

March 7, 2024

Commissioners **and**
Technical Advisory Committee Members
Shingle Creek and West Mississippi
Watershed Management Commissions
Hennepin County, Minnesota

*The agenda and meeting packets are available on
the Commission's web site.*

<http://www.shinglecreek.org/minutes--meeting-packets.html> **and**
<http://www.shinglecreek.org/tac-meetings.html>

Dear Commissioners and Members:

Regular meetings of the Shingle Creek and West Mississippi Watershed Management Commissions will be held Thursday, March 14, 2024, at Plymouth Community Center, 14800 34th Avenue North, Plymouth, MN. Lunch will be served at 12:00 noon and the meetings will convene concurrently at 12:45.

The Technical Advisory Committee (TAC) will meet at 11:00 a.m., prior to the regular meeting.

This month we will meet in CLASSROOM 2B, on the upper level, the same room where we met last month. The elevator and the stairway to the second level can be reached by taking the first left just past the reception desk in the lobby.

Please make your meal choice from the items below and email me at judie@jass.biz to confirm your attendance and your meal selection by **noon, Tuesday, March 12, 2024.**

Thank you.

Regards,

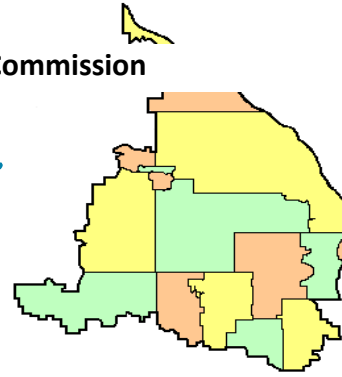
Judie A. Anderson
Administrator

cc: Alternate Commissioners Member Cites Troy Gilchrist TAC Members
Stantec Consulting Services BWSR MPCA HCEE

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Order your deli sandwich box lunch. Sandwiches come with lettuce, tomato and mayo. As an alternative you may specify your sandwich with **wheat bread or as an **unwich** (lettuce wrapped).**

- | | |
|--|--------------------------------|
| 1 Pepe – Ham and cheese | 2 Big John – Roast beef |
| 3 Totally Tuna – Tuna salad and cucumber | 4 Turkey Tom – Turkey |
| 5 Vito – salami, capocollo, cheese, onion, oil and vinegar, oregano-basil (no mayo) | |
| 6 The Veggie – double cheese, avocado spread, cucumber | |
| 14 Bootlegger Club – Roast beef and turkey | |

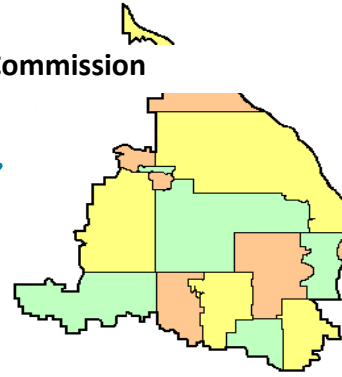


A meeting of the joint Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions is scheduled for **11:00 a.m., Thursday, March 14, 2024**, at the Plymouth Community Center.

AGENDA

1. Call to Order.
 - a. Roll Call.
 - b. Approve Agenda.*
 - c. Approve Minutes of Last Meeting.*
2. Eagle/Pike Lake Management Plan.
 - a. Work Order.*
3. Maintenance Fund Policy.*
 - a. Proposed 2024 Maintenance Fund Activities.*
 - b. Work Order.*
4. MPCA Resilience Grant Agreement.**
 - a. Colorado Avenue Feasibility Study Work Order.*
5. Other Business.
6. Next TAC meeting is scheduled for _____.
7. Adjournment.

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**Technical Advisory Committee
MINUTES | February 8, 2024**

A meeting of the Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions was called to order by Chair Richard McCoy at 11:08 a.m., Thursday, February 8, 2024, at the Plymouth Community Center, 14800 34th Avenue North, Plymouth, MN.

Present: James Soltis, Brooklyn Center; Mitchell Robinson, Brooklyn Park; Heather Nelson, Champlin; Derek Asche, Maple Grove; Nick Macklem, New Hope; Amy Riegel, Plymouth; Richard McCoy, Robbinsdale; Todd Shoemaker and Katie Kemmitt, Stantec; and Judie Anderson, JASS.

Not represented: Crystal and Osseo.

Also present: Gerry Butcher, Champlin; Burt Orred, Crystal, Andy Polzin, Plymouth; Jenna Wolf, Robbinsdale; and Mike Sorensen, Minneapolis Park and Recreation.

I. Motion by Riegel, second by Macklem to **approve the agenda**. *Motion carried unanimously.*

II. Motion by Robinson, second by Riegel to **approve the minutes*** of the December 14, 2023, meeting. *Motion carried unanimously.*

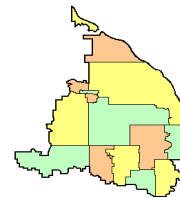
III. 2024 MONITORING PLANS.

A. **Shingle Creek.*** Staff's February 8, 2024 memo presents the proposed 2024 monitoring plan for the Shingle Creek watershed. The proposal is consistent with the joint Commissions' Fourth Generation Management Plan and includes routine monitoring tasks as well as specific monitoring efforts in support of Commission-administered grants and monitoring to evaluate progress toward various TMDLs. The 2024 budget for routine stream monitoring is \$36,000; for routine lake monitoring, \$30,000.

Under the Fourth Generation Plan, TMDLs will be reviewed systematically by priority. Lakes have been prioritized by tiers, streams based on their impaired status. In 2024 the Commission will complete five-year Biotic and DO TMDL reviews for Shingle and Bass creeks and intensive lake monitoring of Eagle and Pike lakes. Intensive lake monitoring includes collecting water quality data, updating surveys of aquatic vegetation, and collecting and comparing phytoplankton and zooplankton samples.

