 2021—from 39 percent in June 2018 to 29 percent in June 2021 and from 4 percent in August 2018 to not observed in August 2021. June average CLP density was the same in 2018 and 2021 (1.2 on a scale of 1–5). August average CLP was 1.0 in 2018 and not observed in August 2021.

Eurasian watermilfoil (*Myriophyllum spicatum*): In 2021, Eurasian watermilfoil (EWM) increased in frequency between June and August—from 60 percent in June to 76 percent in August. The average EWM density in the lake was 1.9 (on a scale of 1–5) during both June and August.

Some areas of the lake had problematic EWM conditions during both June and August.

June EWM frequency and density were very similar in 2018 (61 percent frequency and 2.2 density) and 2021 (60 percent frequency and 1.9 density). August frequency was slightly higher in 2021 (76 percent) than 2018 (71 percent), but average density was similar in 2018 (2.0) and 2021 (1.9).

Suitability of Parkers Lake for aquatic invasive species (AIS)

A large number of AIS currently residing in Minnesota have not yet been observed in Parkers Lake but could be introduced. For example, both zebra mussels and starry stonewort are present in nearby Medicine Lake. To evaluate whether Parkers Lake water quality would support the introduction of six AIS (starry stonewort, zebra mussels, spiny waterflea, faucet snail, Chinese mystery snail, and rusty crayfish), a suitability analysis for each species was performed.

The analysis compared 2021 water quality data in Parkers Lake with the water quality conditions required for each species, specifically evaluating total phosphorus, chlorophyll a, Secchi disc depth, trophic state index, water temperature, dissolved oxygen, specific conductance, calcium, magnesium, sodium, alkalinity, hardness, and calcium carbonate. The results indicate the water quality of Parkers Lake meets the suitability requirements for rusty crayfish, faucet snail, zebra mussels, starry stonewort, and spiny waterflea. However, the sodium and specific conductance levels were too high to be suitable for the Chinese mystery snail. Hence, this species would likely survive but may not thrive in Parkers Lake.



The Chinese mystery snail

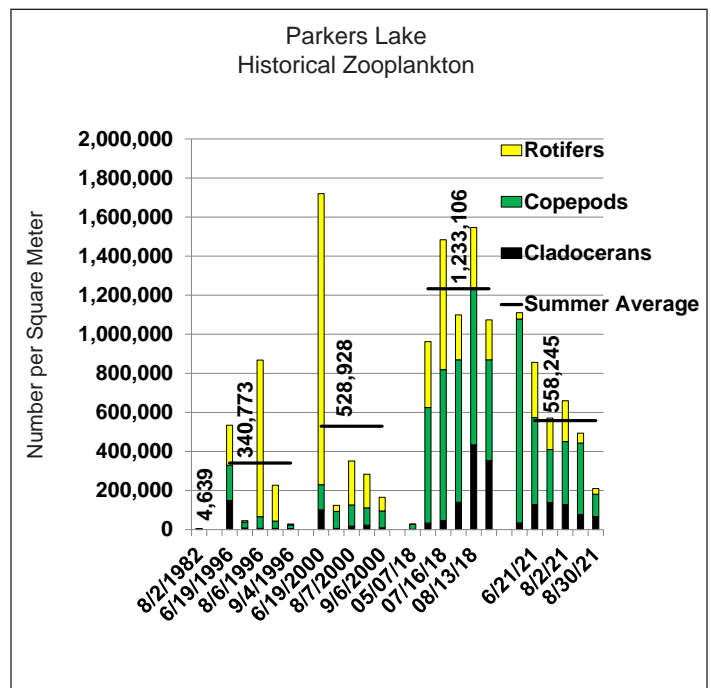
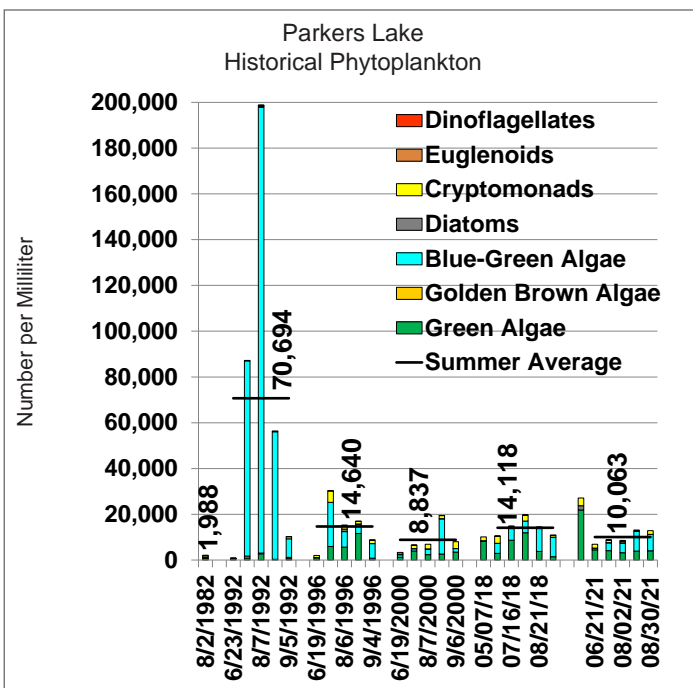
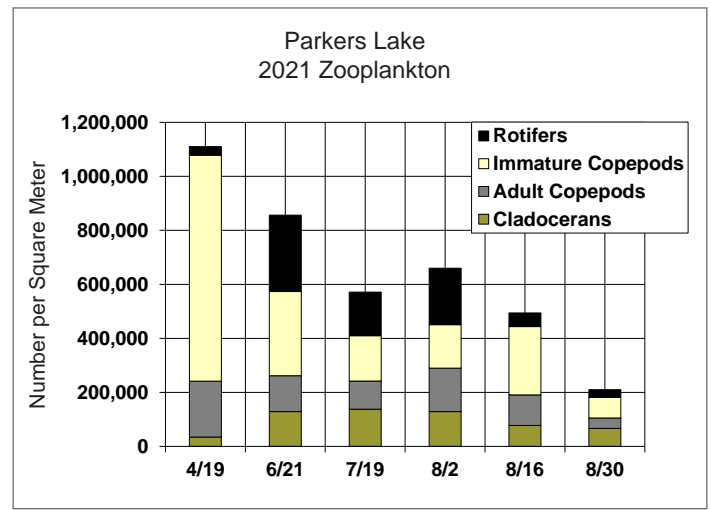
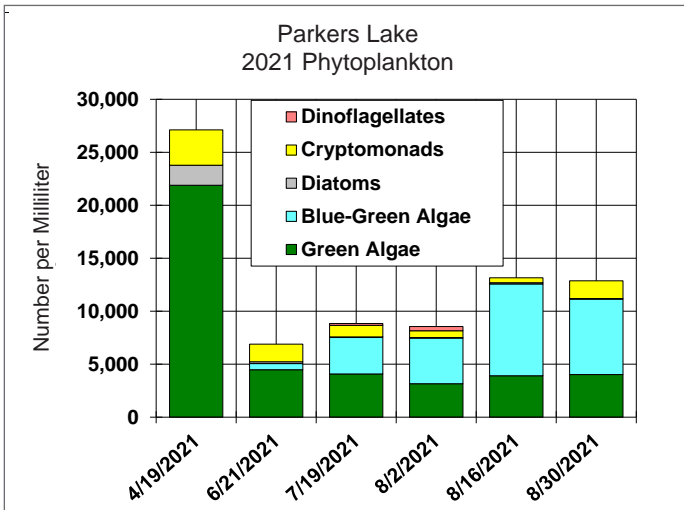
Phytoplankton and Zooplankton

Samples of phytoplankton, microscopic aquatic plants, were collected from Parkers Lake to evaluate water quality and the quality of food available to zooplankton (microscopic animals). Phytoplankton numbers declined from April to June and remained low through September, reflecting the lake's good water quality. Cryptomonads and green algae, good sources of food for the lake's zooplankton, were present throughout the monitoring period (see figure below). 2021 phytoplankton numbers were within the range of numbers observed since 1982.

Blue-green algae, which are associated with water quality problems and can be a source of health concerns, were present from June through August and dominant in August. The World Health Organization (WHO) has established that

lakes with blue-green algae densities of less than 20,000 cells per milliliter pose no risk to the health of humans or pets. In 2021, blue-green algae numbers were below this threshold during all monitoring events.

2021 zooplankton numbers were within the range of numbers observed since 1982. All three groups of zooplankton (rotifers, copepods, and cladocerans) were represented throughout 2021 (see figure below). Immature copepods dominated the community except in early August when immature and adult copepods co-dominated the community. Because copepods do not graze as heavily on algae as the larger cladocerans, they generally have a limited impact on the lake's water quality. This suggests that future Parkers Lake water quality efforts should focus on phosphorus management to reduce the nutrients that contribute to algae growth.



Chloride levels from 1972–2021

Chloride concentrations in area lakes have increased since the early 1990s, when many government agencies switched from sand or sand/salt mixtures to salt for winter road maintenance. When snow and ice melt, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of road salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride. High chloride levels are toxic to sensitive organisms and disrupt natural lake mixing, causing lower dissolved oxygen in bottom waters and associated impacts on benthic organisms and nutrient cycling.

Because high concentrations of chloride can harm fish and plant life, the MPCA established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms can be exposed to for a brief time with zero-to-slight mortality. The chronic standard is the highest chloride concentration that aquatic life can be exposed to indefinitely without causing chronic toxicity. Chronic toxicity is defined as a stimulus that lingers or continues for a long period of time, often one-tenth the life span or more. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake is considered impaired if two or more measurements exceed the chronic criterion (230 mg/L) within a 3-year period or one measurement exceeds the maximum criterion (860 mg/L).

2021 surface chloride measurements ranged from 159 mg/L in late September to 198 mg/L in April. Near-bottom chloride measurements ranged from 200 mg/L in early August to 464 mg/L in April. All of the surface measurements met the MPCA chronic and maximum chloride standards. All of the near-bottom measurements met the MPCA maximum chloride standard but failed to meet the MPCA chronic chloride standard—with the exception of one early August measurement.

Parkers Lake has been listed as impaired for chlorides since 2014. As shown in the figure at right, chloride concentrations in the lake’s bottom waters (9–11 meter depths) have failed to meet the MPCA chronic chloride standard during most years from 2006 through 2021. During this period, when chloride concentrations in the deeper waters exceeded the MPCA chronic chloride standard, annual chloride averages for the entire lake also generally exceeded the MPCA chronic standard. An exception occurred in 2021 when the annual chloride average was slightly below the MPCA chronic standard despite all but one near-bottom chloride concentration exceeding the MPCA chronic standard.

Monitoring of the lake by the City of Plymouth indicates chloride impairment in Parkers Lake is due to chloride loading from the lake’s watershed; lower watershed chloride loading to Parkers Lake generally correlated with a lower chloride concentration in the lake. Lower chloride loading to the lake in 2016 reduced the lake’s chloride concentration enough to meet the MPCA chronic chloride standard. Chloride loading to the lake in 2021 was lower than 2017 through 2019, but not as low as 2016. 2021 chloride concentrations in the lake were lower than 2018 and 2019 concentrations, but higher than 2016.

The City of Plymouth’s monitoring in two of the lake’s subwatersheds found the northern subwatershed, PL2, has a much higher chloride loading rate than the southern subwatershed, PL1. Subwatershed PL2—189 acres, is about 49 percent impervious, and the land use is primarily multi-family residential and industrial. Subwatershed PL1—258 acres, is about 19 percent impervious, and land use is primarily residential. The map on page 1 shows the sample locations for subwatersheds PL1 and PL2. Chloride loading to Parkers Lake from 2013 through 2021 is shown in Table 1 on page 8.

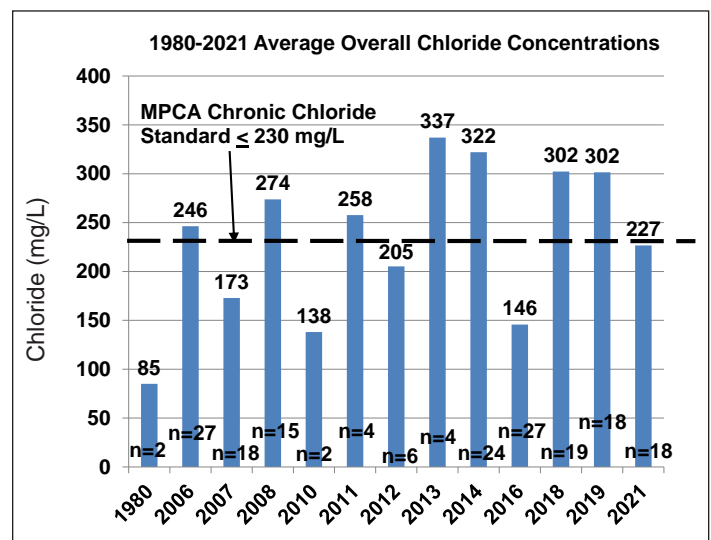
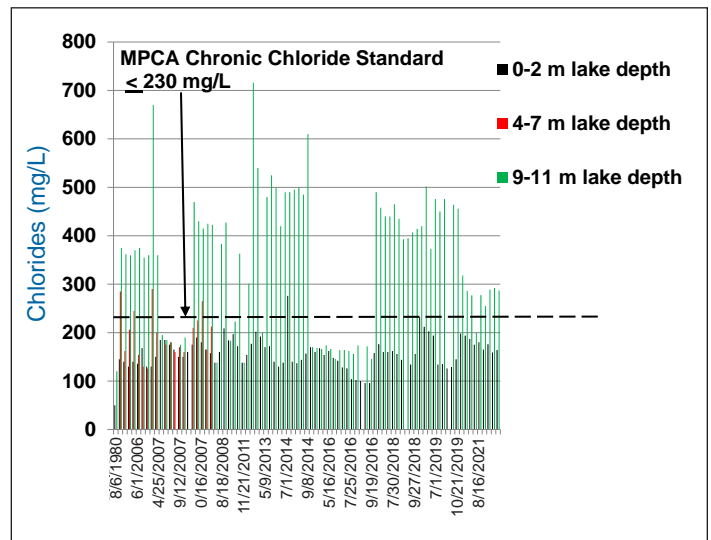


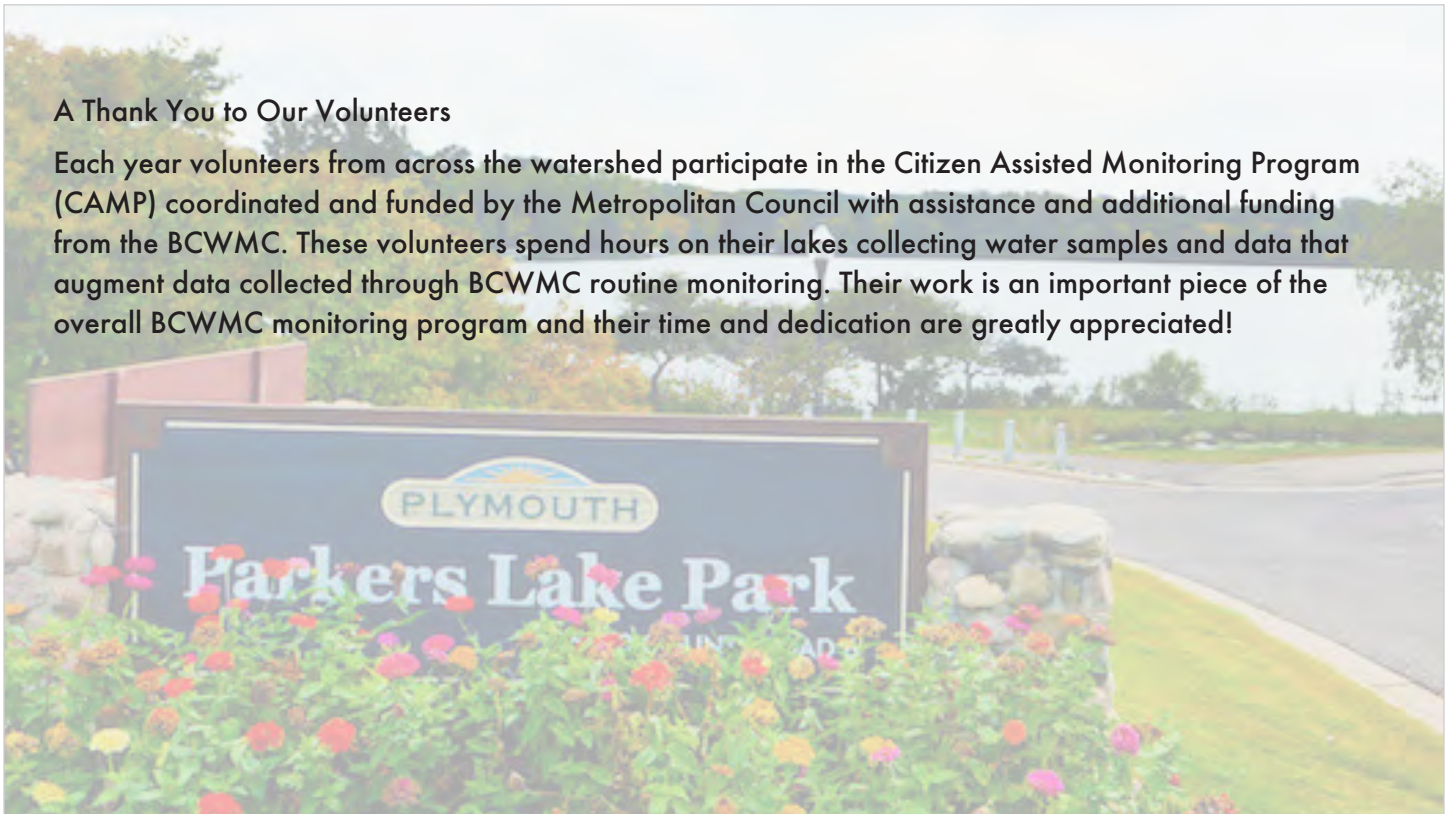
Table 1



Year	PL1 (19% impervious)		PL2 (49% impervious)		Total Chloride Loading from PL1 and PL2 (lbs/year)	Parkers Lake Average Annual Chloride Concentration (mg/l)
	Chloride Loading (lbs/year)	Chloride Loading (lbs/acre)	Chloride Loading (lbs/year)	Chloride Loading (lbs/acre)		
2013	3,239	12.6	105,991	561	109,230	337
2014	1,158	4.5	55,650	294	56,808	322
2015	1,052	4.1	161,814	856	162,866	-
2016	1,797	7.0	66,855	354	68,652	146
2017	4,904	19.0	122,460	648	127,364	-
2018	4,701	18.2	138,692	734	143,393	302
2019	926	3.6	84,831	449	85,757	302
2020	679	2.6	71,449	378	72,128	-
2021	532	2.1	73,146	387	73,678	227

A Thank You to Our Volunteers

Each year volunteers from across the watershed participate in the Citizen Assisted Monitoring Program (CAMP) coordinated and funded by the Metropolitan Council with assistance and additional funding from the BCWMC. These volunteers spend hours on their lakes collecting water samples and data that augment data collected through BCWMC routine monitoring. Their work is an important piece of the overall BCWMC monitoring program and their time and dedication are greatly appreciated!



