MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
455 HAYWARD AVENUE, OAKDALE, MINNESTOA 55082
Phone 651.796.2227 fax 651.330.7747 www.mscwmo.org

Regular Meeting of the Middle St. Croix Watershed Management Organization

Remotely held as posted on www.mscwmo.org

Physical location - Washington Conservation District, 455 Hayward Ave N

Thursday, March 9th, 2023

6:00PM

1. Call to Order – 6:00PM
   - **a.** Approval of Agenda

2. Approval of Minutes
   - **a.** Draft minutes – January 12th, 2023 **pg. 1-6**

3. Treasurer's Report
   - **a.** Report of savings account, assets for March 9th, 2023
   - **b.** Approve payment of bills for March 9th, 2023

4. Public Comment

5. Old Business
   - **a.** WMP Plan Update Resolution **pg. 7**

6. New Business
   - **a.** Request for Professional Services Summary **pg. 8-49**
   - **b.** 2022 Project Review Fee Summary **pg. 50**
   - **c.** 2022 Annual Report Draft **pg. 51-72**
   - **d.** Lily Lake Sign Draft Approval

7. Grant and Cost Share Applications
   - **a.** Sunnyside Condos Native Planting **pg. 73**
   - **b.** Kalambokidis Shoreline Buffer **pg. 74**

8. Plan Reviews/Submittals
   - **a.** Plan Review and Submittal Summary **pg. 75-122**
     - i. Baylon Boathouse/Home Reconstruct-**ACTION**
     - ii. CSAH 5 Reconstruction-**ACTION**
     - iii. MNDOT I94-**ACTION**
     - iv. Chapel Hill Flats -**INFORM**
     - v. Ashford Residence -**INFORM**
     - vi. Oak Park Parking Lot -**INFORM**
   - **b.** Erosion and Sediment Control Inspection Reports -**NONE**

9. Staff Report **pg. 123-125**
10. 1W1P Updates

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11. Other
12. Adjourn

Regular Meeting of the Middle St. Croix Watershed Management Organization
Washington Conservation District, 455 Hayward Ave N
Remote locations: 775 3rd Ave N Bayport 55003; 5312 Fourwinds Way, Fort Pierce, FL 34949
Thursday, January 12th, 2023
6:00PM
Present: Brian Zeller, Lakeland Shores; Mike Runk, Oak Park Heights; Phil Moosbrugger, West Lakeland Township; Tom McCarthy (remote), Lake St. Croix Beach; Avis Peters, Baytown; John Dahl (remote), Bayport; Joe Paiement, Lakeland; Ryan Collins, Stillwater; Annie Perkins, Afton; Administrator Matt Downing; Amanda Herbrand, WCD; Brett Stolpestad, WCD; Cameron Blake, WCD. Audience: Dawn Bulera, Tim Schneider (remote)

Call to Order
Manager Zeller called the meeting to order at 6:00PM.

Approval of Agenda
Administrator Downing requested three additions under "Other": Campaign Finance Board Notice, 2022 Audit, and Watershed Management Plan Update. Manager Runk motioned to approve the agenda with the three additions, Manager Collins seconded the motion. The motion carried on a roll call vote with all in favor.

Approval of Minutes
Manager Collins motioned to approve the draft November 10th, 2022 board meeting minutes, and Manager Dahl seconded the motion. The motion carried on a roll call vote with all in favor.

Treasurer's Report
Administrator Downing presented the Treasurer's Report. The remaining checking account balance on January 12th was $111,782.41. First Bank CDs were valued at $38,549.15. The ending balance on the RBC savings account was $83,210.50 for November and $83,412.11 for December.

The bills to pay this month are $108.00 to MN Dept of Admin, $54.90 to Kennedy & Graven, and eight bills to the Washington Conservation District totaling $18,448.67. Total of the bills to approve is $18,611.57.

There are no invoices to approve this month.

Lakeland has outstanding contribution amount from 2022.

Manager Zeller motioned to approve the report of the savings account and assets, Manager Perkins seconded the motion. The motion carried on a roll call vote with all in favor.

Manager Zeller motioned to approve payment of bills for January 12th, 2023. Manager Perkins seconded the motion. The motion carried on a roll call vote with all in favor.

Public Comment

There was no public comment.

Old Business

Request for Professional Services

MSCWMO previously approved solicitation for engineering services. Administrator Downing notes that the solicitation specifically states that "the selected engineering firm may not serve as the contracting City Engineer for any of the member communities." Administrator Downing wants thoughts from the board on whether this is necessary, he feels there is no conflict of interest with engineering firms also working for any of the member communities and MSCWMO legal advice agreed. No board members oppose removal of this requirement.

Manager Zeller motioned to reopen solicitation for engineering services with "The selected engineering firm may not serve as the contracting City Engineer for any of the member communities listed above" removed as a requirement. Manager Peters seconded the motion.

The motion carried on roll call vote with all in favor.

New Business

2022 Inspections and Maintenance Summary

Cameron Blake from the WCD gave a summary of inspections and maintenance activity in 2022 that the WCD conducted on behalf of the MSCWMO. Maintenance activities include inlet cleanout, weed removal, supplemental planting, minor structural repairs, and litter removal. The WCD is responsible for maintenance during the establishment period of new practice, and also inspects older practices to ensure they are still functioning until the practice reaches an age of 10 years. In total, expenditure totals for the maintenance program in 2022 were $3,679.25 for 65.75 hours. Expenditure totals (Cash-in-Lieu) were $4,154.25 for 87 hours.

2022 Cost Share Implementation Summary

Brett Stolpestad from the WCD gave a summary of cost share implementation in 2022. WCD staff conducted 33 site visits in MSCWMO in 2022, and three projects from those site visits went through the cost share program and were installed. Those include the Goeltl turf-to-prairie, the Hietpas/Baldrica shoreline buffer, and the Siegler shoreline buffer. Twelve BMPs were installed, including: 5 bioretention, 1 dry swale, 3 native landscapings, and 3 shoreline buffers.

2022 Adopt a Drain Summary

In 2022 the Adopt a Drain program had 6 new participants and 10 drains adopted, for a total now of 102 participants and 167 drains adopted. In 2022, 496.1 lbs of debris were collected. The MSCWMO has been a participant in the program since the program started. Metro Watershed Partners, along with the 2022 Summary, also sent a request for continued membership in 2023 for $500.00.

Manager McCarthy motioned to continue the Adopt a Drain membership in 2023 for $500.00. Manager Perkins seconded the motion. The motion carried on a roll call vote with all in favor.

2022 Year End Budget Summary
Total budget for 2022 (annual budget + receivables) was $250,093.00 and total expenditures (annual + receivables) was $129,793.32. Administrator Downing noted on the table that Development Plan Reviews did go over budget, with the table showing 227% of funds spent for that item. Manager Zeller asked if those could be billed back, Administrator Downing states he can do an analysis and bring it to a future meeting for approval if the board wants to invoice the communities for any of those projects.

Manager Perkins notes that the 2021 and 2022 budgets are the same, Manager Zeller notes that the budget rarely increases, Administrator Downing notes that the budget increased his first year as administrator. Administrator Downing notes that for 2024 the overall budget will stay the same but there may be some changes to different areas of the budget.

Community First Half Contribution Requests
Administrator Downing requests approval to send out the first half requests to communities for contributions.

Manager Zeller motions to approve requests for first half contributions from the communities, Manager Collins seconds the motion. The motion carried on a roll call vote with all in favor.

Officer Appointments
Current officer appointments for 2022 are:
Manager Zeller – Chair
Manager McCarthy – Vice Chair
Manager Olfelt-Nelson – Treasurer
Manager Perkins – Secretary

Manager Dahl motions to maintain current officer appointments, Manager Perkins seconds the motion. The motion carried on a roll call vote with all in favor.

2023 Liability Insurance
This is an annual item. Administrator Downing states that the board has to make a decision on whether or not to waive the monetary limits on municipal tort liability established by Minn. Stat 466.04. Administrator Downing states that in the past the board has chosen to not waive.

Manager Zeller motioned to not waive and authorize Administrator Downing to sign, Manager McCarthy seconded the motion. The motion carried on a roll call vote with all in favor.

Lakeland Beach Restoration
In 2022, the MSCWMO and the City of Lake St. Croix Beach implemented a cooperative project stabilizing an additional 96 of failing bluff toe in addition to the 404 feet stabilized in 2020 using a combination of City and CWF grant monies secured by the WMO. The WMO also completed construction of the Riviera Treatment Train Project in 2022 in the City of Lake St. Croix Beach.

Bids for the expanded Bluff Toe Stabilization and final cost of the Riviera Treatment Train project came in lower than expected, leaving ~$25,000 for additional project implementation guided by the Lake St. Croix Direct SWAs.

The Lakeland Beach property located at the end of Quixote Avenue N shows signs of significant erosion near the parking area and picnic benches along the bluff toe. Expanding the rip-rap revetment installed in 2011 and stabilizing the bluff toe near the seating area will reduce total phosphorus (TP) loading to Lake St. Croix by approximately 8.77 lbs/yr based on BWSR calculator modeling. This project ranks highly against other modeled practices in the LSC Direct South SWA at approximately $342 per pound each year over a 10 year period (see project estimate below). Brett Stolpestad of the WCD is recommending that we complete the stabilization work to utilize remaining CWF implementation funds and reach or exceed TP reduction goals. WCD and WMO staff have presented the conceptual plan to the Lakeland City Council and have their support to continue project development.
Preliminary Project Estimate: $28,663

Manager Paiement motioned to approve encumbrance of remaining grant funds for the construction of engineered bluff toe protection and parking area stabilization in Lakeland. Manager Runk seconded the motion. The motion carried on a roll call vote with all in favor.

2022 Savings Deposit
The 2022 MSCWMO Budget included $5,750 for deposit into savings for future costs including water monitoring equipment replacement and repair, and watershed management plan update costs. None of these funds were expended in 2020 and the entire balance can be deposited. Administrator Downing is requesting board approval to deposit the funds into the RBC savings account.

Manager Zeller motioned to approve staff to deposit $5,750 from the 2022 budget to savings. Manager Peters seconded the motion. The motion carried on a roll call vote with all in favor.

Grant and Cost Share Applications
None

Plan Reviews/Submittals
Hinderaker Garage—ACTION
An application for project review was submitted on October 1st, 2022 for the construction of a garage at 1218 6th Ave S in Stillwater. A variance from the City was granted on the condition

that the applicant meets MSCWMO standards for stormwater mitigation. A proposed bioinfiltration basin provides 63 cubic feet of volume retention. The required volume retention for 789 square feet of proposed new impervious is 73 cubic feet. Staff recommends approval with the condition that the bioinfiltration basin footprint is expanded to meet the required volume control.

Manager Zeller motions to approve the project with the condition that the bioinfiltration basin footprint is expanded to meet the required volume control. Manager Collins seconds the motion. The motion carried on a roll call vote with all in favor.

Baylon Boathouse/Home Reconstruct—INFORM
The applicant has been implementing their approved plan for the reconstruction of a boathouse located at 165 Lakeland Shores Rd. There have been inquiries made on the installation of riprap and the construction of a new home and swimming pool. The applicant has been informed that these activities would require an additional review by MSCWMO. An application for project review was submitted on December 20th, 2022. A preliminary review of the submitted materials was conducted and staff requested materials be revised and resubmitted on December 29th, 2022.

Erosion and Sediment Control Inspection Reports
None

Staff Report
Administrator Downing presented the staff report. Administration items include preparing January meeting materials, coordination of grant and permit program, 2023 planning, and 2022 year end reporting. Additional items on the staff report include summaries from the Water Monitoring, Erosion and Sediment Control, and BMP Maintenance programs. Water monitoring staff from the WCD are working on their annual report and will give a presentation to the board when the report is complete.

1W1P Updates
Manager Runk states he will go to the upcoming meeting.

Manager Zeller motioned to have Manager Runk maintain his position as the representative from MSCWMO. Manager Collins seconded the motion. The motion carried on a roll call vote with all in favor.

Manager Zeller asked Manager Runk if he has been receiving mileage reimbursement. Manager Runk states no, he has not. Manager Zeller suggests he bring it back to the board next meeting, as the drive is up to an hour distance away. Administrator Downing mentions that most of the other representatives are submitting for mileage reimbursement.

Campaign Finance Board Notice
Administrator Downing reminds board members to fill out their statements of economic interest, even if they left positions.

2022 Audit
Administrator Downing received a notice about the 2022 audit. Manager Zeller asks how much it will be, Administrator Downing states they did not give him an exact quote. Manager Zeller asks what triggers the audit requirement, stating that the MSCWMO budget seems low for an audit requirement. Administrator Downing states he can check into the requirements. Administrator Downing mentions that the audit should be less expensive this year versus the previous couple years.

Manager Zeller motions to accept the audit proposal. Manager Runk seconded the motion. The motion carries on a roll call vote with all in favor.

Watershed Management Plan Update
Administrator Downing informs the board that they are just about due for a watershed management plan update and that he has reached out to BWSR and set up a meeting for the following week. He states that the process is long with long review periods so he will get started. Administrator Downing states that he will need information from BWSR regarding what exactly needs to be done to determine whether the work can be done by him, a consultant, or by WCD staff who may have the capacity to work on it. The process is time consuming, he states that it would take up a lot of his time that is dedicated to program areas at the WCD if he were to do the work himself. He will continue to update the board on the process.

Adjourn

Manager Zeller motions to adjourn the meeting. Manager McCarthy seconds the motion. The motion carried on a roll call vote with all in favor. The meeting adjourned at 7:31.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

Resolution to Update the Middle Saint Croix Watershed Management Organization Watershed Management Plan

Whereas, Minnesota Statutes Chapter 103B.231 of the Metropolitan Surface Water Management Act (Act), requires metropolitan watershed districts (WDs) and water management organizations (WMOs) to develop and adopt a watershed management plan, and

Whereas, the Act requires that WDs/WMOs update their watershed management plan at least once every 10 years after the original watershed management plan is approved, and

Whereas, the updated watershed management plan must contain the elements described in Minnesota Rules 8410.0050-140 and 103D.405, and

Whereas, the Middle Saint Croix Watershed Management Organization has determined that the update and continued implementation of a watershed management plan will help promote the health and welfare of its citizens
.

Now, Therefore, Be it Resolved, that the Middle Saint Croix Watershed Management Organization Board of Managers will initiate a planning process to update its current watershed management plan.

Be it Further Resolved that Middle Saint Croix Watershed Management Organization will coordinate its efforts in the update of its plan with the contiguous WDs/WMOs and counties conducting water planning and implementation under sections 103B.101 and 103B.301 to 103B.355 and 103D.405.

Be it Further Resolved that the Middle Saint Croix Watershed Management Organization Board of Managers authorizes the establishment of an advisory committee(s) to provide recommendations to the board of managers on revisions and updates to the plan.

Be it Further Resolved that the Middle Saint Croix Watershed Management Organization Board of Managers delegates the Middle Saint Croix Watershed Management Organization staff the responsibility of coordinating, assembling, writing and implementing the watershed management plan pursuant to M.S. 103B.231.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

MEMORANDUM

TO: Middle St. Croix Board of Managers
FROM: Matt Downing, Administrator
DATE: February 24, 2023
RE: **6a.) Request for Professional Services Summary**

Pursuant to Minnesota Statues Annotated 103B.227, Subd. 5, the Middle St. Croix Watershed Management Organization must solicit Letters of Interest Proposals for legal and engineering consulting services every two years. Per board direction, advertising was done via the Minnesota State Register and direct mail to local firms.

One proposal was received for legal services from our current provider, Kennedy & Graven. My recommendation is to accept and continue utilizing their services.

Four proposals for engineering services were received and are presented for review by the Board. The firms for consideration are as follows, with full proposals included in the meeting materials:

- cbec Inc. eco engineering
- Geosyntec Consultants, Inc.
- Short Elliot Hendrickson Inc.
- Emmons & Olivier Resources, Inc.

Requested board action: Make a selection for legal and engineering services for 2023-2024

TROY J. GILCHRIST
Attorney at Law
Direct Dial (612) 337-9214
Email: tgilchrist@kennedy-graven.com

Also: St. Cloud Office
501 W. Germain Street, Suite 304
St. Cloud, MN 56301
(320) 240-8200

December 1, 2022

Middle St. Croix Watershed Management Organization
c/o Matt Downing, Administrator
455 Hayward Avenue
Oakdale, MN 55128

VIA EMAIL AND U.S. MAIL

RE: Proposal to Provide Legal Services to the Middle St. Croix Watershed Management Organization (2023-2024)

Dear Mr. Downing:

Please accept this letter as the proposal of Kennedy & Graven, Chartered to provide legal services to the Middle St. Croix Watershed Management Organization ("MSCWMO").

I. KENNEDY & GRAVEN, CHARTERED QUALIFICATIONS

Kennedy & Graven has made a commitment to the representation of public bodies as a mainstay of its practice. More than 90% of the revenues of the firm are derived from the practice of municipal law. We currently serve as city attorney for civil matters for the following 50 cities: Biscay, Belle Plaine, Brooklyn Center, Brooklyn Park, Cokato, Cottage Grove, Crystal, Faribault, Franklin, Fridley, Greenwood, Holdingford, Hopkins, Independence, Kenyon, Lake City, Lake Elmo, Lauderdale, Mantorville, Maple Lake, McGrath, Maplewood, Marshall, Medina, Minnetonka Beach, Minnetrista, Mound, Mounds View, Nerstrand, New Brighton, New Prague, Nicollet, Oak Grove, Oakdale, Osseo, Pine Island, Rice, Richfield, Robbinsdale, Rogers, Rose Creek, Rosemount, Roseville, Sandstone, Shakopee, Tonka Bay, Victoria, Wahkon, Watson, West Concord, White Bear Lake, and Woodbury.

We also represent a large number of housing and redevelopment authorities, economic development authorities, port authorities, charter commissions, towns, joint powers organizations, watershed management organizations, school districts, and other special purpose political subdivisions as general counsel. We have represented several Minnesota cities as special counsel on specific projects on a broad range of municipal law matters. These have included Minneapolis, St. Paul, the

Minneapolis Park and Recreation Board, and St. Anthony as well as Bloomington, Burnsville, Duluth, Minnetonka and scores of others.

Over the years we have developed considerable experience in nearly all of the legal issues faced by cities and other units of local government. The experience of the firm that relates most directly to the work of the MSCWMO is our practice in the representation of joint powers watershed management organizations, which include the Lower Rum River Watershed Management Organization, the Bassett Creek Watershed Management Commission, the Shingle Creek Watershed Management Commission, the Middle St. Croix Watershed Management Organization, the Mississippi Watershed Management Organization, the Sunrise River Watershed Management Organization, the Vadnais Lakes Area Watershed Management Organization, and the West Mississippi Watershed Management Commission. We were also recently hired by the Rum River Watershed Partnership, which covers several watershed areas.

Our ability to provide services to such organizations is significantly enhanced by our experience in serving other governmental clients. As city attorney for a large number of municipalities and special counsel for many others, we advise our clients on the full range of local government issues on a daily basis. Additionally, the firm is nationally recognized as local government bond counsel. In this connection, we have given approving opinions and provided services relating to municipal finance matters (including financing of storm sewer facilities and county ditches) for several hundred cities, counties, school districts, and other such organizations throughout the state and, to a lesser extent, outside of the state of Minnesota.

This experience has not only allowed us to develop considerable experience in all matters relating to the activities of WMO's, but has given us a good understanding of the problems and concerns of cities. We believe that this understanding has helped in continuing a harmonious relationship between our WMO clients and their member cities and avoiding the problems and conflicts that can occur between cities and watershed districts. We take pride in the firm's broad understanding of the legal, economic, and political environment facing the public sector in Minnesota.

II. PROJECT TEAM QUALIFICATIONS

We propose Troy Gilchrist to be primarily responsible for the work for the MSCWMO. Troy has been an attorney since 1992 and has worked exclusively with local governments. He is currently the attorney for all of the watersheds listed above, except for one, and is the City Attorney for the cities of Crystal, White Bear Lake, Mound, Rice, Rose Creek, Biscay, and Watson. He has also provided special services to others cities at the request of the League of Minnesota Cities, serves as Town Attorney or Special Counsel to over 250 towns across the state, and several joint powers entities. Although his work for other joint powers WMOs is most directly related to the legal needs of the MSCWMO, his representation of cities, towns, and of other joint powers entities has given him the opportunity to be involved in many other ways in surface water management issues, the Wetland Conservation Act, public contracting, the state open meeting law, local land use issues, joint powers

organizations, financing of public improvements, intergovernmental relations, environmental law and public liability for storm water damages.

For the 15 years prior to joining Kennedy & Graven in 2006, Troy was the Director of Operations and General Counsel for the Minnesota Association of Township Insurance Agency and an attorney with the Minnesota Association of Townships. During that time, he worked to establish and run statewide self-insurance programs for towns, conducted training sessions, drafted articles, memos, and risk management materials for elected officials on legal matters, represented towns before state agencies and the legislature, and established and ran statewide self-insurance programs for towns.

We also propose Sam Ketchum to assist in the representation of the MSCWMO. Sam has a particular interest in watersheds and the work they do. He has been an attorney for five years and has assisted with various matters for several of the firm's clients.

III. RATES

For 2023, we propose an hourly rate of $195 and a rate of $200 for 2024. The firm also charges for certain expenses such as postage, copying, and mileage at the current IRS rate if we are required to attend a meeting.

IV. CONFLICTS

As noted above, we represent a large number of cities and towns across the state. We do not anticipate a particular conflict of interest that would arise if we continue representing the MSCWMO.

V. INSURANCE

The firm maintains coverage in the amount of $5,000,000 for professional liability and in excess of that amount (including umbrella coverage) for general commercial liability.

VI. CONCLUSION

If we can provide you with any additional information that would be helpful to you in selecting legal counsel, please do not hesitate to give me a call.

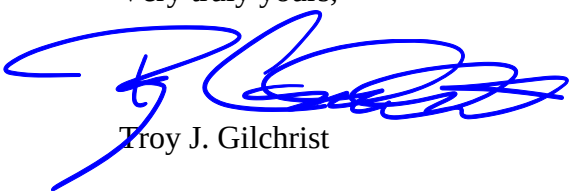
We would be happy to provide references on request. However, we would also encourage you to feel free to call representatives of any of the watershed management organizations or the city managers or administrators of any of the cities noted above that we represent as legal counsel, about the services provided by our firm.

We believe that Kennedy & Graven is uniquely suited to continue serving the MSCWMO. We know of no other firm that has the depth and breadth of experience in representing local government units

in Minnesota as Kennedy & Graven, and we pride ourselves in providing quality service to our public clients.

At Kennedy & Graven, our commitment to representing local government units and joint powers entities represents not only an interest in such work but a firm belief that the work of local government units is important. We would very much appreciate being given the opportunity to continuing serving as legal counsel to the MSCWMO.

Very truly yours,



Troy J. Gilchrist

cbec
eco engineering

Hydrology | Hydraulics | Geomorphology | Design | Field Services

Middle St. Croix Watershed Management Organization
455 Hayward Avenue
Oakdale, MN 55128
Attn: Matt Downing, Administrator

December 23, 2022

RE: ENVIRONMENTAL ENGINEERING SERVICES 2023–2024

Mr. Downing,

cbec, Inc. eco engineering (cbec) is pleased to submit this brief submission for environmental engineering services for the Middle St. Croix Watershed Management Organization (MSCWMO).

cbec specializes in eco engineering, a term that refers to the practice of water resources engineering in ways that provide ecologically-sensitive and environmentally-sustainable solutions in the fields of **hydrology**, **hydraulics**, **geomorphology**, and restoration **design**. cbec cultivates innovative solutions for water resources challenges through in-stream and river **restoration**, process-based **watershed assessments**, sediment management, **water quality monitoring**, **stormwater management**, and multi-objective floodplain management. cbec focuses on both urban and rural stream, river, and wetland environments, and where possible, develops solutions by working from the watershed scale down to the sub-reach scale. Founded in 2007, cbec is based out of West Sacramento, California with Midwest offices in Minnesota, Wisconsin, and Indiana. Our Minneapolis office will serve as the local contact for this opportunity.

cbec can provide MSCWMO with a team of experienced, processed-based engineers and geomorphologists that consider the complex trade-offs that exist between flood risk management, water quality improvements, and environmental restoration, and the demands of urban development. Our interdisciplinary team of engineers and scientists have the education and experience in earth sciences, ecology, hydrology, and civil engineering that is required for flood risk reduction and ecosystem management. We frequently work on multi-objective stream and floodplain restoration projects in heavily urbanized environments. We can deliver all components of a project, including assessment and opportunity identification, restoration concept development, plan generation, design, construction management / oversight, and post-project monitoring. In recent years we have conducted multiple interdisciplinary watershed assessments focused on characterizing watershed health and disturbances, and identifying, prioritizing and advancing restoration opportunities.

cbec's projects span coast to coast and overseas, including projects in the UK, Europe, and Central America. The next section will provide more detail on our more relevant work products for MSCWMO's consideration. cbec values maintaining open, clear, and regular communication with our clients, and we have an excellent track record for completing projects on time and within budget. We pride ourselves on providing efficient and focused execution of project tasks with outstanding levels of scientific rigor and technical accuracy. We look forward to discussing future opportunities with you in more detail.