In 2024 Staff will also undertake monitoring tasks as part of ongoing grant projects:

1. A fully curly-leaf pondweed (CLP) delineation will be done in the spring on **Bass Lake**.



2. A third season of CLP delineation and potential treatment, as well as two vegetation surveys and water quality sampling, will occur as part of the **Meadow Lake** grant project.

3. The **Crystal Lake** Management Plan grant has been extended to mid-2024. Activities will include a visual survey of CLP abundance and a CLP treatment if necessary. WSB has also been contracted to complete another summer of carp removals in 2024.

Volunteer monitoring, under the guise of Metropolitan Council's Citizen Assisted Lake Monitoring Program (CAMP) and Hennepin County's macroinvertebrate stream monitoring program (RiverWatch), is also included in the 2024 budget. The CAMP budget is \$5,000 to monitor Cedar Island, Bass and Pomerleau lakes. The RiverWatch budget includes \$2,000 to monitor two sites.

Motion by Riegel, second by Robinson to recommend the 2024 monitoring plan to the Shingle Creek Commission as proposed. *Motion carried unanimously.*

B. West Mississippi.* Staff's February 8, 2024 memo presents the proposed 2024 monitoring plan for the West Mississippi watershed. The Commissions' Third Generation Management Plan and subsequent budgets have incorporated routine monitoring that includes monitoring **stream flow and water quality** at two sites per year on a rotating basis. The Commission has elected to continue that monitoring under the Fourth Generation Plan. In 2024 the Environmental Preserve site and the 65th Avenue stormwater pipe will be monitored for flow and water quality using automatic samplers. Due to difficulty accessing the 65th Avenue outfall, the Commission has partnered in the past with the Mississippi Watershed Management Organization (MWMO) to perform the monitoring at that site. This partnership will be continued in 2024. The 2024 budget for routine stream monitoring is \$24,000.

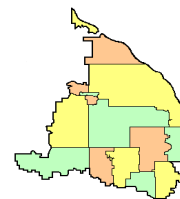
Lake monitoring. The West Mississippi watershed has no lakes within its borders.

Volunteer monitoring as part of Hennepin County's macroinvertebrate stream monitoring program (RiverWatch) is also included in the 2024 budget with \$1,000 to monitor the site at Mattson Brook.

Motion by Robinson, second by Asche to recommend the 2024 monitoring plan to the West Mississippi Commission as proposed. *Motion carried unanimously.*

IV. FRANCE AVENUE CARP BARRIER REMOVAL.*

A. Background. The Twin chain of lakes (Upper, Middle, and Lower Twin Lakes, and Ryan Lake) was designated by the Minnesota Pollution Control Agency (MPCA) as impaired for water quality in 2002. Ryan and Lower Twin Lake have since been removed from the impaired waters list. Management efforts now generally focus on reducing internal loading sources within the lakes. A significant contributor to internal loading is common carp (*Cyprinus carpio*), which uproot and displace aquatic plants and reduce habitat structure, leading to increased turbidity, sediment phosphorus release, and poor water quality conditions. The Shingle Creek Commission and its partners invested \$110,000 with matching funds from the Minnesota Dept. of Natural Resources (DNR) to study and remove carp within the Twin chain of lakes between 2016 and 2019.



The carp study evaluated population, migration habits, control of reproduction and migration, and the effect of removing carp from the chain of lakes. Estimates showed an average of 177 lbs/acre of carp, double the acceptable amount necessary to achieve water quality goals (89 lbs/acre), were present in the lakes. Upper Twin Lake had the highest density with a total of 268 lbs/acre. The Commission established a removal goal of 33,000 lbs. to achieve an average density of 89 lbs/acre throughout the Twin Lakes system.

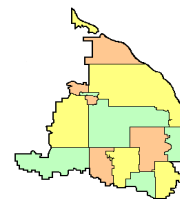
A 2017 study of migration habits showed the carp tend to stay in the deep waters of Middle and Upper Twin in the winter months and move to shallow areas for spawning in spring, including Ryan Lake via Ryan Creek. Tracking also indicated carp are freely moving in and out of the Twin Lakes system. Ryan Lake is connected via Ryan Creek and storm sewer to Shingle Creek, where there are additional spawning areas.

This better understanding of carp movement resulted in the installation of two fish barriers in 2017, at Bass Lake Road and at France Avenue, to prevent the migration of carp. The Commission and its partners organized seven carp removal events in 2018 and 2019 resulting in the removal of approximately 14,450 lbs. (44% of the goal) of carp from the lakes. The Commission also investigated aeration of Upper Twin Lake to prevent winter kill of native species and allow them to out-compete carp in the lake; however, the City of Brooklyn Center did not want to take on the legal liability of owning the aeration system.

Since the barriers aid in carp removal by corralling the carp during the summer and are less effective during the winter when the carp move to deeper, warmer waters, Staff recently inspected the barrier to determine the feasibility of removing it during winter months. At the December TAC meeting, Staff offered options for the members to consider for recommendation to the Commission: The members recommended that the Commission investigate repairing or modifying the current barrier to facilitate winter removal and decrease the amount of regular maintenance.