Bassett Creek Watershed Management Commission
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Westwood Lake 2021 water quality monitoring

The Bassett Creek Watershed Management Commission (BCWMC) has monitored water quality conditions in the watershed's 10 priority lakes since 1972. This monitoring is done to detect changes or trends in water quality and evaluate the effectiveness of efforts to preserve or improve water quality. A summary of 2021 monitoring efforts on Westwood Lake is provided below; more comprehensive information can be found on pages 2–6.

At a glance: 2021 monitoring results

In 2021, the BCWMC monitored Westwood Lake for:

- Water chemistry (nutrients, chlorophyll a, chloride).
- Water clarity and dissolved oxygen.
- Phytoplankton and zooplankton (microscopic plants and animals).
- Macrophytes (aquatic plants).

Results of 2021 monitoring show that Westwood Lake met the applicable Minnesota Pollution Control Agency (MPCA) and Bassett Creek Watershed Management Commission (BCWMC) water quality standards for total phosphorus, chlorophyll a, Secchi disc (a measure of clarity), and chlorides. Trend analyses show no significant changes in Secchi disc, total phosphorus, or chlorophyll a over the past 10 years. Other results include:

- Westwood Lake has a healthy and diverse aquatic plant community.
- 2021 phytoplankton and zooplankton numbers were within the range observed since 1982.
- The results of an aquatic invasive species (AIS) suitability analysis indicate that Westwood Lake's water quality meets the requirements for rusty crayfish, zebra mussels, and stary stonewort but only partially meets the suitability requirements for spiny waterflea, faucet snail, and Chinese mystery snail. Hence, these species would likely survive but may not thrive in Westwood Lake.



About Westwood Lake

BCWMC classification	Priority-1 shallow lake
Watershed area	463 acres
Lake size	38 acres
Average depth	4.2 feet
Maximum depth	6 feet
Ordinary high water level	887.8 feet (NGVD29)
Normal water level	887.6 feet (NAVD88)
Downstream receiving waterbody	Main stem Bassett Creek
Location (city)	St. Louis Park
MPCA impairments	None
Aquatic invasive species	Curly-leaf pondweed, purple loosestrife, narrow-leaved cattail, reed canary grass
Public access	Yes (canoe access in park)

Recommendations

- Continue to provide education and information to the Westwood Hills Nature Center and lake users to reduce the chance of AIS introduction
- Continue water quality and biological monitoring at a 3-year frequency

Water chemistry monitoring: 2021

Total phosphorus levels

While phosphorus is necessary for plant and algae growth, excessive phosphorus leads to excessive growth, decreased water clarity, and water quality impairment.

- BCWMC/MPCA standard: 60 micrograms per liter ($\mu\text{g/L}$) or less
- Range: Low of 18 $\mu\text{g/L}$ in early September to a high of 36 $\mu\text{g/L}$ in early August
- Summer average: 27 $\mu\text{g/L}$ (met BCWMC/MPCA standard)

Chlorophyll a levels

Chlorophyll a is a pigment in algae and generally reflects the amount of algae growth in a lake. Lakes with clear water generally have chlorophyll a levels less than 15 micrograms per liter ($\mu\text{g/L}$).

- BCWMC/MPCA standard: 20 $\mu\text{g/L}$ or less
- Range: Low of 2.2 $\mu\text{g/L}$ in early September to a high of 8.5 $\mu\text{g/L}$ in April, mid-August, and October
- Summer average: 5.0 $\mu\text{g/L}$ (met BCWMC/MPCA standard)

Water clarity

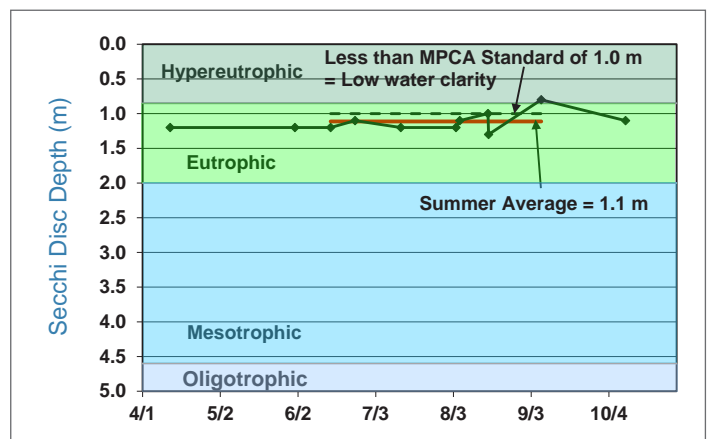
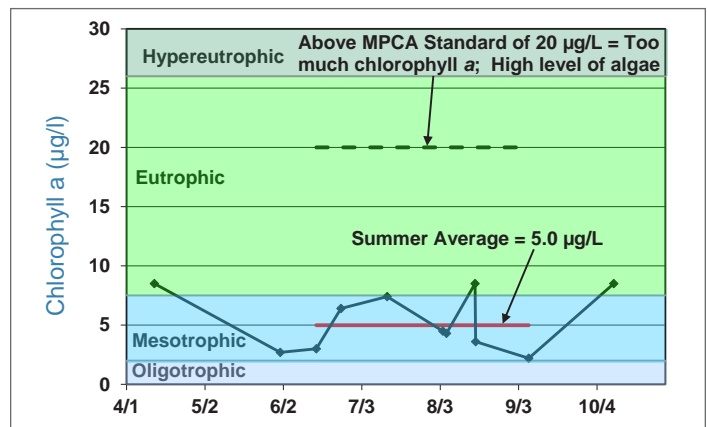
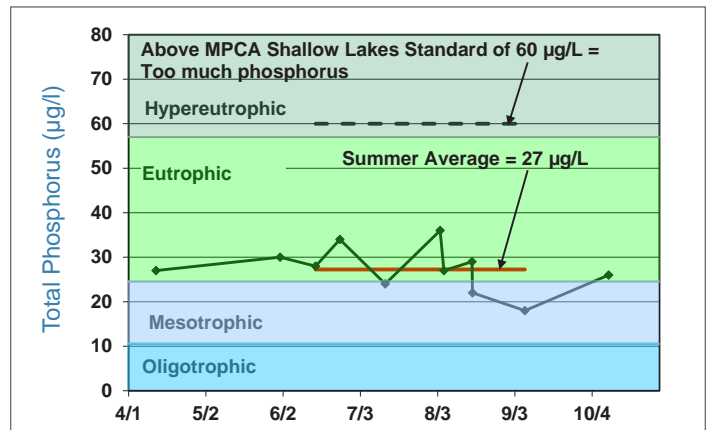
Water clarity is affected by the amount of algae and other suspended materials in a lake. It is usually measured by lowering an 8-inch "Secchi" disc into the lake (see bottom photo); the depth at which the disc's alternating black-and-white pattern is no longer visible is considered a measure of the water's transparency or clarity.

- BCWMC/MPCA standard: 1.0 meter or more.
- Range: From the lake bottom during April through July (1.2 meters) and mid-August (1.3 meters) to the top of submerged aquatic plants during early August (1.2 meters) and early September (0.8 meters)
- Summer average: 1.1 meters (met BCWMC/MPCA standard)



Definitions

- **Eutrophic:** Lake condition characterized by abundant accumulation of nutrients supporting dense growth of algae and other organisms; decay of algae can reduce lake oxygen levels
- **Hypereutrophic:** Nutrient-rich lake conditions characterized by frequent and severe algal blooms and low transparency
- **Mesotrophic:** Lake condition characterized by medium levels of nutrients and clear water
- **Oligotrophic:** Lake condition characterized by a low level of dissolved nutrients, high oxygen content, and sparse algae growth



Water chemistry monitoring from 1977–2021: historical trends

Summer water quality in Westwood Lake has been monitored since 1977. Data have been collected by BCWMC (1977–2021) and the Citizen Assisted Monitoring Program (CAMP, 1993–2021). 2021 monitoring was done by BCWMC and the Citizen Assisted Monitoring Program (CAMP).

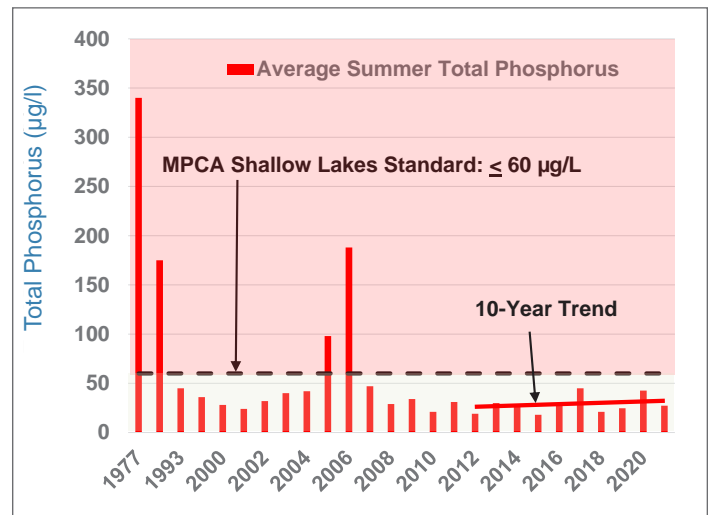
Summer averages (June through September) of total phosphorus, chlorophyll *a*, and Secchi disc depth from 1977–2021 are shown in the figures at right. In 1977 and 1982, these averages generally failed to meet BCWMC/MPCA standards but have generally met the standards since 1982. Exceptions include high chlorophyll *a* values in 2001, high total phosphorus values in 2005 and 2006, and a low Secchi disc depth in 2017. During the period of record, 85 percent of total phosphorus and 92 percent of chlorophyll *a* and Secchi disc summer averages met the Minnesota State Water Quality Standards for shallow lakes in the North Central Hardwood Forest Ecoregion, as published in Minnesota Rules (Minn. R. Ch. 7050.0222 Subp. 4). Summer averages of total phosphorus, chlorophyll *a*, and Secchi depth met the BCWMC/MPCA standards in 2021.

Trend analyses for the last 10 years show:

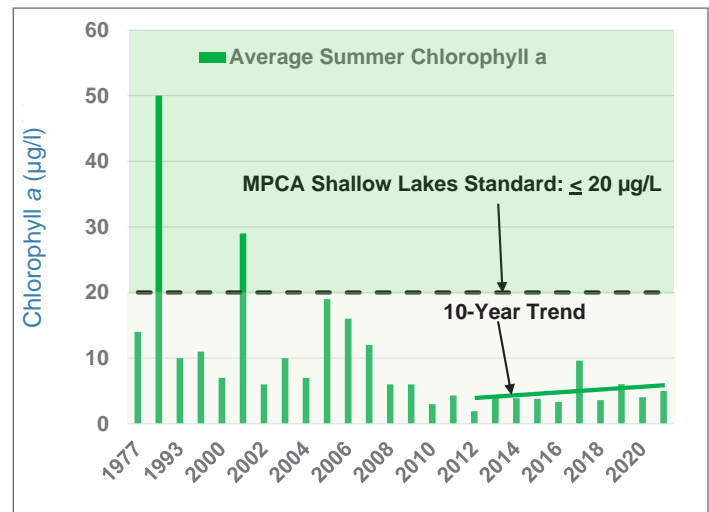
- Slightly increasing (worsening) summer average total phosphorus concentrations.
- Slightly increasing (worsening) summer average chlorophyll *a* concentrations.
- No change in summer average Secchi disc depths.

None of these changes are statistically significant (95-percent confidence level).

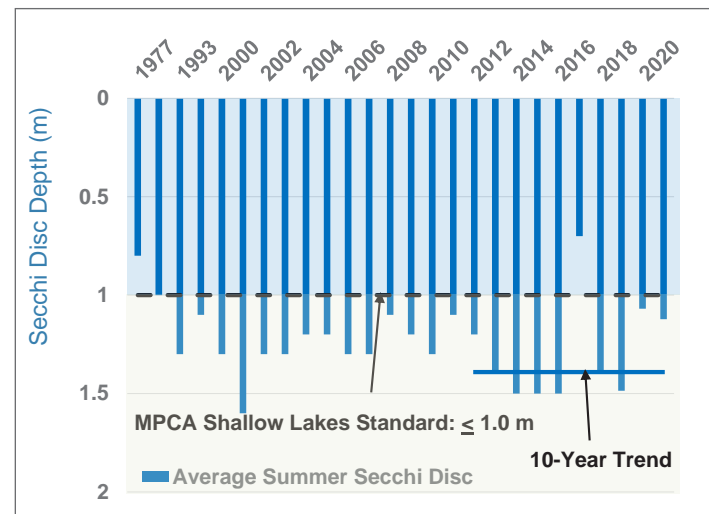
Total phosphorus trends



Chlorophyll *a* trends



Water clarity trends

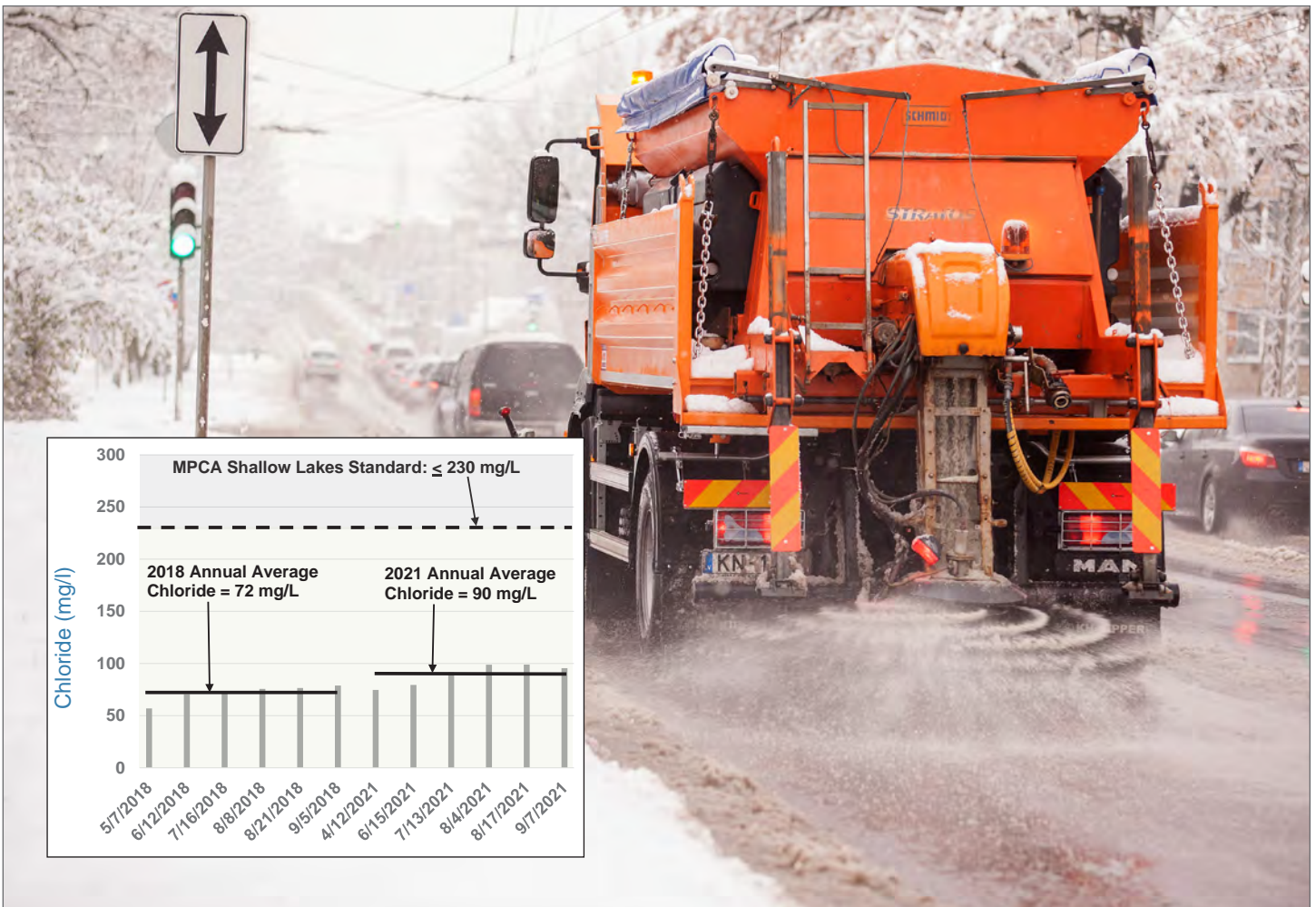


Chloride levels in 2018 and 2021

Chloride concentrations in area lakes have increased since the early 1990s, when many government agencies switched from sand or sand/salt mixtures to salt for winter road maintenance. When snow and ice melt, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of road salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride.

Because high chloride concentrations can harm fish and plant life, the MPCA established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms can be exposed to for a brief time with zero-to-slight mortality. The chronic standard is the highest chloride concentration that aquatic life can be exposed indefinitely without causing chronic toxicity. Chronic toxicity is defined as a stimulus that lingers or continues for a long period, often one-tenth the life span or more. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake is considered impaired if two or more measurements exceed the chronic criterion (230 mg/L) within a 3-year period or if one measurement exceeds the maximum criterion (860 mg/L).

All measurements during 2018 and 2021 were well below the maximum and chronic chloride standards. There was an increase in chloride between 2018 and 2021. The 2021 average annual chloride concentration (90 mg/L) was 25 percent higher than the 2018 average (72 mg/L) but well below the maximum and chronic chloride standards.



Increased use of chloride for road maintenance has had an impact on chloride levels in Twin Cities metro area lakes.