Sincerely,

Dr. Chris Bowles, PE
President, cbec, Inc. eco engineering
c.bowles@cbecoeng.com

Relevant Experience

The following projects reflect cbec's diverse engineering skillset in both urban and rural environments. Learn **MORE** about each of these opportunities at our website.

Escondido Creek at Grape Day Park Feasibility Study

Escondido Creek Conservancy

cbec conducted a feasibility study and 30% design for a stormwater capture and treatment feature within a proposed urban park expansion in downtown Escondido, California. It consists of a subterranean storage tank that features several treatment levels including screens and baffles, as well as a recirculating surface water feature that promotes evaporation and infiltration of nuisance dry season flows. The surface feature, effectively a small channel with a series of riffle and pool sequences, further provides urban green space and habitat in a highly developed downtown core. Through its sub-surface and surface components, the feature would reduce nutrient and pollutant loading into Escondidio Creek, a concrete-lined flood control channel that is listed under Section 303d of the Clean Water Act for several constituents, particularly for the 'first flush' of each wet season. The design efficiently balances the needs of water quality improvements with those of recreational green space and urban habitat. **MORE**

Southport - South offset site pre-construction (top, 2016), during construction (middle, 2018), and post-construction after extensive vegetation growth (bottom, 2022)

Southport Multi-Objective Flood Control and Habitat Restoration Project

West Sacramento Area Flood Control Agency

The project's goal was to set back parts of the Sacramento River levee through West Sacramento, CA providing 200-year level of flood protection, valuable ecological function, and high recreational value on the restored floodplain. cbec implemented multiple studies to inform the geomorphic design of the proposed levee setback, such as: riprap assessments, erosion site identification and prioritization on almost 6 miles of levee, detailed 2D sediment transport modeling, levee breach analysis, extensive bathymetric, side scan sonar, and sub-bottom profiling and sediment transport measurements. cbec worked with a team on the restoration design component to create riparian, perennial marsh, and floodplain habitats that accommodate compatible public recreation for 150 acres of restored floodplain. Construction of the setback levee was completed in 2018, and the floodplain restoration component was finalized in 2019. cbec were retained to perform water quality monitoring during construction of the setback levee, and support and oversight during restoration construction, respectively. **MORE**

American River Parkway Cordova Creek Naturalization

Water Forum, Sacramento County Departments of Regional Parks, Sacramento Area Flood Control Agency

This urban stream rehabilitation project returned ecological function to an urban area while addressing channel erosion. Floodplain restoration was a major focus of the project; lowering the banks to reconnect the creek to its overbank areas and revegetating to provide benefits for habitat and flood management. The project involved geomorphic analysis, floodplain restoration, and biotechnical bank stabilization and grade control on a system with highly erosive soils and increased flows due to a hydromodified watershed. Specific tasks included riprap design, particle transport analysis and design compliance and quality control services during construction. In addition to traditional ground surveys (both for pre- and post–project conditions), post construction monitoring was conducted via an unmanned aerial systems (UAS) technology to monitor plant health and vegetation recruitment. **MORE**

Wetland Design in the Patoka Valley

Patoka Valley Conservation Partners

cbec prepared final designs for wetland creation and enhancement on two 40-acre parcels of land in Pike County, IN. This wetland project is located adjacent to the Patoka National Wildlife Refuge, which allowed for a unique opportunity to enhance the overall ecosystem within the greater wildlife area. In addition to design, cbec played a central role in facilitating coordination between stakeholders, conducted watershed scale geomorphic reconnaissance and surveys, hydrologic calculations, as well as providing construction oversight. **MORE**

Placer County Low Impact Development Guidebook Preparation

Placer County, CA

cbec was part of a team tasked with the development of a Low Impact Development (LID) guidebook for a county government. The purpose of the guidebook was to provide guidance on the use and implementation of LID techniques to protect and enhance the water quality of Placer County in the Yuba, Truckee and American River watersheds through the promotion of innovative, cost effective, stormwater management techniques in the higher elevations. As part of this process, site design and runoff management fact sheets were developed for selected LID measures. See link for examples. **MORE**

Cordova Creek - Phase II designs are currently in progress to restore the last section of channel (left) to provide fish passage to the lower American River

Relevant Experience

Arcade Creek Park and Preserve - Project site after biotechnical bank stabilization techniques applied.

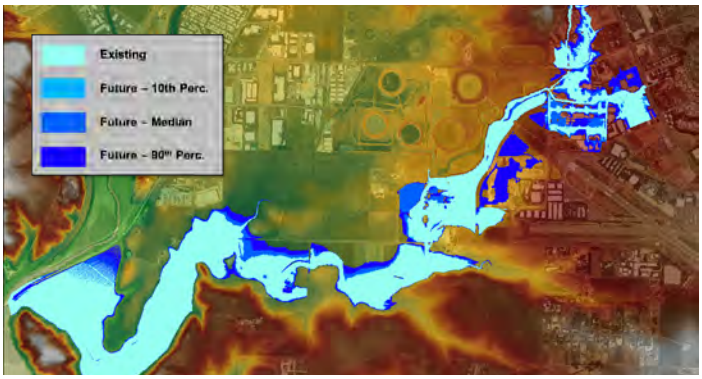
Arcade Creek Park Preserve Restoration Project
City of Citrus Heights, CA
cbec provided channel surveying, hydrologic and hydraulic modeling, and restoration design services on this effort to revitalize a deteriorated natural corridor for public use within a public park. Inset floodplain terrace designs and biotechnical bank stabilization techniques incorporating large wood features were implemented at three priority restoration sites. The project also required scour analysis, 2D modeling, riprap design to protect abutments of two new pedestrian bridges, and topographic surveys of existing and post–project conditions using a combination of a total station and RTK GPS. MORE

Big Creek Watershed GIS, Hydrologic, Water Quality Monitoring/ Analysis *Posey County Soil and Water Conservation District*
cbec conducted a yearlong hydrologic and water quality monitoring study at 5 sites within Indiana's Big Creek Watershed to prioritize subwatershed rehabilitation efforts. These datasets and analysis assisted in the targeting of future conservation and stabilization efforts in specific subwatersheds with the goal of reducing pollutant loads, and minimizing future maintenance expenditures. Additionally, analysis prepared for this study provide opportunities for targeted management efforts to effectively address nonpoint sources of pollution within the Watershed and help to understand the significance of sediment, nutrient, and bacteria loading from tributaries to the Wabash River. MORE

Lower American River - Upper Sailor Bar site before and after side channel installation.

Lower American River Salmonid Habitat Improvement Program
Water Forum
This program was created to address habitat reduction and fisheries decline in the lower American River, and fosters the design and installation of at least one salmonid habitat improvement project annually. Since its inception in 2010, this program has created more than 30 acres of spawning beds, 1.2 miles of side channels, and has placed 92,000 cubic yards of spawning gravel. cbec has provided planning, design, and construction monitoring for the program, resulting in 8 completed projects. Post-project monitoring has documented the incredible success of this effort with high spawning and rearing activity occurring after construction. MORE

Climate Change Analytical Services: Scalable Modeling Framework to Summarize Impacts of Climate Change on Flow and Flood Impacts
Projects spanning the range of urban stormwater capture and treatment to creek and river restoration have long been designed to accommodate historical flow thresholds, such as a 2-yr, 24-hr rainfall event or a 100-year flood. But the effect of climate change, which threatens to increase the prevalence and intensity of extreme rainfall and shift the timing and duration of wet and dry periods overall, has often not been considered. To bridge this gap, cbec has developed a climate change methodology and toolkit to leverage Generalized Circulation Model (GCM, also referred to as Global Climate Model) outputs to understand how precipitation and streamflow are likely to change under a range of potential future atmospheric conditions. This toolkit can be applied to understand both event-based phenomena (e.g., increases in precipitation intensity for a 10-yr, 24-hr rainfall event) and long-term patterns (e.g., water supply and long-term flood risk) over a range of small urban catchments to large watersheds. MORE



Climate Change Modeling - Flood risk inundation mapping for existing conditions and future climate scenarios for 100-yr event.

Ecological Floodplain Inundation Potential (EcoFIP)
EcoFIP refers to a suite of eco-hydraulic modeling tools developed to identify and evaluate physical opportunities for multi-benefit floodplain rehabilitation through levee modification (setbacks and/or breaching) or topographic modification. The scalable approach systematically screens river corridors to identify restoration opportunities at the reach (river mile) and parcel scale and quantifies potential changes to inundation, suitable terrestrial and aquatic habitat, and groundwater recharge. The tools are under continual development by cbec programmers, who are currently working on a module to quantify nutrient load reduction on floodplains. MORE

Key Personnel and Qualifications

Chris Bowles, PhD, PE
President
West Sacramento, CA
Dr. Bowles is a Civil Engineer specializing in hydraulics, hydrology, geomorphology, water resources, water quality, and environmental restoration. He has more than twenty-five years of project management experience on a wide variety of large multi-disciplinary, multi-stakeholder projects involving floodplain restoration, sediment studies, watershed hydrology, water quality, and river and wetland restoration. His technical

Key Personnel and Qualifications

expertise spans the range of hydraulic and hydrologic modeling (HEC software and a wide variety of 1D, 2D and 3D hydraulic models), geomorphology, GIS and field data collection methods. Prior to specializing in environmental hydrology, Dr. Bowles worked initially as a land surveyor and latterly as a site construction supervisor. He founded cbec eco engineering in 2007 to provide ecologically sensitive and sustainable solutions in the fields of hydraulics, hydrology, geomorphology, and restoration design. Dr. Bowles has developed many training courses for a variety of clients, most relevant to this opportunity being UC Davis Continuing and Professional Education. Since 2009, Dr. Bowles has taught courses on a range of topics including: hydraulics and hydrology, streambank assessments, sediment and erosion, geomorphic and watershed assessments, and fluvial geomorphology.

John Stofleth, MS, PE
Senior Ecoengineer III
Wadesville, IN

John Stofleth has over seventeen years of experience in hydraulic engineering, fluvial and estuarine geomorphology, and watershed ecology. At cbec, John has worked on several projects that include the development of one-, two-, and three- dimensional hydrodynamic and sediment transport models. Additionally, he has performed extensive watershed scale hydrologic and geomorphic assessments. He is adept at evaluating and implementing projects that require complex hydraulic and geomorphic solutions. John has also been involved in several research projects that embody new trends in the field of stream restoration including the effects of dam removal on channel morphology, the analysis of large wood as a tool in stream restoration, and the importance of hyporheic exchange in overall stream integrity. He earned his bachelor's degree in Environmental Geosciences at Purdue University before continuing to the University of Mississippi for his master's in Environmental Engineering.

Matthew Weber, MS, PE
Ecoengineer II
Wauwatosa, WI

Matt is a registered Professional Engineer with a diverse background in fluvial geomorphology and restoration ecology. At cbec, Matt is a project manager and leads multiple large-scale hydrodynamic modeling efforts to assess flood risks, project alternatives, sediment transport potential, habitat quality, and fish passage performance. He also serves as a technical advisor for modeling and GIS tasks, and has advanced cbec's Training and Mentoring Program and Quality Management Program. Matt has extensive experience processing LiDAR data, analyzing spatial data in ArcGIS, QGIS, LAStools, and R, developing 2-dimensional hydrodynamic models in SRH-2D and HEC-RAS, developing 1-dimensional sediment transport models in HEC-RAS, and assessing rock riprap revetment designs. Matt has a dual bachelor's degree in Civil Engineering and Environmental Studies from University of Wisconsin, Madison, and a master's degree in Hydrologic Sciences from University of California, Davis. For his master's thesis, Matt developed a novel method for improving uncertainty estimates in digital elevation models to analyze fluvial topographic change and calculate sediment budgets. Matt is broadly interested in ecosystem restoration and draws heavily from his experience leading large-scale restoration projects in Wisconsin.

Luke Tillmann, MS
Ecohydrologist II
Minneapolis, MN

Luke has over 8 years of hydrologic and hydraulic modeling experience using HEC-HMS, HEC-ResSim, USGS PRMS, HEC-RAS, TUFLOW, and Delft3D. As both a project manager and technical team member, he has overseen and supported numerous hydrologic and hydraulic analyses including water budgeting, reservoir operations modeling, site and structural design, habitat quantification, and hazard assessment. He is also an avid computer programmer, with experience using R, Fortran, C++, Python, Matlab, and Visual Basic. The latter he used to develop a suite of coding packages for processing model data, including habitat suitability index calculations, custom reservoir operations models, real-time precipitation forecasting and climate data processing, numerous GIS analyses, and Monte Carlo applications to hydrologic and hydraulic models. He has also overseen the development of cbec's climate change program to develop tools for assessing hydraulic impacts of variations in future precipitation and temperature, and administers cbec's internal knowledge sharing website, which runs on Microsoft's SharePoint platform. Luke completed his bachelor's degree in Environmental Sciences, with minors in GIS and Forestry, at the University of California, Berkeley, and then went on to University of California, Davis for his master's in Hydrology. His master's thesis produced a model of 3-dimensional circulation patterns in Englebright Lake to estimate stream wood flux dynamics through the Yuba River watershed in California. Later, Luke would return to UC Davis to teach multiple intro to hydrology and hydraulics seminars.

Fee Schedule

2023 HOURLY LABOR RATES	
STAFF LEVEL	**Rate**
President	$311
Director	$288
Senior Scientific Advisor	$368
Senior Ecoengineer / Ecohydrologist III	$259
Senior Ecoengineer / Ecohydrologist II	$225
Senior Ecoengineer / Ecohydrologist I	$201
Ecoengineer / Ecohydrologist II	$185
Ecoengineer / Ecohydrologist I	$161
Technician II	$145
Technician I	$110
Clerical / Admin / Graphic Design	$105

Expenses are invoiced at 110% of cost. Unless expressly provided for within the contract, rates are subject to increase annually January first.

Middle St. Croix Watershed Management Organization
455 Hayward Ave
Oakdale, MN 55128
Attention: Matt Downing, Administrator (*via email)*

February 7, 2023

Subject: Letter of Interest to Provide Professional Services for 2023-2024

Dear Mr. Downing,

Geosyntec Consultants, Inc. (Geosyntec) is pleased to provide the Middle St. Croix Watershed Management Organization (MSCWMO) with the following Statement of Qualifications (SOQ). Geosyntec offers an outstanding team of diverse individuals with water and natural resources (WNR) expertise (see more here) and the desire to help Minnesota cities better manage their resources.

Geosyntec offers these services through a Minnesota-based management team supported by a connected framework of knowledgeable stormwater practitioners to provide national support. Geosyntec offers MSCWMO the following benefits:

- Nationally recognized expertise in watershed planning, lake/wetland management, stormwater (SW) management, water/water quality modeling/monitoring, dams and levees, brownfields restoration, civil site design, and water resources permitting.
- Innovative approaches that minimize long-term project costs and make permit compliance easier.
- Local project manager with a proven track record of managing many water resources projects.

We believe our Geosyntec team is optimally qualified to provide exceptional service to the MSCWMO by providing close personal interaction with a single point of contact who will be backed by local administrative staff and other national experts in the field. Thank you for allowing us the opportunity to submit this SOQ. We look forward to working with the MSCWMO.

Sincerely,

Nigel Pickering, Ph.D., P.E., Senior Engineer
Project Manager
npickering@geosyntec.com
612-253-8214

Matthew Bardol, P.E., Senior Principal
Senior Advisor
mbardol@geosyntec.com
630-432-5675

Firm Profile

Geosyntec is a multidisciplinary consulting and environmental engineering firm with 1,800 employees and about 200 Water and Natural Resources practitioners. The company has 90 offices worldwide with a local office in Minneapolis, Minnesota.

Key Client Issues: Watershed managers face a multitude of issues related to surface water, groundwater and the desire for healthy communities. Our clients rely on us to provide high quality and experienced professionals to help these managers.

Why Geosyntec?: Geosyntec works closely and collaboratively with clients to fully understand the nature of the problem. We provide experts along with rigorous assessment to investigate causes, then deliver a well-conceived plan and design.

Subject Matter Experts: Geosyntec has built a team of nationally recognized technical experts, with 65% having advanced technical degrees and 12% holding doctoral degrees in relevant fields (see more on the project team below).

Local Experience: Since 2009, Geosyntec has worked locally on brownfield redevelopment and site remediation. The addition of Nigel Pickering, an experienced practitioner with strong watershed ties, allowed us to expand our WNR work into Minnesota.

Key Personnel

Nigel Pickering, Ph.D., P.E., Senior Engineer (Minnesota) (assigned to MSCWMO). Dr. Pickering is a Senior Water Resources Engineer with more than 30 years of experience in the academic, nonprofit, and consulting arenas, providing his expertise to watershed monitoring and modeling, water quality, water resources planning, and stormwater design and modeling. He is proficient with numerous water resources models including HEC-RAS, HydroCAD, HSPF, P8, and SWMM. Nigel has managed many large, long-term projects including full oversight from start to finish.

David Richardson, P.E., P.G., Senior Engineer (Minnesota) (assigned to MSCWMO). Mr. Richardson has more than 30 years of experience in environmental and engineering projects for private and public clients. David has managed construction of two OptiRTC real time stormwater monitoring and control systems and has developed Stormwater Pollution Prevention Plans (SWPPP) and sediment control (ESC) plans for construction projects. He has provided subcontractor oversight during the excavation, drying, and off-site landfilling of impacted sediments from a stormwater pond.

Matthew Bardol, P.E., CFM, CPESC, D.WRE, Senior Principal (Illinois) Mr. Bardol has more than 25 years of environmental and water resource engineering experience. He has played a key role in developing detailed hydrologic and hydraulic studies for Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), SW management designs, navigating intricate flood control efforts, and managing permits. His career focuses on flood mitigation strategies for large residential developments and complex stormwater studies.

David Vance, P.G., Principal (Georgia). Mr. Vance has 9 years of national experience in using fluvial geomorphology for restoration projects. He has experience in stream restoration where natural flow regimes have been altered. He provides adaptive management and restoration planning approaches and oversees construction and monitoring. Mr. Vance is certified in river restoration through Rosgen Level IV in Natural Channel Design and North Carolina Stream Restoration Institute Level III. He also has significant experience on restoring wetlands.

Lena Nyblade, B.A., Staff Scientist (Minnesota) (assigned to MSCWMO). Ms. Nyblade has 3 years of experience in water resources, field sampling, data visualization and litigation. She is interested in data visualization and modeling for surface/groundwater contamination and the impacts of geology on environmental contamination and remediation. Her field and lab work experience include QA/QC, water collection, soil and sediment collection, and air monitoring. Lena combines her data and Geographic Information Systems (GIS) expertise for efficient data processing for model development using Python.

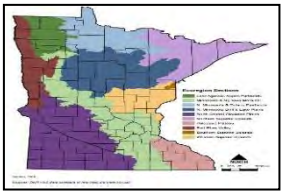
Fee Schedule for 2023-2024

Personnel Category	2023 Rate/Hour	2024 Rate/Hour	Other Expenses
Technician / Administrator	$74	$78	Direct Expenses: Cost plus 12% Personal Automobile (per mile): Current Government Rate
Staff	$136	$140	
Senior Staff	$159	$164	
Professional	$180	$185	
Project Professional	$203	$208	
Senior Professional	$230	$235	
Principal	$250	$255	
Senior Principal	$269	$275	

Relevant Project Experience

Urban Stormwater Design, Management & Monitoring

Geosyntec's national SW management practice regularly designs Best Management Practices (BMPs), including Low Impact Development (LID), Green infrastructure (GI) or real-time monitoring and control systems. We have experience in construction management and monitoring for BMPs. Geosyntec has also prepared many stormwater technical design manuals.

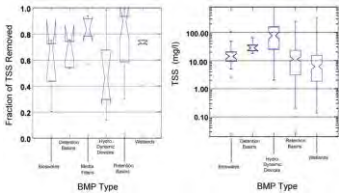


Development of Pretreatment Guidance for Stormwater Runoff Control Practices, Minnesota. Geosyntec was tasked by the Minnesota Pollution Control Agency to gather information on water quality benefits and maintenance expectations for pretreatment systems such as vegetated filter strips, hydrodynamic separators, underground settling devices, swales, and forebays for incorporation into the Minnesota Stormwater Manual (Manual). The Manual assists stormwater practitioners for selecting BMPs, meeting regulatory requirements, and determining stormwater pollutant/ volume reductions.

Curtiss Pond: Design and Installation of an Intelligent Stormwater Control System for Flood Mitigation, Falcon Heights, Minnesota.. The project objective was to improve the flood risk protection at Curtiss Field. A gallery of underground perforated pipes was installed at the outlet of a retention basin to optimize storage and infiltration by using an intelligent stormwater system. The system was installed in May 2015 with OptiRTC, an internet-based, real-time monitoring and control network for stormwater detention and water conservation.

Long Lake Stormwater Retrofit Design, Littleton, Massachusetts. Geosyntec used innovative watershed-based approaches to managing stormwater into Long Lake. Using LID stormwater techniques, Geosyntec created a comprehensive retrofit program to reduce sediment and nutrient loading to the lake. Geosyntec also provided stream daylighting designs, permitting and construction oversight for a stream discharging to the lake near a town beach.

Mirror Lake Stormwater Improvements, New Hampshire. Geosyntec developed a comprehensive watershed management plan for Mirror Lake. The lake is on the state List of Impaired Waters due to cyanobacteria blooms. Phase 1 of this project included development of a phosphorus loading model and a management strategy to reduce cyanobacteria blooms. The project also involved sediment sampling, vegetation surveys, and developing outreach materials. Phase 2 involved design, permitting and construction oversight of stormwater improvements, including bioretention, sand filters, and bioswales.



International Stormwater BMP Database, WERF. The stormwater BMP database is a collection of BMP performance information from sites throughout the United States and other countries. Geosyntec and partners designed the database based on standardized BMP performance monitoring and reporting protocols. Geosyntec assisted with the development of a guidance document for future BMP effectiveness studies such that the monitoring and reporting protocols are met. Geosyntec routinely updates the database to report on new BMP effectiveness studies.

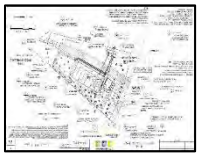
Restoration and Management of Lakes, Wetlands, and Streams

Geosyntec offers a comprehensive approach to the management of water bodies. Geosyntec practitioners are proficient in lake modeling tools including BATHTUB and CE-QUAL-W2. Our wetland scientists provide delineation, monitoring, and restoration of wetland and aquatic habitats while our stream restoration staff have significant experience with Rosgen methods.

Wetland Restoration-Confidential Client, South Carolina. Restoration of an industrial urban wetland was required by the USACE and the State following the removal of the contaminated surface soil. Geosyntec drafted a wetland restoration and monitoring plan to restore pre-disturbance form, hydrology and vegetation. The restoration plan utilizes adjacent, undisturbed vegetation and soils to establish reference conditions, and details short- and long-term monitoring plans to promote native wetland vegetation and hydrology.

Lower Buttermilk Creek Bank Stabilization Project, Austin, Texas. Lower Buttermilk Creek had significant erosion resulting from high streamflow. The eroded stream bank had undermined existing storm drain and other infrastructure. Geosyntec designed and implemented solutions to stabilize the stream bank, protect threatened infrastructure, restore native vegetation, and preserve aquatic habitat. The approach used drilled pile and concrete retaining wall for bank stabilization with limestone block facing and reinforced vegetated soil slopes to resist erosion.

Queens Mirror Lake Nutrient Reduction Facility, Casselberry, Florida. Queens Mirror Lake has elevated nutrient levels in the Lake. Geosyntec designed and implemented an inflow-based nutrient reduction facility (NURF) using alum treatment. The appropriate coagulant dosing was performed with our SiREM laboratory. The full design of the facility included construction drawings, control system specifications, and permitting necessary for bidding purposes.