B. The fish barrier at France Avenue (outlet of Twin Lakes to Ryan Lake) frequently clogs, reducing flow capacity through the barrier, and resulting in flooding the backyards of adjacent properties. In their January 31, 2024 memo* Staff describes five options they researched to reduce maintenance of the existing barrier:

- 1. Dredge a channel** upstream of the barrier to reduce vegetation and debris movement downstream, capital cost \$100,000-\$150,000; timeline 1-4 years, questionable effectiveness because debris and dead vegetation will likely still reach the barrier, requiring dredging every ten years;
- 2. Install low voltage fish barrier;** capital cost \$100,000-\$200,000; timeline 1-2 years, most effective at low stream velocity, which would be exceeded relatively frequently, allowing carp to pass;
- 3. Install high voltage fish barrier;** capital cost \$500,000-\$1,000,000; timeline 2-4 years, most effective of the five options but likely too robust of a solution for this situation;



4. Replace existing physical barrier, capital cost \$50,000-\$100,000; timeline 1-2 years, debris accumulates but does not reduce flow, impedes fish passage in both directions and allows for flow of small debris. Assume three maintenance visits/year.

5. Modify existing physical barrier; capital cost \$15,000-\$30,000; timeline 0.5-2 years, impedes fish passage in both directions and allows for flow of small debris. Assume three maintenance visits/year.

Motion by Riegel, second by Macklem to recommend to the Commission to update the estimate of the carp population within the Twin Lakes chain to quantify the effectiveness of past efforts and to use the information gathered to modify the existing fish barrier (option 5). *Motion carried unanimously.*

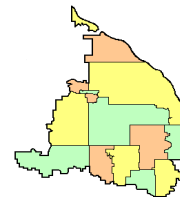
V. 2024-2025 WBIF FUNDING.* The Board of Water and Soil Resources (BWSR) biennially appropriates funding for a program called Watershed-Based Implementation Funding (WBIF). WBIF is allocated to targeted watersheds to be distributed according to guidelines agreed upon by the eligible entities in the allocation area (“the Partnership”). The BWSR Board has approved allocations for fiscal year 2024-2025, including \$191,662 to the Shingle Creek allocation area and \$152,299 to the West Mississippi allocation area. Funds will become available July 1, 2024. A minimum 10% match is required.

A. The BWSR Funding Policy specifies that each Partnership will include one decision-making representative from each (1) watershed district/organization, (2) soil and water conservation district, (3) county with a current groundwater plan, and (4) up to two decision-making representatives from municipalities within the allocation area. Other parties may participate in discussions regarding the use of the funding, but only the decision-making representatives may make the final recommendation to BWSR. The city and watershed representatives may be TAC members or Commissioners.

Staff recommends that, at this meeting and in the regular meeting that follows, members discuss who will fill the roles of (1) and (4) above. The County will also be asked to designate a representative and BWSR will be formally represented as well. At that meeting the group will begin discussing options for the use of the funds.

B. Activities eligible for funding must be focused on prioritized and targeted cost-effective actions with *measurable water quality results*. Funding is not limited to capital projects; anything in the Fourth Generation Plan’s Implementation Plan may be eligible as long as its end goal is the protection and improvement of water quality. The Implementation Plan included several broad areas that would be eligible, including:

1. Implementing an education and outreach program.
2. Implementing TMDL management actions.
3. Completing subwatershed assessments and follow-up implementation cost share.
4. Matching grants.
5. Capital improvement projects.



Other projects to consider for WBIF funding that are not on the Commissions' CIP:

6. Fund the shared education and outreach coordinator.
7. Continue Hennepin County Chloride Initiative.
8. Feasibility studies for Oxbow Creek or Mattson Brook in West Mississippi.

The Partnerships may choose to award the funds to one high-priority project or make numerous awards for various objectives. Or they may decide to focus on one or two priority lakes and undertake a suite of activities focused on making a measurable improvement in water quality. Or they may add one or more projects to the CIP by Minor Plan Amendment for eligibility for the WBIF funding if approved prior to submitting a work plan.

C. Along with designating the required representatives, the secondary purpose of this discussion is to provide some broad guidance and direction to the designees to consider during the Convene meeting. For example, the Commissions may want to make it known to the Partnerships that their preference is to fund capital projects.

At the March Convene meeting the Partnerships will complete some procedural details and discuss desired objectives and outcomes from the use of the funding before diving into determining how fundable activities will be solicited and selected. Recommended activities approved by BWSR may then be detailed in a work plan starting approximately June 2024. Funding will be available July 1, 2024, following submittal and approval of the work plan.

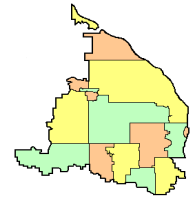
D. Recommended Convene Meeting objectives:

1. Choose a decision-making process.
2. Decide how to select activities for funding. Note that partnerships may also want to choose funding targets for different categories (e.g., projects, studies, education).
3. Partnerships may select activities by:
 - a. Developing a list of potential activities from eligible plans,
 - b. Dividing funding among eligible entities in an equitable manner,
 - c. Selecting a few priority waterbodies (lake, streams) and/or ground-water areas to prioritize activities,
 - d. Using agreed upon criteria to select activities, or
 - e. Using a process approved by the BWSR Central Region Manager.
4. Select the highest priority, targeted, measurable, and eligible activities to be submitted to BWSR as a budget request.
5. Confirm which entity will serve as grantee and/or fiscal agent for each selected activity and decide on the source of the 10% required match.

E. **Action.** Macklem, Robinson, and Soltis volunteered to represent the watersheds. Kemmitt will serve as moderator.

VI. **OTHER BUSINESS.**

- A. The **next TAC meeting** is scheduled for Thursday, March 14, 2024, at 11:00.



There being no further business, the TAC meeting was adjourned at 12:05 p.m.

Respectfully submitted,

A handwritten signature in black ink, reading "Judie A. Anderson".