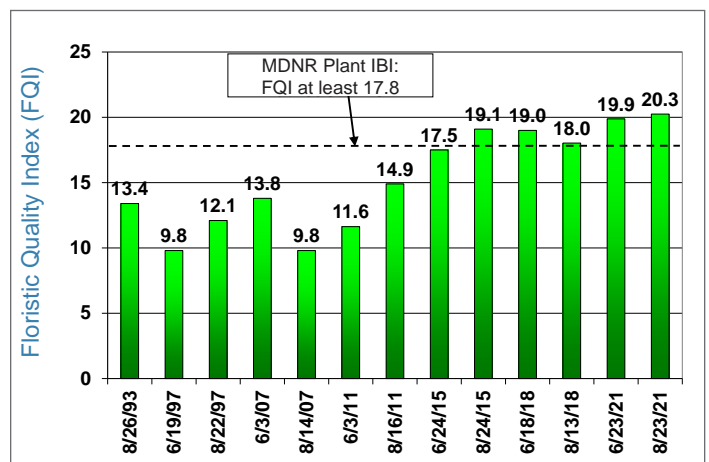
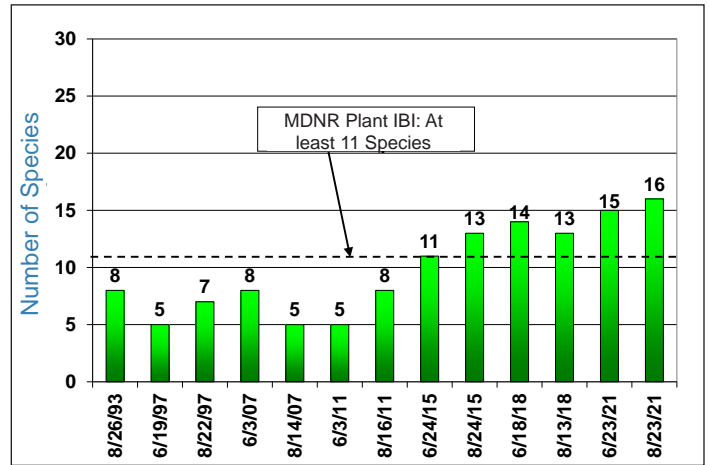
Macrophytes (aquatic plants)

Lake Plant Eutrophication Index of Biological Integrity (IBI)

Eutrophication (excessive nutrients) may have detrimental effects on a lake, including reducing the quantity and diversity of plants. The MNDNR developed a Lake Plant Eutrophication Index of Biological Integrity (IBI) to measure the response of a lake plant community to eutrophication. The Lake Plant Eutrophication IBI includes two metrics: (1) the number of species in a lake and (2) the “quality” of the species, as measured by the Floristic Quality Index (FQI). The MNDNR determined a threshold for each metric. Lakes that score below the thresholds contain degraded plant communities and are likely stressed from anthropogenic (human-caused) eutrophication.

Plant survey data from 1993 to 2021 were assessed to determine Plant IBI trends. The figures at right show Westwood Lake FQI scores and the number of species for that period compared to the MNDNR Plant IBI thresholds.

- **Number of species:** A shallow lake such as Westwood Lake meets the MNDNR Plant IBI threshold when at least 11 species exist. During the period examined, the number of species in Westwood Lake ranged from 5 to 16, exceeding the MNDNR Plant IBI threshold from 2015 through 2021. Fifteen to 16 species were observed in the lake in 2021, the highest number to date.
- **FQI values (quality of species):** The MNDNR Plant IBI threshold for shallow lakes, as measured by FQI, is a minimum value of 17.8. During the period examined, FQI values in Westwood Lake ranged from 9.8 to 20.3, bettering the MNDNR Plant IBI threshold from August 2015 through 2021. FQI scores from 19.9 to 20.3 were observed in 2021, the highest scores to date.
- **2021 results:** Both the number of species in the lake and FQI values were better than the MNDNR Plant IBI thresholds and improved in 2021.



Aquatic invasive species

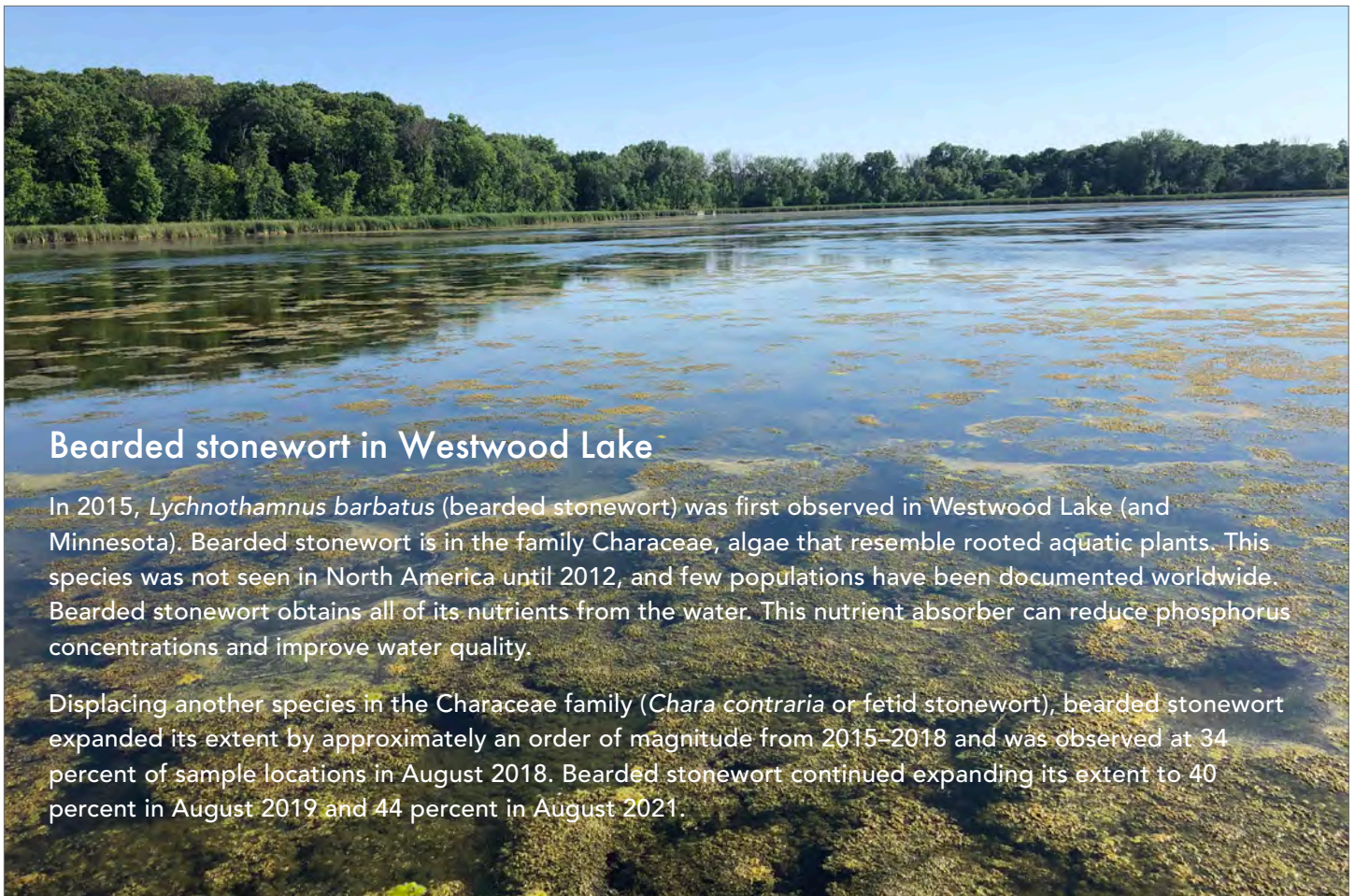
In 2021, four aquatic invasive species (AIS) were known to be present in Westwood Lake; no species was considered problematic.

- **Curly-leaf pondweed (*Potamogeton crispus*):** Though prevalent, the curly-leaf pondweed coexisted with native plants at relatively low densities.
- **Purple loosestrife (*Lythrum salicaria*):** This emergent species was found at five locations along the north shoreline in 2021. It was found at similar locations in 2015 and 2018.
- **Narrow-leaved cattail (*Typha angustifolia*):** Narrow-leaved cattail was observed at four locations along the northern shoreline in 2021. It was observed in similar locations in 2015 and 2018.
- **Reed canary grass (*Phalaris arundinacea*):** For the first time since monitoring began in 1993, reed canary grass was found in Westwood Lake in 2018—at three locations along the north shoreline in June and one location in August. In 2021, it was observed along the north shoreline at one location in both June and August. It has not expanded its footprint.

Suitability of Westwood Lake for AIS

Many aquatic invasive species (AIS) residing in Minnesota have not yet been observed in Westwood Lake but could be introduced. For example, both zebra mussels and starry stonewort are present in nearby Medicine Lake but have not yet been observed in Westwood Lake. A suitability analysis was performed to evaluate whether Westwood Lake water quality would support the introduction of six AIS (starry stonewort, zebra mussels, spiny waterflea, faucet snail, Chinese mystery snail, and rusty crayfish).

The analysis compared 2021 water quality in Westwood Lake with the water quality conditions required for each species, specifically evaluating total phosphorus, chlorophyll a, Secchi disc depth, trophic state index (TSI), water temperature, dissolved oxygen, specific conductance, calcium, magnesium, sodium, alkalinity, hardness, and calcium carbonate. The results indicate that the water quality of Westwood Lake meets the suitability requirements for rusty crayfish, zebra mussel, and starry stonewort but only partially meets the suitability requirements for spiny waterflea, faucet snail, and Chinese mystery snail. Hence, these species would likely survive but may not thrive in Westwood Lake.



Bearded stonewort in Westwood Lake

In 2015, *Lychnothamnus barbatus* (bearded stonewort) was first observed in Westwood Lake (and Minnesota). Bearded stonewort is in the family Characeae, algae that resemble rooted aquatic plants. This species was not seen in North America until 2012, and few populations have been documented worldwide. Bearded stonewort obtains all of its nutrients from the water. This nutrient absorber can reduce phosphorus concentrations and improve water quality.

Displacing another species in the Characeae family (*Chara contraria* or fetid stonewort), bearded stonewort expanded its extent by approximately an order of magnitude from 2015–2018 and was observed at 34 percent of sample locations in August 2018. Bearded stonewort continued expanding its extent to 40 percent in August 2019 and 44 percent in August 2021.

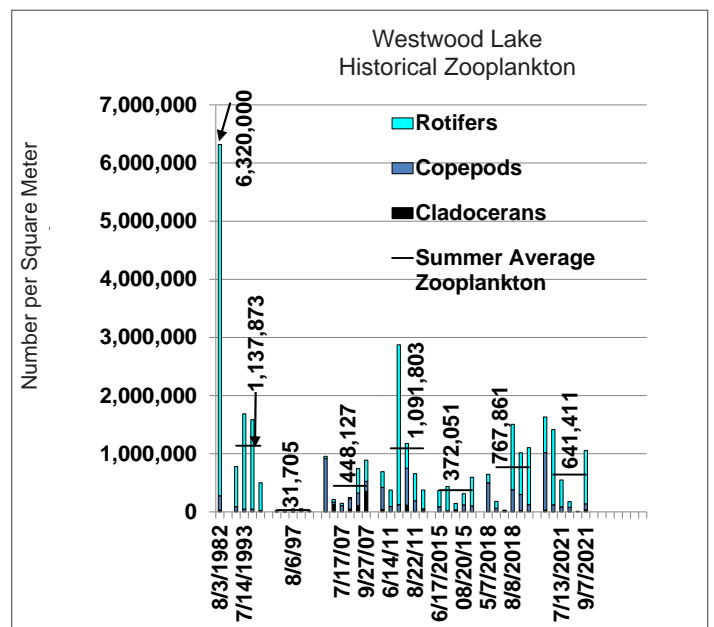
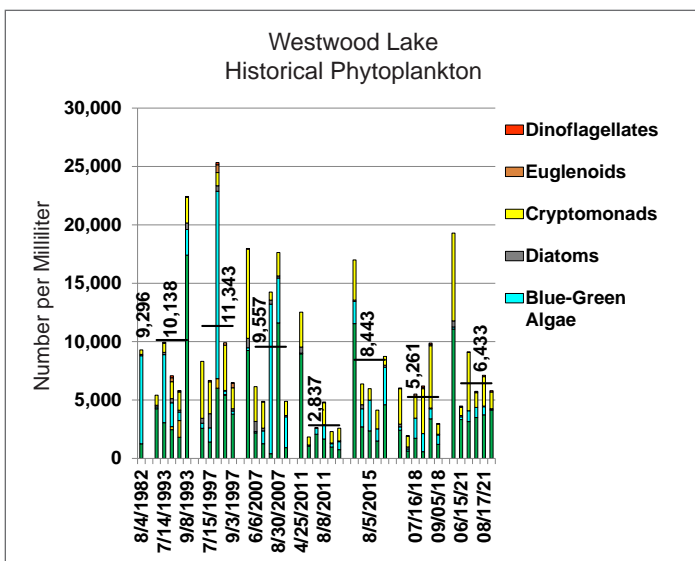
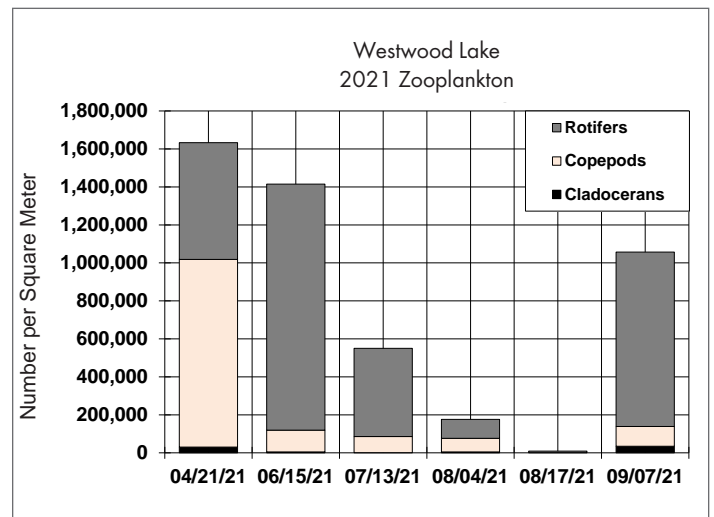
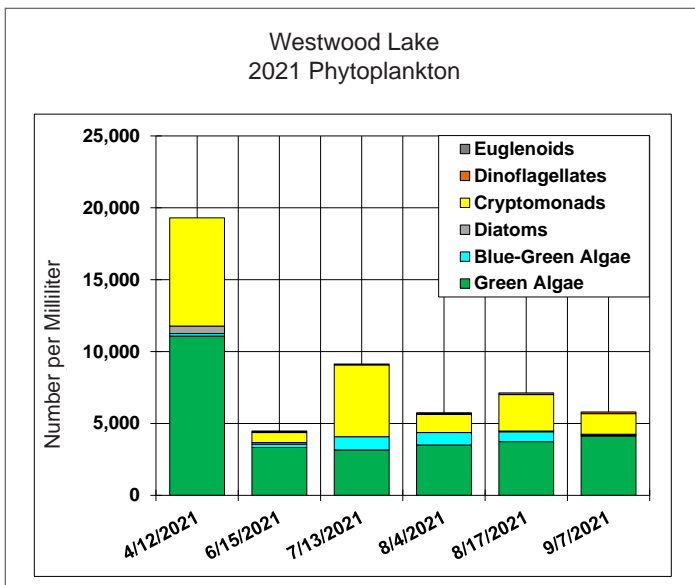
Phytoplankton and zooplankton

Samples of phytoplankton, microscopic aquatic plants, were collected from Westwood Lake to evaluate water quality and the quality of food available to zooplankton (microscopic animals). Phytoplankton numbers declined from April to June and remained low throughout the summer, indicating good water quality. Cryptomonads and green algae, good food sources for the lake's zooplankton, were dominant throughout the monitored period. Blue-green algae, associated with water quality problems and a potential source of health concerns, were present in very low numbers. 2021 phytoplankton numbers were within the range of observed since 1982.

Unlike phytoplankton, zooplankton do not produce their own food. As "filter feeders," they eat millions of small algae; given the right quantity and species, they can filter the volume of an entire lake in a matter of days. They are also valuable food for planktivorous fish and other organisms.

The 2021 zooplankton composition reflects the impact of fish predation on the community. Fish generally select the largest zooplankters they see and prefer cladocerans to copepods because they swim slowly and lack the copepods' ability to escape predation by jerking or jumping out of the way. Rotifers, the least preferred food for fish, dominated the community throughout 2021 (except for April), and copepods consistently occurred in higher numbers than cladocerans. Because rotifers and copepods do not graze as heavily on algae as the larger cladocerans, they generally have a limited impact on the lake's water quality. This suggests that future Westwood Lake water quality efforts should focus on phosphorus management to reduce the nutrients that contribute to algae growth.

2021 zooplankton numbers were within the range observed since 1982.



A Thank You to Our Volunteers

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Cleaner, healthier water for a growing community



2020–2021 Stream Monitoring and 2020 Biotic Index Evaluation of the Sweeney Lake Branch of Bassett Creek

The Bassett Creek Watershed Management Commission (BCWMC) monitored the Sweeney Lake Branch of Bassett Creek for water depth, flow, temperature, specific conductance, and stream water quality during 2020 and 2021. BCWMC also continuously monitored the stream for dissolved oxygen for a one-week period in June 2022. The Minnesota Pollution Control Agency (MPCA) monitored the stream for pH, dissolved oxygen, and water quality in 2020 and 2021. In 2020, the MPCA monitored macroinvertebrates, and the BCWMC monitored habitat. The BCWMC used the macroinvertebrate data to complete a biotic index evaluation of the stream. This report presents the results of these monitoring efforts.

Summary

The Sweeney Lake Branch of Bassett Creek drains approximately 3.8 square miles of northern St. Louis Park and southern Golden Valley. The Sweeney Lake Branch originates in Golden Valley and flows northeast for 3.6 miles, through Schaper Pond and Sweeney Lake, and joins the Main Stem of Bassett Creek in Theodore Wirth Regional Park just downstream of Sweeney Lake. The Sweeney Branch monitoring station drains an area of approximately 2.6 square miles. The following table summarizes information about the monitoring station watershed.

Monitoring Station Watershed	
Drainage area	1,694.5 acres (2.6 square miles)
Imperviousness	43.2%
Commercial/Industrial	320 acres
Multifamily residential	71 acres
Public/institutional	134 acres
Single-family residential	733 acres
Major highway	246 acres

The purpose of the stream monitoring program is to evaluate flow and water quality, detect changes over time, determine whether the MPCA water quality and biological standards are being met, and identify stressors to the biological community.

Results of the Sweeney Lake Branch of Bassett Creek monitoring program show the stream failed to meet MPCA standards for E. coli bacteria, chlorides, and total suspended solids. MPCA standards were met for temperature, pH, dissolved oxygen, metals (total cadmium, chromium, copper, nickel, lead, and zinc) and river eutrophication standards (RES).

Between 1980 and 2020, the BCWMC collected benthic macroinvertebrates (bottom-dwelling organisms) from the Sweeney Lake Branch of Bassett Creek on 11 occasions to evaluate water quality and detect changes over time. The 2020 monitoring program evaluated macroinvertebrates (MPCA) and habitat (BCWMC).

The MPCA developed and added the Macroinvertebrate Index of Biotic Integrity (M-IBI) to Minnesota's water quality standards to help identify biologically impaired rivers and streams. The 2020 M-IBI score for the Sweeney Lake Branch of Bassett

Creek was 42.1, compared with the MPCA impairment threshold of 43. The MPCA concluded the stream was not biologically impaired because the M-IBI score was less than a point below the impairment threshold and the stream has relatively decent habitat for a moderately channelized urban stream. A habitat survey completed in 2020 indicated overall habitat conditions had declined between 2015 and 2020. Habitat declines included increased erosion and sediment deposits (embeddedness).