Mule Creek Dam Reservoir Inundation Mapping, California. Geosyntec conducted dam breach analyses, inundation mapping, and created an Emergency Action Plan (EAP). The updated EAP could aid emergency evacuation in the event of the dam breach failure. The study included data acquisition, HEC-RAS 2D model setup, model parameterization, model simulation execution, results evaluation, and inundation mapping. Sunny-day and storm-induced failure scenarios were also modeled.

Stream Restoration Design for a Metals-Impacted Brownfield, Confidential Location. This location was a metals-impacted site undergoing cleanup by removal of contaminated soil from 500 linear feet of an intermittent tributary and over two acres of adjacent wetland. Geosyntec redesigned the stream to replicate the existing stream ecosystem including native vegetation, gravel, cobble substrate, and meandering flow path. Geosyntec also managed the restoration of two acres of bordering wetland to replicate a heavily vegetated forested floodplain.

Watershed Management and Planning

Geosyntec is a national leader in watershed management, working with local government clients to meet their watershed planning, water quality, and flooding challenges. Our experienced professionals are known for their innovative work in watershed and stormwater management. Geosyntec is also recognized for transferring technologies from academia to commercial/public use.

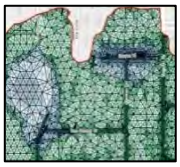
Statewide Watershed-Based Plans, Massachusetts Department of Environmental Protection (MassDEP). Geosyntec developed a web-based tool for statewide Watershed-Based Plans (WBPs). The watershed-planning tool integrated science, engineering, public policy, and public education. Geosyntec's tool helps users develop WBPs that meet the nine elements required by the USEPA. The tool allows organizations and communities to complete a technically robust WBP efficiently and allow the state to focus on funding on watershed restoration.

Green Infrastructure Outreach for Municipalities, Northeastern Illinois. Geosyntec worked with the Chicago Wilderness' Sustainable Watershed Action Team to help communities integrate GI into their master planning and help achieve the region's Green Infrastructure Vision. Our team worked with local agency staff to facilitate all day mapping workshops to identify spatial data and compile a GIS-based resource inventory of GI and other features to identify opportunity areas for implementing GI strategies.

Stormwater Master & Capital Improvement Planning, Framingham, Massachusetts. Geosyntec collected data for over 1,000 drainage structures and conveyance features like pipes, culverts, and open channels. Geosyntec integrated the new data into the town's asset management system. Hydrologic/hydraulic models using SWMM5 were then used to evaluate existing conditions, and then identify areas of potential flooding and high pollutant loading.

Hydrologic/Hydraulic/Water Quality Modeling

Geosyntec has excellent surface water modeling expertise including hydrology/hydraulics, sediment transport, and water quality for both upland and receiving waters. Geosyntec practitioners are proficient in variety of models including BATHTUB, CE-QUAL-W2, HEC-RAS, HSPF, P8, QUAL2K, SWMM and WINSLAMM.

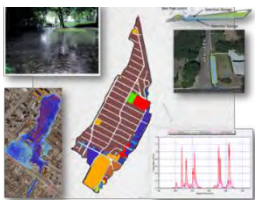


Temple Drive Drainage Retrofit, City of Winter Park, Florida. This project developed feasible engineering alternatives to provide an acceptable flooding level of service (LOS). Geosyntec compiled GIS data, reports, surveys, and plans then conducted field confirmation. ICPR4 was used for 2D overland flow and a 1D piped network to establish baseline conditions. Modeled scenarios examined mitigation alternatives then developed conceptual plans and cost estimates for each feasible alternative.

Fox River Water Quality Model, Fox River, Illinois. The Fox River Study Group is implementing a workplan to eliminate water quality impairments due to high phosphorus concentrations. This work includes water quality monitoring/modeling and development of the Fox River Implementation Plan (FRIP). Geosyntec updated an existing model to QUAL2k for a continuous simulation of water quality. Geosyntec used the new model to simulate the various watershed management scenarios.

Run Reservoir System Dam 2 Tower Improvements, Portland, Oregon. A hydrodynamic and water quality model (CE-QUAL-W2) was developed for two drinking water reservoirs and the downstream river. The calibrated model was utilized to explore alternative reservoir operations management scenarios. The study facilitated upgrades to the intake tower and allow targeted water releases to protect fish habitat downstream.

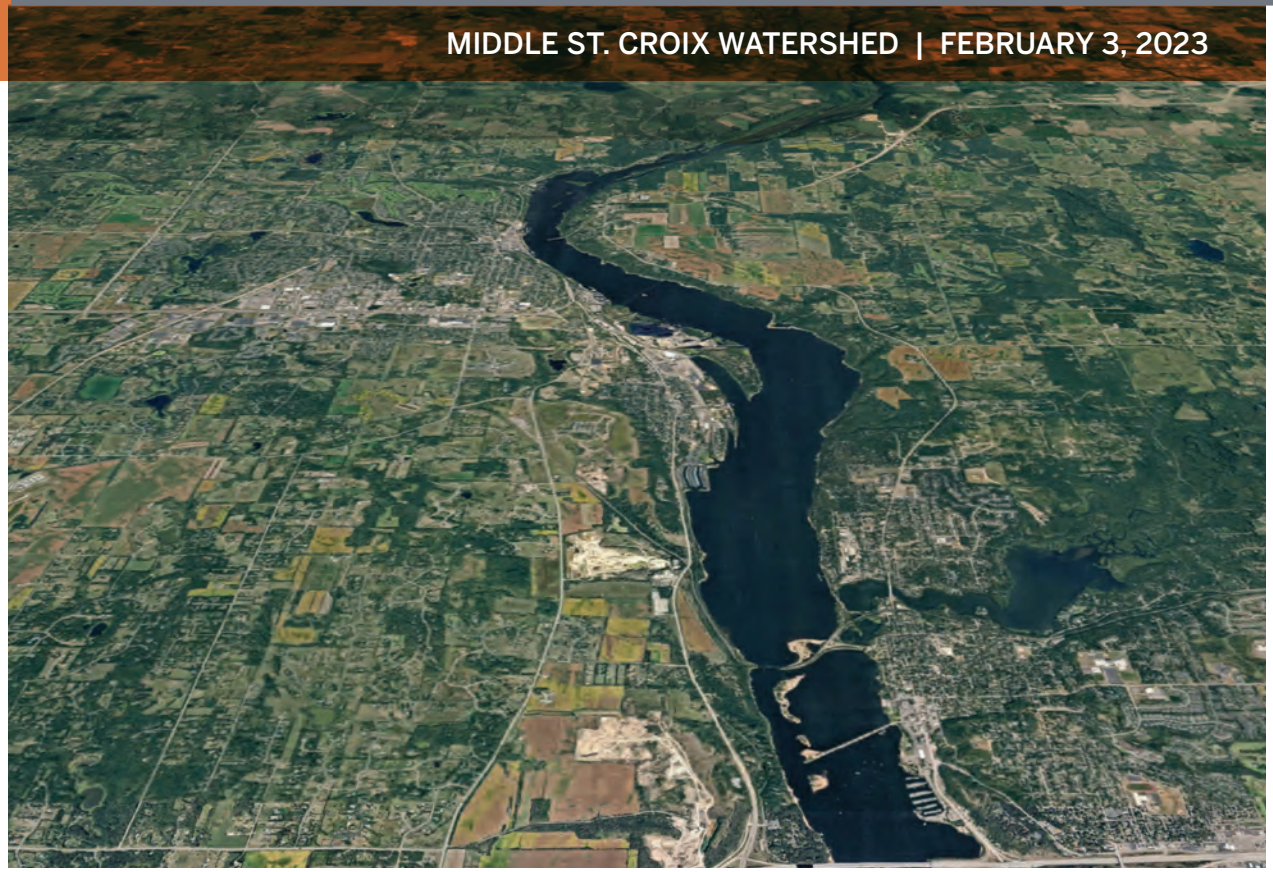
Green Stormwater Infrastructure Modeling, Metropolitan Water Reclamation of Greater Chicago (MWRD-GC), Illinois. Geosyntec worked with MWRD-GC to determine the best solutions for flooding in the Chicago's Calumet Service Area. The team used innovative modeling approaches to identify GI solutions based on site conditions and evaluation criteria to outline an implementation strategy and create a long-term stormwater management plan. The study used cloud-based optimization to evaluate 70,000 scenarios and find optimal combinations of green and gray solutions.



Impact of Decentralized Green Stormwater Controls, Austin, Texas. The City of Austin is evaluating opportunities to solve flooding, channel erosion, and water quality problems in Grover Channel, which frequently exceeds its conveyance capacity and causes flooding. Geosyntec explored a decentralized, GI approach to reduce peak flows and runoff volumes to the conveyance system. Modeling used 25 years of 5-min precipitation, 6-inch resolution surface topography, and the PCSWMM 2D model for overland flow simulation to evaluate the impacts of decentralized controls on peak flowrates and runoff volumes.

QUALIFICATIONS FOR ENGINEERING SERVICES

Middle St. Croix Watershed Management Organization



SEH

Building a Better World for All of Us®

Engineers | Architects | Planners | Scientists

February 3, 2023

Middle St. Croix
Watershed Management Organization
Attention: Matt Downing
mdowning@mnwcd.org

Building a Better World
for All of Us®

Re: Qualifications For Engineering Services

Dear Mr. Downing and Members of the Selection Committee:

The Middle St. Croix Watershed Management Organization (MSCWMO) is seeking engineering services to support the work you do to protect water resources in the St. Croix Valley area. At Short Elliott Hendrickson Inc. (SEH®), we are excited for this opportunity to provide as needed engineering services for projects focused on implementing the Clean Water Fund. We are confident that the service areas you are requesting and other service areas you may need are an excellent match for our staff and the level of service we are able to offer. We look forward to the opportunity to serve as an extension of your staff and build a strong working relationship with you. The following key points highlight our proposal.

RESPONSIVE SERVICES AND CLEAR COMMUNICATION.

Our team will communicate clearly and respond efficiently to your project needs. Emily Jennings will be your day-to-day contact. She will facilitate communication and lead an SEH team that can proactively assist in planning and implementing improvements while also offering the flexibility that is often required to adjust our approach to meet your project needs. John Parotti will serve as a back up to Emily.

PROJECTS DELIVERED TO THE BEST INTERESTS OF MSCWMO AND CITIES IN THE WATERSHED.

We have assembled an exceptional team of engineers, natural resource scientists, and water quality scientists who are invested in the St. Croix Valley area community and understand the high value of watershed management. By drawing on our familiarity with MSCWMO policies and water resources in the St. Croix Valley area through our work and experience in Bayport, Lakeland, Lakeland Shores, Lake St. Croix Beach, St. Mary's Point, and Stillwater, we will help you implement policies and updates that reflect the long-term interests of all affected parties.

KNOWLEDGE OF STANDARDS, POLICIES AND PERMITTING REQUIREMENTS.

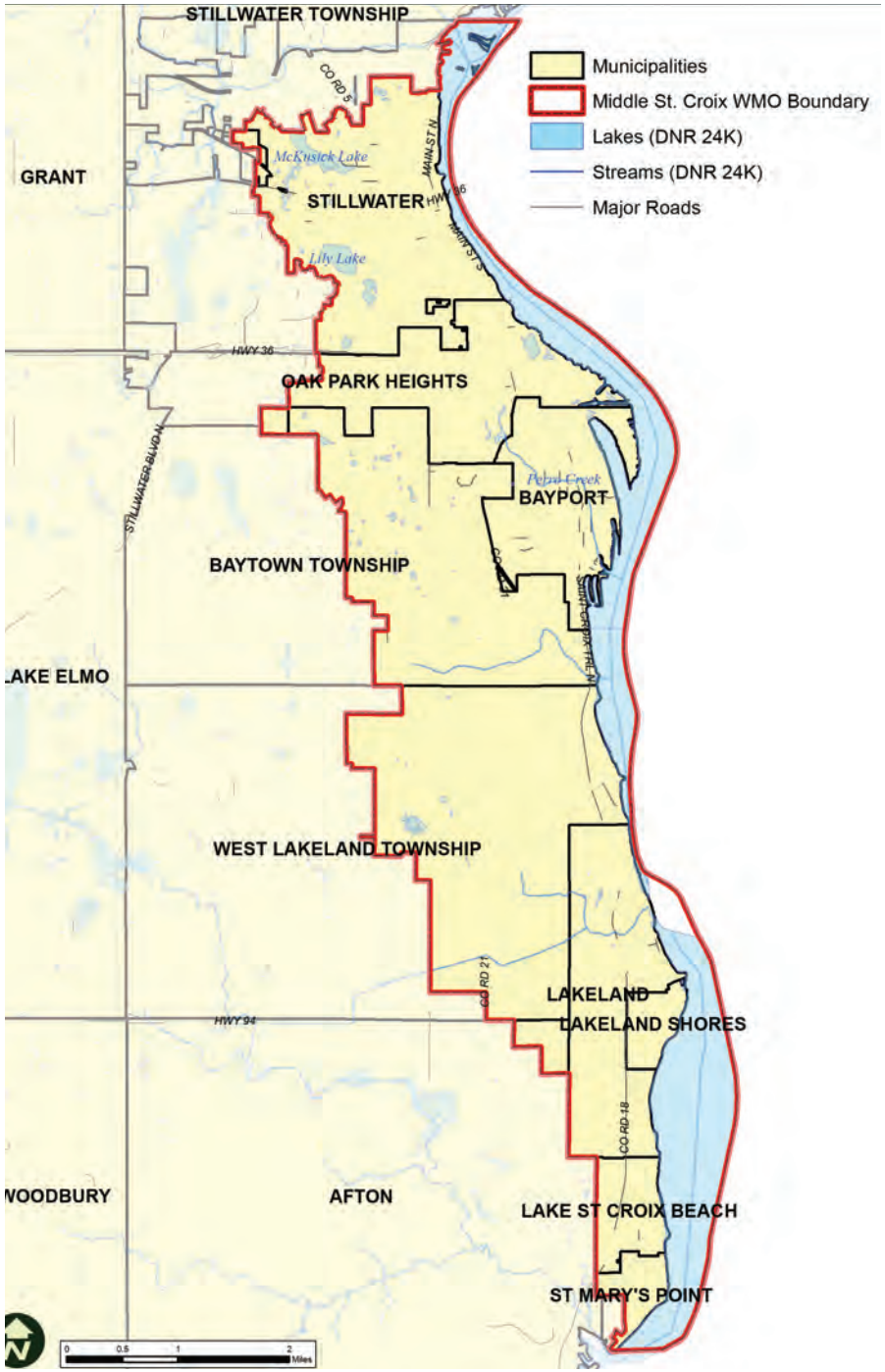
SEH has long-standing, positive working relationships with our regional regulatory agencies, and we know their standards and requirements. We are committed to establishing project details and goals early to provide the groundwork for effective decisions. In addition, we currently assist and serve municipalities within the MSCWMO watershed boundaries. We will continue to leverage the efficiencies that come from our familiarity of stormwater policy as well as municipal policies, stakeholder expectations, and design standards.

Please feel free to contact Emily at 218.576.7944 or ejennings@sehinc.com with any questions or to discuss the information provided in this proposal.

Respectfully submitted,

EMILY JENNINGS PE (MN)
PROJECT MANAGER

JOHN PAROTTI PE (MN)
CLIENT SERVICE MANAGER



CONTENTS

The specific licenses and credentials of the team members are described in the personnel and/or resume section of this document.

MSCWM 156517

Executive Summary

At SEH, we are proud of our ability to serve as a trusted advisor to your staff. Studying the way you operate and seamlessly integrating our services into your "system" is fundamental to our business philosophy. Every client is unique in the way they operate, the services they require, and their priorities. The key to providing successful and consistent service is having a thorough understanding of the client. When working with SEH, you can expect:

- Personalized, client-centered service
- A single contact person and "core team" to serve as an extension of your staff
- An honest, trustworthy interface that strives for a long-term, equally beneficial relationship
- A relationship which continuously works to develop and improve our capability to match your needs and expectations
- Responsiveness that equals your sense of urgency

Working as an extension of our clients' staff, we can provide project management expertise, lead environmental work, and manage the permitting process. Our team of scientists and engineers are assets to the process due to their abilities to analyze project elements that could affect environmental review decisions.

We believe success is about working together in collaboration and partnership and we have long standing relationships with our clients. With that same collaborative spirit, we've developed positive working relationships with our regional regulatory agencies so project details are understood early, and mutually beneficial goals are determined for successful and efficient permit decisions.

This proposal describes SEH's experience in each of the primary service areas requested in the RFQ. While this information is focused on the requested services, our extensive experience in other areas of water resources such as floodplain management, wetland and natural resource services, and feasibility studies and design assistance creates a well-rounded team of professionals who are eager to serve MSCWMO.

ASSIST IN THE IMPLEMENTATION OF CLEAN WATER FUND PROJECTS

SEH offers a dedicated staff of engineers, scientists, and grant writers who are experienced in providing technical support for grant applications and other funding sources. Our funding team has successfully generated hundreds of millions of dollars in grant money for clients. Our funding team also has experience with legislative appropriations and grant applications both on local and state levels as well as federal funding. We will apply this experience to find the right sources for your projects. Our close relationship with our clients allows us to effectively work together and provide the necessary technical guidance to prepare successful grant proposals.

We have the resources and knowledge to know which types of funding and grants a project may qualify for, whether it be Board of Water and Soil Resources (BWSR) grants, Minnesota Department of Natural Resources (DNR) Flood Damage Reduction program, or new funding programs that are being developed or have been recently established. SEH worked with three cities to prepare successful applications for the Minnesota Pollution Control Agency (MPCA) community planning grants for stormwater, wastewater, and community (SWC) resilience, and were successful in securing 30% of all available SWC funding in 2021, the first year of the grant program, totaling more than $250,000 in funds.

SEH also has significant experience in assisting our clients with using their secured funds. We understand the importance of delivering project milestones, deliverables, and reporting that meet the requirements of specific funding. SEH project managers are knowledgeable in the coordination methods and techniques necessary to achieve the detailed expectations of various sources of funding.

GREEN INFRASTRUCTURE STORMWATER MANAGEMENT

SEH has substantial experience in assisting our clients with green infrastructure stormwater management including policy development, planning exercises, design, construction, and operation and maintenance. Our project experience includes incorporating green infrastructure designs into commercial and residential developments, roadway designs, and redevelopment projects

The Whitaker Pond Improvements Project included innovative green infrastructure techniques to treat stormwater prior to discharge to Lambert Creek.

Through our experience, we have adapted to varying regulatory frameworks, site conditions, and client expectations. We have designed numerous projects which balance a multitude of requirements such as:

- Water quality
- Water quantity
- Recreational and aesthetic values
- Economic considerations

We are able to cater our GSI designs to meet the needs of small, localized watersheds, large regional watersheds, TMDL studies, or WLA assignments and include aesthetic features to provide amenities to the public or private space. We use creative solutions to meet the needs of our clients most efficiently.

SEH is an employee-owned engineering, architectural, environmental, and planning company that helps our clients implement resilient solutions to complex challenges. Our approach to projects reflects a company-wide commitment to improve the quality of life by designing safer, more sustainable infrastructure and landscapes. We do this through our multidisciplined teams that are capable of drawing upon this mindset throughout the entire project life cycle, from the project planning through construction and everything in between.

BIOENGINEERING RIVERBANK AND SLOPE STABILIZATION

SEH has extensive experience with the geography and land feature types within the MSCWMO from the St Croix River National Scenic Riverway and adjacent bluffs, to the ravines, gulleys, and streams which drain to the St Croix River. We understand that bioengineering riverbank and slope stabilization projects can vary in solution type and approach depending on the setting involved and intent of the stabilization project. Our team of natural resource scientists, biologists, water resources, and geotechnical engineers can accommodate the variation in complexity and approaches to develop resilient solutions. Our team does not only rely on one approach and can pull from staff formally trained in fluvial geomorphology and process-based channel design, geotechnical engineers that specialize in slope stabilization, and natural resources scientists and biologists that ensure the restoration techniques and types are appropriate for the site. Our team's extensive experience with stream stabilization combined with knowledge of hydraulic and geotechnical engineering means we can steer the project and project team to quickly and efficiently arrive at implementable solutions.

We draw on SEH knowledge and experience and also solicit early input from the project stakeholders to assist in identifying cost effective, reasonable, and constructible solutions. This effort aids in selecting the best methods to stabilize the ravine, riverbank, and bluff slopes while addressing the concerns and goals of all interested parties. Upfront coordination and buy-in from stakeholders help identify any differing expectations, understand permit requirements, and identify critical final design, permitting, and construction considerations.

SEH also has extensive experience working with agencies that administer the wide range of governing water regulations, including the U.S. Army Corps of Engineers (USACE), Minnesota Department of Natural Resources (MNDNR), Board of Water and Soil Resource (BWSR), US Fish and Wildlife Service, Minnesota Pollution Control Agency (MPCA), and many other state and local agencies. We have also worked on numerous County ditch projects.

OTHER SERVICES

SEH offers a diverse portfolio of water resources project experience including service areas outside of those listed in the request for qualifications. Our team has the experience and knowledge to help with the following additional services:

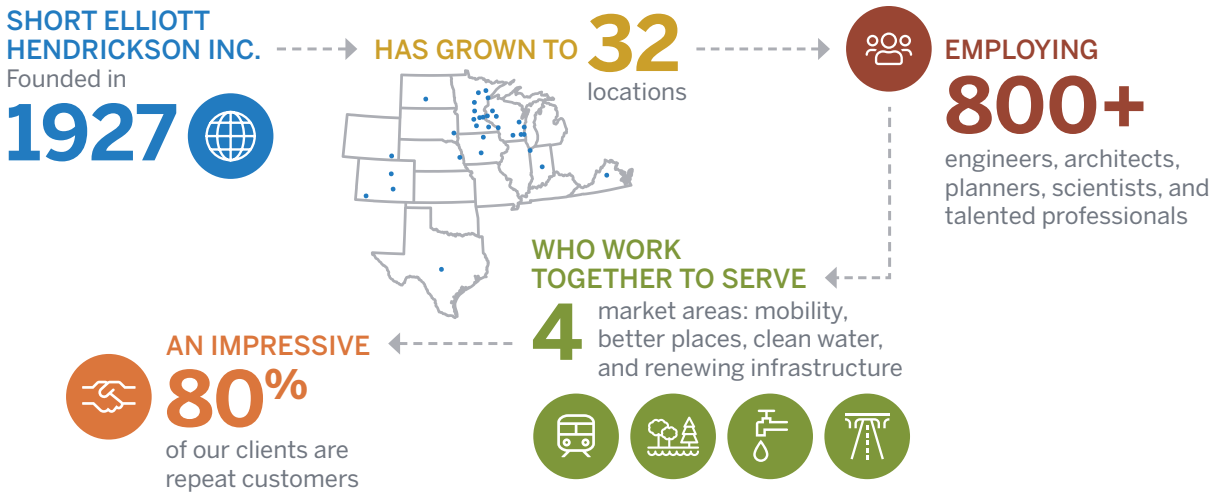
- Watershed plan development and implementation
- Floodplain management, including estimating and communicating flood risk
- Public and private BMP inspections, both surface and subsurface facilities using human or special equipment entry
- Environmental consulting including wetland services and preparation of environmental documents
- Water quality analysis and report preparation with recommendations for improvements
- Assistance with education and outreach efforts
- Full range or surveying services, whether it be on the ground surveys or higher level with our drone capabilities

Firm Overview and Background Information

Short Elliott Hendrickson Inc. (SEH®) is a 100% employee-owned company providing engineering, architectural, planning, and environmental services to public and private clients throughout the country. Our integrated teams are simplifying the world's complex challenges by improving mobility, designing better places, engineering clean water, and renewing infrastructure. Located across 32 offices in 11 states, you'll find evidence of our work throughout the United States.

Our 800-plus employee-owners share a core purpose: Building a Better World for All of Us®. This approach reflects a companywide commitment to improving the quality of life by designing safer, more sustainable infrastructure for government, and helping industrial and commercial clients achieve their business goals.

SEH has helped our clients build their roads and infrastructure; track project funding; meet compliance requirements; and plan their communities' futures. Because of our breadth of in-house technical disciplines, we are able to integrate an array of professional skills to address complex technical challenges. Integrating multiple in-house disciplines in a collaborative, solutions-based team structure allows us to develop complete project solutions and simplify project delivery.



WATER RESOURCES SERVICES

Engaging the right expertise to complement your watershed management organization is essential to ensuring your projects are executed, documented, and built according to local and state requirements, approved plans and specifications, and more importantly your expectations. SEH has built a strong reputation as a partner by providing quality deliverables and successfully demonstrating our ability to truly manage the project delivery process on behalf of our clients.