Judie A. Anderson
Recording Secretary
JAA:tim

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To: Shingle Creek Watershed Management Commission

From: Katie Kemmitt
Todd Shoemaker, PE

Date: March 7, 2024

Subject: Eagle and Pike Lakes Internal Load Project

Recommended Commission Action	Consider the attached work order from Stantec to implement the Eagle and Pike Lakes Internal Load project. Call for public hearing at the April 11, 2024 Commission meeting on project.
Proposed Budget	Stantec services –\$123,304; Contractor fees – \$352,000 (est) Total project cost – \$475,304
Funding	Authorize the project to be funded from the Commission’s closed projects account.

The Commission has previously discussed a potential Lake Management Plan for Eagle and Pike Lakes, similar to those recently completed on Bass, Pomerleau, Meadow, and Crystal Lakes. These plans typically have included alum treatments to reduce internal phosphorus load; aquatic vegetation and fish management; and intensive monitoring over three to four years to comprehensively and systematically improve lake water quality. Eagle and Pike Lakes are slated to begin this process in 2024. The purpose of this item is to initiate that Lake Management Plan process so that monitoring and project preparation can be completed this spring/summer and alum treatments can be applied as soon as this Fall.

Introduction

SCWMC has previously studied the Eagle Lake subwatershed through the Cedar Island, Pike, and Eagle Lakes Nutrient TMDL completed in 2010 and in the TMDL 5-year review. The TMDL concluded that internal load management, biological management, and reduction of nonpoint sources of phosphorus in the watershed by retrofitting Best Management Practices (BMPs) would have the most impact on reducing phosphorus load and improving water quality. The TMDL 5-Year review identified a 39% reduction in TP for Pike Lake, and a 29% TP reduction for Eagle Lake. Pike Lake Subwatershed Assessments were completed in 2017 and 2019. These past studies identified general practices to reduce the watershed load to the lake.

In 2023, the Commission authorized Stantec to complete the Eagle Lake Subwatershed Assessment that built on the previous studies to identify specific locations for BMPs in the Eagle Lake subwatershed and evaluate internal loading of Eagle and Pike Lakes. The Eagle Lake Subwatershed Assessment is still being finalized, but sediment core data collected in Summer 2023 and presented to the Commission in August indicated a need for internal load management in both Eagle and Pike. The Commission’s Fourth Generation Plan includes a 2024 project to complete Lake Management Plans for Eagle and Pike Lakes similar to those recently completed in Bass, Pomerleau, Crystal, and Meadow lakes. This would include targeted monitoring; alum treatments to control internal phosphorus load; aquatic vegetation monitoring and treatment; and if necessary rough fish management.

The Commission submitted a Clean Water Fund Projects & Practices grant to BWSR in August 2023 for \$527,500 (\$337,500 grant and \$190,000 match) to fund the Eagle and Pike Lakes internal load project;

however, the Commission did not receive an award. Based on the findings of the internal load assessment for the lakes and discussions with the City of Maple Grove and the Commission, we recommend proceeding in 2024 with the Lake Management Plan for these lakes using Commission funding.

Recommended Actions

Similar to previous projects, we recommend that the Commission consider ordering the overall project, which would proceed in two actions at the March 14 meeting. The first action is authorizing a work order for Stantec to perform the professional services associated with the project. The second action is to call for a public hearing on April 11, 2024 to order the capital project and authorize entering into a cooperative agreement with Maple Grove to serve as the contracting agent for the alum treatments. Future aquatic vegetation management would be completed under separate contract with a specialized contractor.

Funding

This project is listed on the Shingle Creek Capital Improvement Program for 2024, and typically the Commission would consider levying for it in Fall 2024. However, as you know the Commission maintains the Closed Projects account in which to deposit levy funds that are “left over” when CIP projects are completed for less than the amount levied. The Commission has designated that those funds are to be used for limited purposes: to cover overages when CIP projects exceed the budget; to fund additional projects; or to complete special studies such as feasibility studies to help define and scope future CIP projects and to prepare them for grant applications. The Commission currently holds a large balance in the Closed Projects Account (estimated at around \$850,000) after several past projects came in well under budget. Based on the Commission's desire to not hold a large balance in their closed projects account, we recommend this project be funded through the Closed Projects Account rather than being levied for in 2024.

Statement of Project Purpose(s)

The primary objective of the project is to reduce internal load and therefore improve water quality in Eagle and Pike Lakes in Maple Grove, MN. This project will take a holistic lake management approach and incorporate aluminum sulfate (alum) treatments for water phosphorus (P) reduction, lake vegetation surveying and management, and water quality and sediment monitoring. Alum treatments and lake vegetation management contract fees shown herein are subject to change based on actual applicator rates and the public bidding process and are estimated in this scope using the best available information (previous applications, material estimates from applicators, etc.).

Professional Services Scope of Work

Task 1 – Engineering Support for Alum Treatments

- **Brief description of activities involved:** This task will include alum contracting support to the City of Maple Grove, coordination and scheduling of alum treatments in partnership with the City, and Stantec oversight of alum applications on the lakes. The City of Maple Grove will act as the contracting agent for the alum treatments. Stantec will support by drafting the Request for Quote/Bid documents, reviewing quotes/bids received, and providing a recommendation to the City for contracting. Stantec will work with the City to schedule alum treatments and help identify any barriers to application, as well as providing oversight throughout the application process to ensure lake pH levels are stable and applicators are applying appropriately.
- **Proposed Timeframe:** Fall 2024 – Fall 2026
- **Name and Title of person(s) responsible:** Dendy Lofton, Senior Associate