Recommendations

Because the Sweeney Lake Branch of Bassett Creek failed to meet the MPCA standards for chlorides, total suspended solids, and E. coli bacteria from 2020 through 2021, and the 2020 M-IBI score was slightly below the M-IBI impairment threshold, the Commission Engineer recommends that BCWMC continue to:

- **Assess the Sweeney Lake Branch of Bassett Creek** to identify the cause of high concentrations of total suspended solids, chlorides, and E. coli bacteria and implement management measures to reduce these concentrations with the goal of meeting the MPCA water quality standards for the stream.
- **Evaluate the stream corridor** for erosion and identify and implement management measures to repair the erosion.
- **Continue education efforts to reduce chloride use** in the watershed (e.g., Smart Salting Level 1 Certification course) with the goal of meeting the MPCA chloride standard for the stream.
- **Support MPCA efforts to complete a stressor ID on the Sweeney Lake Branch of Bassett Creek** by providing requested data and other information.
- **Continue monitoring stream habitat, flow, water quality, and macroinvertebrates** to evaluate if the stream meets MPCA water quality and biological standards, identify changes over time, and identify stressors to the macroinvertebrate community.

2020–2021 stream monitoring program

The water quality and flow of the Sweeney Lake Branch of Bassett Creek was monitored from 2020 through 2021 at a station immediately south (upstream) of the frontage road on the south side of Hwy 55 and just downstream of the biological monitoring location (Figure 1). Water depth, flow, specific conductance, and temperature were measured continuously during the monitoring period. The BCWMC collected water quality samples manually on 21 occasions to monitor baseflow conditions and with an automatic sampler on 17 occasions to monitor storm events. The MPCA collected water quality samples manually on 28 occasions. Monitoring was completed from March 6 through March 12, 2020, and from May 23, 2020, through November 11, 2021. Monitoring was not conducted between March 12 and May 23, 2020, due to restrictions during the COVID-19 pandemic. Because ice conditions in the channel during the winter months prevent accurate continuous flow, temperature, and specific conductance measurements, the monitoring period for these parameters was limited to spring through early winter.

Storm and baseflow samples were analyzed for nutrients (total phosphorus, ortho phosphorus, dissolved phosphorus, nitrate/nitrite, ammonia, and total Kjeldahl nitrogen), solids (total suspended solids and volatile suspended solids), chlorides, hardness, calcium, and magnesium. Baseflow samples were also analyzed for chlorophyll *a*, and E. coli bacteria. Quarterly grab samples were analyzed for metals (chromium, cadmium, copper, lead, nickel, and zinc). The MPCA measured dissolved oxygen and pH when collecting baseflow samples. The BCWMC continuously measured dissolved oxygen from June 8 through 15, 2022. The following equipment was used for the monitoring program:

- A radar water-level sensor (Figure 2) measured water levels at 15-minute intervals, and a data logger (Figure 3 and Figure 4) recorded the measurements. A data logger is an electronic device that records data over time. Flow was measured at a range of depths using a flow meter, and a stage-rating curve was developed to estimate flow from the measured water depths. The stage-rating curve equation was added to



Figure 1: Sweeney Lake Branch of Bassett Creek water quality and biological monitoring locations

the data logger program, which allowed the automatic computation of flow from water depth for the duration of the monitoring period.

- Cellular modem (Figure 3): Enabled staff to control equipment and download data from their office.
- SunSaver regulator (Figure 3): This instrument controls the current flowing from the solar panel to the battery and prevents the current from flowing in reverse (i.e., battery to the solar panel).
- Solar panel (Figure 4): Charged the battery used to operate the equipment.
- Automatic sampler (Figure 5): Collected storm samples.
- Temperature probe and data logger: The probe measured water temperature, and the data logger (Figure 3 and Figure 4) recorded the measurements.



Figure 2: Radar water level sensor

- Specific-conductance probe and data logger: The probe measured specific conductance, and the data logger (Figure 3 and Figure 4) recorded the measurements.

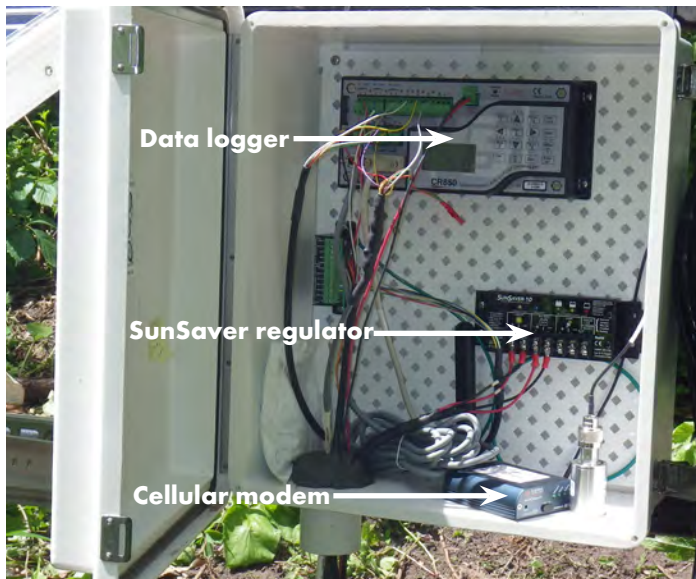


Figure 3: Data logger, SunSaver regulator, and cellular modem

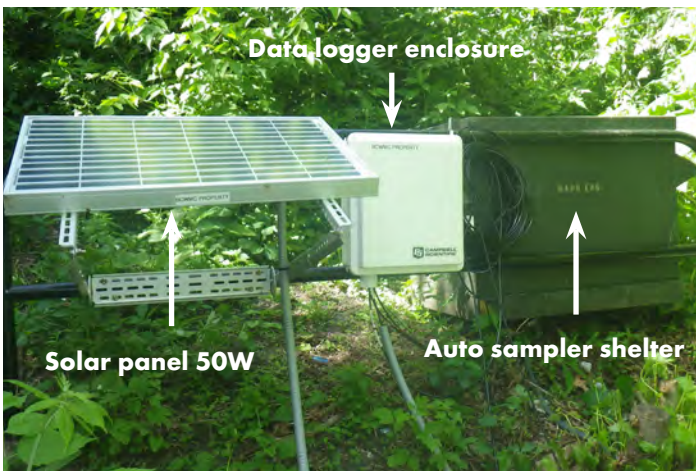


Figure 4: Solar panel, flow logger enclosure, and auto sampler shelter

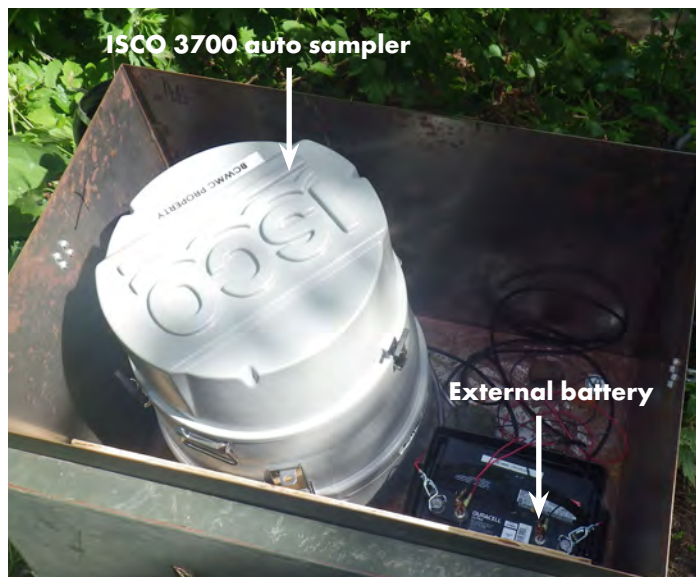


Figure 5: Automatic sampler and external battery

Results of 2020–2021 stream monitoring program

Water depth and flow

Water depth and flow were measured at 15-minute intervals throughout the monitoring period. The results are shown in Table 1 and Figures 6 and 7.

The highest flows during 2020 and 2021 are more uncertain and considered provisional due to limited depth and flow data at the high levels during the development of the stage-rating curve. Due to the flashiness of the stream (rapid increases and decreases in depth and flow after a storm), it is difficult to capture these high measurements.

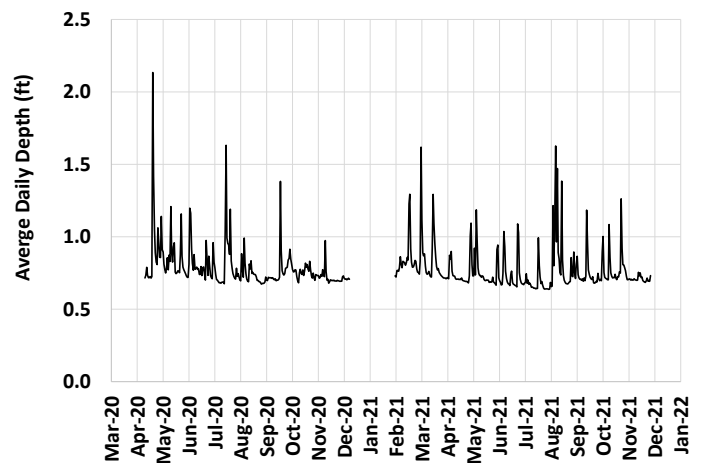


Figure 6: Average daily depth of the Sweeney Lake Branch of Bassett Creek

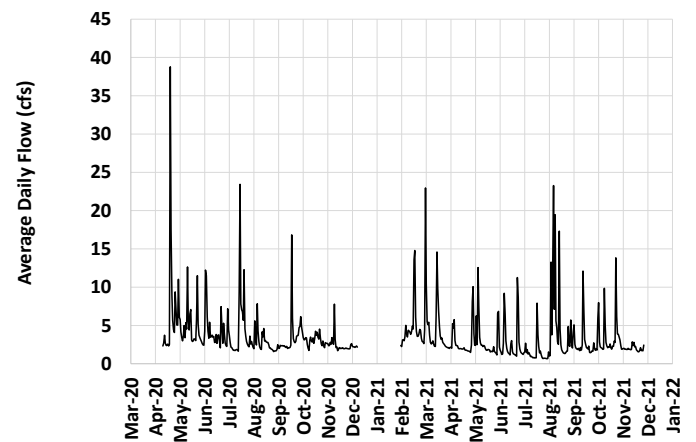


Figure 7: Average daily flow of the Sweeney Lake Branch of Bassett Creek

Table 1: 2020–2021 water depth and flow in the Sweeney Lake Branch of Bassett Creek

Parameter	2020			2021		
	Low	High	Average	Low	High	Average
Average daily water depth	0.67 feet 9/20/2020	2.13 feet 5/17/2020	0.79 feet	0.64 feet 8/2/2021, 8/4–6/2021, and 8/14–19/2021	1.63 feet 8/27/2021	0.77 feet
Average daily flow in cubic feet per second (cfs)	1.6 cfs 8/8/2020 and 9/20/2020	38.8 cfs 5/17/2020	3.8 cfs	0.7 cfs 8/14–19 2021	23.3 cfs 8/27/2021	3.3 cfs

Temperature

Temperature was measured at 15-minute intervals throughout the monitoring period. During the 2020 monitoring period, the average daily temperature ranged from 33° F to 81 °F; the overall average was 58 °F (Figure 8). During the 2021 monitoring period, the average daily temperature ranged from 31 °F to 82 °F; the overall average was 58 °F (Figure 8). All measurements met the MPCA standard of less than or equal to 86 °F. The MPCA is not currently using the standard to assess warm-water streams, such as the Sweeney Lake Branch of Bassett Creek. Instead, it evaluates mostly cold-water fisheries for temperature-caused impairment because of the special sensitivity of cold-water fish to temperature elevations.

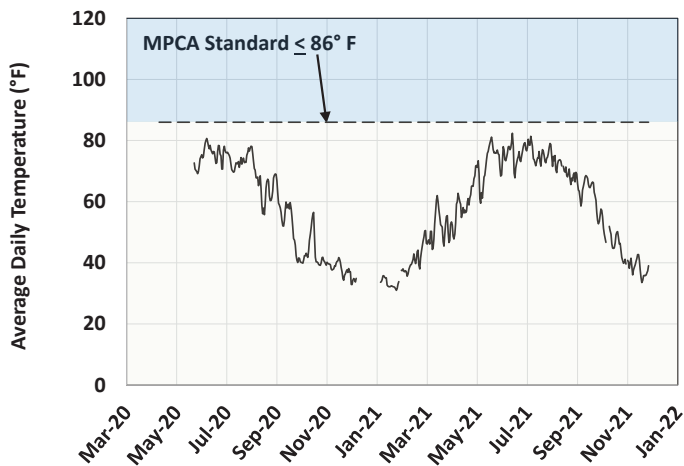


Figure 8: Average daily temperature of the Sweeney Lake Branch of Bassett Creek

pH

The pH of water is a measure of the degree of its acid or alkaline reaction. The applicable pH standard for the Sweeney Lake Branch of Bassett Creek is a minimum of 6.5 and a maximum of 9.0. A stream meets the standard for pH if the standard is met at least 90 percent of the days of the monitoring season. A designation of meeting the standard for pH generally requires at least 20 suitable measurements from a data set that gives an unbiased representation of conditions over at least 2 different years.

During the 2020 monitoring period, pH ranged from 7.6 to 9.0; the overall average was 7.8 (Figure 9). During the 2021 monitoring period, pH ranged from 7.7 to 7.9; the overall average was 7.8 (Figure 9). The 2020–2021 data included 21 pH measurements, and all measurements were within the MPCA standard of 6.5 to 9.0. Hence, the Sweeney Lake Branch of Bassett Creek meets the standard for pH.

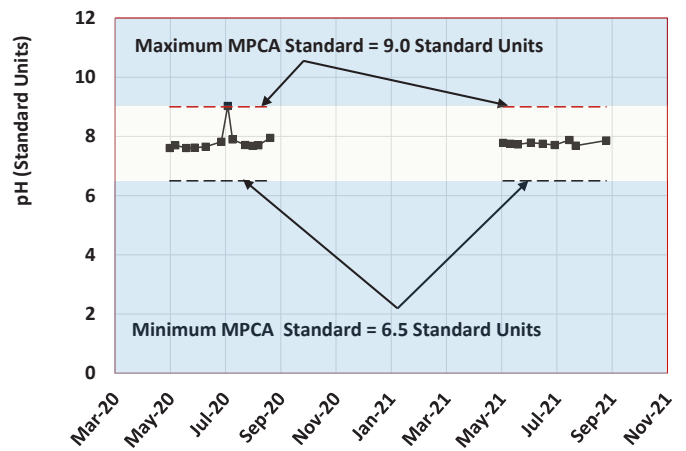


Figure 9: 2020–2021 pH from the Sweeney Lake Branch of Bassett Creek

Dissolved oxygen

Dissolved oxygen is required for all aquatic organisms to live. When dissolved oxygen drops below acceptable levels, desirable aquatic organisms, such as fish, can be harmed or killed. The MPCA dissolved oxygen standard for the Sweeney Lake Branch of Bassett Creek is at least 5 mg/L as a daily minimum. The stream meets the dissolved oxygen standard if at least 90 percent of the measurements are at least 5 mg/L and there are at least three such measurements. A designation of meeting the standard generally requires at least 20 measurements over at least 2 different years.

During the 2020 monitoring period, dissolved oxygen measurements ranged from 4.7 to 9.4; the overall average was 6.8 (Figure 10). During the 2021 monitoring period, dissolved oxygen measurements ranged from 5.1 to 9.9; the overall average was 7.8 (Figure 10). Because only one of the 21 measurements (5 percent) during 2020–2021 failed to meet the standard of at least 5 mg/L (Figure 10), the Sweeney Lake Branch of Bassett Creek meets the standard for dissolved oxygen.

Stream dissolved oxygen concentrations generally follow a diurnal cycle, with concentrations increasing during the day and decreasing overnight. When eutrophication causes undesirable levels of algae or rooted plants in a stream, the stream may respond with oxygen levels below 5 mg/L overnight due to excess removal of oxygen from the stream by plant respiration. Photosynthesis by plants during the day adds oxygen to the stream. This daily fluctuation in dissolved oxygen (lower levels at night and higher levels during the day) is termed DO flux.

Continuous dissolved oxygen was measured in the Sweeney Lake Branch of Bassett Creek during June 8–15, 2022. During the monitored period, dissolved oxygen measurements ranged from 4.91 mg/L to 14.50 mg/L; the overall average was 9.32 mg/L (Table 2). Because only two of the 687 measurements (0.3 percent) failed to meet the standard of at least 5 mg/L (Figure 11) the Sweeney Lake Branch of Bassett Creek meets the standard for dissolved oxygen. DO flux ranged from 2.25 mg/L to 8.97 mg/L; the overall average was 6.20 mg/L (Table 2).

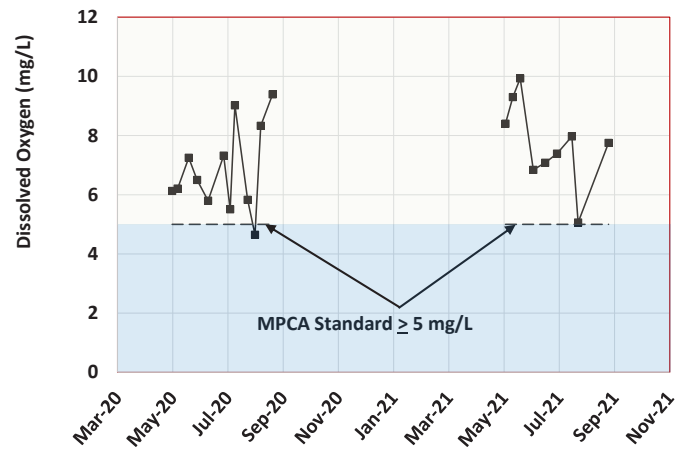


Figure 10: 2020–2021 dissolved oxygen from the Sweeney Lake Branch of Bassett Creek

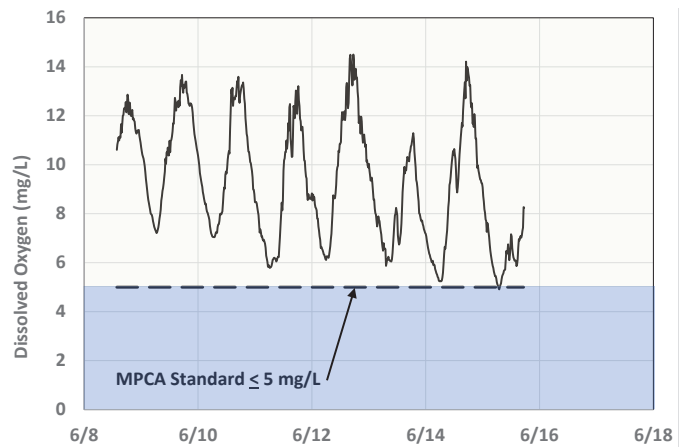


Figure 11: Continuous dissolved oxygen from the Sweeney Lake Branch of Bassett Creek, June 8–15, 2022

Total phosphorus, chlorophyll α , and dissolved oxygen (DO) flux

While phosphorus is necessary for plant and algae growth, too much phosphorus leads to excessive algae, decreased water clarity, and water quality impairment. Some common sources of phosphorus are fertilizers, leaves and grass clippings from streets, atmospheric deposition, soil erosion, and material from plant die-off. The quantity of algae in water is measured by chlorophyll α , a pigment in algae. The MPCA standard for total phosphorus, chlorophyll α , and DO flux is the river eutrophication standard (RES). RES is a two-part standard, requiring an exceedance of the “causative variable” (total phosphorus) and a “response variable” (chlorophyll α and DO Flux), which indicates the presence of eutrophication (excessive nutrients). Total phosphorus, chlorophyll α , and DO flux are considered in combination and not independently.