We allocate experienced professionals to every project – people who understand design, implementation, and long-term sustainability needs.

SEH offers diverse experience on water resources projects – from innovative water quality improvement to master drainage to large-scale hydraulic structures and watercourse rehabilitation in urban settings. Our professional services include stormwater detention, infiltration and rain garden systems, wetland development and protection, open channel convergence systems, and computerized stormwater systems studies.

BACKGROUND INFORMATION

The Middle St. Croix Watershed Management Organization covers parts of 10 member communities and SEH serves as consulting City Engineer for half of them.

In these roles, we have had many opportunities to work with MSCWMO staff through coordination of plan reviews, preparation of member communities local surface water management plans, and cooperative projects dating back to at least 2004. Below is a partial list of cooperative projects completed with both City and MSCWMO funds:

- Perro Pond Outlet (2005)
- Bayport 2nd Avenue North Perro Creek Water Quality Improvements (2019)
- Afton/Lakeland Gully Stabilization (2007)
- Lakeland Beach Parking Area Stabilization (2012)
- Lakeland Quixote Avenue/6th Street Water Quality Improvements (2014-2015)
- Lake St. Croix Beach Bluff Toe Stabilization (2015-2023)
- Lake St. Croix Beach Riviera Avenue Water Quality Improvements (2022)

DID YOU KNOW

ERIK HENNINGSGARD AND JOHN PAROTTI SERVE AS CITY ENGINEER FOR BAYPORT, LAKELAND LAKELAND SHORES LAKE ST. CROIX BEACH & ST. MARY'S POINT

SEH has also been instrumental in helping to create an atmosphere of cooperation among the cities we serve, other agencies (including the MSCWMO), property owners, and developers.

To that end, several of the SEH-served MSCWMO member communities implemented our recommendation to make preapplication meetings part of the process for most projects located within the St. Croix River Bluffland/Shoreland zones or in the floodplain. **These meetings have resulted in more informed applicants, agency staff being aware of projects earlier, more streamlined project approval process, and better compliance with regulations.**

Related Experience

WHITAKER POND IMPROVEMENTS – BIOCHAR STORMWATER FILTER

WHITE BEAR TOWNSHIP, MN

Whitaker Pond is a wet detention basin with forebay that receives drainage from approximately 650 acres of mostly residential area with some commercial and institutional areas. Whitaker Pond discharges to Lambert Creek (County Ditch 14), which is impaired for bacteria (fecal coliform). The Whitaker Pond Improvements project included a biochar stormwater filter intended to provide additional treatment to the 'first flush' of stormwater from the Whitaker Pond drainage area, prior to the discharge to Lambert Creek.

Construction of the stormwater filter was completed in October 2022. The enhanced media filtration bench was constructed on the west side of Whitaker Pond. Monitoring to evaluate the filter begins in spring 2023.

The effort was funded through two state/federal grants. Watershed Based Funding from the MN Board of Water and Soil Resources (BWSR) and U.S. Environmental Protection Agency (EPA) 319 grant funds administered by the Minnesota Pollution Control Agency (MPCA) with a local match funding from VLAWMO.

LAMBERT LAKE IMPROVEMENTS – POND AND MEANDER

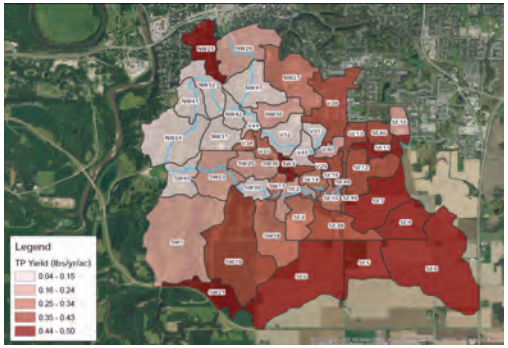
VADNAIS HEIGHTS, MN

The Lambert Lake Improvements project included sheet pile removal and replacement and meandering of the existing Lambert Creek alignment (County Ditch 14), from the Lambert Lake Pond outlet to the convergence of the historic creek and the current creek path. The pre-project ditch alignment was unnaturally straight and disconnected from the vast floodplain. The project goal was to provide enhanced water storage at Lambert Pond and improved floodplain access in the segment of Lambert Creek just south of Lambert Pond. Additional water quality benefits of the project are removal of bacteria, improved vegetation and wildlife habitat, and reduced erosion due to managed discharge rates.

Construction took place in winter 2020-2021. Following construction, native plants were re-vegetated along the meander. The project was funded through both grant funding through the U.S. EPA 319 funds and loan funding through the Clean Water Partnership loan program, which is funded through the Clean Water State Revolving Fund (CWSRF).

INDIAN CREEK WATERSHED STUDY

MANKATO, MN



The Indian Creek Watershed is a partially developed watershed with agricultural drainage systems connecting to the City's stormwater infrastructure. This study included field data collection, identifying existing and potential future erosion areas, performing a hydrologic and hydraulic analysis of the watershed, completing a sediment and pollutant loading assessment, and identifying projects intended to reduce erosion potential and pollutant loading from the watershed.

Water quality analysis was completed to evaluate alternatives intended to reduce TP and TSS loads to the Minnesota River. A variety of hydrologic and hydraulic models were used for these studies including XPSWMM, HEC-HMS, and HEC-RAS. Average annual runoff, TP, and TSS loads were estimated using "the Simple Method." Planning-level cost estimates were developed for the various alternatives. Recommended projects included ravine stabilization measures and wetland restorations.

COMMUNITY PLANNING GRANTS FOR STORMWATER, WASTEWATER, AND COMMUNITY RESILIENCE

CLOQUET, DULUTH, ST. CLOUD, AND WORTHINGTON, MN

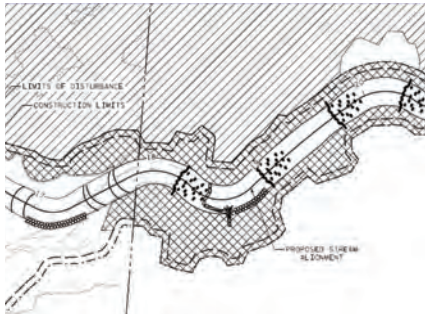
SEH assisted several cities in Minnesota with developing grant applications for a MPCA grant program for Surface Water Management, Climate Change, and Resiliency Planning. We started work on these projects in May 2022. The projects entail large scale watershed planning, detailed surface and storm sewer modeling, evaluation of climate change scenarios, flood vulnerability analysis, and development of a surface water management plan. SEH teamed with the University of Minnesota Climate Science Group to assist with the development of climate change scenarios.

As part of these projects, SEH will overlay environmental justice areas with areas with high flood risk. This effort will help the cities identify vulnerable populations that may be exposed to flood risk, which will help to prioritize improvement projects that are identified by the study.

Potential improvement projects that are identified will be included in the final Surface Water Management Plans, which will be used for Capital Improvement Planning. These projects are expected to be completed by June 2023.

DEER CREEK STREAM RESTORATION

CARLTON COUNTY, MN

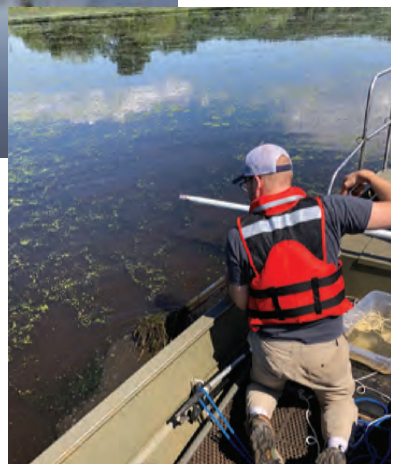


The project includes the bridge replacement of the structurally deficient rural two-lane bridge on State Trunk Highway 23 and the associated stream restoration of Deer Creek that crosses under the highway. The Minnesota Department of Transportation replaced the existing box culvert structure over Deer Creek with a 200-foot-long two lane single-span bridge.

The Deer Creek restoration included the natural channel design and reconnection to the floodplain of approximately 1,200 feet of channel upstream and downstream from the culvert replacement. This project included the coordination and collaboration with the Minnesota Department of Natural Resources (MNDNR) as this segment of Deer Creek is identified as a top priority for habitat restoration because biological characteristics of the stream have degraded over time. The restoration involved the realigning and meandering of the channel while reducing the stream profile through the construction of rock riffles and pools to create fish passage through the area. Woody debris from trees removed by construction were salvaged to create in-stream cover, define channel boundaries, and constrict the channel as needed. Vegetation plantings adjacent to the restored channel consisted of native riparian flora appropriate to the habitat and region. Hard armor surfaces along the channel were used to protect the bridge abutments from potential erosion and scouring.

LAKE DECORAH LAKE MANAGEMENT PLAN AND GRANT FUNDING

MAUSTON, WI



SEH prepared a Lake Management Plan for Lake Decorah in the City of Mauston in 2020. As part of the project, SEH field staff led nutrient and aquatic vegetation sampling efforts, along with a bathymetric survey of the lake. These tasks were completed to provide solid data on the nutrient and aquatic chemistry in the lake, a baseline aquatic vegetation survey, and to determine if sedimentation had decreased water depth in navigable channels.

The information collected allowed for the characterization of existing lake and watershed conditions, the identification of data gaps required to complete a Nine Key Elements Watershed Plan, analysis of water quality drivers, and the identification of near-term management strategies to improve lake water quality. The work done by SEH on this project provided a foundation for the City of Mauston to set and meet their water quality goals and obtain the funding for them to do so.

Since the completion of the Lake Management Plan, the City of Mauston and the Guardians of Lake Decorah (GOLD) secured additional funding to complete a Nine Key Element Plan for two subwatersheds that flow into Lake Decorah. SEH is currently working with the City and GOLD on the development of the Nine Key Element Plan. Once the Nine Key Element Plan is reviewed and approved by the Wisconsin DNR and EPA, it will open additional funding opportunities through EPA 319 grant funds.

Resumes for Key Personnel

PROJECT ORGANIZATIONAL CHART

Middle St. Croix Watershed Management Organization

Brad Woznak PE, PH, CFM
QA/QC Manager

Emily Jennings PE
SEH Project Manager

John Parotti PE
Client Service Manager

WATER RESOURCES SERVICES

Erik Henningsgard PE
Lead Water Resources Engineer

Mark Christenson
Water Resources Engineer

NATURAL RESOURCES SERVICES

Ericka Massa CMWP
Aquatic Ecologist and Fisheries Biologist

Rebecca Beduhn PWS, CMWP, MN PSS-IT
Natural Resources Scientist

LAND SURVEY & GIS

Theo Brown LS
Land Surveyor

Lauren Osowski
Geographic Information System Analyst

GEOTECHNICAL

Brett Larsen PE
Geotechnical Engineer

CONSTRUCTION SERVICES

Cory Bednar NACE
Resident Project Representative

The specific licenses and credentials of the team members are described in the personnel and/or resume section of this document.

EMILY JENNINGS PE

PROJECT MANAGER

Emily is a senior professional engineer specializing in municipal, industrial, and construction stormwater permitting, hydraulic and hydrological analysis, permanent stormwater management facility design, and stormwater conveyance modeling and design, including roadways and ditches. Emily's project experience includes stormwater related feasibility studies, planning, analysis, final design, and construction. Emily has extensive experience in assisting clients with maintaining compliance with stormwater regulation, policy, and infrastructure.

EXPERIENCE

General Engineering Services (Vadnais Lake Area Water Management Organization) – Vadnais Heights, MN
In 2019, SEH began a general engineering contract with the Vadnais Lake Area Water Management Organization (VLAWMO) and Emily has served as the main point of contact and project manager. Services include but are not limited to stormwater management, compliance, feasibility and design assistance, grant assistance, policy assistance, development review, and public outreach. Most recently, SEH worked with VLAWMO on the design the Whitaker Pond biochar filtration bench. Construction of the filter was completed in fall 2022.

Lambert Lake Improvements (Vadnais Lake Area Water Management Organization) – Vadnais Heights, MN
Emily was the lead engineer for the Lambert Lake Improvements project during both design and construction. The project included improvements to the existing Lambert Lake Pond and realignment of Lambert Creek (County Ditch 14).

Municipal Separate Stormwater Sewer Systems (MS4) Program Assistance (Various Communities) – Minnesota
Emily served as the project manager and lead engineer responsible for the coordination and design of MS4 permit program documents and procedures for various communities including the Cities of Vadnais Heights, Gem Lake, Cambridge, and Inver Grove Heights, amongst others. Emily prepared specialized regulatory compliance guides, containing administrative and operational program documents for cities to effectively track MS4 related content and enforce MS4 requirements. She worked closely with City staff to meet specific needs and conducted regular checks-in to assists with MS4 related content. Emily also helped various cities with MS4 Annual Reporting duties and has provided MS4 training City staff.

Trunk Highway 61 Design (City of Lake City) – Lake City, MN
This project converted a four-lane roadway to three lanes as a means to enhance mobility, improve pedestrian safety, and help revitalize downtown Lake City, which is adjacent to Lake Pepin on the Mississippi River. Emily served as the lead water resources engineer responsible for the design of retrofit storm sewer systems and grant-funded water quality design of two biofiltration basins to treat storwmater prior to discharge to Lake Pepin. Operational and maintainable considerations were imperative to the design of the basins, as they are located within the MnDOT right of way. Project duties also included tabulations, specifications, and construction documents.

10
YEARS OF EXPERIENCE

EDUCATION

Bachelor of Science, Civil Engineering
University of Minnesota-Duluth

REGISTRATIONS/CERTIFICATIONS

Professional Engineer in MN

Design and Construction for Stormwater Pollution Prevention Plan (SWPPP), University of Minnesota

PROFESSIONAL ASSOCIATIONS

American Council of Engineering Companies (ACEC) Minnesota Scholarship Committee, Chair (2022)

AVAILABILITY

40%

JOHN PAROTTI PE
CLIENT SERVICE MANAGER

30
YEARS OF EXPERIENCE

John specializes in municipal engineering and serves as City Engineer for several municipalities in Minnesota and Wisconsin. In addition to his role as City Engineer, John has served as the project manager and project engineer for municipal and county street reconstruction and site development projects. His responsibilities include ordinance review, permit review, subdivision review, floodplain administration, as well as the conducting and supervising all aspects of project design for a variety of municipal projects. Project types include reconstruction of existing streets and county roads, new street construction, sanitary and storm sewer systems, water main, residential subdivision, commercial site development, bituminous street seal coating and crack sealing, street patching, and drainage system improvements.

EXPERIENCE

- PII Surveying for Riviera Avenue Water Quality (Middle St. Croix Watershed Management Organization) – Lake St. Croix Beach, MN
- Perro Creek Water Quality (City of Bayport) – Bayport, MN
- City Wide Drainage Study (City of Bayport) – Bayport, MN
- City Engineer Services (City of Saint Mary's Point) – Saint Mary's Point, MN
- City Engineer Services (City of Lake St. Croix Beach) – Lake St. Croix Beach, MN

EDUCATION
Bachelor of Civil Engineering
University of Minnesota-Twin Cities

REGISTRATIONS/CERTIFICATIONS
Professional Engineer in MN, WI

AVAILABILITY
20%

BRAD WOZNAK PE, PH, CFM
QA/QC MANAGER

26
YEARS OF EXPERIENCE

Brad is a project manager/lead hydraulic engineer with extensive experience in hydraulic and hydrologic analysis, watershed modeling, floodplain analyses, and preparation of detailed plans and specifications. His project experience includes hydrologic and hydraulic modeling studies, design of spillways, outlet works, stilling basins, drop structures, channels and channel structures, interior drainage works, pumping plants, and erosion protection.

EXPERIENCE

- Indian Creek Watershed (City of Mankato) – Mankato, MN
- TH 23 Deer Creek Environmental Documentation (Minnesota Department of Transportation District 1) – Deer Creek, MN
- Ravine/Stormwater Retention Remediation/ Rehabilitation (City of Mankato) – Mankato, MN
- Springville Mill Pond Dam Evaluation (Wisconsin Department of Transportation North Central Region) – Plover, WI
- Lambert Lake Improvements (Vadnais Lake Area Watershed Management Organization) – Vadnais Heights, MN
- BioChar Design Assistance (Vadnais Lake Area Watershed Management Organization) – Vadnais Heights, MN

EDUCATION
Bachelor of Civil Engineering
University of Minnesota-Twin Cities

REGISTRATIONS/CERTIFICATIONS
Professional Engineer in MN, WI, CO, IA, IN, NE, SD

Hydrologist, American Institute of Hydrology

Certified Floodplain Manager (CFM) Association of State Floodplain Managers, Inc.

AVAILABILITY
40%

ERIK HENNINGSGARD PE
LEAD WATER RESOURCES ENGINEER

21
YEARS OF EXPERIENCE

Erik is a senior professional engineer with the civil engineering practice. His specialties include providing site and stormwater design for compliance with state and local regulations and providing project management of civil engineering projects. He serves as a municipal engineer, working with local communities on projects including street rehabilitation, assessment projects, sanitary sewer design, water main design, stormwater master plans, municipal well development, review of proposed developments, and site feasibility studies.

EXPERIENCE

- Cantonment-Wide Stormwater Master Plan (US Army - Fort McCoy) – Fort McCoy, WI
- Cantonment Area Drainageway Study (US Army - Fort McCoy) – Fort McCoy, WI
- Parking Facility Site and Landscape Design Development (Goodhue County) – Red Wing, MN
- Town Engineer Services (Town of Hudson) – Hudson, MN
- City Engineer Services (City of Lakeland) – Lakeland, MN
- City Engineer Services (City of Amery) – Amery, WI
- Village Engineer Services (Village of Baldwin) – Baldwin, WI

EDUCATION

Bachelor of Science, Civil Engineering
University of Wisconsin-Platteville

REGISTRATIONS/CERTIFICATIONS

Professional Engineer in MN and WI

Certified Professional in Erosion and Sediment Control (CPESC), Envirocert International, Inc.

AVAILABILITY

20%

MARK CHRISTENSON
WATER RESOURCES ENGINEER

6
YEARS OF EXPERIENCE

Mark is a staff engineer with experience reviewing permit applications to ensure clients are in compliance with regulations for stormwater, erosion control, floodplains, drainage systems, water quality, rate control, best management practice (BMP) design, and wetland protection. Mark has performed construction observation and daily reports as well as served as a modeler for developing, updating, and maintaining hydrologic and hydraulic models for watershed planning, redetermination of benefits for public drainage systems, culvert replacement sizing, and stream corridor restoration. . He is proficient in Microsoft Office, GIS, HydroCAD, EPA SWMM, XPSWMM, HEC-RAS, FLUX, BATHTUB, and P8.

EXPERIENCE

- County Ditch 34A Repair (Renville County) – Fairfax, MN
- North Point Parking Lot and Shoreline (Milwaukee County) – Milwaukee, WI
- General Engineering Services (Vadnais Lake Area Watershed Management Organization) – Vadnais , MN
- Harrison Street Watershed Study (Town of Lowell) – Town of Lowell, IN
- TH 93 Flood Mitigation Project (Minnesota Department of Transportation District 7) – Henderson, Le Sueur, Saint Peter, Mankato, MN

EDUCATION

B.S., Applied Physics of Industry and Engineering
University of Wisconsin-River Falls (2018)

M.S., Civil and Environmental Engineering
University of Minnesota-Twin Cities

REGISTRATIONS/CERTIFICATIONS

Engineer-in-Training in MN

Design of Construction SWPPP, Minnesota Department of Transportation

AVAILABILITY

50%

ERICKA MASSA CMWP
AQUATIC ECOLOGIST AND FISHERIES BIOLOGIST

Ericka is a biologist who regularly completes wetland delineation, wetland and aquatic resource permitting, floristic inventories and plant community mapping, and habitat restoration for large- and small-scale natural resource projects. She is proficient with ArcGIS, Global Positioning Systems (GPS), Microsoft Office Suite, and field data collection. She also has experience in a wide range of writing styles including technical reports, environmental assessments, and peer-reviewed journal articles.

EXPERIENCE

- Wetland Services (Minnesota Department of Transportation District 1) – Various Locations in MnDOT District 1, MN
- Lourdes Channel Stabilization (City of Rochester) – Rochester, MN
- N Side Berm Failure, Veg (Confidential Client) – Northern Minnesota
- Brule River Mitigation Site (Wisconsin Department of Natural Resources) – Douglas County, WI

4
YEARS OF EXPERIENCE

EDUCATION
M.S., Fish and Wildlife Biology and Management
State University of New York College of Environmental Science and Forestry-Syracuse

Bachelor of Science, Biology
University of Minnesota-Duluth

REGISTRATIONS/CERTIFICATIONS
Certified Minnesota Wetland Professional (CMWP)
University of Minnesota Water Resources Center

AVAILABILITY
50%

REBECCA BEDUHN PWS, CMWP, MN PSS-IT
NATURAL RESOURCES SCIENTIST

Rebecca is a professional wetland scientist and Minnesota-certified wetland delineator with an extensive background in wetland science, wetland regulatory administration, environmental review, and policy. She primarily provides wetland services such as delineations, permitting, and quality assessments. Rebecca has completed delineations on more than 150 projects resulting in more than 750 basins delineated in over six states.

EXPERIENCE

- Indian Creek Watershed (City of Mankato) – Mankato, MN
- Stormwater Management Plan Updates (City of Red Wing) – Red Wing, MN
- BioChar Design Assistance (Vadnais Lake Area Watershed Management Organization) – Vadnais Heights, MN
- County Ditch 34A Repair (Renville County) – Renville County, MN

11
YEARS OF EXPERIENCE

EDUCATION
Master of Science, Soil Science
Bachelor of Science, Environmental Science
University of Minnesota-St. Paul

REGISTRATIONS/CERTIFICATIONS
Professional Wetland Scientist (PWS), Society of Wetland Scientists

Certified Minnesota Wetland Professional (CMWP)

Minnesota Professional Soil Scientist (In Training)

AVAILABILITY
50%

THEO BROWN LS
LAND SURVEYOR

19
YEARS OF EXPERIENCE

Theo has extensive experience in the survey profession in various capacities and roles. He has spent time in both the private and public sector, and he has worked on a wide base of project types in both the field and the office. As a land surveyor he has spent the bulk of his time in the office working on right-of-way, Design Surveys, ALTA/ACSM, Geodetics, GIS/Survey integration, and QA/QC of techniques for greater accuracy and precision. Completing jobs for all levels of government agencies and commercial developments has kept him well-rounded for all survey types.

EXPERIENCE

- General Engineering Services (Vadnais Lake Area Watershed Management Organization) – Vadnais Heights, MN
- Shakopee Wetland Delineation (Metropolitan Council Environmental Services) – Shakopee, MN
- City Engineering Services (City of Lakeland Shores) – Lakeland Shores, MN
- City Engineering Services (City of Bayport) – Bayport, MN

EDUCATION

Bachelor of Science, Surveying and GIS
St. Cloud State University – St. Cloud, MN

Associate of Arts, Business
Century College – White Bear Lake, MN

REGISTRATIONS/CERTIFICATIONS

Land Surveyor in MN
Professional Land Surveyor in WI

AVAILABILITY

15%

LAUREN OSOWSKI
GIS ANALYST

10
YEARS OF EXPERIENCE

Lauren is a geographical information system (GIS) specialist with GIS project experience including automated mapping, data integration, management and analysis. She works with clients to obtain, analyze, and implement data to create maps, map booklets, graphics, and tables as well as update and maintain existing GIS data. Lauren is proficient in ArcGIS, Adobe Acrobat, Access, Word, and Excel.

EXPERIENCE

- Indian Creek Watershed (City of Mankato) – Mankato, MN
- Hillman Creek Erosion (City of Pierz) – Pierz, MN
- Minnesota River Bank Stabilization, Land of Memories Park (City of Mankato) – Mankato, MN
- Phase I Flood Control (City of Austin) – Austin, MN
- City Engineer Services (City of Bayport) – Bayport, MN

EDUCATION

Bachelor of Arts, Geography
University of Minnesota-Twin Cities (2012)

GIS Certificate, University of Minnesota-Duluth

AVAILABILITY

60%

BRETT LARSEN PE
GEOTECHNICAL ENGINEER

15
YEARS OF EXPERIENCE

Brett is a project engineer with geotechnical engineering experience for a wide variety of projects including education, municipal, healthcare, mixed use developments, commercial, pavements, industrial, federal, power generation and transmission, oil and gas, transportation, slope stability, and shoring. Brett has accessed data from the field, managed drill crews and field and lab technicians, and written geotechnical reports. He is proficient in GeoStudio, LPILE, CPeT-IT, GRLWEAP, Google Earth, ArcGIS, gINT, and Microsoft programs.