Estimated cost to complete task: \$11,424

Task 2 – Phosphorus Monitoring

- **Brief description of activities involved:** A key component of lake management is monitoring to assess the lake's response to management and inform what actions are taken next. Under the Commission's Fourth Generation Management Plan, Eagle and Pike Lakes are considered Tier 1 lakes and are scheduled for Commission monitoring twice from 2023-2032. This task includes additional monitoring outside of what is regularly scheduled:
 - **Collection of sediment cores following alum treatments.** Sediment cores will be used to assess the success of the alum applications. Sediment cores will be collected from the lake by Stantec staff and then be sent to the University of Wisconsin-Stout for phosphorus analysis. Cores will be analysed for aluminium-bound phosphorus and phosphorus release rates.
 - **Water quality monitoring.** Water quality samples will be collected to assess the impact of the alum treatments on water quality. We expect a noticeable reduction in bottom and surface total phosphorus concentrations following alum treatments, an increase in water clarity, and a decrease in total suspended solids in the lake water. Outside of the Commission's regular lake monitoring schedule and the City's monitoring program, Stantec will provide two additional years of water quality monitoring, including surface and deep-water samples, depth profiles, and Secchi depth readings. Water samples will be analysed for the following parameters:

- Total phosphorus
- Ortho-phosphorus
- Total suspended solids
- Chlorophyll content

Water quality results will be presented annually in the Commission's Annual Monitoring Report.

- **Proposed Timeframe:** Summer 2025 and 2027
- **Name and Title of person(s) responsible:** Katie Kemmitt, Environmental Scientist

Estimated cost to complete task: \$31,850

Task 3 – SAV Monitoring

- **Brief description of activities involved:** This task includes submersed aquatic vegetation (SAV) point-intercept surveys. An early (May/June) and late summer (August) SAV survey will be conducted on each lake for 2 years (2025 and 2027) following alum treatments to assess the response of the aquatic plant community following water quality improvements. Results, including data summaries and species diversity maps, invasive species abundance maps, and biovolume maps from each survey will be presented annually in the Commission's Annual Monitoring Report.
- **Proposed Timeframe:** Summer 2025 and 2027
- **Name and Title of person(s) responsible:** Katie Kemmitt, Environmental Scientist

Estimated cost to complete task: \$32,140

Task 4 – AIS Delineations & Permitting

- **Brief description of activities involved:** This task includes aquatic invasive species (AIS) delineations and permitting required for AIS management, including herbicide treatment and hand-pulling. Curly-leaf pondweed (CLP) and Eurasian watermilfoil (EWM) are both present in Eagle and Pike and may exhibit a growth response with increased water clarity from alum treatments. Stantec will complete AIS delineations in early spring/summer as necessary to delineate areas of management for up to 5 years following alum treatments. CLP and EWM delineations must be done separately due to differences in peak growth and optimal treatment times. Stantec will work with the Minnesota Department of Natural Resources to permit herbicide treatments or hand-pulling as necessary.
- **Proposed Timeframe:** Spring/Summer 2025-2030
- **Name and Title of person(s) responsible:** Katie Kemmitt, Environmental Scientist

Estimated cost to complete task: \$47,890

Assumptions

- Project timeline is subject to contractor schedules and availability.

- Laboratory expenses are subject to change from year to year.

Fee Estimate

The table below includes a summary of the proposed tasks and associated Stantec fees and expenses.

No.	Description	HRS	LABOR	EXPENSES	STANTEC FEE
1	Engineering Support for Alum Treatments	80	\$11,424	-	\$11,424
2	Phosphorus Monitoring	151	\$20,730	\$11,120	\$31,850
3	SAV Monitoring	184	\$25,500	\$6,640	\$32,140
4	AIS Delineations & Permitting	345	\$47,890	-	\$47,890
TOTALS			\$105,544	\$17,760	\$123,304

Contractor Fee Estimates

A component of the Eagle and Pike Lakes Management Plan will be working with contractors for alum treatments and vegetation management (i.e., herbicide application and/or hand-pulling). These components will require publishing Request for Bids/Quotes and the associated costs change from year to year. Stantec has provided an estimate of costs based on current unit prices for alum and herbicide.

Task 1 – Alum Application

This task will include the alum applicator contract fees and will be reimbursable to the City of Maple Grove by the Commission. The planned alum dose for each lake was presented to the Commission as part of the Eagle Lake Subwatershed Assessment as follows:

Table 1. Recommended alum treatment scenario for Pike Lake with estimated load reduction and treatment volumes.

Scenario	Depth Contour	Treatment Area (ac)	P Load by Treatment Area (lbs/yr)	P Load Reduction from Alum (lbs/yr)*	Alum (gal)	Cost for Material + Applicator	Cost per pound P removed	Aluminum Dose	
								mg/L	g Al/m ²
1	10 – 22 ft	23	54	46	34,754	\$127,896	\$2,802	27.3	81.8

*Assumes 85% reduction in sediment loading from alum treatment.

Table 2. Recommended alum treatment scenario for Eagle Lake with estimated load reduction and treatment volumes.

Scenario	Depth Contour	Treatment Area (ac)	P Load by Treatment Area (lbs/yr)	P Load Reduction from Alum (lbs/yr)	Alum (gal)	Cost for Material + Applicator	Cost per pound P removed	Aluminum Dose	
								mg/L	g Al/m ²
2	20 – 35 ft	47	73	62	65,769	\$211,775	\$3,436	34.5	76.4

The Draft Eagle Lake Subwatershed Assessment recommend a split application where half of the alum is applied in year 1 (i.e., 2024) and then the remaining half dose is applied two years later (i.e., 2026). Alum estimates are based on best available information for 2023 costs per unit volume and area scaled according to treatment area, volume of alum and volumetric alum dose. The cost per unit fluctuates with volume of alum ordered such that higher volumes typically corresponds to lower per unit costs. Unit costs for alum used in our analyses ranged from \$2.66/gal to \$3.43/gal.