Table 2: Continuous dissolved oxygen (DO) measurements on the Sweeney Lake Branch of Bassett Creek (June 8-15, 2022)

Date	Daily Average DO (mg/L)	Daily Maximum DO (mg/l)	Daily Minimum DO (mg/L)	Daily (Diel) DO Flux (mg/l)
6/8/2022	11.45	12.86	10.61	2.25
6/9/2022	10.54	13.67	7.21	6.46
6/10/2022	9.92	13.59	7.04	6.55
6/11/2022	8.87	13.21	5.79	7.42
6/12/2022	10.02	14.50	6.11	8.39
6/13/2022	8.22	11.29	5.87	5.42
6/14/2022	9.07	14.21	5.24	8.97
6/15/2022	6.45	9.08	4.91	4.17
Average	9.32	12.80	6.60	6.20

To determine whether a stream is impaired, total phosphorus and chlorophyll a data must be collected during at least two different years during a 10-year period, and a minimum of 12 measurements per parameter (from June to September) must be used to determine the seasonal averages. The seasonal averages are then compared with the MPCA standard for each parameter: a maximum of 100 µg/L for total phosphorus and a maximum of 18 µg/L for chlorophyll a. For DO flux, a minimum 4-day deployment is required from June through September, with a minimum of two deployments over separate years. The MPCA standard for DO flux is a maximum of 3.5. The stream meets the RES if either the causative variable (total phosphorus) or response variables (chlorophyll a and DO flux) meet their respective standards.

The 2020 through 2021 seasonal average (June through September) for the causative variable, total phosphorus (TP), was 88 µg/L, which met the MPCA standard (Figure 12). The 2020 through 2021 seasonal average response variable, chlorophyll a, was 18.8 µg/L, slightly exceeding the MPCA standard of 18 µg/L (Figure 13). The DO flux from June 8–15, 2022, ranged from 2.25 mg/L to 8.97 mg/L, with an average of 6.20 mg/L (Table 2). DO flux exceeded the MPCA standard from June 9 through 15. However, because the causative variable (TP) met the MPCA standard, the stream meets the RES.

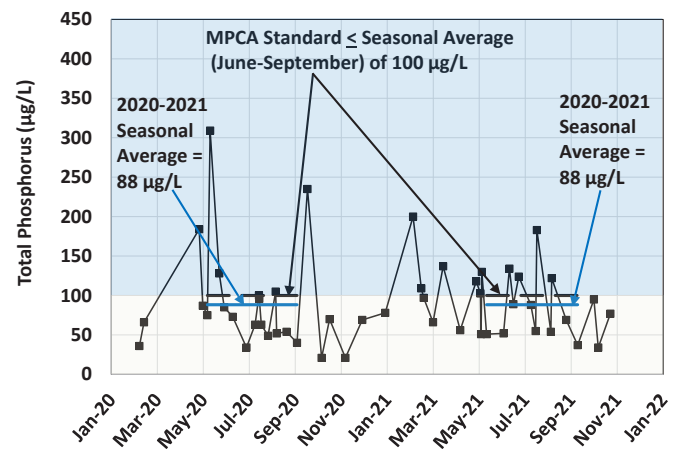


Figure 12: Total phosphorus from the Sweeney Lake Branch of Bassett Creek

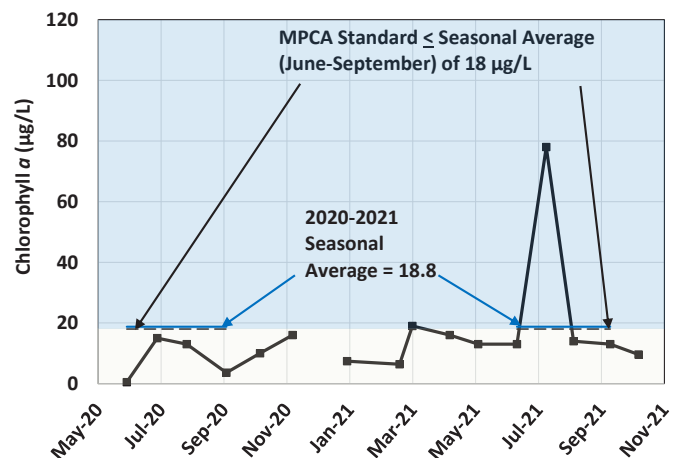


Figure 13: Chlorophyll a from the Sweeney Lake Branch of Bassett Creek

Chlorides

Chloride concentrations in area streams have increased since the early 1990s, when many government agencies switched from sand or sand/salt mixtures to salt for winter road maintenance. When snow and ice melt, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of road salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride.

Because high chloride concentrations can harm fish and plant life, the MPCA has established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms can be exposed to for a brief time with zero-to-slight mortality. The chronic standard is the highest chloride concentration that aquatic life can be exposed to indefinitely without causing chronic toxicity. Chronic toxicity is defined as a stimulus that lingers or continues for a long period, often one-tenth the life span or more. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake or stream is considered impaired if two or more measurements exceed the chronic criterion (230 mg/L) within 3 years or if one measurement exceeds the maximum criterion (860 mg/L).

Based on samples collected in 2020 and 2021, chloride concentrations in the Sweeney Lake Branch of Bassett Creek ranged from a low of 103 mg/L, measured in August 2020, to a high of 654 mg/L, measured in February 2021 (Figure 14). All samples collected by BCWMC during 2020 and 2021 met the MPCA maximum chloride standard, but 16 of the 30 samples (53 percent) exceeded the MPCA chronic chloride

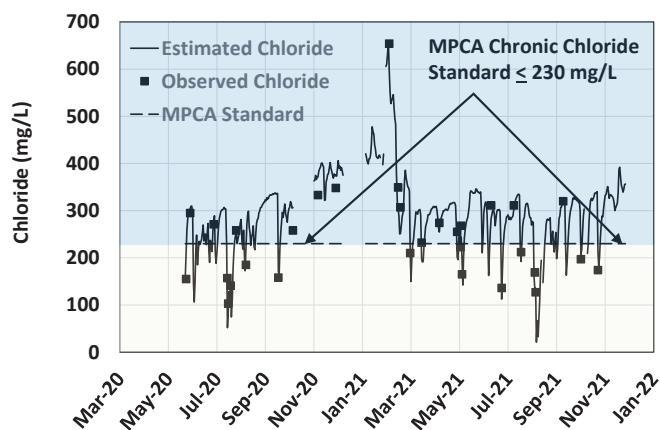


Figure 14: 2020–2021 Chloride concentrations: Observed and estimated from average daily specific-conductance measurements of the Sweeney Lake Branch of Bassett Creek by BCWMC

standard (Figure 14). The MPCA collected chloride samples in May 2020 (160 mg/L) and May 2021 (223 mg/L), and both samples met the MPCA maximum and chronic chloride standards.

Additional information about chloride concentrations was captured by performing a specific-conductance analysis. Specific conductance measures how well water can conduct electricity. It indicates what is dissolved in the water and increases with larger numbers of ions, including chloride ions. A linear regression analysis of specific conductance and chloride measurements from the Sweeney Lake Branch of Bassett Creek indicated that 89 percent of the specific-conductance value was due to chloride ions in the stream. The outcome of the linear regression analysis was a regression equation, which is a statistical model of the relationship between specific conductance and chloride. The model was used to estimate average daily chloride values from the average daily specific-conductance values measured in the stream.

In 2020, the estimated chloride concentrations in the stream ranged from 52 mg/L to 406 mg/L, with an average of 284 mg/L (Figure 14). The estimated number of days that chloride concentrations exceeded the MPCA standard was 133 of the 171 days of specific-conductance measurements (78 percent, Figure 14). In 2021, the estimated chloride concentrations in the stream ranged from 21 mg/L to 656 mg/L, with an average of 302 mg/L (Figure 14). The estimated number of days that chloride concentrations exceeded the MPCA standard was 262 of the 314 days of specific-conductance measurements (83 percent, Figure 14).

The Sweeney Lake Branch of Bassett Creek is not included on the 303(d) list of Minnesota's impaired waters for chloride. However, because more than two chloride samples exceeded the MPCA chronic chloride standard during 2020 and 2021, the stream would be considered impaired for chlorides.

E. coli bacteria

The Environmental Protection Agency (EPA) determined that *E. coli* is the preferred indicator of the potential presence of waterborne pathogens. The MPCA standard for *E. coli* protects streams used for two types of recreation: primary body contact (e.g., swimming, where inadvertent ingestion of water is likely) and secondary body contact (e.g., wading, where the likelihood of ingesting water is much

smaller). The MPCA uses average and maximum E. coli values to determine impairment. E. coli standards are applicable only during the warmer months of April through October since swimming or wading in Minnesota streams during the November through March period is not expected.

Average E. coli is assessed by a standard based on a geometric mean EPA criterion of 126 E. coli colony-forming units (cfu) per 100 mL. Data are aggregated by individual month (e.g., all April values, all May values, etc.) for up to 10 years to determine impairment due to high average monthly E. coli values. At least 3 months of data must be collected, preferably between June and September, and at least five values must be collected per month for those 3 months (15 samples) to determine impairment due to high average E. coli.

Maximum E. coli is assessed by a criterion of a maximum of 1,260 cfu that is not to be exceeded by 10 percent of all samples collected from April through October over the 10-year assessment period (independent of month) (Figure 15).

If the geometric mean of the aggregated monthly values for one or more months exceeds 126 cfu per 100 mL, that reach is considered impaired. Also, a waterbody is considered impaired if more than 10 percent of individual values over the 10-year assessment period (independent of month) exceed 1,260 cfu per 100 mL.

E. coli data collected from 2020 through 2021 were assessed to determine whether average E. coli values met the MPCA impairment standard. The April through October monthly geometric means from the aggregated 2020 through 2021 values ranged from a low of 48 cfu per 100 mL to a high of 305 cfu per 100 mL (Figure 15). Geometric means during May, June, July, September, and October failed to meet the MPCA standard of 126 cfu per 100 mL (Figure 15). Hence, by this standard, the stream would be considered impaired.

A water body is also considered impaired if more than 10 percent of individual samples taken from April 1 through October 31 over a 10-year period (independent of month) exceed 1,260 cfu per 100 mL. In 2020 and 2021, sample values of 2,421 cfu/100 mL, measured on July 24, 2020, and 1,300 cfu/100 mL, measured on August 25, 2021, exceeded the impairment threshold (Figure 16). Two samples out of 34 (6 percent) collected during the April through

October period in 2020 and 2021 exceeded the MPCA standard. Because the number of samples exceeding the MPCA standard was less than 10 percent of individual samples taken from April 1 through October 31 during the two-year monitoring period, the MPCA standard was met.

The Sweeney Lake Branch of Bassett Creek is not currently included on the 303(d) list of Minnesota's impaired waters for E. coli bacteria. However, because the geometric mean of the aggregated monthly E. coli values for one or more months during 2020 and 2021 exceeded 126 cfu per 100 mL, the Sweeney Lake Branch would be considered impaired for E. coli bacteria.

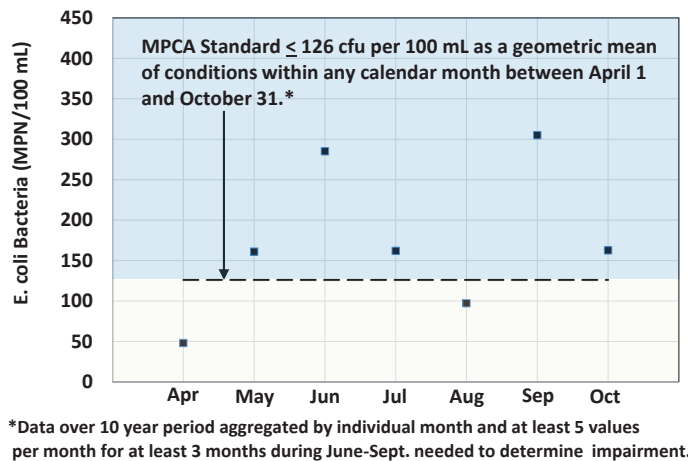


Figure 15: 2020–2021 monthly geometric means of E. coli bacteria from the Sweeney Lake Branch of Bassett Creek

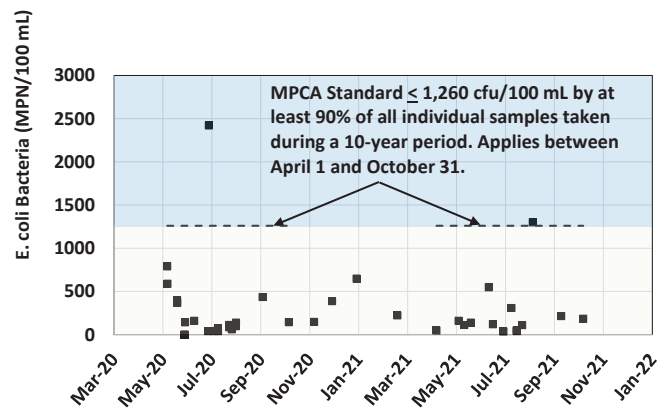


Figure 16: 2020–2021 E. coli bacteria from the Sweeney Lake Branch of Bassett Creek

Total suspended solids

Total suspended solids consist of soil particles, algae, and other materials that are suspended in water and cause a lack of clarity. Excessive total suspended solids can harm aquatic life and degrade aesthetic and recreational qualities. A stream is considered to exceed the standard for total suspended solids (30 mg/L) if (1) the standard is exceeded more than 10 percent of the days of the assessment season (April through September) and (2) there are at least three such measurements exceeding the standard.

In 2020, total suspended solids concentrations in the Sweeney Lake Branch of Bassett Creek ranged from a low of 4 mg/L to a high of 62 mg/L (Figure 17); the average was 20 mg/L. Four of the 17 samples collected from April through September (24 percent) exceeded the MPCA standard of 30 mg/L (Figure 17).

In 2021, total suspended solids concentrations in the Sweeney Lake Branch of Bassett Creek ranged from a low of 4 mg/L to a high of 59 mg/L (Figure 17); the average was 22 mg/L. Eight of the 18 samples collected from April through September (44 percent) exceeded the MPCA standard of 30 mg/L (Figure 17).

The Sweeney Lake Branch of Bassett Creek is not currently included on the 303(d) list of Minnesota's impaired waters for total suspended solids. However, because the total suspended solids standard was exceeded in more than 10 percent of the samples collected from April through September of 2020 and 2021, and there were at least three measurements, the stream would be considered impaired for total suspended solids.

Metals

Metals are naturally occurring elements found throughout the earth's crust. Their multiple industrial, domestic, agricultural, medical, and technological applications have led to their widespread distribution in the environment. Because heavy-metal-induced toxicity can harm aquatic life, the MPCA has established three standards for Class 2B waters—chronic, maximum, and final acute values (FAVs)—for each metal type. (The MPCA has classified Bassett Creek as a Class 2B water.) The chronic standard (CS) is the highest toxicant concentration that aquatic organisms can be indefinitely exposed to with no harmful effects. The maximum standard (MS) is a

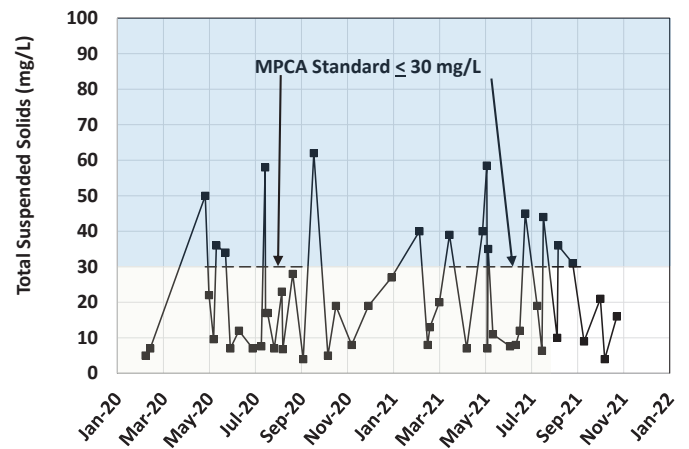


Figure 17: 2020–2021 Total suspended solids from the Sweeney Lake Branch of Bassett Creek

concentration that protects aquatic organisms from the potentially lethal effects of a short-term “spike” in toxicant concentrations. The MS is always equal to one-half of the FAV: the concentration that would kill about one-half of the exposed individuals of a very sensitive species. The FAV is most often used as an “end-of-pipe” effluent limit to prevent an acutely toxic condition in the effluent or the mixing zone. Because increases in water hardness decrease the toxicity of metals, the MPCA metals standards vary with water hardness. To show this variation in Figures 18 through 23, metal concentrations are plotted on the y-axis and hardness on the x-axis.

Quarterly samples were collected from the Sweeney Lake Branch of Bassett Creek and analyzed for total cadmium, total chromium, total copper, total nickel, total lead, and total zinc during the 2020 and 2021 monitoring period. All samples met the MPCA standards (Figures 18 through 23), indicating metals are not causing heavy metal toxicity to aquatic organisms in the stream.