EXPERIENCE

- County Ditch 34A Repair (Renville County) – Fairfax, MN
- CSAH 14 Signal/Trail Improvements (Washington County Department of Transportation) – Oakdale, MN
- City Hall Slope Stabilization (City of Mauston) – Mauston, WI
- CTH SS STP-Rural Reconstruction, Peavine Road to STH 56 (Vernon County Highway Department) – Liberty, WI
- Salt Creek Bank Stabilization (JEO Consulting Group Inc) – Lincoln, NE
- Lowertown Flood Mitigation Design Services (City of Saint Paul) – St Paul, MN

EDUCATION
Master of Science, Geotechnical Engineering
Iowa State University-Ames

Bachelor of Science, Civil Engineering
University of Minnesota-Twin Cities

REGISTRATIONS/CERTIFICATIONS
Professional Engineer in MN

AVAILABILITY
50%

CORY BEDNAR NACE
RESIDENT PROJECT REPRESENTATIVE

31
YEARS OF EXPERIENCE

Cory is a technician and resident project representative with extensive experience in civil and transportation engineering projects. His role includes construction engineer and inspector responsible for construction staking and paving, storm sewer and pipe inspections, materials testing, field surveys, design and quantity estimations, and environmental remediation.

EXPERIENCE

- Perro Creek Water Quality (City of Bayport) – Bayport, MN
- Street Reconstructions (City of Lakeland) – Lakeland, MN
- City Engineer Services (City of Saint Mary's Point) – St. Mary's Point, MN
- City Engineer Services (City of Lake Saint Croix Beach) – Lake Saint Croix Beach, MN
- City Engineer Services (City of Bayport) – Bayport, MN

EDUCATION
NACE Coating Inspector Level 1 - Certified (2011), NACE International

OSHA 40 Hour HAZWOPER (Specialist

REGISTRATIONS/CERTIFICATIONS
Society for Protective Coatings, Member

AVAILABILITY
15%

Hourly Rates

SEH HOURLY BILLABLE RATES – 2023

CLASSIFICATION - OFFICE STAFF	BILLABLE RATE [1]
Principal	$185 - $251
Project Manager	$150 - $169
Senior Professional Engineer I	$130 - $197
Senior Professional Engineer II	$155 - $238
Scientist	$100 - $151
GIS Analyst	$110 - $163

CLASSIFICATION - FIELD STAFF	BILLABLE RATE [1]
Professional Land Surveyor	$125 - $161
Lead Resident Project Representative	$105 - $129

(1) The actual rate charged is dependent upon the hourly rate of the employee assigned to the project. Rates shown here are for staff identified in this document. Other staff may be used to supplement those included in this proposal. Rates for additional staff will be provided upon request.

The rates shown are subject to change.

Effective: January 1, 2023
Expires: December 31, 2023

References

Indian Creek Watershed Study
City of Mankato, MN

Michael J McCarty PE
Assistant City Engineer
507.387.8643
mmccarty@mankatomn.gov

Lake Decorah Lake Management Plan and Grant Funding
City of Mauston, WI

Randy Reeg
City Administrator
608.847.6676
cityadmin@mauston.com

City Engineering Service
City of Bayport, MN

Matt Kline
Public Works Director
651.275.4410
mkline@ci.bayport.mn.us

Whitaker Pond Improvements – Biochar Stormwater Filter
White Bear Township, MN

Phil Belfiori
Administrator
651.204.6073
Phil.Belfiori@vlawmo.org

Lambert Lake Improvements – Pond and Meander
Lambert Township, MN

Phil Belfiori
Administrator
651.204.6073
Phil.Belfiori@vlawmo.org

City Engineering Service
City of Lakeland, MN

Simon Wirth
People Services contracted Public Works Director
218.491.3575
swirth@peopleservice.com

Building a Better World for All of Us®

Sustainable buildings, sound infrastructure, safe transportation systems, clean water, renewable energy and a balanced environment. Building a Better World for All of Us communicates a company-wide commitment to act in the best interests of our clients and the world around us.

We're confident in our ability to balance these requirements.

JOIN OUR SOCIAL COMMUNITIES

Emmons & Olivier Resources, Inc.
for the Middle St. Croix Watershed Management Organization

February 7, 2023

Legal and Engineering Consulting Services LOI: 2023-2024

water ecology community

February 7, 2023

Matt Downing, Administrator
Middle St. Croix Watershed Management Organization
455 Hayward Avenue
Oakdale, MN 55128

Subject: Proposal for Engineering Services

Dear Matt:

Once again, we are pleased to submit our proposal to continue providing engineering services to the MSCWMO for fiscal years 2023 and 2024. We are excited about the opportunity to build on our successes over the past eight years and look forward to the challenges that lie ahead. Our efforts began with our multi-year effort to integrate and implement MIDS into local ordinances and zoning codes, working one-on-one with each of the communities to review, update, and implement ordinances and policies to protect and improve water quality. This project, which has proven successful in the MSCWMO, is being used as a model for working with other communities in the St. Croix River watershed that will begin in 2023. Our successful delisting of Lily Lake is a benchmark in the community coming together to bring a lake back from the brink through effective planning, design and community involvement. We at EOR are proud of our partnership with the MSCWMO from the very start of this project through its successful completion in 2022. We take great pride in these efforts to improve water quality in an area that many of us call home.

With a significant number of EOR staff living in the St. Croix Valley, we are part of the fabric of our communities and intimately involved in water resource management throughout the St. Croix Basin. We continue to provide engineering services to Brown's Creek, Carnelian Marine-St. Croix, Comfort Lake Forest Lake Watershed Districts as well as the Chisago Lakes - Lake Improvement District. The St. Croix River is "our" river, and we are dedicated to providing future protection and improvements to the watershed.

Building on our experience, our Team will remain the same. I will continue to act as the Client Representative. Britta Hansen and Kyle Crawford will lead our Design Team for the analysis, design, construction, and ongoing maintenance of our constructed and future water quality projects. Stu Grubb will continue to track groundwater issues in relation to the 3M PFAS settlement, a topic that we expect will be getting a lot of attention and potential project funding opportunities in the very near future. Our experienced group of water resource professionals across the EOR staff are available to support our efforts. The depth and experience of the group within the St. Croix Valley is unrivaled.

Thank you for the opportunity to continue our involvement with the MSCWMO. We are looking forward to the challenges and opportunities that lie ahead. Please feel free to contact me with any questions.

Sincerely,

Jay Michels, CPESC, NGICP
Partner, Senior Project Manager
651-261-4546; jmichels@eorinc.com

Lily Lake Basin Planting Day

EOR's 65 employees

19 Professional Engineers
8 Engineers -in-Training
3 Professional Landscape Architects
1 Professional Geologist
1 Certified Wildlife Biologists
1 Restoration Ecologist
1 Professional Wetland Scientist
5 Certified Wetland Delineators
3 Cert. Floodplain Managers
4 Certified Prof. in Erosion & Sediment Control
1 GIS Professional
6 LEED Accredited Professionals
11 other related Professionals
26 with Master's degree or higher
7 with 10-20 years of experience
21 with 20+ years of experience

www.eorinc.com

FIRM INFORMATION

Emmons & Olivier Resources, Inc. (EOR)

Is a collaborative group of environmental and design professionals passionate about protecting our waters, restoring healthy ecosystems, & enhancing our community's unique sense of place. We are an employee owned, multi-disciplinary water resource-based firm that specializes in:

- water-resources engineering, watershed planning, & modeling
- environmental compliance, biological surveying, & restoration
- sustainable site design, planning, & landscape architecture

We care for the Earth and its inhabitants

Mission and Values

- we collaborate with environmentally conscious customers
- we attract passionate, creative professionals
- we work in an inspiring and healthy environment
- we foster a culture of ownership
- we support the communities we serve
- we believe now is the time to act

Approach

At EOR, scientific study and design are inherently intertwined in the pursuit of sustainability. The analytical and creative richness of our solutions derives from this integration and results in the highest social, environmental and economic returns for our clients.

Awards

2020 AWRA Integrated Water Resource Management Award
2020 WEF Water Quality Improvement Award
2020 MN-ASLA Landscape Merit Award

MSCWMO Experience

Our relationship with the MSCWMO started in 2015 with a 2-year project working with each of the communities in the MSCWMO to review, update and implement ordinances, policies, and programs to protect and improve water quality and stormwater management through the adoption of the Minimal Impact Design Standards (MIDS) Community Assistance Package. Many of the communities were shackled with ordinances that were decades old and out of date. By working one-on-one with each of the communities we were able to customize their ordinances to address their specific needs and to match and compliment the policies of the MSCWMO. Through coordination and funding provided by the Lower St. Croix Watershed Partnership, this experience is being used to guide a similar effort across the St. Croix Watershed that will begin in 2023.

Lily Lake was added to the State's impaired waters list in 2002. A planned and scheduled Total Maximum Daily Load (TMDL) could be avoided if practices could be implemented that would reduce phosphorus levels in the lake by an additional 45 pounds per year. This project became the "Lily Lake Final 45". We have been involved from the first "walkabouts" pulling manhole covers and looking for opportunities to disconnect stormwater runoff as a part of the City of Stillwater's street reconstruction projects. From the very roots of the effort, we have played a role in the planning, grant applications, community outreach, design, construction, project management and contract administration, and now support of ongoing operations and maintenance. Our "Crown Jewels" of this effort were completed in 2022 with the construction of the Lily Lake infiltration basin that redirects runoff from a very dirty subwatershed that discharged directly into Lily Lake, into a large infiltration basin on the southern part of the Lily Lake recreation area. Once the basin was completed, EOR provided coordination and project management for the in-lake alum treatment that provided dramatic improvement to water quality in the lake leading to its successful removal from the impaired waters list, avoiding the TMDL.

Lily Lake, the ballfields, and hockey arena have played a significant role in many of our personal histories; from swimming lessons for our children when the beach was still open to decades of little league and softball games on the ballfields and watching our grandchildren learn to skate and play hockey in the arena. To have the opportunity to be a part of this historic project in our own community and to leave a legacy of improved water quality is truly an honor.

Future opportunities

As we look to the future, at the forefront are the problems, and opportunities, that we face from groundwater contamination within the MSCWMO for PFAS contamination from the 3M landfill.

Progress is being made and new funding opportunities are on the horizon as part of the settlement between the State and 3M. Our groundwater team, led by Stu Grubb, is following this issue closely and will continue to provide expertise as requested by the MSCWMO Board.

Our experience, local knowledge, and dedication to improving and protecting the waters and natural resources of the St. Croix Valley is unrivaled. The challenges are many and we look forward working closely with the MSCWMO Board and staff on providing solutions for future generations.

EXPERTISE & EXPERIENCE

Education & Expertise

Degrees

- Water Resource + Civil Engineering
- Agricultural + Bio-systems Engineering
- Geological Engineering
- Environmental Engineering
- Mining + Mechanical Engineering
- Water + Natural Resources Sciences
- Forestry + Plant Physiology
- Ecology (freshwater, forest, environmental)
- Biology (aquatic, conservation, environmental)
- Environmental Design
- Landscape Architecture
- Architecture

Specialties

- Stormwater Best Management Practices
- Low Impact Development & Green Infrastructure
- Natural Resources Management & Planning
- Watershed, Water Quality and Quantity Modeling
- Total Daily Maximum Load Studies (TMDLs)
- Environmental Compliance (EAW, EIS, SEIS,)
- Sustainable Site Development + Low Impact Design
- Fluvial Geomorphology & Stream Stabilization
- Eco-Restoration and Conservation Management
- Sustainability Planning
- Stormwater Policy, Permitting & Utility Guidance
- Watershed Planning and Rules Development
- Field Surveying (rare plants, threatened species, etc.)
- Educational and environmental signage
- Geographic Information Systems

KEY PERSONNEL

The same key staff you have come to rely on, will continue to be dedicated to your projects for 2023 - 2024.

JAY MICHELS, CPESC, NGICP
Role: Stormwater Mgmt. & Erosion Control Specialist
Years: 42

Jay Michels is a Certified Professional in Erosion and Sediment Control with experience in construction management, stormwater management and erosion and sediment control.

The emphasis of his work is in Low Impact Development and stormwater pollution prevention. His experience in planning, design, and construction management includes projects ranging from residential and commercial development to shoreline and streambank stabilization; from highway and golf course construction to prairie and wetland restoration.

Jay has also served as a program adviser to a number of communities and agencies in the development of stormwater policy and programs. He is a proven leader and an outspoken advocate for stormwater and erosion and sediment control education.

STUART GRUBB, PG
Role: Sr. Hydrogeologist
Years: 33

Stu has 33 years of experience in environmental consulting and has served as the lead hydrogeologist and project manager for many large, multi-disciplinary environmental permitting projects and regional groundwater studies. He has worked extensively with groundwater infiltration and recharge both on local and regional scales. Stu has also designed stormwater infiltration basins and modeled aquifer recharge for water resource management organizations.

BRITTA HANSEN, PLA
Role: Landscape Architect
Years: 13

Britta has 13 years of experience as a landscape architect and project manager designing and constructing public spaces, parks, school and corporate campuses, and stormwater management features. Britta specializes in site design that weaves together elements of conservation, sustainability, education, performance, and art. She is experienced and capable at all levels of design from iterative concept design to master planning. In addition, Britta designs and facilitates public input processes, and she is a trained visual artist who creates renderings and interpretive signage. She is experienced at permit review of landscape restoration plans, and she has developed and implemented many successful ecological restoration projects across Minnesota and the Upper Midwest.

KYLE CRAWFORD, PE
Role: Civil Engineer
Years: 11

Kyle Crawford is a Water Resources Engineer with nine years of broad experience in civil engineering, stormwater management and ecosystems restoration. He is well versed in design and assessment platforms (ArcGIS, HydroCAD, Bentley FlowMaster, CulvertMaster, and AutoCAD Civil 3D). Kyle has been directly involved in a wide range of projects in stormwater conveyance design, stormwater management plans, residential and commercial site design, and implementation of eco-restoration. These projects have utilized his background in land and construction surveying, civil engineering design, erosion and sediment control, and construction observation and administration.

SERVICE AREAS

Key Staff	Watershed Mgmt. & Planning	Lake, Wetland & Stream Restoration and Mgmt.	Ground & Water Quality Modeling	Stormwater BMP Design and Construction Management	Culvert Design, Repair, Installation	Bank Erosion Design & Repair	Dam/Control Structures	Water Resources Permitting	Education & Outreach	LA Design & Construction	Carp Barriers
Jay Michels, CPESC, NGICP	✓	✓		✓	✓	✓	✓	✓	✓		
Stu Grubb, PG	✓		✓					✓	✓		
Britta Hansen, PLA		✓		✓		✓		✓	✓	✓	
Kyle Crawford, PE		✓	✓	✓	✓	✓	✓	✓			✓

REFERENCES

CARNELIAN MARINE ST. CROIX WATERSHED DISTRICT

Mike Isensee, Administrator
11660 Myeron Road North
651.275.7451
mike.isensee@cmscwd.org

BROWN'S CREEK WATERSHED DISTRICT

Karen Kill, Administrator
455 Hayward Ave. N.
Oakdale, MN 55128
651.330.8220 ext. 26
kkill@mnwcd.org

CROW WING SOIL AND WATER CONSERVATION DISTRICT

Melissa Barrick, District Manager
322 Laurel Street #22
Brainerd, MN 56401
218.828.6197
melissa@cwswcd.org

STAFF RATES

2023	
Staff	**Billing Rate***
Professional 1	$117/hr
Professional 2	$147/hr
Professional 3	$173/hr
Professional 4	$120/hr
Technician 1	$84/hr
Technician 2	$102/hr
Technician 3	$124/hr
Principal Partner	$242/hr
Support Staff	$81/hr

Professionals: Licensed and nonlicensed engineers, landscape architects, geologists, scientists, surveyors, field professionals, and geospatial professionals with bachelor's or advanced degrees.

Technicians: Work requires a combination of basic scientific knowledge and manual skills which can be obtained through two years of post high school education, such as is offered in technical schools, community colleges, or equivalent on-the-job training.

Principal Partners: Officers and department managers at the highest level performing technical and quality control supervision.

Support Staff: Non-manual clerical, administrative assistants, bookkeepers, messengers, office helpers, clerks.

Notes:

- *Reimbursable expenses (Reproduction, Printing, Duplicating, Mileage at current government rates, DGPS equipment, field supplies, use/rental of special equipment, etc.) will be billed at cost.*
- *Subcontracted services will be billed at cost plus 15% to cover overhead expenses.*
- *Expert witness trial and deposition testimony will be billed at the above hourly rates times 1.5.*
- *Payment is due upon receipt of invoice. If the invoice is not paid within thirty (30) days after invoice date, Client will also pay a finance charge thereon of 1.5 percent or the maximum rate allowed by law, whichever is less, for each month thereafter or portion thereof that an invoice remains unpaid.*

(*) Rates reviewed and adjusted on an annual basis.

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

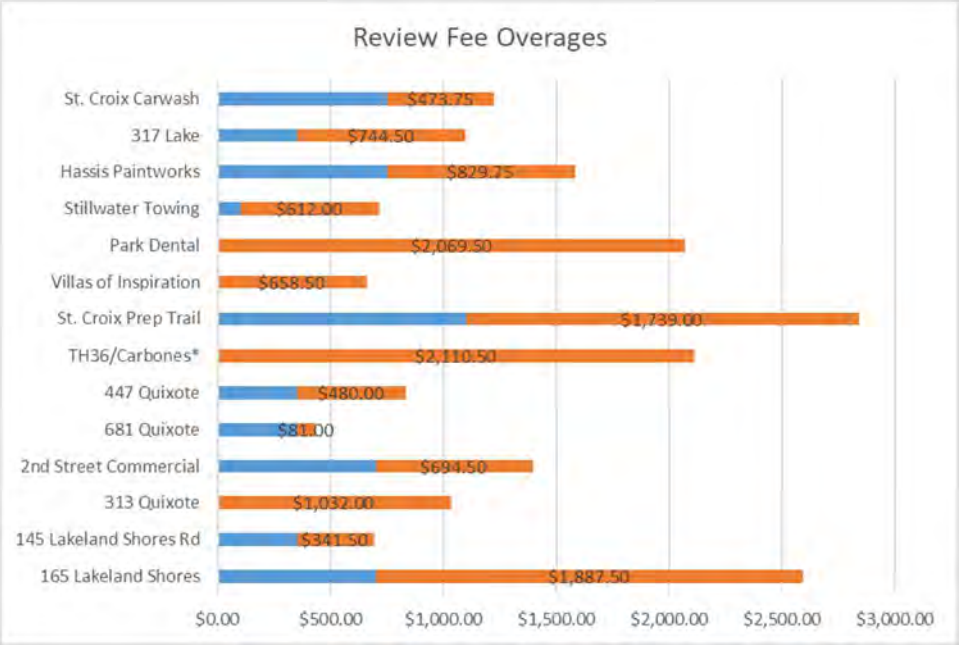
MEMORANDUM

TO: Middle St. Croix WMO Board of Managers
FROM: Matt Downing, Administrator
DATE: February 24, 2023
RE: **6b.) 2022 Permit Review Workload and Revenue Analysis**

The MSCWMO conducts reviews of building permits submitted to member communities and recommends steps to be taken to ensure compliance with the MSCWMO standards that have been adopted by these communities. To accomplish this task, the MSCWMO budgeted $5,040 in 2022 and requires a review fee by non-public entity applicants. The board has approved a fee schedule that scales with the size and scope of proposed projects to offset the cost of the review.

2022 was a well above average year for review workload with $26,455 of labor costs were incurred. Review fees totaling $7,050 have been secured, the associated review costs were $18,171 resulting in a $11,121 deficit. The remaining deficit was from time spent where no application has been formally received, or on reviews of public entity projects.

Policy set by the Board in 2021 was overages in review time over $500 to be presented for approval to invoice. If the decision is made to request additional fees to cover review costs, the MSCWMO will send a request to the permitting entity (community) for the difference in fee vs. actual total cost. A summary graph has been prepared detailing the fee vs. actual total cost for each project review invoice recommended in 2022. Total revenue recommended for recovery is $10,267.25.



MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

2022 ANNUAL REPORT

Lakeland

Prepared by:

MIDDLE ST. CROIX WMO BOARD OF MANAGERS
APPROVAL DATE: XXXXth, 2023

Table of Contents

INTRODUCTION

The Middle St. Croix Watershed Management Organization encompasses approximately 19.8 square miles and is located in the east-central part of Washington County. A distinction exists between the Middle St. Croix watershed and the other watersheds of Washington County in that the Middle St. Croix watershed has many small, parallel watersheds that all flow to the St. Croix, whereas the other watersheds in the County generally have one major drainage with a headwaters and outlet. Land use in the watershed is evenly distributed between agricultural uses, rural residential, high-density residential and commercial land uses.

The Middle St. Croix Watershed Management Organization (MSCWMO) is a Joint Powers Watershed Management Organization composed of ten St. Croix Valley communities that was established under State Statute 103B to cooperatively manage water resources within the watershed. The ten member communities of the MSCWMO are: Afton, Bayport, Baytown Township, Lakeland, Lakeland Shores, Lake St. Croix Beach, Oak Park Heights, St. Mary's Point, Stillwater, and West Lakeland Township.

In general, the purposes of a Watershed Management Organization (WMO) are to conserve natural resources through land use planning, flood control, and other conservation projects in order to ensure continued public health and welfare. The specific purposes of a watershed management organization are:

- Cooperatively manage water resources in the watershed.
- Inventory and assess the resources of the watershed.
- Monitor the water quality of lakes and streams in the watershed.
- Provide education on water related issues in the watershed.
- Review development plans for stormwater management, erosion and sediment control, and provide wetland and shoreland protection.
- Plan and implement capital improvement projects that enhance the water resources of the watershed.

The mission of the Middle St. Croix Watershed Management Organization is to jointly and cooperatively manage the water resources of the watershed. The ten member communities will do so to conserve and protect the water resources in an efficient and effective manner.

ORGANIZATION AND BUDGET

MSCWMO Board of Managers

Each member municipality or township within the MSCWMO appoints one member to the MSCWMO Board. The 2022 representatives from each participatory community are listed below.

Annie Perkins
4042 River Road S.
Afton, MN 55001
651-592-3007

Brian Zeller (Chair)
55 Lakeland Shores Rd
Lakeland Shores, MN 55043
612.325.3038

Mike Runk
5525 O'Brien Ave N
Oak Park Heights, MN 55082
651-439-5458

Ryan Collins
1467 Benson Blvd E
Stillwater MN 55082
651.246.8264

Dan Kyllo
1891 Oldridge Ave. N.
West Lakeland Township, MN 55082
651.436.1134

Tom McCarthy
16455 20th St. S.
Lake St. Croix Beach, MN 55043
651.436.7031

Beth Olfelt-Nelson
2990 Itasca Ave. S.
St. Mary's Point, MN 55043
612.417.5394

Avis Peters
13045 53rd Street Pl.
Stillwater., MN 55082
612.275.2200

Joe Paiement
1190 St. Croix Trail South
Lakeland, MN 55082
651-430-8163

John Dahl
775 3rd Ave N.
Bayport, MN 55003
651.439.7312

MSCWMO Contract Support Staff

The MSCWMO does not employ staff but does contract with several organizations for professional services. The organizations providing these services are listed below.

Administrator
Matt Downing
Washington Conservation District
455 Hayward Avenue,
Oakdale MN 55128
651.796.2227

Attorney
Troy Gilchrist
470 Pillsbury Center
200 South Sixth Street
Minneapolis, MN 55402
612.337.9215
tgilchrist@kennedy-graven.com

Recording Secretary
Washington Conservation District
455 Hayward Avenue,
Oakdale MN 55128
651.330.8220 Ext. 2225

Table 1: 2022 Budget

Administration Budget	Community Contributions
Administration - General	$ 31,160
Accounting	$ 1,550
Legal Fees – General	$ 1,000
Audit	$ 2,100
Insurance	$ 2,600
Office supplies/equipment/postage	$ 625
Minutes/Clerical	$ 1,180
Copying/printing	$ 625
Subtotal	**$ 40,840**
Project Budget	
Project Contingency	$ 2,000
Engineering - Project	$ 5,700
Development Plan Reviews	$ 5,040
Erosion Monitoring Program	$ 2,250
BMP Program Tech. Assistance	$ 27,768
BMP Program Cost Share	$ 20,000
Community TA	$ 3,000
Water Resource Educator	$ 6,300
Website	$ 800
Inspection and Tracking Database	$ 900
Water Monitoring	$ 22,000
Water Monitoring Equip. Savings	$ 750
2025 WMP Update	$5,000
Subtotal	**$ 101,508**
TOTAL	**$ 142,348**

Table 2: 2023 Budget

Administration Budget	Community Contributions
Administration - General	$ 31,160
Accounting	$ 1,550
Legal Fees – General	$ 1,000
Audit	$ 2,100
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2025 WMP Update	$5,000
Subtotal	**$ 101,508**
TOTAL	**$ 142,348**

AUDIT REPORT

Michael Peterson, Certified Public Accountant & Consultant, has been contracted to complete an audit of the financial management of the WMO for the year 2022. At the time of writing this report the audit process is underway. The audit will be presented to the State of Minnesota and posted to the MSCWMO website upon completion.