Estimated cost to complete task: \$340,000

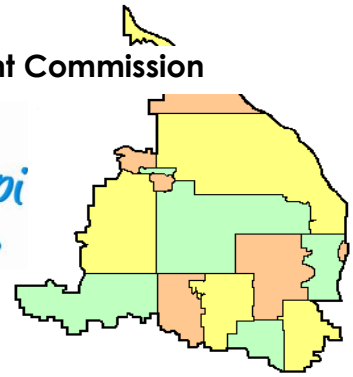
Task 2 – AIS Treatment

This task includes contracts for AIS herbicide treatments (CLP, EWM) or hand-pulling (EWM) for up to 5 years on Eagle and Pike following alum treatments. Delineations done under Task 4 above will inform whether or not treatment/removal is necessary each year. The cost to complete this task assumes a similar area of treatment with diquat herbicide from year to year. If hand-pulling of EWM is recommended by the DNR, Stantec will work with contractors get fee estimates.

Estimated cost to complete task: \$12,000

Contractor Fee Estimate

No.	Description	ESTIMATED CONTRACTOR FEES
1	Alum Application	\$340,000
2	AIS Treatment	\$12,000
TOTALS		\$352,000



**Shingle Creek and West Mississippi
Watershed Management Commissions
Maintenance Funding Guidelines**

The Shingle Creek and West Mississippi Watershed Management Commissions undertake projects that aim to improve water resources in the watersheds. Projects are taken on by the Commissions directly or by member cities, with cost-share provided through the Capital Improvements Program (CIP) or the small BMP Cost-Share Program. Maintenance, repair, or replacement of Commission-led projects is often ongoing and necessary to continue providing water quality benefits in the watershed. The Commissions will allocate up to \$50,000 per year to complete maintenance activities not already taken on by member cities that fall under the classifications described below.

Projects that will be considered for Commission funding under the Maintenance Funding policy fall into two categories as follows:

1. Actions to maintain water quality benefits following Commission-led projects such as but not limited to:
 - Annual rough fish maintenance management
 - Rough fish barrier cleaning, repair, and maintenance
 - Whole-lake invasive aquatic vegetation management treatments performed for water quality, excluding those for recreation, aesthetics, or navigation and with DNR concurrence
 - Alum treatment touch-up
 - In-lake vegetation transplanting efforts
 - Research BMP maintenance (e.g., biochar and iron-enhanced sand filters constructed under Watershed projects)
2. Other actions that do not fall within the above category, evaluated on a case-by-case basis by the TAC and recommended to the Commissions.

Actions that will not be considered include any city actions for meeting National Pollutant Discharge Elimination System (NPDES) permit requirements; other activities that are clearly city responsibilities including pond dredging, street sweeping, and removing terrestrial invasive vegetation; and project-related operations and maintenance to which the city previously agreed such as debris removal and bank stabilizations related to stream restoration projects.

All candidate actions will be reviewed by the TAC and recommended to the Commissions for approval. Unallocated funds will carry over from year to year and be maintained in a designated fund account.

Adopted: February 10, 2022

To: Shingle Creek/West Mississippi Watershed Management Commission

From: Katie Kemmitt
Todd Shoemaker, PE

Date: March 7, 2024

Subject: 2024 Proposed Maintenance Fund Activities

Recommended Commission Action	Review and approve 2024 maintenance fund activities.
Proposed Budget	\$15,865
Funding	Authorize the maintenance activities to be funded from the Commission's Maintenance Fund.

In 2022 the Commissions approved a new Maintenance Fund intended to maintain, repair, or replace Commission-led projects to continue providing water quality benefits. Projects considered for Commission funding under the Maintenance Fund are described in the policy (attached) and are evaluated by the TAC and recommended to the Commission for approval. The proposed activity and its costs are described below.

Task 1 – Bass Lake Curly-leaf Pondweed Management

Bass Lake has been treated with diquat herbicide for four consecutive years for a curly-leaf pondweed (CLP) infestation. CLP is persistent and often requires up to 7 years of treatment per DNR recommendation. Bass Lake requires additional CLP management in 2024. This additional year of Bass Lake CLP management includes:

- Curly-leaf pondweed delineation and mapping
- Herbicide treatment permitting and coordination
- Contract with herbicide applicator and application oversight.

The cost of the herbicide treatment will depend on the applicator, the delineated area of CLP growth, and the unit price of diquat herbicide, which is market dependent. The expected cost of the herbicide application including applicator fees and materials is \$4,000. Stantec will coordinate a request for quote following the delineation. This applicator cost estimate of \$4,000 is our best estimate based on last year's treatment and estimated 2024 herbicide unit prices. The window between when the delineation area is approved by the DNR and when the optimal treatment window occurs is narrow, thus Stantec recommends the Commissions provide authorization for application to proceed immediately after obtaining the quote. The contract will be reviewed by the Commissions' attorney before application and will be brought to the following meeting for ratification. If the applicator fees are substantially more than estimated, Stantec will contact the Chair and get his decision and approval to proceed.

Task 2 – Ryan Creek Carp Barrier Maintenance

The Ryan Creek carp barrier installed on Ryan Creek off of France Avenue functions as the first step in carp population control in the Twin Lakes chain. The fish barrier at France Avenue (outlet of Twin Lakes to Ryan Lake) frequently clogs, which reduces flow capacity through the barrier and floods backyards of

adjacent properties. Stantec and City staff must routinely clean off the barrier when it get clogged, particularly in the spring with snowmelt. Staff recommends budgeting \$X from the Maintenance Fund for carp barrier cleaning and maintenance in 2024. Site visits involve 2 staff entering Ryan Creek with equipment and yard waste bags for removing debris. Site visits typically last 1-2 hours. Stantec will complete up to 6 site visits in 2024 under the proposed budget.