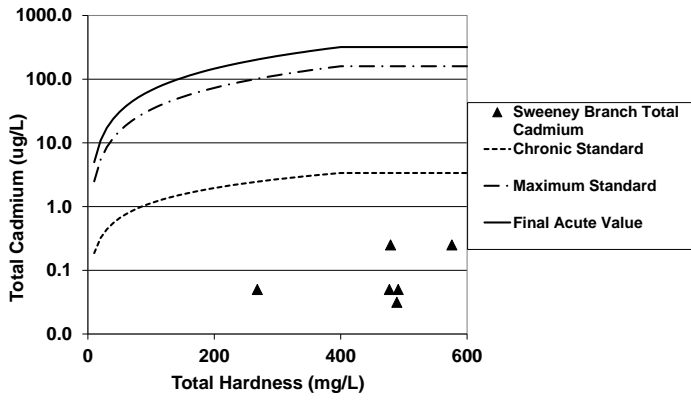


Figure 18: 2020-2021 total cadmium from the Sweeney Lake Branch of Bassett Creek compared to MPCA standards

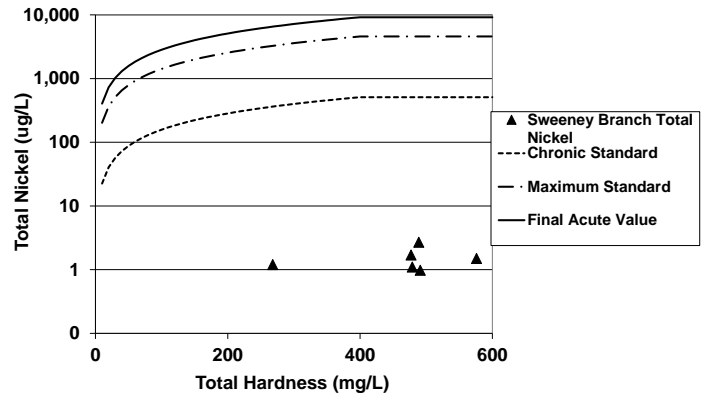


Figure 21: 2020-2021 total nickel from the Sweeney Lake Branch of Bassett Creek compared to MPCA standards

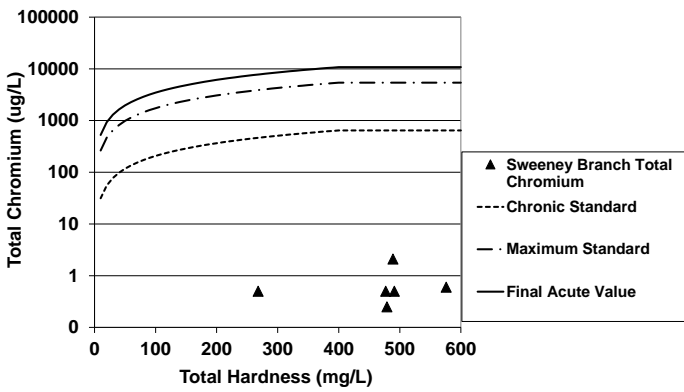


Figure 19: 2020-2021 total chromium from the Sweeney Lake Branch of Bassett Creek compared to MPCA standards

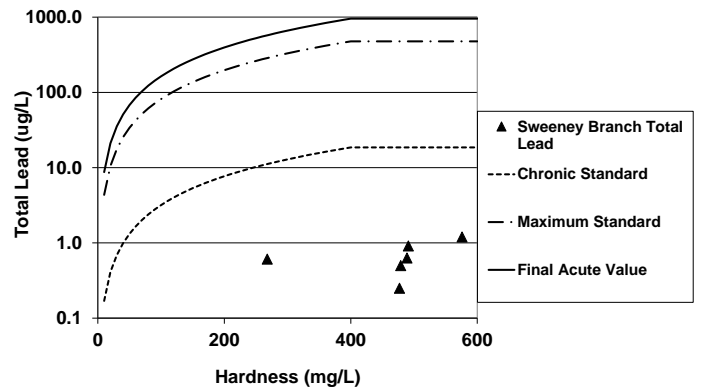


Figure 22: 2020-2021 total lead from the Sweeney Lake Branch of Bassett Creek compared to MPCA standards

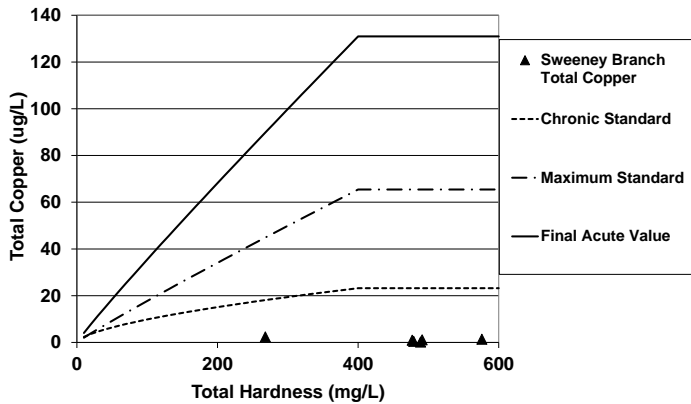


Figure 20: 2020-2021 total copper from the Sweeney Lake Branch of Bassett Creek compared to MPCA standards

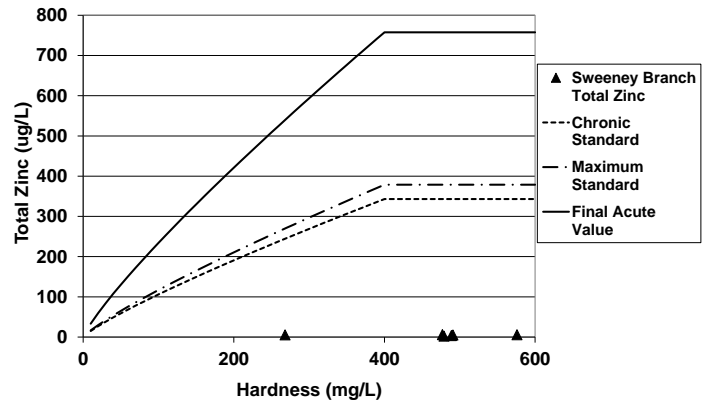


Figure 23: 2020-2021 total zinc from the Sweeney Lake Branch of Bassett Creek compared to MPCA standards

Biotic index evaluation

Between 1980 and 2021, the BCWMC collected benthic macroinvertebrates (bottom-dwelling organisms) from the Sweeney Lake Branch of Bassett Creek on 11 occasions (see Figure 1 for the sampling location). The purpose of the sampling was to evaluate water quality and detect changes over time.

In 2020, the MPCA monitored the Sweeney Branch of Bassett Creek for macroinvertebrates, and the BCWMC assessed the stream’s habitat. The MPCA used the Macroinvertebrate Index of Biotic Integrity (M-IBI) to assess the health of the stream’s macroinvertebrate community. The MPCA developed the M-IBI and added it to Minnesota’s water quality standards to help identify biologically impaired rivers and streams.

Sweeney Lake Branch of Bassett Creek habitat

Habitat is a key factor in determining the presence and distribution of macroinvertebrates in streams. Stream macroinvertebrates are influenced by such habitat factors as substrate size and composition, the quantity of fine sediment deposited on the substrate, and the presence of vegetation. The substrate provides places for food and refuge for

macroinvertebrates. Aquatic vegetation provides shelter against predation by small fish. Adverse changes in habitat can result in adverse changes to the macroinvertebrate community.

The BCWMC completed habitat surveys of the Sweeney Lake Branch of Bassett Creek at Woodstock Avenue in 2015 and 2020 using the MPCA quantitative habitat survey method. The survey results are summarized in Table 3. Overall, habitat conditions declined between 2015 and 2021. Habitat changes documented by the 2020 survey include the following.

Evidence of habitat improvement:

- Increased flows and water depths
- Increase in percent length of transect with overhanging vegetation
- Decrease in percent of transects with left-bank erosion

Evidence of habitat degradation:

- Increase in average embeddedness of coarse sediment
- Increase in percent of transects with right-bank erosion
- Increase in average length of bank erosion per transect for both left and right banks
- Decrease in average amount of algae observed on the quadrat

Table 3: 2015 and 2020 habitat comparison: Sweeney Lake Branch of Bassett Creek at Woodstock Avenue

Parameter	2015	2020
Discharge (flow [cfs] when macroinvertebrate samples were collected)	1.9	2.1
Average depth of water (cm)	14	17
Average depth of fine sediment (cm)	15	15
Average embeddedness of coarse sediment (%)	67	69
Percent of transects with left-bank erosion	69	54
Percent of transects with right-bank erosion	85	92
Average length of bank erosion per transect: left bank (m)	0.4	1.2
Average length of bank erosion per transect: right bank (m)	0.9	>3.0
Average amount of algae (filamentous or attached) observed on quadrat (%)	2	0
Average number of macrophytes observed on quadrat (%)	0	0
Percent length of transect over at least 10 cm of water depth with overhanging vegetation	5	7
Percent length of transect over at least 10 cm of water depth with submergent vegetation	0	0
Percent length of transect over at least 10 cm of water depth with emergent vegetation	0	0
Percent length of transect over at least 10 cm of water depth with woody debris	12	9
Percent length of transect over at least 10 cm of water depth with boulders	0	0.8
Percent length of transect over at least 10 cm water depth with undercut banks	1	0

- Decrease in percent length of transect with woody debris
- Decrease in percent length of transect with undercut banks

M-IBI biological metrics

The MPCA has established biological water quality standards for all Minnesota streams and rivers, including Bassett Creek. A macroinvertebrate index of biotic integrity (M-IBI) and a fish index of biotic integrity (F-IBI) were added to Minnesota standards and approved by the United States Environmental Protection Agency on June 26, 2018.

The M-IBI helps identify biologically impaired rivers and streams by assessing the health of their macroinvertebrate communities. The M-IBI score is the sum of the scores from 10 individual metrics. Each metric assesses an attribute of the macroinvertebrate community; collectively, the metrics assess the community’s overall health. Each M-IBI metric has a scale of 0 to 10, the lowest possible score is 0, and the highest is 10. Increasing scores indicate improving conditions. Because 10 metrics are summed to attain the M-IBI score, and each metric has a maximum score of 10, the maximum possible score is 100. To meet the MPCA macroinvertebrate standard, the sum of the scores from the 10 individual metrics must equal or exceed

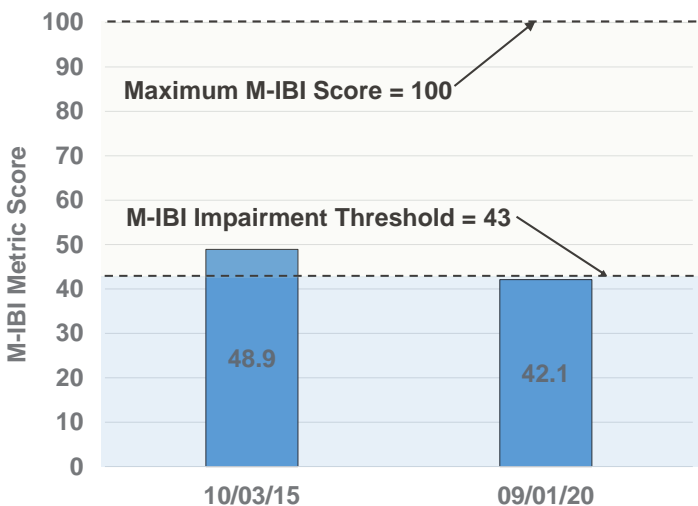


Figure 24: 2015 and 2020 M-IBI metric scores from the Sweeney Lake Branch of Bassett Creek

the impairment threshold—a score of at least 43 for the Sweeney Lake Branch of Bassett Creek.

The MPCA collected macroinvertebrate samples from the Sweeney Lake Branch of Bassett Creek on September 1, 2020, and computed the M-IBI to determine whether the stream met the M-IBI biological standard. The 2020 M-IBI score for the Sweeney Lake Branch of Bassett Creek was 42.1 (Figure 24). The MPCA concluded the stream was not biologically impaired because the M-IBI score was less than a point below the impairment threshold and the stream has relatively decent habitat for a moderately channelized urban stream.

The MPCA monitored a slightly different station location in 2020 than the BCWMC monitored in 2015, when the M-IBI score was 48.9—well above the impairment threshold. The MPCA station location began about 5 meters downstream from the BCWMC station and did not include a riffle area monitored by the BCWMC (Figure 25). The MPCA indicated the riffle was not monitored because it is very close to the culvert; due to the influence of the culvert structure on flow, the MPCA considered the riffle artificial rather than natural. It is not known whether the differences in 2015 (48.9) and 2020 (42.1) M-IBI scores were due to the differences in sample location or degradation of the macroinvertebrate community caused by stressors in the stream such as high chloride concentrations or high total suspended solids concentrations.



Figure 25: The 5-meter reach of stream pictured above was sampled by BCWMC in 2015 but not included in the 2020 MPCA survey. A riffle near the culvert was included in the 2015 BCWMC sample reach but not in the 2020 MPCA sample reach.



Memorandum

To: Commissioners, Bassett Creek Watershed Management Commission
From: Karen Chandler, Greg Williams (Barr), and Laura Jester, BCWMC Administrator
Subject: Summary of Complex Issues for Additional Scoping (Plan Update Phase 2)
Date: July 13, 2022

Recommendation:

1. Direct the Commission Engineer and Administrator to develop a more detailed scope of activities to address challenging and complex issues per Phase 2 of the Plan Update Scope

As part of the 2025 Watershed Management Plan (Plan) update, several challenging issues should be evaluated to determine the appropriate role for the Commission. This analysis is identified as Phase 2 in the [Plan update scope](#) approved in March, 2022. These are issues that are estimated to require consideration beyond the scope of a typical Plan update due to their complexity, emerging nature, and/or other factors.

The Plan Steering Committee and city staff participated in an issue identification workshop on July 11, 2022. The purpose of that workshop was to identify issues, opportunities, and gaps to be addressed in the 2025 Plan update and provide feedback on whether the issue, opportunity, or gap:

- 1) Is adequately addressed by current Commission policy or programs;
- 2) Needs additional analysis to define the Commissions' role; or
- 3) Is important but not something on which the Commission should take lead role.

Workshop participants met in four small groups to discuss and categorize each issue. Results of this exercise are presented in Table 1. Commission staff considered the results of the workshop to identify the following topics as priorities for more detailed consideration above and beyond that of a typical Plan update (those items in **bold** are expected to require analysis from the Commission Engineer, while the others are anticipated to be addressed primarily by the Administrator, commissioners, and technical advisory committee (TAC)). (Parenthetical numbers represent the number of the issue as found in Table 1.)

- a. Implement projects through a diversity, equity, and inclusion lens, (#23) including:
Outreach to and build relationships with diverse communities (including Native cultures) (#24)
- b. Expand education and outreach program (education to groups/residents, helping cities fulfill stormwater education requirements) (#25)
- c. Training, orientation, and education for commissioners and alternate commissioners (#26)
- d. **Assess impacts of climate change on water resources and build climate resiliency** (#8)
- e. **Strategies to address chloride pollution** (#7)

- f. **Water quality standards for linear projects** (#11)
- g. Capital improvement program (CIP) including project identification and program implementation (#13)
- h. **Stormwater management in Bassett Creek Valley** (#15)
- i. **Programs to manage or restore riparian areas** (#17)
- j. **Evaluate stream health to address biotic impairments** (#4)
- k. Policy development for addressing sediment deltas in streams and lakes (#22)
- l. Provide grant funding for small scale BMPs by residents or businesses (#10)
- m. Water level variability (#30)

This list does not include the issue of addressing organizational capacity of the Commission. We believe discussion and decisions about this issue may happen more “organically” once the Plan’s programs and projects are more solidified later in planning process.

This list also does not include the issue of aquatic plant management/aquatic invasive species. We recommend the Commission first revisit the Aquatic Plant Management/Aquatic Invasive Species (APM/AIS) policies and practices adopted in 2017.

The Plan update scope approved by the commissioners in March, 2022 included placeholder values for the estimated cost to perform the analyses necessary to address anticipated complex or challenging issues. With these issues identified, we request the Commission authorize the Engineer and Administrator to develop a more detailed scope of activities to address these issues.

Table 1 Results of Plan Steering Committee Workshop Categorization of Issues by Small Groups
(figures in the table represent number of groups assigning issue to that category)

Issue or Topic	Number of group votes by category		
	Current BCWMC role is generally appropriate (Green)	Important issue; significant analysis needed to determine BCWMC’s role (Yellow)	Important issue but not BCWMC’s role to lead (Red)
1. Focus on impaired waters and pollutant loading hotspots	3.5	0.5	
2. Focus on reducing flood risk and flood impacts	3.5	0.5	
3. Monitor water quality of lakes and streams	4		
4. Evaluate stream health to address biotic impairments	2	2	

Issue or Topic	Number of group votes by category		
	Current BCWMC role is generally appropriate (Green)	Important issue; significant analysis needed to determine BCWMC's role (Yellow)	Important issue but not BCWMC's role to lead (Red)
5. Modeling and model maintenance for pollutant loads and hydrology (P8 model and XPSWMM model)	4		
6. Flood Control Project inspections, maintenance, repair per current policies	3	1	
7. Strategies to address chloride pollution		3.5	0.5
8. Assess impacts of climate change on water resources and build climate resiliency		4	0.5
9. Manage aquatic invasive species (AIS)	0.5	3	0.5
10. Provide grant funding for small scale BMPs by residents or businesses	1	2	1
11. Water quality standards for linear projects (like road reconstruction projects)		3.5	1
12. Standards and requirements related to non-linear projects	3	1	
13. Capital improvement program (CIP) including project identification and program implementation	1	3	
14. Assess and/or mitigate carbon footprint of BCWMC projects and programs		1	3
15. Stormwater management (flooding and water quality) in Bassett Creek Valley, Minneapolis	1.5	2.5	
16. Programs to manage or restore wetlands	2	1	1
17. Programs to manage or restore riparian areas	1	2.5	0.5
18. Programs to manage or restore high priority upland natural areas		0.5	3.5
19. Buffer requirements (streams, wetlands, lakes)	2	1.5	0.5

Issue or Topic	Number of group votes by category		
	Current BCWMC role is generally appropriate (Green)	Important issue; significant analysis needed to determine BCWMC's role (Yellow)	Important issue but not BCWMC's role to lead (Red)
20. Groundwater monitoring or management		0.5	3.5
21. BCWMC priority classifications of waterbodies	3	1	
22. Policy development for addressing sediment deltas in streams and lakes		2	1.5
23. Implement projects and programs through a diversity, equity, and inclusion lens		4	
24. Outreach to and building relationships with diverse communities (including Native cultures)	0.5	3.5	
25. Expand education and outreach program (education to groups/residents; helping cities fulfill stormwater education requirements, etc.)		4	
26. Training, orientation, and education for commissioners and alternate commissioners	1	3	
27. Provide/enhance water access and recreation opportunities			4
28. Organizational capacity (e.g., BCWMC staffing)	1	3	
29. BCWMC funding mechanisms	3	1	
30. Water level variability		1	

MEMORANDUM

DATE: July 1, 2022
TO: MAWD Members
FROM: Sherry Davis White, Resolutions Committee Chair
RE: **2022 REQUEST FOR MAWD RESOLUTIONS**



It is that time of year for MAWD members to submit their policy recommendations through our resolutions process. This is YOUR organization and policy statements start with YOU! Here are the next steps and timeline:

- July / August** Members write, discuss, and approve resolutions at your WD/WMO meetings. The more detail you can provide, the easier it will be for the committee to make a recommendation.
- September 1** Administrators submit resolutions and background information documents to the MAWD office at emily@mnwatershed.org by September 1. If more time is needed, please contact the MAWD office so the MAWD Resolutions Committee is aware that another resolution may be submitted. The latest possible date to submit a resolution is **60 days before** the annual meeting (October 4). We ask that resolutions be submitted according to the described timeframe to ensure distribution to members for discussion by your boards in November.
- NOTE: If all the requested information is not included, the Resolution will NOT be accepted.**
- September / October** The MAWD Resolutions Committee will review the resolutions, gather more information or ask for further clarification when deemed necessary, work with the submitting watersheds to combine similar resolutions, reject resolutions already active, discuss and make recommendations on their passage to the membership.
- October 31** Resolutions (with committee feedback) will be emailed to each organization by Oct 31.
- NOTE: If at all possible, please hold a regional meeting to discuss the Resolutions BEFORE the annual conference.**
- November** Members should discuss the resolutions at their November meetings and decide who will be voting on their behalf at the annual meeting (2 voting members and 1 alternate are to be designated per watershed organization)
- December 3** Delegates discuss and vote on resolutions at the annual resolutions hearing. Please be prepared to present and defend your resolution.
- December** Legislative Committee will review existing and new resolutions and make a recommendation to the MAWD Board of Directors for the 2023 legislative platform.
- December 2022** MAWD Board of Directors will finalize the 2023 legislative platform.
- January 2023** Legislature returns for the 93rd Legislature, 2023-2024.