2022 PROGRAMS AND PROJECTS

2022 Implementation of Performance Standards

The mission of the MSCWMO is to jointly and cooperatively manage water resources within the WMO and to provide effective and efficient services to the residents of the watershed. To work to meet this goal, the MSCWMO adopted Minimal Impact Design Standards (MIDS) developed by the Minnesota Pollution Control Agency. The watershed also provided assistance to member communities to integrate MIDS into local ordinance. Rather than create its own separate permit program, the MSCWMO reviews projects that meet the criteria listed in section 7.0 of the 2015-2025 Watershed Management Plan. Member communities do not issue permits until the project has met all applicable watershed performance standards.

Table 3: MSCWMO Project Reviews and Total Phosphorous Load Reductions of Permanent Stormwater Best Management Practices Estimated with the MIDS Calculator.

Year	Total Projects Reviewed	Total BMP Estimated TP Reduction (lbs./yr.)	Redevelopment BMP Estimated TP Reduction (lbs./yr.)
2016	19	26.7	25.6
2017*	19	133.6	124.7
2018	18	25.8	17.2
2019	13	17.9	6.0
2020	11	51.7	0.2
2021	13	14.0	7.6
2022	18	7.2	7.2

*2017 includes the permanent stormwater BMPs installed as part of the St. Croix Crossing project.

2022 Projects Implementation

The MSCWMO 2015-2025 Watershed Management Plan targets goal reductions of Total Phosphorus to each of the three major watersheds draining to impaired surface waters listed on the State of Minnesota 303 D list: Lake St. Croix, Lily Lake, and Perro Creek. From 2015 to 2020, table 6.6 of the MSCWMO Watershed Management Plan identifies a total target of 70.1 lbs of total phosphorus load reduction to be completed by voluntary retrofitting. To date, 68 water quality improvement projects have been installed totaling an estimated annual total phosphorus reduction of 246 lbs. Twelve projects were installed in 2022.

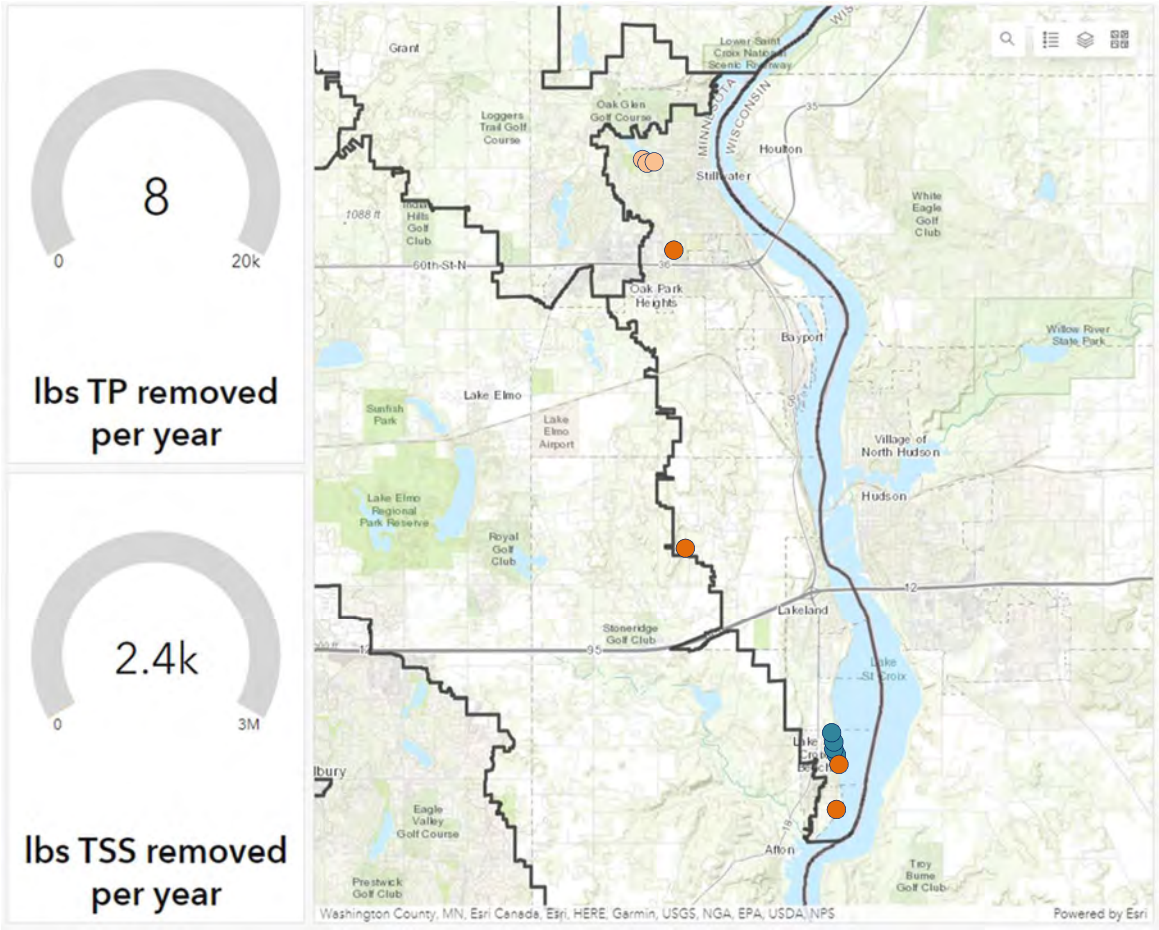


Figure 1. 2022 Installed Practices with Total Phosphorus (TP) and Total Suspended Solids (TSS) Reductions

Table 4: MSCWMO Water Quality Retrofits and Total Phosphorous Load Reductions of Permanent Stormwater Best Management Practices Estimated with the MIDS Calculator.

Year	Total Projects Installed	Total BMP Estimated TP Reduction (lbs./yr.)	Targeted Subwatersheds
2015	17	17.3	Lake St. Croix and McKusick
2016	3	48.8	Lake St. Croix and Perro
2017	5	10.1	Lake St. Croix and Lily
2018	6	56.3	Lake St. Croix and Lily
2019	7	39.4	Lake St. Croix and Lily
2020	4	0.8	Lake St. Croix and Perro
2021	4	65.3	Lake St. Croix and Lily
2022	12	8.0	Lake St. Croix and McKusick

Best Management Practices and Subwatershed Implementation Program

The MSCWMO continues to seek partnerships to construct high-performing and low-cost stormwater best management practices identified in its subwatershed analyses. In 2022, seven projects were completed that were either identified in a subwatershed analysis or located in priority direct drainages that were part of these analyses. These projects received state and local funding to design and construct:

Projects that were installed in 2022:

- Lily Lake Infiltration Basin, Lily Lake Subwatershed
- Lake St Croix Beach Bluff Toe Stabilization, Lake St. Croix Subwatershed
- 4x bioretention practices and 1 vegetated swale/native planting projects installed along Riviera Avenue in Lake St. Croix Beach in the Lake St. Croix Subwatershed.

The following is a summary of work that was completed in 2022:

Lily Lake Infiltration Basin, Stillwater:

In 2018 the MSCWMO completed the Lily Lake Delisting Roadmap which identifies projects and treatments to complete the total phosphorus load reductions to Lily Lake and remove it from the impaired waters list by 2022. The final report is located on the MSCWMO website: http://www.mscwmo.org/subwatershed-assessments. In 2020 the MSCMWO applied for and received a grant from the Clean Water Fund to install a large-scale infiltration basin at Lily Lake Park and complete an in-lake alum treatment in Lily Lake. A 22,000 sq ft infiltration basin was installed at Lily Lake Park in 2021. The basin will remove 31 lbs of TP from the lake annually. The WMO also worked with city staff and consultants in 2022 to complete the alum treatment portion of the project in summer 2022. The project itself will be instrumental in avoiding the Total Maximum Daily Load (TMDL) process and potentially delisting the lake for phosphorus impairments.

The WMO worked with EOR, the City of Stillwater, and other local partners in 2022 to plant the basin with over 1,250 native plugs and 15 native shrubs, assist with establishment maintenance of existing trees, and install a split rail fence for aesthetics and safety.

[Above] *Lily Basin planting event, June 2022. Photo courtesy of Emmons & Olivier Resources, Inc.*

Lake St. Croix Beach – Bluff Toe Stabilization:

In 2018 the MSCWMO completed the Lake St. Croix Direct South Subwatershed Analysis and was successful at securing a 2019 Clean Water Fund (CWF) Grant and a 2019 St. Croix River Association Grant to design and install high priority projects identified in the report. 404 linear feet of bluff stabilization was constructed in coordination with the city of Lake St. Croix Beach utilizing 2019 CWF, 2019 Watershed Based Funding (WBF) and city funds in 2020. The first phase was completed in spring of 2021. In 2022, the WMO engaged the city to utilize remaining funds from the WMO's 2021 Clean Water Fund (CWF) Grant to stabilize an additional 96 feet.

[Above] *Lake St. Croix Beach bluff toe stabilization.*

This second phase is expected to continue into spring 2023. Once complete, Phases 1 and 2 together will reduce total phosphorus (TP) to the river by approximately 50 lbs per year.

Lake St. Croix Beach – Riviera Treatment Train:

In 2018 the MSCWMO secured a 2021 Clean Water Fund (CWF) Grant to continue implementation of prioritized practices identified in the Lake St. Croix Direct South Subwatershed Analysis. Four bioretention practices and one vegetated swale were installed along Riviera Avenue in August of 2022. Turf edges along city right of way were ripped and re-sodded in two location to improve road drainage and enhance infiltration. Together, these practices will reduce total phosphorus (TP) loading to the river by 6.5 lbs per year.

[Above] *Riviera Avenue Treatment Train Bioretention.*

Middle St Croix Mini-Grant Cost Share program:

The Middle St Croix WMO offers mini-grants (up to $500) to qualifying landowners to install low cost BMPs in priority areas. The program saw six installations and 33 inquiries (likely future applicants). These projects included three native shoreline buffer restorations/enhancement on Lake McKusick, one turf-to-prairie conversion, one oak woodland enhancement, and one native plantings for pollinator benefit.

[Above] *Siegler Shoreline Buffer Restoration, Lake McKusick*

Erosion Monitoring Program

The MSCWMO erosion control inspection program was developed to ensure that the policies and performance standards of the MSCWMO were implemented on the ground for qualifying projects. Staff continue to inspect active projects, which were reviewed by the MSCWMO board. The MSCWMO coordinates its inspection program with its member communities and their building/permit inspectors.

In 2022, 22 erosion control inspections were conducted at 13 sites in 2022. Compliance over the year was fairly high, with 59.1% of inspections receiving an A grade, 31.8% a B, 9.1% a C, and 0% a D or F. For the purposes of this summary, compliance rates for inspection items were only considered when the item was marked "compliant" or "non-compliant", and all "not inspected" items were removed from the total number of inspections for each inspection item. The most common non-compliant items noted on sites were lack of maintenance for damaged or missing perimeter controls (29.4% of inspections) and improperly installed perimeter controls (16.7% of inspections). Lack of containment for concrete washout waste was also somewhat high (20.0% of inspections). Fortunately, compliance with adequate soil stabilization for disturbed areas not being worked (60.0% of inspections) and adequate maintenance of installed soil cover (92.9% of inspections) was relatively high. Generally, it is considered more effective to prevent erosion via soil cover and stabilization than it is to control sediment that has been eroded via perimeter controls, so this is a positive finding. Other notable items found to have a high rate of compliance were prevention and cleaning of sediment trackout onto paved surfaces, protection of proposed permanent stormwater treatment features, preservation of buffers when working near water resources, and limiting disturbance of steep slopes. No sediment discharges to water resources were recorded on any inspection in 2022.

BMP Inspections and Maintenance

The MSCWMO BMP Inspection and Tracking Database was developed to ensure that the installed practices are meeting functional and aesthetic expectations. In 2022, 404 MSCWMO projects were inspected. Utilizing the Washington Conservation District Maintenance Crew, Minnesota Conservation Corps, and volunteer effort, maintenance was performed on BMPs that are municipalities' responsibility to maintain.

The watershed also worked in partnership with the East Metro Water Resource Education Program, Sustainable Stillwater, the Lily Lake Association, and the Stillwater Foundation to develop and Pilot an Adopt a Raingarden Program in Stillwater. The program will continue in 2022 under volunteer management.

Groundwater

The MSCWMO continued to recognize the Washington County Groundwater Plan during 2022 and continued to participate in County wide technical advisory committee meetings to prioritize implementation and identify responsible parties for specific activities.

Local Government Controls

The MSCWMO continued to work with its member communities to strengthen water quality and natural resource management. Through a Clean Water Fund Accelerated Implementation grant the MSCWMO assisted its member communities to update their local controls. In 2018 all communities except Stillwater adopted Minimum Impact Design Standards (MIDS) into local ordinance and code. All communities will continue to participate in the MSCWMO's project review program. The City of Stillwater has adopted MIDS standards by resolution in 2019 but has not codified.

One Watershed One Plan

In 2022, the MSCWMO has worked collaboratively with 15 local governments participating in the Lower St. Croix Comprehensive Watershed Management Plan. The MSCWMO will continue to work collaboratively to implement a coordinated management plan on the large HUC 8 basin scale.

Information and Education Program

Shared Water Resource Educator

MSCWMO continues to participate in the East Metro Water Resource Education Program (EMWREP). The partnership was formed in 2006 to educate community residents, businesses, staff, and decision-makers about issues affecting local lakes, rivers, streams, wetlands and groundwater resources and to engage people in projects that will help to protect and improve the health of these water resources.

In 2022, EMWREP programming and activities within the MSCWMO included:

- **Public education resources, delivered on a monthly basis to volunteers and local cities in the MSCWMO**
- **Lily Lake De-listed!** A highlight of 2022 was the de-listing of Lily Lake in Stillwater, after more than 20 years of community organizing, watershed planning, and project implementation. EMWREP and MSCWMO education and outreach from 2006 onward was critical to the success of this effort. On Friday, Sept. 30, MSCWMO worked with Friends of Lily Lake to throw a "De-Listing Party" with food, music, and an official commendation of Lily Lake's removal from the impaired water's list.
- **Volunteer engagement**
    - **Adopt a Drain:** This program engages community residents in helping to prevent stormwater pollution by cleaning leaves, litter and other debris off of storm drains near their homes.
        - 2022 stats include 167 drains adopted in MSCWMO; 496.1 pounds of debris collected by volunteers; and 18.8 volunteer hours spent on the program.
        - EMWREP continues to collaborate with Sustainable Stillwater to promote this program and recruit volunteers.
    - **Adopt a Raingarden:** Volunteers commit to removing weeds, litter, and built-up sediment during the growing season and reporting larger maintenance concerns to staff at Washington Conservation District.
        - There are 31 raingardens adopted in Stillwater and Oak Park Heights
        - April 4 – resource packet emailed to garden owners and volunteers
        - May 12 – raingarden maintenance workshop in Stillwater
    - **Water Steward volunteers in MSCWMO:** Sally Arneson, Barb Bickford, Mike McCarthy, Gabriel Curell
        - Barb Bickford and Mike McCarthy have been actively engaged with the Friends of Lily Lake. Barb facilitated strategic planning conversations in 2022 and Mike helped to plan the Lily Lake de-listing celebration. Both continue working to remove buckthorn and plant native species near Lily Lake.
        - Sally Arneson now serves on the board of the Wild Rivers Conservancy and remains engaged in St. Croix River issues, including caring for native plantings near her property in Lakeland.
        - Gabriel Curell is part of the Lake St. Croix Citizens Environmental Group and continues to care for his native planting.

        - EMWREP is currently working with Freshwater Society, ArtReach St. Croix, and Franconia Sculpture Park to secure grant support for a cohort of "Artist Water Stewards" to begin in 2024.
        - We are also in close collaboration with the St. Croix Watershed Stewards program, which is hosted by North Woods and Waters. Several volunteers in that program also live in the MSCWMO.
    - **Additional volunteer events**
        - June 1 - Lily Lake volunteer planting event
        - Sept. 10 - River Rally, Stillwater: Barbara Heitkamp led a group of community volunteers in storm drain clean-up and promoting Adopt a Drain.
- **Bluffland Landowner Education**
    - Delivered a postcard to St. Croix bluffland landowners in MSCWMO in the spring
    - Delivered a special mailing to St. Croix bluffland landowners, in conjunction with Wild Rivers Conservancy in the fall
- **Media**
    - **KARE-11 News story on de-listing Lily Lake – Sept. 26:** Reporters interviewed Angie Hong and Del Peterson for this 3:49min feature story about the work that went into de-listing Lily Lake.
    - **Weekly news articles in the Stillwater Gazette** (Circulation - 17,479)
        - **Salt continues to pollute Minnesota lakes and streams** – January 20

      "Once concentrations are high enough, the chloride becomes toxic to fish and invertebrates and can even prevent lakes from turning over the in spring and fall."
        - **10,000 Storm Drain Adopters in the Land of 10,000 Lakes** – May 3

      "To date, nearly 10,000 Minnesotans have adopted 17,762 storm drains, and those volunteers have reported collecting 474,096 pounds of debris that would have otherwise ended up in our water."
        - **Saving our water one storm drain at a time** – May 10

      "If you live in an area with storm drains and have been wondering if there's a way to fit a small but measurable feat of conservation into your busy life, Adopt-a-Drain is great way to go."
        - **Lily Lake alum treatment scheduled** – May. 12

      "The alum will draw phosphorus out of the water column and also seal sediment on the lake bottom so that the nutrient can no longer feed algae."
        - **Who maintains raingardens after they are planted?** – June. 2

      "As raingardens surged in popularity, local communities quickly realized how challenging it could be to keep these new gardens looking good and functioning properly."
        - **Friends of Lily Lake invites community to celebrate lake's "de-listing"** – September 19

      "On Friday, September 30, 5-7:30pm, Friends of Lily Lake will celebrate this return to clean water with a family-friendly community event at Lily Lake Park."

- **Sweeping streets and clearing drains for a cleaner St. Croix River** – Dec. 1

"This winter, the Lower St. Croix Watershed Partnership will allocate $40,000 in state funding to help 16 local communities develop targeted, enhanced street sweeping programs in order to reduce stormwater runoff pollution to the St. Croix River and its tributary lakes and streams."

- **A very hygge holiday?** – Dec. 9, 2022

"Most often, you experience hygge with a small group of friends or family, possibly in front of a fireplace with warm wooly socks and a steaming drink in hand, but definitely not behind the wheel of a car, careening through rush hour traffic in the middle of an ice storm."

- **Videos**
  - **Adopt a Drain** (3/16/22) 60k views, 128 shares
  - **De-listing lakes** (3/17/22) 20k views, 16 shares
  - **Lily Lake de-listing** (4/14/22) 7k views, 14 shares
  - **Lily Lake de-listing** (9-27-22) 407k views, 4600 shares
  - Developed a series of 4 videos about aquatic invasive species, focusing on carp
- **Education for local decision-makers**
  - **Workshop on the Water – July 20:** EMWREP collaborated with Wild Rivers Conservancy, Minnesota and Wisconsin DNR, National Park Service, and Wisconsin counties to host a St. Croix River Workshop on the Water for local officials. 100 people attended.

The MSCWMO will continue providing funding and staff time to support EMWREP in 2023.

A full report of EMWREP activities completed in 2022 can be found at www.mnwcd.org/emwrep-partners.

Website

The MSCWMO continued to update its website in 2022. The website contains up to date meeting dates, agendas, minutes, annual reports, water monitoring information, contact information and more. In addition, the website also contains a section for grant reporting which highlights projects completed as part of the BWSR Clean Water Legacy Program. The website also contains a tab for project review applications which provides all necessary information on the MSCWMO's project review process. The MSCWMO website can be viewed at the following link: http://www.mscwmo.org

2023 Data Collection Program

Water Quality Monitoring Program

In 2022 the Middle St. Croix Watershed Management Organization (MSCWMO) continued condition monitoring and water quality and elevation biweekly on McKusick Lake and Lily Lake. Information from the Brown's Creek Diversion Drainage which flows to McKusick Lake is monitored by the Brown's Creek Watershed District, but resulting information is also provided to the MSCWMO for use in management planning. The MSCWMO established a permanent monitoring station at the storm sewer connection from Brick Pond to Lily Lake. This station will measure the annual volume of water and concentration of phosphorous flowing from Brick Pond to Lily Lake. In 2022 a fully automated monitoring station was established on Perro Creek to better characterize loading from Perro Creek to the St. Croix. The MSCWMO monitored volume and concentration of discharge for both base flow and storm flows from Perro Creek.

Full water monitoring reports can be viewed on our website. The 2022 monitoring report will be available in May of 2023.

http://www.mscwmo.org/water-monitoring

2023 WORKPLAN

Best Management Practices Program
The MSCWMO will continue to promote its Best Management Practices Program in 2023. The MSCWMO will continue to work to engage landowners in the Lily Lake, McKusick Lake, Perro Creek, Lake St. Croix Direct Discharge North and South subwatersheds.

Subwatershed Analyses and Implementation
In 2023 the MSCWMO will continue working with the City of Stillwater, City of Bayport, City of Lake St. Croix Beach, other member communities, MnDOT, and private landowners to design and install targeted stormwater quality best management practices identified in subwatershed analyses. The MSCWMO received Clean Water Fund Grants to implement the findings of the Lake St Croix Direct Discharge (South) SWA. Design and construction for priority locations in the southern half of the watershed will commence in 2023.

Water Monitoring
The MSCWMO will continue water quality condition monitoring program for Lily and McKusick Lakes and Perro Creek. The MSCWMO will be expanding the data and water quality samples collected on Perro Creek in 2021 to include a continuous monitoring station. The MSCWMO has contracted with the Washington Conservation District to complete monitoring and reporting again in 2023. The MSCWMO is planning to apply for funding to monitor the volume and concentration flowing out from the Mulberry Ravine and select stormwater outfalls in the City of Stillwater discharging directly into Lake St. Croix.

Public Education and Outreach Programs
The MSCWMO will continue to participate in the East Metro Water Resource Education Program. The activities and programs offered through this partnership will help MSCWMO meet its goals for education and outreach.

Lower St. Croix One Watershed One Plan
The MSCWMO will continue to work collaboratively with 15 units of government charged with water governance in the Lower St. Croix HUC8 watershed to implement a coordinated management plan.

Development Plan Reviews and Erosion Control Inspection Program; MSCWMO Policies and Performance Standards
The MSCWMO will continue to review qualifying projects for consistency with the 2015 Watershed Management Plan, and will continue to coordinate its review process with its member communities. Staff will also continue to inspect current and past projects to ensure erosion control practices are implemented, and stormwater management features are functioning as planned. The MSCWMO will promote trainings and events that will improve performance on future projects.

Website Update and Maintenance
The MSCWMO continues to update and maintain its website.

APPENDIX A

2022 Annual Communications

AFTON
The City of Afton is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Afton to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the MSCWMO watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Annie Perkins, the City of Afton appointed MSCWMO Board Manager at 651-592-3007.

BAYPORT
The City of Bayport is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Perro Creek and Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Bayport to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering Perro Creek and the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Council Member John Dahl the City appointed Board Manager on the watershed, at 651-439-7312.

BAYTOWN TOWNSHIP
Baytown Township is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to Baytown Township to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Township Board Member Avis Peters, the Township appointed Board Manager on the watershed, at 651-430-8163.

LAKELAND
The City of Lakeland is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Lakeland to effectively manage water resources. They also partner with the Washington

Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Mayor Joe Paiement, the City appointed Board Manager on the watershed, at 651-206-5200.

LAKELAND SHORES

The City of Lakeland Shores is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Lakeland Shores to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Brian Zeller, the City appointed Board Manager on the watershed, at 612-325-3038.

LAKE ST CROIX BEACH

The City of Lake St. Croix Beach is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Lake St. Croix Beach to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Mayor Tom McCarthy, the City appointed Board Manager on the watershed, at 651-436-7031.