Fee Estimate

The table below includes a summary of the proposed tasks and associated Stantec fees and expenses.

No.	Description	HRS	LABOR	EXPENSES	STANTEC FEE	Estimated Contractor FEE
1	Bass Lake CLP Management	36	\$4,932	\$268.04	\$5,200.04	\$4,000
2	Ryan Creek Carp Barrier Maintenance	48	\$6,552	\$112.56	\$6,664.56	
TOTALS					\$11,864.60	\$4,000

SERVICES AGREEMENT

THIS SERVICES AGREEMENT ("Agreement") is made and entered into by and between the Shingle Creek Watershed Management Commission, a Minnesota joint powers organization ("Commission"), and _____ ("Contractor").

1. Services. The Contractor will provide for the removal, by ~~netting~~ herbicide treatment, of ~~common carp curly-leaf pondweed~~ on ~~the Twin Lake chain of Lakes Bass Lake in Crystal/Robbinsdale Plymouth~~, Minnesota ("Services"). The Services shall be provided ~~while the lakes are frozen after ice-off in early spring~~ and shall be completed by no later than _____, 2024. The Contractor is responsible for ~~obtaining~~ following, at its own cost, ~~all permits~~ permit obligations and permissions that may be required to provide the Services and shall be responsible for providing all necessary personnel and equipment. The Contractor shall be responsible for maintaining, during the entire term of this Agreement, commercial general liability insurance with limits of not less than \$300,000.

Commented [KK1]: Reword because Stantec will submit the permit application

2. Compensation. The total compensation the Commission will pay the Contractor for providing the Services is comprised of two parts, as follows:

(a) Seine Haul Herbicide application. The Commission will pay the Contractor \$_____ for ~~each seine haul attempt~~ the herbicide application. The Commission's engineer, ~~Wenck Associates~~ Stantec Consulting Services, Inc. ("Engineer"), will determine the ~~number of seine haul attempts~~ area of treatment.

(b) Bounty. In addition to the seine haul attempt payment, the Commission will pay the Contractor an amount (referred to herein as a "bounty") based on the total pounds of common carp and other undesirable fish removed as part of the Services. The payment of a bounty depends on the market price of common carp at the time of collection as set out below. The parties also recognize that the seine hauls intended to collect common carp also result in the collection of other undesirable fish (such as bullheads) that should not be returned to the lake. Because there is no practical market for such undesirable fish, the Commission desires to compensate the Contractor for removal and proper disposal of such other undesirable fish through the payment of a bounty as provided below.

Commented [KK2]: Delete section? Not applicable to herbicide applications.

(1) Common Carp. The common carp per pound bounty payment is based on a rate of \$0.____ per pound of carp, reduced by the actual amount the Contractor receives per pound in the market. For example, if the Contractor receives \$0.____ per pound when selling the carp in the market, the Commission will pay the Contractor a bounty of \$0.____ per pound (market price plus bounty equals \$0.____). If the Contractor receives \$0.____ per pound or more in the market, the Commission shall not be required to pay the Contractor any bounty for common carp.

(2) Other Undesirable Fish. The Commission will pay the Contractor \$0.____ per pound of other undesirable fish collected during seine hauls conducted to collect common carp. The purpose of the bounty is to pay the Contractor to provide for the removal and proper

disposal of such undesirable fish. The Engineer will determine the types of collected fish that constitute undesirable fish and for which the bounty will be paid.

(3) Cap on Bounty. The total combined bounty paid to the Contractor for the removal of common carp and other undesirable fish shall not exceed \$_____.

3. Payment. The Contractor shall provide a single invoice for the Services provided under this Agreement that identifies the ~~number of seining attempts~~ quantity of herbicide applied, as verified by the Engineer, ~~and, if a bounty payment is owed, the market value per pound for common carp at the time the Services were provided and the total number of pounds of common carp removed as part of providing the Services~~. The Commission will issue payment on the invoice within 45 days of receipt thereof.
4. Term and Termination. This Agreement shall be effective as of the date of the last party to execute it and it shall continue in effect until the Services are complete and payment for the Services has been made. The Commission may terminate this Agreement before the Services are provided by notifying the Contractor in writing of such termination.
5. Independent Contractor. The Contractor and its employees are not employees of the Commission. The Contractor shall provide the Services as an independent contractor and acquires no rights to tenure, workers' compensation benefits, unemployment compensation benefits, medical and hospital benefits, sick and vacation leave, severance pay, pension benefits or other rights or benefits from the Commission. The Contractor shall not be considered an employee of the Commission for any purpose including, but not limited to: income tax withholding; workers' compensation; unemployment compensation; FICA taxes; liability for torts; and eligibility for benefits.
6. Compliance. The Contractor shall be responsible for ensuring compliance with all applicable federal, state, and local laws, regulations or ordinances in providing the Services.
7. Indemnification. The Contractor shall defend, indemnify, and hold harmless the Commission and its officers, the member cities and their elected officials, officers, employees, agents, and representatives, from and against any and all claims, costs, losses, expenses, demands, actions or causes of action, including reasonable attorneys' fees and other costs and expenses of litigation that may arise out of the Contractors performance of the Services under this Agreement. This indemnification obligation shall survive the expiration of this Agreement.
8. Miscellaneous Provisions.
 - (a) Amendments. This document constitutes the entire Agreement between the parties and no modifications of its terms shall be valid unless reduced to writing and signed by both parties.
 - (b) Substitution and Assignment. No substitution or assignment of this Agreement is allowed by any party, except upon written approval of the other party.