NOTE: Resolutions passed by the membership will remain MAWD policy for five years after which they will sunset. If a member wishes to keep the resolution active, it must be resubmitted and passed again by the membership. Enclosed with this memorandum are the active resolutions and those that will sunset 12/31/22. Please feel free to contact me at sherrywhite@mediacommb.net or (952) 215-6963 or our Executive Director Emily Javens if you have any questions at emily@mnwatershed.org or (651) 440-9407.

THANK YOU FOR YOUR EFFORTS IN OUR POLICY DEVELOPMENT!

Background Information

2022 MAWD Resolution

Proposing District: _____

Contact Name: _____

Phone Number: _____

Email Address: _____

Resolution Title: _____

Please attach a signed and dated copy of the resolution to this submittal form. Thank you!

Background that led to the submission of this resolution:

Describe the problem you wish to solve and provide enough background information to understand the factors that led to the issue. Attach statutory or regulatory documents that may be helpful.

Ideas for how this issue could be solved:

Describe potential solutions for the problem. Provide references to statutes or rules if applicable.

Efforts to solve the problem:

Document the efforts you have taken to try to solve the issue. For example: have you spoken to state agency staff, legislators, county commissioners, etc? If so, what was their response?

Anticipated support or opposition:

Who would be willing to partner with us on the issue? Who may be opposed to our efforts? (Ex. other local units of government, special interest groups, political parties, etc.)?

This issue: (check all that apply)

_____ Applies only to our district

_____ Applies only to 1 or 2 regions

_____ Applies to the entire state

_____ Requires legislative action

_____ Requires state agency advocacy

_____ Impacts MAWD bylaws or MOPP

(MOPP = Manual of Policies and Procedures)



Active MAWD Resolutions

July 1, 2022

FINANCE ISSUES

2021-01A: Support SWCD Capacity Fund Sources

MAWD supports SWCD capacity funds to come from county and state general funds.

2021-01B: Support Clean Water Funds for Implementation, Not Capacity

MAWD Supports Clean Water Funds being used for implementation and not for capacity.

2021-02: Support Capacity Funding for Watershed Districts

MAWD supports capacity base funding resources directed to non-metro watershed district who request this assistance, to implement the activities as outlined in approved watershed district watershed management plans or comprehensive watershed management plans.

2021-05: Support Crop Insurance to Include Crop Losses Within Impoundment Areas

MAWD supports expansion of Federal Multi-Peril Crop Insurance to include crop losses within impoundment areas.

2019-06: Oppose Legislation that Forces Spending on Political Boundaries

MAWD opposes legislation that establishes spending requirements or restricts watershed district spending by political regions or boundaries.

2018-02 Increase the \$250k General Fund Tax Levy Limit

MAWD supports legislation to increase or remove the \$250,000 general fund ad valorem tax levy limit set in MN statute 103D.905 Subd. 3. If the limit is raised to a new dollar amount, MAWD supports an inflationary adjustment be added to statute.

2019-08: Heron Lake Watershed District General Operating Levy Adjustment

MAWD supports an increase in Heron Lake Watershed District's general operating levy cap from \$250,000 to an amount not to exceed \$500,000.

2019-09: Shell Rock River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Shell Rock River Watershed District's general operating levy cap from \$250,000 to an amount not to exceed \$500,000.

2019-10: Pelican River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Pelican River Watershed District's general operating levy cap from \$250,000 to an amount not to exceed \$500,000.

2019-11: Buffalo Red River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Buffalo Red River Watershed District's general operating levy cap from \$250,000 to an amount not to exceed \$500,000.

2017-05 Middle Fork Crow River Watershed District General Operating Levy Adjustment

MAWD supports the efforts of Middle Fork Crow River Watershed District to draft and advance special legislation affecting a change in its general fund levy cap.

2017-06 Obtain Stable Funding for the Flood Damage Reduction Program

MAWD supports stable funding (as opposed to the current even year bonding process) for the DNR's Flood Damage Reduction Program. A suggested sustainable level of funding is \$25 million per year for the next 10 years.

URBAN STORMWATER

2017-04 Limited Liability for Certified Commercial Salt Applicators

MAWD supports passage and enactment of state law that provides a limited liability exemption to commercial salt applicators and property owners using salt applicators who are certified through the established salt applicator certification program who follow best management practices.

2017-07 Creation of a Stormwater Reuse Task Force

MAWD supports legislation requiring creation of a Stormwater Reuse Task Force with membership from Watershed Districts, Cities, Counties, State Agencies and other Stormwater Reuse implementers; and that the Stormwater Reuse Task Force should be charged with developing recommendations that further clarify and/or replace the information in the Water Reuse Report that relates to stormwater reuse best management practices.

PUBLIC DRAINAGE LAW

2019-02: Add a Classification for Public Drainage Systems that are Artificial Watercourses

MAWD supports removal of the default Class 2 categorization for public drainage systems that are artificial watercourses and supports a default Class 7 categorization for public drainage systems that are artificial watercourses.

2019-04: Clarify County Financing Obligations and/or Authorize Watershed District General Obligation Bonding for Public Drainage Projects

MAWD supports legislation to achieve one or both of the following:

- a) To clarify that an affected county must finance a watershed district drainage project on project establishment and request of the watershed district; and
- b) To authorize watershed districts to finance drainage project establishment and construction by issuance of bonds payable from assessments and backed by the full faith and credit of the watershed district; and further provide for adequate tax levy authority to assure the watershed district's credit capacity.

2018-08 Reinforce Existing Rights to Maintain/Repair 103E Drainage Systems

MAWD supports legislation modeled after House File 2687 and Senate File 2419 of the ninetieth legislature (2017-2018) reinforcing that the DNR cannot restrict existing rights to maintain and repair 103E public drainage systems.

LAKES AND WETLANDS

2020-01 Appealing Public Water Designations

MAWD supports legislation that would provide landowners with a more formal process to appeal decisions made by the DNR regarding the designation of public waters including the right to fair representation in a process such as a contested case proceeding which would allow landowners an option to give oral arguments or provide expert witnesses for their case.

2020-02 Limiting Negative Impacts from Wake Boats

MAWD supports:

- a) limiting wake boating to areas of lakes sufficiently distanced from shorelines to allow boat generated waves to adequately dissipate and lessen energy before coming into impact with lake shorelines;
- b) banning wake boats wakes in shallow lake areas where waves created by wake boats detrimentally impact sediment, aquatic vegetation, and aquatic habitat; and
- c) requiring new and existing wake boats to be able to completely drain and decontaminate their ballast tanks.

2020-04 Temporary Water Storage on DNR Wetlands during Major Flood Events

MAWD supports the temporary storage of water on existing DNR-controlled wetlands in the times of major flood events.

2019-07 Chinese Mystery Snail Designation Change and Research Needs

MAWD supports Chinese Mystery Snail prevention and control research and to change the Chinese Mystery Snail designated status in Minnesota as a regulated species to a prohibited species.

2017-02 Temporary Lake Quarantine Authorization to Control the Spread of AIS

MAWD supports legislation granting to watershed districts, independently or under DNR oversight, the authority, after public hearing and technical findings, to impose a public access quarantine, for a defined period of time in conjunction with determining and instituting an AIS management response to an infestation.

WATERSHED MANAGEMENT AND OPERATIONS

2021-03: Support Increased Flexibility in Open Meeting Law

- MAWD supports changes to the Open Meeting Law to provide greater flexibility in the use of interactive technology by allowing members to participate remotely in a nonpublic location that is not noticed, up to three times in a calendar year per manager.
- MAWD supports allowing public participation from a remote location by interactive technology, or alternatively from the regular meeting location where interactive technology will be made available for each meeting, unless otherwise noticed under Minnesota Statutes Section 13D.021.
- MAWD supports changes to the Open Meeting Law requiring watershed districts to prepare and publish procedures for conducting public meetings using interactive technology.

2021-06: Support 60-day Review Required for State Agencies on Policy Changes

MAWD supports requiring State Agencies to provide a meaningful, not less than 60-day review and comment period from affected local units of government on new or amended water management policies, programs, or initiatives with a response to those comments required prior to adoption.

2021-07: Support Metro WBIF for Approves 103B Plans Only

MAWD supports BWSR distribution of metro WBIF among the 23 WMOs with state-approved comprehensive, multi-year 103B watershed management plans. Those plans implement multijurisdictional priorities at a watershed scale and facilitate funding projects of any eligible local government unit (including soil and water conservation districts, counties, cities, and townships).

2020-03 Soil Health Goal for Metropolitan Watershed Management Plans

MAWD supports amending Minnesota Rule 8410.0080 to include a goal for soil health in watershed management plans and ten-year plan amendments.

2019-01 Streamline the DNR permitting process

MAWD supports legislation, rules, and/or agency policies to streamline the DNR permitting process by increasing responsiveness, decreasing the amount of time it takes to approve permits, providing a detailed fee schedule prior to application, and conducting water level management practices that result in the DNR reacting more quickly to serious, changing climate conditions.

2019-03 Support for Managing Water Flows in the Minnesota River Basin Through Increased Water Storage and Other Strategies and Practices

MAWD supports efforts to manage the flow of water in the Minnesota River Basin and the Minnesota River Congress in its efforts to increase water storage on the landscape; and

MAWD supports the Minnesota River Congress in its efforts to secure state and federal programs targeted specifically to increase surface water storage in the Minnesota River Watershed.

2019-05 Watershed District Membership on Wetland Technical Evaluation Panels

MAWD supports legislation to allow technical representatives of watershed districts to be official members of wetland technical evaluation panels (TEPs).

2018-03 Require Timely Appointments to the BWSR Board

MAWD supports legislation that requires the Governor to make BWSR board appointments within 90 days of a vacancy or board member term expiration.

2018-04 Require Watershed District Permits for the DNR

MAWD supports an amendment to the MN Statute § 103D.315, Subd. 5, to include the MN Department of Natural Resources as a state agency required to get permits from watershed districts when applicable.

2018-06 Ensure Timely Updates to Wildlife Management Area (WMA) Plans

MAWD supports that WMA operation and maintenance plans and/or management plans are either drafted or brought current in a timely fashion, with input from local governmental entities, to ensure their consideration in future One Watershed, One Plan efforts.

2018-09 Clean Water Council Appointments

MAWD may ask the representative of the Clean Water Council to resign when they lose their direct association to a watershed district; and that MAWD will recommend to the Governor's office that managers and/or administrators in good standing with MAWD be appointed to the Clean Water Council.

Resolutions to Sunset

Effective December 31, 2022

In accordance with MAWD's Sunset Policy, the following resolutions will be archived at the end of 2022 and will no longer be considered for future legislative and administrative platforms. The Sunset Policy says that resolutions older than five years old shall be removed from the books. If your watershed feels any of these issues should continue to be actively pursued with MAWD resources, then your watershed board needs to submit the resolution and the issue will need to be voted on and renewed by the membership at the annual meeting in December 2022. Please see previous sections for language associated with the following resolutions set to expire.

2017-02 Temporary Lake Quarantine Authorization to Control the Spread of AIS

2017-04 Limited Liability for Certified Commercial Salt Applicators

2017-05 Middle Fork Crow River Watershed District General Operating Levy Adjustment

2017-06 Obtain Stable Funding for the Flood Damage Reduction Program

2017-07 Creation of a Stormwater Reuse Task Force



Bassett Creek Watershed Management

MEMO

To: BCWMC Commissioners and Alternate Commissioners
From: Laura Jester, Administrator
Date: July 14, 2022

RE: Invitation to Participate in One Water Summit

I was recently invited by the Metropolitan Council to join their delegation to the One Water Summit being held September 13 – 15, 2022 in Milwaukee Wisconsin. The summit is facilitated through the U.S. Water Alliance whose vision is: *A sustainable water future for all*; and whose mission is “to drive One Water breakthroughs that positively transform our environment, economy, and society.” Learn more at www.uswateralliance.org/.

In their invitation to me, Met Council staff noted that as a delegation, there are opportunities to meet as a group and with others from a broad geographic area with different perspectives to promote water-focused work in our area and learn from others. At the end of the summit, each delegation shares their commitment to continue work on “One Water” principals. I was invited due to my participation on the Council’s 2050 Water Resource Policy Plan Advisory Group. Council staff have attended One Summit conferences in the past and say it’s the best conference they’ve attended and “forces us to think of the work we do in new and different ways.” They are planning to have a delegation of five Council staff members, one or two Council members, one or two members from the Water Resource Policy Plan Advisory Group, and one or two members from their technical advisory group our TAC for the Metropolitan Area Water Supply Advisory Committee.

The Council would pay the \$550 conference fee. My time and travel expenses would be paid by the Commission. Travel expenses would be minimal (I have family in the area and wouldn’t need a hotel room). I would be asked to attend one or two pre-meetings to discuss logistics and the delegation’s participation. Since the third day of the conference is the same day as the BCWMC September meeting, I would only participate in days one and two at the conference. I expect total BWCMC costs to be approximately \$1,805 including \$1,368 for my time (19 hours * \$72/hour) + \$437 for mileage (700 miles * \$0.625/mile federal rate).

The exact [conference agenda](#) is still being developed. Day one includes a welcome session, peer dialogues among various delegations, and site visits in the area. Days two and three include presentations and networking.

I think this is a good opportunity for BCWMC to be represented at a national conference within the Met Council delegation. I believe I would be exposed to new and different practices and programs that would benefit the BCWMC – particularly as we develop our next watershed plan.



Bassett Creek Watershed Management Commission MEMO

Date: July 13, 2022
From: Laura Jester, Administrator
To: BCWMC Commissioners
RE: **Administrator's Report**

Aside from this month's agenda items, the Commission Engineers, city staff, committee members, and I continue to work on the following Commission projects and issues.

CIP Projects (more resources at <http://www.bassettcreekwmo.org/projects.>)

2019 Medicine Lake Road and Winnetka Avenue Area Long Term Flood Mitigation Plan Implementation Phase I: DeCola Ponds B & C Improvement Project (BC-2, BC-3 & BC-8) Golden Valley (No change since Nov): A feasibility study for this project was completed in May 2018 after months of study, development of concepts and input from residents at two public open houses. At the May 2018 meeting, the Commission approved Concept 3 and set a maximum 2019 levy. Also in May 2018, the Minnesota Legislature passed the bonding bill and the MDNR has since committed \$2.3M for the project. The Hennepin County Board approved a maximum 2019 levy request at their meeting in July 2018. A BCWMC public hearing on this project was held on August 16, 2018 with no comments being received. Also at that meeting the Commission officially ordered the project and entered an agreement with the City of Golden Valley to design and construct the project. In September 2018, the City of Golden Valley approved the agreement with the BCWMC. The [Sun Post](#) ran an article on this project October 2018. Another public open house and presentation of 50% designs was held February 6, 2019. An EAW report was completed and available for public review and comment December 17 – January 16, 2019. At their meeting in February 2019, the Commission approved the 50% design plans. Another public open house was held April 10th and a public hearing on the water level drawdown was held April 16th. 90% Design Plans were approved at the April Commission meeting. It was determined a Phase 1 investigation of the site is not required. The City awarded a contract to Dahn Construction for the first phase of the project, which involves earthwork, utilities, and trail paving and extends through June 2020. Dewatering began late summer 2019. Tree removal was completed in early winter; excavation was ongoing through the winter. As of early June 2020, earth work and infrastructure work by Dahn Construction is nearly complete and trail paving is complete. Vegetative restoration by AES is underway including soil prep and seeding. Plants, shrubs, and trees will begin soon along with placement to goose protection fencing to help ensure successful restoration. The construction phase of this project was completed in June with minor punch list items completed in September. The restoration and planting phase is complete except for minor punch list items and monitoring and establishment of vegetation over three growing seasons. A final grant report for BWSR's Watershed Based Implementation Funding was submitted at the end of January. City staff recently completed a site walk through to document dead or dying trees and shrubs in need of replacement (under warranty). This project (along with Golden Valley's Liberty Crossing Project) recently received the award for "Project of the Year" from the Minnesota Association of Floodplain Managers as part of the overall Project website: <http://www.bassettcreekwmo.org/index.php?CID=433> .

2020 Bryn Mawr Meadows Water Quality Improvement Project (BC-5), Minneapolis: A feasibility study by the Commission Engineer was developed in 2018 and approved in January 2019. The study included wetland delineations, soil borings, public open houses held in conjunction with MPRB's Bryn Mawr Meadows Park improvement project, and input from MPRB's staff and design consultants. Project construction year was revised from 2020 and 2022 to better coincide with the MPRB's planning and implementation of significant improvements and redevelopment Bryn Mawr Meadows Park where the project will be located. A public hearing for this project was held September 19, 2019. The project was officially ordered at that meeting. In January 2020 this project was awarded a \$400,000 Clean Water Fund grant from BWSR; a grant work plan was completed and the grant with BWSR was fully executed in early May 2020. The project and the grant award was the subject of an article in the Southwest Journal in February: <https://www.southwestjournal.com/voices/green-digest/2020/02/state-awards-grant-to-bryn-mawr-runoff-project/>. In September 2020, Minneapolis and MPRB staff met to review the implementation agreement and maintenance roles.