OAK PARK HEIGHTS

The City of Oak Park Heights is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Perro Pond and Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Oak Park Heights to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering Perro Pond or St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Council Member Mike Runk, the City appointed Board Manager on the watershed, at (651) 439-5458.

ST. MARY'S POINT

The City of St. Mary's Point is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake

St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of St. Mary's Point to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Council Member Beth Olfelt-Nelson, the City appointed Board Manager and the Treasurer for the watershed, at 612-417-5394.

STILLWATER

The City of Stillwater is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lily Lake, Lake McKusick, and Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to the City of Stillwater to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering Lily Lake, Lake McKusick, or the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Council Member Ryan Collins, the City appointed Board Manager on the watershed, at 651-246-8264.

WEST LAKELAND TOWNSHIP

West Lakeland Township is one of ten member communities of the Middle St. Croix Watershed Management Organization (MSCWMO) that collectively works to improve the water quality of Lake St. Croix. The MSCWMO provides educational, technical, and financial assistance to West Lakeland Township to effectively manage water resources. They also partner with the Washington Conservation District to provide design and cost share assistance for voluntary conservation projects on private lands that reduce sediment and phosphorous pollution entering the St. Croix River. If you are considering a conservation project on your property or have any questions about the watershed please contact Matt Downing, Administrator of the MSCWMO at mdowning@mnwcd.org or Board Member Phillip Moosbrugger, the Township appointed Board Manager, at 612-889-1556.

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

MEMORANDUM

TO: Middle St. Croix Board of Managers
FROM: Brett Stolpestad, Sr. Landscape Restoration Technician, Washingon Conservation District
DATE: February 24, 2023
RE: **7a.) Sunnyside Condos Native Planting**

Victoria Bradford, as a representative of Sunnyside Condos management, is applying for the Landscaping for Habitat Grant to establish a 500 square-foot pollinator garden at 6375 St. Croix Trail North.

Project Estimate: $5,950
Amount of Phosphorus removed: n/a
Cost Share requested: $250.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of $250.00 cost share for the installation of the Sunnyside Condos Native Planting.

Location & Photos:

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

MEMORANDUM

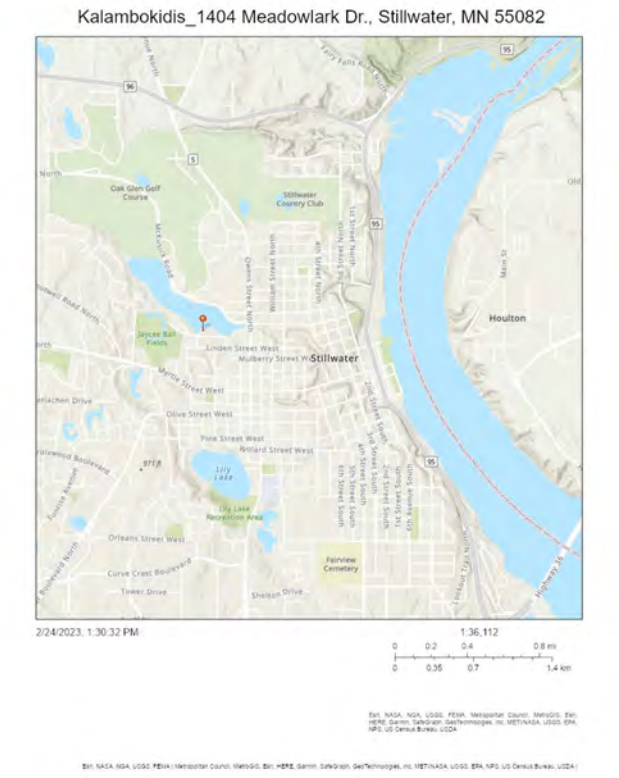
TO: Middle St. Croix Board of Managers
FROM: Brett Stolpestad, Sr. Landscape Restoration Technician, Washingon Conservation District
DATE: March 3, 2023
RE: **7b.) Kalambokidis Buffer Enhancement**

Laura Kalambokidis is applying for the Landscaping for Water Quality Grant to enhance approximately 750 square feet of shoreline buffer on Lake McKusick with native grasses, sedges and forbs. The project is located within a prioritized catchment McK-18 of the Lake McKusick Stormwater Retrofit Assessment.

Project Estimate: $3,281.25
Amount of Phosphorus removed: 0.05 lbs/yr
Cost Share requested: $500.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of $500.00 cost share for the installation of the Kalambokidis Buffer Enhancement.

Location & Photos:



MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

MEMORANDUM

TO: Matt Downing, Administrator
FROM: Rebecca Nestingen, PE
DATE: February 28, 2023
RE: 8a) Plan Reviews/Submittals

The following is a summary of recent activity on projects submittals which qualify for plan review under the MSCWMO 2015 Watershed Management Plan (WMP):

- **Baylon Residence.** An application for project review was received December 20th, 2022 for the proposed home reconstruction located at 165 Lakeland Shores Rd. The project is within the St. Croix Riverway and involves 9,713 sf of new/fully reconstructed impervious surface. Numerous revisions and resubmittals were provided by the applicant at the request of MSCWMO staff and the City Engineer to provide complete submittal items, correct the stormwater management hydrologic and hydraulic calculations, remove proposed construction from within the 40' bluffline setback, and update erosion and sediment control plans to conform with MSCWMO performance standards. *The proposed project as revised and resubmitted meets the MSCMWO performance standards, however, it is recommended that as a condition of approval that the City approves or has approved a variance and conditional use permit (CUP) for reconstruction of the boathouse, a connected project at the same property.*
- **CSAH 5 Phase 2.** An application for project review was received on January 12th, 2023 for the proposed Washington County CSAH 5 Phase 2 Improvement Project in Stillwater. The proposed improvements create new/fully reconstructed impervious surface areas of 3.090 acres. In addition to the Phase 2 improvements, the stormwater management performance standards are carried over from the CSAH 5 Phase 1 improvements completed in 2018. The volume retention goal is controlled by 0.55 inches over a total of 3.580 acres of new/reconstructed impervious. Onsite volume retention is precluded by the prohibition of infiltration practices in ERAs and high vulnerability DWSMAs and right-of-way constraints. The applicant (Kimley-Horn on behalf of Washington County) has proposed to partially comply with FTO#2 with an annual 1.54 lbs TP reduction utilizing sump/baffle structures but 60% TP removal (FTO #2) would require an annual reduction of 4.00 lbs TP. The remaining 2.46 lbs TP reduction is proposed to be achieved through FTO #3 – offsite mitigation in the form of a cash-in-lieu payment of $153,750 based upon the MSCMWO cash-in-lieu policy rate of $62,500/lb TP removal. *The MSCWMO staff recommends approval of the project contingent upon a County agreement for the cash-in-lieu payment.*
- **MnDOT I94.** An application for project review was received on January 18th, 2023 from MnDOT for proposed roadway improvements on I94. The proposed improvements consist of mill and overlay sections of impervious surfaces and will not fully reconstruct impervious surfaces and are therefore exempt from stormwater management performance goals. The project was reviewed for compliance with all other MSCWMO performance goals since it qualifies for project review by disturbing more than 10,000 square feet of land. *The MSCWMO staff recommends the proposed project is approved with one condition.*

- **Chapel Hill Flats.** An application for project review was received on January 5th, 2023 for the proposed redevelopment of a vacant parcel at 110 Myrtle St E in Stillwater to construct multi-family apartment housing. The initial submittal utilized an underground infiltration facility to achieve MCSWMO volume retention performance goals, however, the City of Stillwater has communicated that infiltration practices will not be appropriate onsite based upon the potential impact to the neighboring property. A resubmittal by the applicant was received that does not comply with the MSCWMO FTOs since it only demonstrated a TP removal performance of 39%. The MSCWMO staff have requested the project is revised and resubmitted looking into alternatives to achieve volume control or with other non-infiltration practices capable of achieving the MIDS FTOs.
- **Ashford Residence.** An application for project review was received on February 7th, 2023 for proposed residential reconstruction and flood proofing at 850 Quixote Ave N in Lakeland. The proposed project creates or fully reconstructs more than 500 sf of impervious surfaces and is within the St. Croix Riverway. Plans and materials received were incomplete and did not demonstrate compliance with MSCWMO performance goals. The MSCWMO staff recommends that applicant revise and resubmit.
- **Oak Park Parking Lot.** An application for project review was received on January 27th, 2023 for proposed parking lot improvements for the Oak Park Building at 6355 Osman Ave N in Stillwater. The proposed project creates approximately 75,000 sf of new/reconstructed impervious surfaces. The proposed project is within a high vulnerability DWSMA, however, it is outside of the ERA therefore infiltration is not precluded without a higher level of engineering review. The applicant proposed the use of a filtration basin to achieve FTOs, however, the applicant must first demonstrate the site is inappropriate for infiltration and correct the MIDS calculations to address an overestimation of TP removal credit from pretreatment structures. The MSCWMO staff recommends that the applicant revise and resubmit.

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

455 HAYWARD AVE. N, OAKDALE, MINNESTOA 55128
Phone 651.330.8220 x22 fax 651.330.7747 www.mscwmo.org

~~February 2, 2023~~ March 1, 2023

Kim Points
City Administrator
City of Lakeland Shores
P.O. Box 246
Lakeland Shores, MN 55043

RE: Baylon Residence

Dear Ms. Points,

The Middle St. Croix Watershed Management Organization (MSCWMO) received an application for project review on December 20th, 2022 for residential reconstruction at 165 Lakeland Shores Road located within MSCWMO boundaries and in the City of Lakeland Shores. The proposed project qualifies for full review under the MSCWMO 2015 MSCWMO Watershed Management Plan (WMP). The project is within the St. Croix Riverway and involves 9,713 SF of new/reconstructed impervious. **The MSCWMO recommends approval with the following one conditions:**

1. City approves or has approved a variance and CUP for reconstruction of the boathouse below the FEMA BFE.
2. ~~Stabilization timeframe on sheet C200 note E8 is revised from 14 days to 7 days.~~
3. ~~The construction plan notes and BMP details are updated to match the elevations of the submitted proposed conditions model (amended material 714.75-717.75', aggregate 717.75-723.92', topsoil 723.92-724.25').~~
4. ~~Residential structure roof is routed directly to subsurface storage system via downspout connections. (see justification in attached documentation of rate control model revisions).~~

The enclosed checklist contains detailed information on project review and the policies and performance standards of the WMP. Feel free to contact me at 651-330-8220 x22 or mdowning@mnwcd.org if you have any questions regarding these comments.

Sincerely,

Matt Downing
MSCWMO, Administrator

Enclosure

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
455 HAYWARD AVE. N.
OAKDALE, MINNESTOA 55128
Phone 651.330.8220 x22 fax 651.330.7747 www.mscwmo.org

PROJECT REVIEW FOR SINGLE LOT RESIDENTAL

MSCWMO Review ID: 22-018

Project Name: Baylon Residence

Applicant: Jeff Welle

Purpose: Reconstruction of existing residence, pool, shed, deck and boathouse.

Location: 165 Lakeland Shores Rd, Lakeland Shores

Review Date: 2/17/2023

Recommendation: Approval with one condition:

1. City approves or has approved a variance and CUP for reconstruction of the boathouse below the FEMA BFE.
2. ~~Stabilization timeframe on sheet C200 note E8 is revised from 14 days to 7 days.~~
3. ~~Update the construction plan notes and details to match the elevations of the submitted proposed conditions model (amended material 714.75-717.75', aggregate 717.75-723.92', topsoil 723.92-724.25').~~
4. ~~Residential structure roof is routed directly to subsurface storage system via downspout connections. (see justification in attached documentation of rate control model revisions).~~

Submittal Items:

☒ A completed and signed project review application form and $350 review fee.

☒ Grading plan showing grading limits, existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929.

☒ Location of proposed and existing permanent structures.

☒ Ordinary High Water (OHW) elevations and location of all existing water bodies.

☒ Location of all bluff lines.

☐ Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies must be a minimum of two feet above the regulator flood protection elevation. Low floor elevation of boathouse is 685.5' which is below the FEMA base flood elevation of 692.0' (must have City approved variance to Floodplain Ordinance and CUP).

☒ Delineation of existing wetlands, shoreland, ordinary high water levels, drain tiling, and floodplain areas.

☒ Details of proposed buffer upslope of water resources including site and vegetation characteristics (when applicable).

☒ Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

☒ Erosion and sediment control plan demonstrating locations, specifications, and details of the following items:
A. Erosion Prevention

i. Stabilize all exposed soil areas (including stockpiles) with temporary erosion control (seed and mulch or blanket) within 7 days after construction activities in the area have temporarily or permanently ceased. ~~Sheet C200 note G4 was revised to 7 days. Note E8 should also be revised from 14 days to 7 days.~~
ii. Identify location, type and quantity of temporary erosion prevention practices.
iii. Identify permanent vegetation.

B. Sediment Control
i. Sediment control practices will be placed down-gradient before up-gradient land disturbing activities begin.
ii. Identify the location, type and quantity of sediment control practices.
iii. Vehicle tracking practices must be in place to minimize track out of sediment from the construction site. Streets must be cleaned if tracking practices are not adequate to prevent sediment from being tracked onto the street.

C. Inspections and Maintenance
i. Applicant must inspect all erosion prevention and sediment control practices once every 7 days or after a ½" rain event to ensure integrity and effectiveness. All nonfunctional practices must be repaired, replaced or enhanced the next business day after discovery.
ii. Plans shall include contact information including email and a phone number of the person responsible for inspection and compliance with erosion and sediment control.

D. Pollution Prevention
i. Solid waste must be stored, collected and disposed of in accordance with state law.
ii. Provide effective containment for all liquid and solid wastes generated by washout operations (concrete, stucco, paint, form release oils, curing compounds).
iii. Hazardous materials that have potential to leach pollutants must be under cover to minimize contact with stormwater.

E. Final Stabilization
i. For residential construction only, individual lots are considered final stabilized if the structures are finished and temporary erosion protection and down gradient sediment control has been completed.
ii. Grading and landscape plans shall include soil tillage and soil bed preparation methods that are employed prior to landscape installation to a minimum depth of 8" and incorporate amendments to meet Minnesota State Stormwater Manual predevelopment soil type bulk densities.
1. Observe minimum setbacks for areas within the dripline of existing trees, over utilities within 30 in of the surface, where compaction is required by design and inaccessible slopes.

☒ Details of proposed structural stormwater practices (Meets Minnesota Stormwater Manual guidelines)

A. Stormwater flows are diverted away from bluffs whenever feasible.
B. Volume control facilities must drain down within 48 hours, as required by the MPCA NPDES Construction Stormwater Permit.
i. The period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.
C. The maximum water depth for volume control facilities is 1.5 feet.
D. Planting plan identified vegetation suitable for the hydrology of the basin.
E. Separation from seasonally saturated soils or bedrock is 3 feet or more for bioretention and infiltration practices.
F. Volume control facilities meet the following setback requirements:

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

Volume control is provided for the first 1.1”inch of runoff for all impervious:

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$9713\ sq.ft. \times \frac{1.1\ in}{12\ {}^{in}/_{ft}} = 890\ cu.ft.$	**BMP** **Volume** Subsurface 5929 cu. ft. Surface 625 cu. ft.
Total Required Volume Retention = 890 cu. ft.	**Total Provided Volume Retention = 6,554 cu. ft.**

G. Construction Standards
   i. To prevent soil compaction, the proposed volume control facility must be staked off and marked during construction to prevent heavy equipment and traffic from traveling over it.
   ii. Facilities may not be excavated within 2.0 feet of final grade until the contributing drainage area has been constructed and fully stabilized.
   iii. Facilities are in-place during construction activities, all sediment and runoff must be diverted away the facility, using practices such as pipe capping or diversions.
   iv. Facilities installation must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
   v. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
   vi. Prior to the release of any remaining fee or security, the owner must provide documentation that constructed volume control facilities perform as designed.

H. Details
   i. Include a standard cross section of the infiltration device similar to those identified in the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php/Bioretention_plan_and_section_drawings)
   ii. The cross section must detail the infiltration media used in the device. Typically, devices use Mix B as described in the Minnesota Stormwater Manual: A well-blended, homogenous mixture of 70 to 85 percent washed construction sand; and 15 to 30 percent MnDOT Grade 2 compost.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

February 22, 2023

Shawn Sanders
City of Stillwater
216 N Fourth Street
Stillwater, MN 55082

Dear Mr. Sanders,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on January 12th, 2023 for the proposed Washington County CSAH 5 Phase 2 Improvement Project, located within MSCWMO boundaries and in the City of Stillwater. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP).

The proposed improvements create a net new impervious area of 0.098 acres and new/fully reconstructed impervious area of 3.090 acres. In addition to the proposed Phase 2 improvements, the MSCWMO requirements apply to Phase 1 CSAH 5 improvements completed in 2018 consisting of 0.26 acres of net new and 0.49 acres of new/fully reconstructed impervious. The volume retention standard is controlled by 0.55 inches over the new/fully reconstructed impervious area of 3.580 acres for a volume retention goal of 7,148 cubic feet. Onsite volume retention is precluded by the prohibition of infiltration practices in ERAs and high vulnerability DWSMAs per Section 16.19 of the NPDES CSW permit and right-of-way constraints limit construction of practices to achieve MIDS FTO #1 (75% annual TP removal).

The applicant has proposed to achieve an annual 1.54 lbs TP removal through impervious disconnection and sump/baffle structures for partial compliance with FTO #2 (60% annual TP removal equaling 4.00 lbs TP/yr). The remaining annual 2.46 lbs TP removal required to comply with FTO #2 is proposed to be achieved through FTO #3 – offsite mitigation in the form of a cash-in-lieu payment of $153,750 to MSCWMO for development and implementation of stormwater facilities offsite. This amount is based on the MSCWMO cash-in-lieu policy rate of $62,500/lb TP removal.

The MSCWMO has reviewed the project and recommends approval contingent upon a County agreement for the cash-in-lieu payment.

This recommended approval is based on the technical review of the MSCWMO performance standards and does not constitute approval by the City of Stillwater. MSCWMO review process information can be downloaded from www.mscwmo.org. The project review checklist is attached. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
455 HAYWARD AVE. N.
OAKDALE, MINNESTOA 55128
Phone 651.330.8220 x22 fax 651.330.7747 www.mscwmo.org

PROJECT REVIEW

MSCWMO Review ID: 23-002

Project Name: CSAH 5 Phase 2 Improvements

Applicant: Emily Bowen, PE | Kimley Horn

Purpose: Grading, Mill and Overlay, New Sidewalk, ADA Improvements, Storm Sewer, and Retaining Wall

Location: CSAH 5 from Pine Tree Trail to Sycamore Street

Review Date: 2/15/2022

Recommendation: Approval with cash-in-lieu payment in the amount of $153,750 to MSCWMO for development and implementation of stormwater facilities to achieve offsite treatment mitigation equivalent to 2.46 lbs TP/year.

Applicability:

☒ Any project undertaking grading, filling, or other land alteration activities which involve movement of 100 cubic yards of earth or removal of vegetation on greater than 10,000 square feet of land.

☒ Any project that creates or fully reconstruct 6,000 square feet or more of impervious surface.

☐ All major subdivisions or minor subdivisions that are part of a common plan of development. Major subdivisions are defined as subdivisions with 4 or more lots.

☐ Any project with wetland impacts, grading within public waters, grading within buffers or within 40-feet of the bluff line.

☐ Development projects that impact 2 or more of the member communities.

☐ New or redevelopment projects within the St. Croix Riverway that require a building permit that add 500 square feet of additional impervious surface.

☐ Any project requiring a variance from the current local impervious surface zoning requirements for the property.

☐ Any land development activity, regardless of size, that the City determines is likely to cause an adverse impact to an environmentally sensitive area or other property, or may violate any other erosion and sediment control standard set by the member community.

Submittal Items:

☒ A completed and signed project review application form and review fee. Government entity exempt from review fee.

☒ Grading Plan/Mapping Exhibits:

- ☒ Property lines and delineation of lands under ownership of the applicant. Work within ROW and TE.
- ☒ Delineation of existing on-site wetlands, shoreland and/or floodplain areas (including any buffers). NA

- ☒ Ordinary High Water (OHW) elevations and datum, as determined by the MDNR (if applicable). NA
- ☒ Existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929. Datum must be noted on exhibits. NA – only minor sidewalk slope adjustments, no significant grading.
- ☒ Drainage easements covering land adjacent to ponding areas, wetlands, and waterways up to their 100-year flood levels and covering all ditches and storm sewers. Access easements to these drainage easements and to other stormwater management facilities shall also be shown. (Not required for sites within public right-of-way) NA – structural treatment within ROW.
- ☒ Minimum building elevation for each lot. NA
- ☒ Identification of downstream water body. Lily Lake and Lake McKusick
- ☒ Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns.
- ☒ Location, alignment, and elevation of proposed and existing stormwater facilities. Proposed facilities consist of sump structures with baffles.
- ☒ Existing and proposed normal water elevations and the critical (the highest) water level produced from the 100-year 24-hour storms. NA
- ☒ Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations. NA

☒ A Stormwater Pollution Prevention Plan in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.

☒ Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.

- ☒ Impervious areas (Pre- and Post-Construction). 3.580 acres new/fully reconstructed, 0.124 acres net increase (includes Phase 1 from 2018)
- ☒ Construction plans and specifications for all proposed stormwater management facilities.
- ☒ Location(s) of past, current or future onsite well and septic systems (if applicable). NA

☒ Other exhibits required to show conformance to these Performance Standards.

☒ Hydrologic/Hydraulic Design Exhibits:

- ☒ All hydrologic and hydraulic computations completed to design the proposed stormwater management facilities shall be submitted. Model summaries must be submitted. The summaries shall include a map that corresponds to the drainage areas in the model and all other information used to develop the model.
- ☒ A table (or tables) must be submitted showing the following:
  - ☒ A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes. NA – discharge rates/volumes will not significantly change from existing conditions
  - ☒ A listing of the normal water levels under existing and proposed conditions and the water levels produced from the storm and runoff events listed above for all on-site wetlands, ponds, depressions, lakes, streams, and creeks. NA –discharge rates/volumes will not significantly change from existing conditions

☒ A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city.

Special or Impaired Water:

☒ This site drains to, and is within one mile of special or impaired water and complies with the following enhanced protections: NA

- ☒ Stabilization initiated immediately and all soils protected in seven days/provide temp basin for five acres draining to common location. NA
- ☒ Treat water quality volume of one inch of runoff by retaining on site unless not feasible due to site conditions. NA
- ☒ Maintain buffer zone of 100 linear feet from Special Water. NA

STORMWATER MANAGEMENT PERFORMANCE STANDARDS

☒ Water quality treatment is provided prior to direct discharge of stormwater to wetlands and all other water bodies.

Rate and Flood Control Standards

☒ The peak rate of stormwater runoff from a newly developed or redeveloped site shall not exceed the 2-, 10-, and 100-year 24-hour storms with respective 2.8, 4.2, and 7.3-inch rainfall depths with MSCWMO approved time distribution based on Atlas 14 for existing and proposed conditions. The runoff curve number for existing agriculture areas shall be less than or equal to the developed condition curve number. The newly developed or redeveloped peak rate shall not exceed the existing peak rate of runoff for all critical duration events, up to and including the 100-year return frequency storm event for all points where discharges leave a site during all phases of development. NA –discharge rates/volumes will not significantly change from existing conditions

☒ Predevelopment conditions assume "good hydrologic conditions" for appropriate land covers as identified in TR−55 or an equivalent methodology. Runoff curve numbers have been increased where predevelopment land cover is cropland: NA –discharge rates/volumes will not significantly change from existing conditions

Hydrologic Soil Group A	Runoff Curve Number 56
Hydrologic Soil Group B	Runoff Curve Number 70
Hydrologic Soil Group C	Runoff Curve Number 79
Hydrologic Soil Group D	Runoff Curve Number 83

☒ Computer modeling analyses includes secondary overflows for events exceeding the storm sewer systems level-of-service up through the critical 100-year event. NA –discharge rates/volumes will not significantly change from existing conditions

☒ In sub-areas of a landlocked watershed, the proposed project does not increase the predevelopment volume or rate of discharge from the sub-area for the 10-year return period event. NA

☒ Flowage easements up to the 100-yr flood level have been secured for stormwater management facilities (such as ditches and storm sewers). NA

☒ Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies are a minimum of two feet above the 100-year flood elevation and a minimum of two feet above the natural overflow of landlocked basins. NA

Volume Control Standards

☐ Calculations/computer model results indicate stormwater volume is controlled for new development and redevelopment requirements per the MSCWMO Design Standards.