- (c) Audit. The books, records, documents, and accounting procedures of Contractor relevant to the Services are subject to examination by the Commission and either the legislative auditor or the state auditor, as appropriate, for a minimum of six years.
- (d) Third Party Rights. The parties to this Agreement do not intend to confer on any third party any rights under this Agreement.
- (e) Applicable Law. This Agreement shall be governed by the laws of the State of Minnesota and the appropriate venue and jurisdiction for any litigation that may arise under this Agreement will be in and under those courts located within the County of Hennepin, State of Minnesota, regardless of the place of business, residence, or incorporation of Contractor.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date of the last party to execute it.

CONTRACTOR

By: _____

Its: _____

Date: _____

COMMISSION

Chairperson

Secretary

Date

To: Shingle Creek Watershed Management Commission

From: Todd Shoemaker PE

Date: March 7, 2024

Subject: Colorado Avenue Infiltration Trench Feasibility Study

Recommended Commission Action	For review and approval.
Proposed Budget	\$20,140
Funding	\$18,309 from MPCA Community Resiliency Grant and \$1,831 matching funds from Closed Project Fund

Introduction

The Shingle Creek Watershed Management Commission (SCWMC) completed the Gaulke Pond Subwatershed Assessment in 2023. That study identified the Colorado Avenue infiltration trench as the highest ranked practice to reduce flooding and improve water quality within the Gaulke Pond Watershed. The study also recommended the SCWMC study the trench location and design in more detail before final design because of its potential proximity to the adjacent drinking water reservoir. The SCWMC subsequently applied for and received a grant from the MPCA to study the trench feasibility. This work order details the tasks and costs to complete the feasibility study.

Background

The purpose of this project is to refine and design the most effective and feasible Best Management Practice (BMP) to alleviate current and prevent future flooding in a large, fully developed mixed use subwatershed in Crystal, Minnesota. The SCWMC recently completed a subwatershed assessment in this area and preliminarily identified an infiltration trench upstream of Gaulke Pond as being the optimal BMP, but it is located adjacent to an underground drinking reservoir, which warrants further investigation to ensure feasibility and constructability.

The 890 acres of urban landscape in question drains into the regional Gaulke Pond, which is land locked. During wet periods, the pond is pumped to Twin Lake to increase pond storage and mitigate upstream flooding. The City of Crystal has studied the pond and its watershed extensively to identify and prioritize efforts to reduce flooding within Gaulke Pond and other connected ponds just upstream. The Cities of Robbinsdale and Crystal and the SCWMC collaborated in 2021 to more extensively study and establish an emergency pumping plan for Gaulke Pond. The City implemented the Central Core Stormwater project in 2022 to provide additional flood storage within the chain of ponds. In 2023, the Cities of New Hope and Crystal and SCWMC further collaborated to conduct an assessment of the Gaulke Pond subwatershed. The Gaulke Pond Subwatershed Analysis identified eleven potential practices to reduce runoff volume within the watershed. The SCWMC further evaluated the eleven opportunities and ranked them according to runoff reduction volume, watershed area, construction cost, lifetime cost, and cost per acre-foot

infiltrated. The Colorado Avenue infiltration trench was the most effective in terms of cost per acre-foot infiltrated.

Scope of Work

The scope of work focuses on a geotechnical evaluation to guide design of an infiltration trench adjacent to an underground drinking water reservoir.

Task 1 – Site Survey & Assessment

- **Brief description of activities involved:** The Colorado Avenue project area will be surveyed for topography, utility locations, and site boundaries. Soil borings have already been collected at the site location by the City of Crystal and will be analyzed as part of the site survey task. Record drawings of the nearby reservoir and pump station will also be reviewed as part of this task.
- **Timeframe:** April 2024

Task 2 – Geotechnical Evaluation

- **Brief description of activities involved:** Staff will evaluate existing information to determine the presence of potential contamination, proximity of the proposed infiltration trench to the underground drinking water reservoir, key design features, and the potential slope stability concerns during construction excavation of the infiltration trench. It involves assessing the groundwater regime, soil stratigraphy, and hydraulic conductivity of the soil as it affects the functioning of the infiltration facility. Additionally, it involves an evaluation of the geotechnical stability of the facility, such as slope stability, the effect of seepage forces or soil piping at adjacent structures and slopes, and design of fills that control the retention, diversion, or discharge of the collected stormwater.
- **Timeframe:** May – August 2024

Task 3 – Reporting

- **Brief description of activities involved:** A feasibility study report will be completed that includes results/recommendations from the geotechnical evaluation. The report will also feature an update to the Shingle Creek PC-SWMM model that includes the infiltration trench and the water quantity benefit, and an updated conceptual design based on the geotechnical evaluation and design infiltration rate.

We will submit a final grant project report using the MPCA template approximately one month prior to the end of the grant agreement on June 30, 2025, or at completion of the project, whichever occurs first. We will respond promptly to any requests by the MPCA authorized representative for additional information and/or corrections to the report and will provide electronic files of all project deliverables to the MPCA authorized representative.

- **Timeframe:** September-February 2025

Assumptions:

- Soil boring results to be provided by the City of Crystal.
- Property access for the site survey to be coordinated by the City of Crystal.
- Other than the site survey, all other geotechnical testing and data collection is excluded from this scope of work.

Fee Estimate

Stantec will execute the scope of work described above for the fee outlined below on a time and materials basis and according to the Master Services Agreement with Stantec. We will not exceed the amount indicated without prior authorization from the Shingle Creek Watershed Management Commission.

No.	Description	HRS	<u>TASK TOTALS</u>		FEE
			LABOR	EXPENSES	
1	Site Survey	32	\$5,200	\$184	\$5,384
2	Geotechnical Evaluation	54	\$9,074	\$0	\$9,074
3	Feasibility Study Report	34	\$5,682	\$0	\$5,682
TOTALS		120	\$19,956	\$184	\$20,140