BCWMC developed options for contracting and implementation which were presented at the November meeting. At that meeting staff was directed to develop a memorandum of understanding or agreement among BCWMC, MPRB, and city of Minneapolis to more formally recognize and assign roles and responsibilities for implementation. The draft agreement was developed over several months and multiple conversations among the parties. At the May 2021 meeting the Commission approved to waive potential conflict of the Commission legal counsel and reviewed a proposal for project design by the Commission Engineer. The updated design proposal and the design agreement among all three parties were approved at the June 2021 meeting. Four public open houses have been held in the park since late July to gather input on park concepts. Project partners meet regularly to discuss schedules, planning and design components, and next steps. Concept designs were approved by the MRPB Board in late 2021. Staff met with MnDOT regarding clean out of Penn Pond and continue discussions. 50% design plans were approved at the January meeting; 90% design plans were approved at the March meeting along with an agreement with MPRB and Minneapolis for construction. The agreement was approved by all three bodies. Commission Engineers finalized designs and assisted with bidding documents. Bids are due July 27th. Project website: <http://www.bassettcreekwmo.org/projects/all-projects/bryn-mawr-meadows-water-quality-improvement-project>

2020 Jevne Park Stormwater Improvement Project (ML-21) Medicine Lake (No change since April): At their meeting in July 2018, the Commission approved a proposal from the Commission Engineer to prepare a feasibility study for this project. The study got underway last fall and the city's project team met on multiple occasions with the Administrator and Commission Engineer. The Administrator and Engineer also presented the draft feasibility study to the Medicine Lake City Council on February 4, 2019 and a public open house was held on February 28th. The feasibility study was approved at the April Commission meeting with intent to move forward with option 1. The city's project team is continuing to assess the project and understand its implications on city finances, infrastructure, and future management. The city received proposals from 3 engineering firms for project design and construction. At their meeting on August 5th, the Medicine Lake City Council voted to continue moving forward with the project and negotiating the terms of the agreement with BCWMC. Staff was directed to continue negotiations on the agreement and plan to order the project pending a public hearing at this meeting. Staff continues to correspond with the city's project team and city consultants regarding language in the agreement. The BCWMC held a public hearing on this project on September 19, 2019 and received comments from residents both in favor and opposed to the project. The project was officially ordered on September 19, 2019. On October 4, 2019, the Medicine Lake City Council took action not to move forward with the project. At their meeting in October 2019, the Commission moved to table discussion on the project. The project remains on the 2020 CIP list. In a letter dated January 3, 2022, the city of Medicine Lake requested that the Commission direct its engineer to analyze alternatives to the Jevne Park Project that could result in the same or similar pollutant removals and/or stormwater storage capacity. At the March meeting, the Commission directed the Commission Engineer to prepare a scope and budget for the alternatives analysis which were presented and discussed at the April meeting. No action was taken at that meeting to move forward with alternatives analysis. Project webpage: <http://www.bassettcreekwmo.org/index.php?cID=467>.

2014 Schaper Pond Diversion Project and Carp Management, Golden Valley (SL-3): Repairs to the baffle structure were made in 2017 after anchor weights pulled away from the bottom of the pond and some vandalism occurred in 2016. The city continues to monitor the baffle and check the anchors, as needed. Vegetation around the pond was planted in 2016 and a final inspection of the vegetation was completed last fall. Once final vegetation has been completed, erosion control will be pulled and the contract will be closed. The Commission Engineer began the Schaper Pond Effectiveness Monitoring Project last summer and presented results and recommendations at the May 2018 meeting. Additional effectiveness monitoring is being performed this summer. At the July meeting the Commission Engineer reported that over 200 carp were discovered in the pond during a recent carp survey. At the September meeting the Commission approved the Engineer's recommendation to perform a more in-depth survey of carp including transmitters to learn where and when carp are moving through the system. At the October 2020 meeting, the Commission received a report on the carp surveys and recommendations for carp removal and management. Carp removals were performed through the Sweeney Lake Water Quality Improvement Project. Results were presented at the February 2021 meeting along with a list of options for long term carp control. Commission took action approving

evaluation of the long-term options to be paid from this Schaper Pond Project. Commission and Golden Valley staff met in March 2021 to further discuss pros and cons of various options. At the September 2021 meeting, the Commission approved utilizing an adaptive management approach to carp management in the pond (\$8,000) and directed staff to discuss use of stocking panfish to predate carp eggs. Commission Engineers will survey the carp in 2022. At the April meeting, the Commission approved panfish stocking in Schaper Pond along with a scope and budget for carp removals to be implemented later in 2022 if needed. Commission staff informed lake association and city about summer activities and plans for a fall alum treatment. Approximately 1,000 bluegills were released into Schaper Pond in late May. Carp population assessments by electroshocking in Sweeney Lake and Schaper Pond began on June 21st (see photo). Project webpage: <http://www.bassettcreekwmo.org/index.php?cID=277>.



Sweeney Lake Water Quality Improvement Project, Golden Valley (SL-8) (No change since May): This project was added to the 2020 CIP list after receiving a federal 319 grant from the MPCA. It is partially a result of the carp surveys completed through the Schaper Pond Diversion Project and a study of the year-round aeration on Sweeney Lake. This project will treat curly-leaf pondweed in spring 2020, will remove carp in summer 2020, and will perform an alum treatment on Sweeney Lake in late summer 2020. The project was officially ordered by the Commission after a public hearing in September 2019. A public open house on this project was held via Webex on April 8th with approximately 20 people joining. The open house presentation and a question and answer document are available online. The curly-leaf pondweed herbicide treatment was completed in May. Carp Solutions performed carp tracking and setting nets in early June. The first round of netting resulted in 334 carp removed from Sweeney Lake (mean length 620 mm, mean weight 3.1 kg), representing an estimated 29% of the total population. From Schaper Pond 82 carp removed which likely represents about 17% of the initial population. After another round of carp removals in late July, 118 additional carp were netted from Sweeney. Based on preliminary estimates, approximately 40% of the carp population was removed from Sweeney this summer. The carp biomass was reduced from approximately 129 kg/ha to 79 kg/ha, which is below the threshold where adverse impacts on water quality are expected. The first round of alum treatment was completed in late October. A grant report and payment request were submitted at the end of January. A report on the results of the carp removals and recommendations for future management were presented at the February 2021 meeting. Long term carp management evaluation will happen through the Schaper Pond Diversion Project funding. A one-page overview of 2020 activities and outcomes was developed for the Sweeney Lake Association and [posted online](#) in March. The Commission is performing post alum treatment water monitoring this year along with additional carp population assessments (see photo above). The project website: [Sweeney Lake Water Quality Improvement Project, SL-8](#)).

2014 Twin Lake In-lake Alum Treatment, Golden Valley (TW-2): (No change since June 2018) At their March 2015 meeting, the Commission approved the project specifications and directed the city to finalize specifications and solicit bids for the project. The contract was awarded to HAB Aquatic Solutions. The alum treatment spanned two days: May 18- 19, 2015 with 15,070 gallons being applied. Water temperatures and water pH stayed within the desired ranges for the treatment. Early transparency data from before and after the treatment indicates a change in Secchi depth from 1.2 meters before the treatment to 4.8 meters on May 20th. There were no complaints or comments from residents during or since the treatment.

Water monitoring continues to determine if and when a second alum treatment is necessary. Lake monitoring results from 2017 were presented at the June 2018 meeting. Commissioners agreed with staff recommendations to keep the CIP funding remaining for this project as a 2nd treatment may be needed in the future. Project webpage: <http://www.bassettcreekwmo.org/index.php?cID=278>.

2013 Four Seasons Area Water Quality Project (NL-2) (No change since February): At their meeting in December 2016, the Commission took action to contribute up to \$830,000 of Four Seasons CIP funds for stormwater management at

the Agora development on the old Four Seasons Mall location. At their February 2017 meeting the Commission approved an agreement with Rock Hill Management (RHM) and an agreement with the City of Plymouth allowing the developer access to a city-owned parcel to construct a wetland restoration project and to ensure ongoing maintenance of the CIP project components. At the August 2017 meeting, the Commission approved the 90% design plans for the CIP portion of the project. At the April 2018 meeting, Commissioner Prom notified the Commission that RHM recently disbanded its efforts to purchase the property for redevelopment. In 2019, a new potential buyer/developer (Dominium) began preparing plans for redevelopment at the site. City staff, the Commission Engineer and I have met on numerous occasions with the developer and their consulting engineers to discuss stormwater management and opportunities with “above and beyond” pollutant reductions. Concurrently, the Commission attorney has been working to draft an agreement to transfer BCWMC CIP funds for the above and beyond treatment. At their meeting in December, Dominium shared preliminary project plans and the Commission discussed the redevelopment and potential “above and beyond” stormwater management techniques. At the April 2020 meeting, the Commission conditionally approved the 90% project plans. The agreements with Dominium and the city of Plymouth to construct the project were approved May 2020 and project designers coordinated with Commission Engineers to finalize plans per conditions. In June 2021, the City of Plymouth purchased the property from Walmart. The TAC discussed a potential plan for timing of construction of the stormwater management BMPs by the city in advance of full redevelopment. At the August 2021 meeting, the Commission approved development of an agreement per TAC recommendations. An agreement has yet to be drafted. In an update in February, city staff noted they are on track to have a new development plan later this year that will incorporate potentially innovative water quality improvement components. Project webpage: <http://www.bassettcreekwmo.org/index.php?cID=282>.

2021 Parkers Lake Drainage Improvement Project (PL-7): The feasibility study for this project was approved in May 2020 with Alternative 3 being approved for the drainage improvement work. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020 and entered an agreement with the city of Plymouth to design and construct the project. The city hired WSB for project design which is currently underway. 60% design plans were approved at the June meeting. 90% plans were approved at the August meeting. Construction is complete and vegetation is currently being established. www.bassettcreekwmo.org/projects/all-projects/parkers-lake-drainage-improvement-project

2021 Parkers Lake Chloride Reduction Project (PL-7) (See Item 5A): The feasibility study for this project was approved in May 2020 with Alternative 3 being approved for the drainage improvement work. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020 and entered an agreement with the city of Plymouth to implement the project in coordination with commission staff. City staff and I have had an initial conversation about this project. The city plans to collect additional chloride data this winter in order to better pinpoint the source of high chlorides loads within the subwatershed. Partners involved in the Hennepin County Chloride Initiative (HCCI) are interested in collaborating on this project. A proposal from Plymouth and BCWMC for the “Parkers Lake Chloride Project Facilitation Plan” was approved for \$20,750 in funding by the HCCI at their meeting in March. The project will 1) Compile available land use data and chloride concentrations, 2) Develop consensus on the chloride sources to Parkers Lake and potential projects to address these sources, and 3) Develop a recommendation for a future pilot project to reduce chloride concentrations in Parkers Lake, which may be able to be replicated in other areas of Hennepin County, and 4) help target education and training needs by landuse. A series of technical stakeholder meetings were held last fall and winter to develop recommendations on BMPs. A technical findings report will be presented at this meeting. Project website: www.bassettcreekwmo.org/projects/all-projects/parkers-lake-drainage-improvement-project

2021 Mt. Olivet Stream Restoration Project (ML-20): The feasibility study for this project was approved in May 2020 with Alternative 3 being approved for the drainage improvement work. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020 and entered an agreement with the city of Plymouth to design and construct the project. The city hired WSB for project design which is currently underway. 60% design plans were approved in June. 90% plans were approved at the August. Construction is complete and vegetation is currently being established. www.bassettcreekwmo.org/projects/all-projects/mt-olivet-stream-restoration-project

2021 Main Stem Lagoon Dredging Project (BC-7): The feasibility study for this project was approved in May 2020 with Alternative 2-all (dredge all three lagoons to 6-foot depth) being approved. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020. Rather than entering an agreement with a separate entity to design and construct this project, the Commission will implement the project in close coordination with the MPRB. At their meeting in November, the Commission approved a timeline for implementation and the Commission Engineer was directed to prepare a scope of work for project design and engineering. The engineering scope and budget were approved at the May 2021 meeting. Design and permitting got underway in summer 2021. Dredging of all three lagoons is planned for winter 2022/2023. A grant agreement for the \$250,000 Watershed Based Implementation Funding grant was approved at the January 2021 meeting. The project work plan was approved by BWSR. In the spring 2021 the Commission approved a grant agreement for a Hennepin County Opportunity Grant for this project. An Environmental Assessment Worksheet was approved by the Commission at their October 2021 meeting and was submitted for a 30-day comment period by the City of Golden Valley as the RGU. A meeting of project stakeholders was held December 7th and 50% designs were approved at the December 2021 meeting. Comments were received on the EAW from multiple review agencies and one private citizen. Agency comments were relatively minor and expected. Comments from the citizen were more complex and detailed. Responses to comments were developed the RGU (city of Golden Valley) made an official declaration that no Environmental Impact Statement is needed. Staff reviewed a request from a resident to add “safety” benches to the ponds, reviewed reference materials and discussed in detail with MPRB. Determined safety benches aren’t appropriate or needed for this project and responded to the resident. 90% plans were approved at the June meeting along with direction to the Commission Engineers to finalize plans, prepare bid documents, and solicit bids. The Commission will review and consider bids at a future meeting. Project website: www.bassettcreekwmo.org/projects/all-projects/bassett-creek-main-stem-lagoon-dredging-project

2022 Medley Park Stormwater Treatment Facility (ML-12) (No change since June): The feasibility study for this project is complete after the Commission Engineer’s scope of work was approved last August. City staff, Commission Engineers and I collaborated on developing materials for public engagement over the fall/early winter. A project kick-off meeting was held in September, an internal public engagement planning meeting was held in October, and a Technical Stakeholder meeting with state agencies was held in November. A [story map of the project](#) was created and a survey to gather input from residents closed in December. Commission Engineers reviewed concepts and cost estimates have been reviewed by city staff and me. Another public engagement session was held in April to showcase and receive feedback on concept designs. The feasibility report was approved at the June meeting with a decision to implement Concept #3. At the July meeting the Commission directed staff to submit a Clean Water Fund grant application, if warranted. A grant application was developed and submitted. Funding decisions are expected in early December. A public hearing on this project was held in September with no members of the public attending. In September, a resolution was approved to officially order the project, submit levy amounts to the county, and enter an agreement with the city to design and construct the project. The city hired Barr Engineering to develop the project designs which are now underway. The BCWMC received a \$300,000 Clean Water Fund grant from BWSR in December 2021. 50% design plans were approved in February. A public open house on the project was held March 3rd at Brookview. A grant work plan was developed in March and a grant agreement was approved at the March meeting. 90% plans were approved at the May meeting. www.bassettcreekwmo.org/projects/all-projects/medley-park-stormwater-treatment-facility

2022 SEA School-Wildwood Park Flood Reduction Project (BC-2, 3, 8, 10) (No change since April): The feasibility study for this project is complete after the Commission Engineer’s scope of work was approved last August. A project kick-off meeting with city staff was held in late November. Meetings with city staff, Robbinsdale Area School representatives, and technical stakeholders were held in December, along with a public input planning meeting. A virtual open house video and comment form were offered to the public including live chat sessions on April 8th. The feasibility study report was approved in June with a decision to implement Concept #3. A public hearing on this project was held in September with no members of the public attending. In September, a resolution was approved to officially order the project, submit levy amounts to the county, and enter an agreement with the city to design and construct the project. The city hired Barr Engineering to develop the project designs which are now underway. A virtual public open house was held February 3rd. 50% Design Plans were approved at the January meeting. 90% plans are being developed but are slightly behind schedule to allow for additional engagement with Robbinsdale Area Schools. www.bassettcreekwmo.org/projects/all-projects/sea-school-wildwood-park-flood-reduction-project.

Administrator Report June 7 – July 12, 2022

Subject	Work Progress
Education and Outreach	<ul style="list-style-type: none"> • Discussed development of a new position at Hennepin County to implement education activities for WMOs partially using Watershed Based Implementation Funds, WMWA funds, and other education funding • Reviewed and commented on WMWA long term vision document • Met with Metro Blooms and WMWA partners re: future of new position
CIP	<ul style="list-style-type: none"> • <u>Parkers Lake Chloride Reduction Project</u>: Reviewed and commented on project summary and memo to Commission • <u>Main Stem Lagoon Dredging Project</u>: Reviewed 90% plans and memo; reviewed construction project sign • <u>Sweeney Lake Water Quality Improvement Project/Schaper Pond Diversion Project and Carp Management</u>: Informed Sweeney Lake Association about plans for summer monitoring; Met Carp Solutions on site with Juan Del Valle to interview and take photos of shocking effort • <u>Bryn Mawr Meadows Water Quality Improvement Project</u>: Corresponded with Commission Engineer and city staff regarding finalizing plans, project budget, and O&M plan development
Henn Co. Chloride Initiative	<ul style="list-style-type: none"> • Facilitated large group meeting • Corresponded with partners on ideas for utilizing remaining grant fund • Assisted with facilitation of video taping segment with Commissioner Welch
Administration	<ul style="list-style-type: none"> • Discussed MAWD work, priorities, and future strategies with Executive Director and prepared recommendation on membership • Corresponded with Hennepin County staff and Commissioner Fernando’s office re: 2023 levy; prepared and sent max levy request document; corresponded with Commission Engineer and GV staff re: July 19th Hennepin County Board meeting • Inquired with Commission Attorney and Engineer re: need for public hearing in 2022 (no new CIP projects slated for 2023) • Developed agenda; reviewed and submitted invoices; reviewed financial report; reviewed and edited June meeting minutes; reviewed memos and documents for Commission meeting; disseminated Commission meeting information to commissioners, staff, and TAC; updated online calendar; participated in pre-meeting call with Chair Cesnik and Commissioner Engineer; drafted meeting follow up email; ordered catering for July Commission meeting • Prepared and sent invoices to: DNR for AIS grant reimbursement funds; Meadowbrook School for review costs over \$5,000; City of Minneapolis for technical assistance with North Loop Green development over tunnel access; Three Rivers Park District for AIS treatment cost share • Sent email to commissioners with updates and events • Arranged and attended Technical Advisory Committee meeting; created agenda and materials with Commission Engineer assistance; drafted TAC recommendations for July Commission meeting • Reviewed 2021 financial audit • Finalized and sent proposed 2023 Operating Budget to all nine city clerks • Sent “welcome email” to new Minnetonka Commissioner and corresponded with her via email • Reviewed/commented on 2021 water monitoring reports
Intern Guidance	<ul style="list-style-type: none"> • Met with Juan several times to discuss and review tasks and progress • Inspected Main Stem Streambank Restoration Project and Briarwood/Dawnview Stormwater Pond projects with Juan • Met with Alt. Commissioner McDonald Black and Juan to discuss BCWMC work and intern position • Prepared materials for Juan to complete (such as invoices to MPLS and Meadowbrook, city input compilation, spreadsheet on Minneapolis neighborhoods and organizations, etc.)
Grant Work	<ul style="list-style-type: none"> • Updated BCWMC grant tracking spreadsheet • Reviewed and submitted grant reports prepared by Metro Blooms for Lawns to Legumes projects (Phase I and Phase II)
2025 Watershed Management Plan	<ul style="list-style-type: none"> • Met with Commission Engineers for bi-weekly progress/task check in • Posted materials to new webpage for Plan Update https://www.bassettcreekwmo.org/document/2025-plan-update.

	<ul style="list-style-type: none"> • Reviewed TAC comments on Gaps Analysis • Prepared presentations for Plan Steering Committee July 11th workshop • Prepared and distributed agenda and materials for July 11th workshop • Prepared list of issues for categorization exercise at July 11th workshop • Met with Alt. Commissioner Polzin and Juan to discuss outreach in Minneapolis communities
<p>Other Issues & Projects</p>	<ul style="list-style-type: none"> • Participated in meeting with Commission Engineer and Minneapolis staff re: updated or new agreements with Minneapolis and responsibilities documents or policies for FCP maintenance, inspections, and reviews • Participated in MPLS Pathogen Task Force meeting and performed technical review of toolbox, provided comments • Fielded calls and emails re: water quality and excessive plant issues in Parkers Lake and Medicine Lake • Participate in meeting with Hennepin County research staff re: Bassett Creek Valley challenge and Currie Common Project • Corresponded with CAMP volunteers and picked up samples