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$5401\ sq.ft. \times \frac{1.1\ in}{12\ {}^{in}/_{ft}} = 495\ cu.ft.$ $155{,}945\ sq.ft. \times \frac{0.55\ in}{12\ {}^{in}/_{ft}} = 7{,}148\ cu.ft.$ **Total Required Volume Retention = 7,148 cu. ft.**	**BMP** **Volume** BMP #1 X,XXX cu. ft. BMP #2 X,XXX cu. ft. **Total Provided Volume Retention = X,XXX cu. ft.**

Flexible Treatment Options (when applicable)

☒ Applicant demonstrated qualifying restrictions as defined in Section 7.2.2 (4) of the 2015 MSCWMO Watershed Management Plan that prohibits the infiltration of the entire required volume. Source water protection site constraint (High Vulnerability DWSMA and ERA) – infiltration practice prohibited per NPDES CSW §16.19.a

☐ FTO #1: MIDS calculator submission removes 75% of the annual total phosphorous. Limited ROW restricts permanent stormwater facilities to achieve 75% TP removal

☒ FTO #2: MIDS calculator submission removes 60% of the annual total phosphorous.
- New/Reconstructed TP Load = 6.66 lbs/yr
- 60% TP removal goal = 4.00 lbs/yr
- Disconnected impervious TP removal = 0.64 lbs/yr
- Sump/baffle TP removal = 0.90 lbs/yr
- Combined TP removal = 1.54 lbs/yr

☒ FTO #3: Offsite mitigation equivalent to the volume reduction standard is provided.
- Remaining TP removal required = 4.00 – 1.54 = 2.46 lbs
- MSCWMO Cash-in-lieu rate of $62,500/lb TP removal
- Required cash-in-lieu amount = $153,750

Infiltration/Filtration Design Standards

☒ Proposed stormwater management features meet or exceed NPDES General Construction Permit requirements are designed in conformance with the most recent edition of the State of Minnesota Stormwater Manual. NA

☒ None of the following conditions exist that prohibit infiltration of stormwater on the site NA

a. Areas where vehicle fueling and maintenance occur.
b. Areas with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
c. Areas where industrial facilities are not authorized to infiltrate industrial stormwater under an National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Industrial Stormwater Permit issued by the MPCA.
d. Areas where contaminants in soil or groundwater will be mobilized by infiltrating stormwater.
e. Areas of Hydrologic Soil Group D (clay) soils

f. Areas within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features unless allowed by a local unit of government with a current MS4 permit.

☒ Minimum setbacks from the Minnesota Department of Health for infiltration practices are met NA

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

☒ Pretreatment devices(s) remove at least 50% of sediment loads. If downstream from a potential hot spot, a skimmer is in place to facilitate cleanup. NA

☒ Water quality volume will be discharged through infiltration or filtration media in 48 hours or less. NA

☒ For bioretention (biofiltration and bioinfiltration) volume control management facilities above ground with vegetation the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate. NA

☒ For infiltration basin volume control management facilities the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate. NA

☒ Appropriate soil borings have been conducted that meet the minimum standards. NA

a. A minimum of one boring was conducted at the location of the infiltration facility for facilities up to 1,000 ft^2; between 1,000 and 5,000 ft^2, two borings; between 5,000 and 10,000 ft^2, three borings; and greater than 10,000 ft^2, 4 borings plus an additional boring for every 2,500 ft^2 beyond 12,500 ft^2.
b. Soil borings extend a minimum of five feet below the bottom of the infiltration practice. If fractured bedrock is suspected, the soil boring goes to a depth of at least ten feet below the proposed bottom of the volume control facility.
c. A minimum of three feet of separation to the seasonal water table and/or bedrock.
d. Identify unified soil classification.

☒ The least permeable soils horizon identified in the soil boring dictated the infiltration rate. NA

☒ Additional flows are bypassed and are routed through stabilized discharge points. NA

☒ Filtration basin demonstrates a basin draw down between 24 hours and 48 hours. NA

☒ Filtration system Iron Enhanced Sand Filter is sized to bind soluble phosphorous removal for 30 year functional life of the system using the published value of 17lbs.phosphorous removal per 20 yards of 5% by weight iron filings to 95% sand. NA

☒ Identify as build survey and method to demonstrate infiltration or filtration basin is functioning. NA

☒ Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance. NA

a. Excavation within 2.0 feet of final grade for infiltration/filtration systems is prohibited until contributing drainage areas are constructed and fully stabilized.
b. Rigorous sediment and erosion controls planned to divert runoff away from the system.
c. Installation of volume control facilities must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.

d. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
e. Prior to the release of any remaining fee or security, the permit holder must provide documentation that constructed volume control facilities perform as designed.

☒ There is a way to visually verify the system is operating as designed. NA

☒ A minimum 8.0' maintenance access is provided to all stormwater facilities. NA

Erosion and Sediment Control Performance Standards

☒ A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements.

Narrative

☒ Identify the person knowledgeable and experienced who will oversee the implementation of the SWPPP; the installation, inspection, and maintenance of the BMPs.
a. Identifies the person who will oversee the BMP inspection and maintenance.
b. Identify the training requirements are satisfied.
c. Inspections performed once every 7 days.
d. Inspections performed within 24 hours of a rain event greater than 0.5 in/24 hours.
e. Inspection and Maintenance records include:
i. Date and time of inspection.
ii. Name of person(s) conducting inspections.
iii. Finding of inspections, including the specific location where corrective actions are needed.
iv. Corrective actions taken (including dates, times, and party completing maintenance activities).
v. Date and amount of rainfall events greater than 0.5 in/24 hours.
vi. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
vii. Requirements to observe, describe, and photograph any discharge that may be occurring during the inspection.
viii. All discovered nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow.

☒ Describes procedures to amend the SWPPP and establish additional temporary ESC BMPs as necessary for site conditions.

☒ Describes the installation timing for all Erosion Sediment Control (ESC) Best Management Practices (BMPs).

☒ Describes final stabilization methods for all exposed areas.

☒ Methods used to minimize soil compaction and preserve topsoil must be described.

☒ Describes dewatering technique to prevent nuisance conditions, erosion, or inundation of wetlands.

☒ Identifies any specific chemicals and the chemical treatment systems that may be used for enhancing the sedimentation process on the site, and how compliance will be achieved with the permit requirements.

☒ Describes the following pollution prevention management measures:
a. Storage, handling, and disposal of construction products, materials, and wastes.
b. Fueling and maintenance of equipment or vehicles; spill prevention and response.
c. Vehicle and equipment washing.

d. No engine degreasing allowed on site.
e. Containment of Concrete and other washout waste.
f. Portable toilets are positioned so that they are secure.

Plan Sheets

☒ Temporary Sediment Basins required (10 acres draining to common location or 5 acres App. A) and design meets the following criteria: NA – 10 acres will not drain to a common discharge location
a. Adequately sized – 2-year, 24-hour storm, minimum 1,800 feet/acre; or no calculative minimum 3,600ft3/acre.
b. Designed to prevent short circuiting.
c. Outlets designed to remove floating debris.
d. Outlets designed to allow complete drawdown.
e. Outlets designed to withdraw water from the surface
f. Outlets have energy dissipation.
g. Have a stabilized emergency spillway.
h. Situated outside of surface waters and any natural buffers.

☒ Locations and types of all temporary and permanent Erosion Control BMPs.
a. Exposed soils have erosion protection/cover initiated immediately and finished within 7 days.
b. Wetted perimeters of ditches stabilized within 200 feet of surface water within 24 hours.
c. Pipe outlets have energy dissipation within 24 hours of connecting.

☒ Locations and types of all temporary and permanent Sediment Control BMPs.
a. Sediment control practices established on down gradient perimeters and upgradient of any buffer zones.
b. All inlets are protected.
c. Stockpiles have sediment control and placed in areas away from surface waters or natural buffers.
d. Construction site entrances minimize street tracking?
e. Plans minimize soil compaction and, unless infeasible to preserve topsoil.
f. Fifty foot natural buffers preserved or (if not feasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.

☒ Tabulated quantities of all erosion prevention and sediment control BMPs.

☒ Stormwater flow directions and surface water divides for all pre- and post-construction drainage areas.

☒ Locations of areas not to be disturbed (buffer zones).

☒ Location of areas where construction will be phased to minimize duration of exposed soil areas.

☒ Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer). NA

WETLAND PERFORMANCE STANDARDS

☒ Direct discharge of stormwater to wetlands and all other water bodies without water quality treatment is prohibited. NA

☒ Any potential changes to the hydrology of the wetland (i.e. changes to the outlet elevation or contributing drainage area) must be reviewed to evaluate the impact of both the existing and proposed wetland conditions and approved by the MSCWMO. NA

☒ Land-altering activities shall not increase the bounce in water level or duration of inundation from a 2.0-inch 24-hour storm for any downstream wetland beyond the limit specified in Table 7.2 for the individual wetland susceptibility class. NA

LAKE, STREAM AND WETLAND BUFFER PERFORMANCE STANDARDS

☒ A buffer zone of unmowed natural vegetation is maintained or created upslope of all water bodies (wetlands, streams, lakes). NA

☒ A 50 foot natural buffer or (if a buffer is infeasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and stormwater flows to the surface water. NA

☒ If adjacent to a Special or Impaired Water an undisturbed buffer zone of not less than 100 linear feet from the special water is maintained both during construction and as a permanent feature post construction. NA

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

February 28, 2023

Ron Moorse
City of Afton
3033 St. Croix Trail
PO Box 219
Afton, MN 55001

Dear Mr. Moorse,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on January 18th, 2023 from MnDOT for proposed roadway improvements on I94 from TH120 to TH95 which is partially within MSCWMO boundaries and in the City of Afton. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it disturbs more than 10,000 sf of land. The project is exempt from MSCWMO stormwater management performance standards since the proposed project consists of mill and overlay sections and will not fully reconstruct impervious surfaces. The MSCWMO staff recommends the proposed project is approved with the following condition:

1. Exposed soils and stockpile stabilization timeframe in the SWPPP is changed from 14 days to 7 days to account for portions of the project are within a mile of and that drain to special or impaired waters that have construction related impairments (Battle Creek, Goose Lake, Markgrafs Lake, Lake St. Croix).

This recommended approval is based on the technical review of MSCWMO performance standards and does not constitute approval by the City of Afton. MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

February 28, 2023

Michelle Elsner
City of Lakeland
690 Quinnell Ave N
PO Box 321
Lakeland, MN 55043

Dear Ms. Elsner,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on January 18th, 2023 from MnDOT for proposed roadway improvements on I94 from TH120 to TH95 which is partially within MSCWMO boundaries and in the City of Lakeland. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it disturbs more than 10,000 sf of land. The project is exempt from MSCWMO stormwater management performance standards since the proposed project consists of mill and overlay sections and will not fully reconstruct impervious surfaces. The MSCWMO staff recommends the proposed project is approved with the following condition:

1. Exposed soils and stockpile stabilization timeframe in the SWPPP is changed from 14 days to 7 days to account for portions of the project are within a mile of and that drain to special or impaired waters that have construction related impairments (Battle Creek, Goose Lake, Markgrafs Lake, Lake St. Croix).

This recommended approval is based on the technical review of MSCWMO performance standards and does not constitute approval by the City of Lakeland. MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

February 28, 2023

Carrie Seifert
West Lakeland Township
959 Paris Avenue Circle N
West Lakeland Township, MN 55082

Dear Ms. Seifert,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on January 18th, 2023 from MnDOT for proposed roadway improvements on I94 from TH120 to TH95 which is partially within MSCWMO boundaries and in the West Lakeland Township. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it disturbs more than 10,000 sf of land. The project is exempt from MSCWMO stormwater management performance standards since the proposed project consists of mill and overlay sections and will not fully reconstruct impervious surfaces. The MSCWMO staff recommends the proposed project is approved with the following condition:

1. Exposed soils and stockpile stabilization timeframe in the SWPPP is changed from 14 days to 7 days to account for portions of the project are within a mile of and that drain to special or impaired waters that have construction related impairments (Battle Creek, Goose Lake, Markgrafs Lake, Lake St. Croix).

This recommended approval is based on the technical review of MSCWMO performance standards and does not constitute approval by the West Lakeland Township. MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-003

Review Date: 2/28/2023

Project Name: MnDOT I94 SP8282-132

Location: I94 from TH123 to TH95

Applicant: Bryce Fossand | MnDOT

Purpose: Preservation and Safety

Recommendation: Approval with the following condition:

1. Exposed soils and stockpile stabilization timeframe in the SWPPP is changed from 14 days to 7 days to account for portions of the project are within a mile of and that drain to special or impaired waters that have construction related impairments (Battle Creek, Goose Lake, Markgrafs Lake, Lake St. Croix).

Applicability:

☒ Any project undertaking grading, filling, or other land alteration activities which involve movement of 100 cubic yards of earth or removal of vegetation on greater than 10,000 square feet of land.

☐ Any project that creates or fully reconstruct 6,000 square feet or more of impervious surface.

☐ All major subdivisions or minor subdivisions that are part of a common plan of development. Major subdivisions are defined as subdivisions with 4 or more lots.

☐ Any project with wetland impacts, grading within public waters, grading within buffers or within 40-feet of the bluff line.

☐ Development projects that impact 2 or more of the member communities.

☐ New or redevelopment projects within the St. Croix Riverway that require a building permit that add 500 square feet of additional impervious surface.

☐ Any project requiring a variance from the current local impervious surface zoning requirements for the property.

☐ Any land development activity, regardless of size, that the City determines is likely to cause an adverse impact to an environmentally sensitive area or other property, or may violate any other erosion and sediment control standard set by the member community.

Submittal Items:

☒ A completed and signed project review application form and review fee.

☐ Grading Plan/Mapping Exhibits:

- ☒ Property lines and delineation of lands under ownership of the applicant. Work within ROW or TE.
- ☒ Delineation of existing on-site wetlands, shoreland and/or floodplain areas (including any buffers).
- NA Ordinary High Water (OHW) elevations and datum, as determined by the MDNR (if applicable).

NA Existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929. Datum must be noted on exhibits. mill and overlay

NA Drainage easements covering land adjacent to ponding areas, wetlands, and waterways up to their 100-year flood levels and covering all ditches and storm sewers. Access easements to these drainage easements and to other stormwater management facilities shall also be shown. (Not required for sites within public right-of-way)

NA Minimum building elevation for each lot.

☒ Identification of downstream water body.

NA Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns. Mill and overlay, no change in drainage patterns

☒ Location, alignment, and elevation of proposed and existing stormwater facilities.

☒ Existing and proposed normal water elevations and the critical (the highest) water level produced from the 100-year 24-hour storms.

NA Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

☒ A Stormwater Pollution Prevention Plan in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.

☒ Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.

☒ Impervious areas (Pre- and Post-Construction). Net impervious = -2000-2500 sf (cross over removal), proposed impervious surfaces consist of mill and overlay, no fully reconstructed impervious surfaces

☒ Construction plans and specifications for all proposed stormwater management facilities.

NA Location(s) of past, current or future onsite well and septic systems (if applicable).

☒ Other exhibits required to show conformance to these Performance Standards.

☒ Hydrologic/Hydraulic Design Exhibits:

NA All hydrologic and hydraulic computations completed to design the proposed stormwater management facilities shall be submitted. Model summaries must be submitted. The summaries shall include a map that corresponds to the drainage areas in the model and all other information used to develop the model.

NA A table (or tables) must be submitted showing the following: Mill and overlay, no change in drainage patterns

NA A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes.

NA A listing of the normal water levels under existing and proposed conditions and the water levels produced from the storm and runoff events listed above for all on-site wetlands, ponds, depressions, lakes, streams, and creeks.

NA A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city.

☐ This site drains to, and is within one mile of special or impaired water and complies NPDES CSW additional requirements. Does not comply with 7 day stabilization timeframe for Lake St. Croix (impaired for nutirents)

Stormwater Management Performance Standards

NA Water quality treatment is provided prior to direct discharge of stormwater to wetlands and all other water bodies. Stormwater Management not triggered, < 6,000 sf new/fully reconstructed impervious surfaces

Rate and Flood Control Standards

NA The peak rate of stormwater runoff from a newly developed or redeveloped site shall not exceed the 2-, 10-, and 100-year 24-hour storms with respective 2.8, 4.2, and 7.3-inch rainfall depths with MSCWMO approved time distribution based on Atlas 14 for existing and proposed conditions. The runoff curve number for existing agriculture areas shall be less than or equal to the developed condition curve number. The newly developed or redeveloped peak rate shall not exceed the existing peak rate of runoff for all critical duration events, up to and including the 100-year return frequency storm event for all points where discharges leave a site during all phases of development. Mill and overlay, no change in drainage patterns

NA Predevelopment conditions assume "good hydrologic conditions" for appropriate land covers as identified in TR−55 or an equivalent methodology. Runoff curve numbers have been increased where predevelopment land cover is cropland:

Hydrologic Soil Group A	Runoff Curve Number 56
Hydrologic Soil Group B	Runoff Curve Number 70
Hydrologic Soil Group C	Runoff Curve Number 79
Hydrologic Soil Group D	Runoff Curve Number 83

NA Computer modeling analyses includes secondary overflows for events exceeding the storm sewer systems level-of-service up through the critical 100-year event.

NA In sub-areas of a landlocked watershed, the proposed project does not increase the predevelopment volume or rate of discharge from the sub-area for the 10-year return period event.

NA Flowage easements up to the 100-yr flood level have been secured for stormwater management facilities (such as ditches and storm sewers).

NA Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies are a minimum of two feet above the 100-year flood elevation and a minimum of two feet above the natural overflow of landlocked basins.

Volume Control Standards

NA Calculations/computer model results indicate stormwater volume is controlled for new development and redevelopment requirements per the MSCWMO Design Standards.

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$XX,XXX\ sq.ft. \times \frac{1.1\ in}{12\ in/ft} = X,XXX\ cu.ft.$ $XX,XXX\ sq.ft. \times \frac{0.55\ in}{12\ in/ft} = X,XXX\ cu.ft.$ **Total Required Volume Retention = X,XXX cu. ft.**	**BMP** **Volume** BMP #1 X,XXX cu. ft. BMP #2 X,XXX cu. ft. **Total Provided Volume Retention = X,XXX cu. ft.**

Flexible Treatment Options (when applicable)

NA Applicant demonstrated qualifying restrictions as defined in Section 7.2.2 (4) of the 2015 MSCWMO Watershed Management Plan that prohibits the infiltration of the entire required volume.

NA FTO #1: MIDS calculator submission removes 75% of the annual total phosphorous.

NA FTO #2: MIDS calculator submission removes 60% of the annual total phosphorous.

NA FTO #3: Offsite mitigation equivalent to the volume reduction standard is provided.

Infiltration/Filtration Design Standards

NA Proposed stormwater management features meet or exceed NPDES General Construction Permit requirements are designed in conformance with the most recent edition of the State of Minnesota Stormwater Manual.

NA None of the following conditions exist that prohibit infiltration of stormwater on the site

a. Areas where vehicle fueling and maintenance occur.
b. Areas where contaminants in soil or groundwater will be mobilized by infiltrating stormwater.
c. Areas where soil infiltration rates are field measured at more than 8.3 inches per hour unless amended to slow the infiltration rate below 8.3 inches per hour.
d. Areas with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
e. Areas of Hydrologic Soil Group D (clay) soils
f. Areas within DSWMAs and ERAs unless infiltration is deemed appropriate based on Minnesota Stormwater Manual Guidance
g. Areas within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features unless allowed by a local unit of government with a current MS4 permit.
h. Areas that receive runoff from industrial facilities not authorized to infiltration stormwater under the NPDES stormwater permit for industrial activites.

NA Minimum setbacks from the Minnesota Department of Health for infiltration practices are met

Setback	**Minimum Distance (ft.)**
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

NA Pretreatment devices(s) remove at least 50% of sediment loads. If downstream from a potential hot spot, a skimmer is in place to facilitate cleanup.

NA Water quality volume will be discharged through infiltration or filtration media in 48 hours or less.

NA For bioretention (biofiltration and bioinfiltration) volume control management facilities above ground with vegetation the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA For infiltration basin volume control management facilities the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA Appropriate soil borings have been conducted that meet the minimum standards.
   a. A minimum of one boring was conducted at the location of the infiltration facility for facilities up to 1,000 ft²; between 1,000 and 5,000 ft², two borings; between 5,000 and 10,000 ft², three borings; and greater than 10,000 ft², 4 borings plus an additional boring for every 2,500 ft² beyond 12,500 ft².
   b. Soil borings extend a minimum of five feet below the bottom of the infiltration practice. If fractured bedrock is suspected, the soil boring goes to a depth of at least ten feet below the proposed bottom of the volume control facility.
   c. A minimum of three feet of separation to the seasonal water table and/or bedrock.
   d. Identify unified soil classification.

NA The least permeable soils horizon identified in the soil boring dictated the infiltration rate.

NA Additional flows are bypassed and are routed through stabilized discharge points.

NA Filtration basin demonstrates a basin draw down between 24 hours and 48 hours.

NA Filtration system Iron Enhanced Sand Filter is sized to bind soluble phosphorous removal for 30 year functional life of the system using the published value of 17lbs.phosphorous removal per 20 yards of 5% by weight iron filings to 95% sand.

NA Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.

NA Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance.
   a. Excavation within 2.0 feet of final grade for infiltration/filtration systems is prohibited until contributing drainage areas are constructed and fully stabilized.
   b. Rigorous sediment and erosion controls planned to divert runoff away from the system.
   c. Installation of volume control facilities must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
   d. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
   e. Prior to the release of any remaining fee or security, the permit holder must provide documentation that constructed volume control facilities perform as designed.

NA There is a way to visually verify the system is operating as designed.

NA A minimum 8.0’ maintenance access is provided to all stormwater facilities.

Erosion and Sediment Control Performance Standards

☒ A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements.

Narrative

☒ Identify the person knowledgeable and experienced who will oversee the implementation of the SWPPP; the installation, inspection, and maintenance of the BMPs.
   a. Identifies the person who will oversee the BMP inspection and maintenance.
   b. Identify the training requirements are satisfied.
   c. Inspections performed once every 7 days.
   d. Inspections performed within 24 hours of a rain event greater than 0.5 in/24 hours.

e. Inspection and Maintenance records include:
   i. Date and time of inspection.
   ii. Name of person(s) conducting inspections.
   iii. Finding of inspections, including the specific location where corrective actions are needed.
   iv. Corrective actions taken (including dates, times, and party completing maintenance activities).
   v. Date and amount of rainfall events greater than 0.5 in/24 hours.
   vi. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
   vii. Requirements to observe, describe, and photograph any discharge that may be occurring during the inspection.
   viii. All discovered nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow.

☒ Describes procedures to amend the SWPPP and establish additional temporary ESC BMPs as necessary for site conditions.

☒ Describes the installation timing for all Erosion Sediment Control (ESC) Best Management Practices (BMPs).

☒ Describes final stabilization methods for all exposed areas.

☒ Methods used to minimize soil compaction and preserve topsoil must be described.

NA Describes dewatering technique to prevent nuisance conditions, erosion, or inundation of wetlands.

NA Identifies any specific chemicals and the chemical treatment systems that may be used for enhancing the sedimentation process on the site, and how compliance will be achieved with the permit requirements.

☒ Describes the following pollution prevention management measures:
   a. Storage, handling, and disposal of construction products, materials, and wastes.
   b. Fueling and maintenance of equipment or vehicles; spill prevention and response.
   c. Vehicle and equipment washing.
   d. No engine degreasing allowed on site.
   e. Containment of Concrete and other washout waste.
   f. Portable toilets are positioned so that they are secure.

Plan Sheets

☒ Temporary Sediment Basins required (10 acres draining to common location or 5 acres App. A) and design meets the following criteria: SWPPP Notes for Construction Activity- Note 8
   a. Adequately sized – 2-year, 24-hour storm, minimum 1,800 feet/acre; or no calculative minimum 3,600ft^3/acre.
   b. Designed to prevent short circuiting.
   c. Outlets designed to remove floating debris.
   d. Outlets designed to allow complete drawdown.
   e. Outlets designed to withdraw water from the surface
   f. Outlets have energy dissipation.
   g. Have a stabilized emergency spillway.
   h. Situated outside of surface waters and any natural buffers.

☐ Locations and types of all temporary and permanent Erosion Control BMPs.
   a. Exposed soils have erosion protection/cover initiated immediately and finished within 7 or 14 days.
   b. Wetted perimeters of ditches stabilized within 200 feet of surface water within 24 hours.
   c. Pipe outlets have energy dissipation within 24 hours of connecting.

☒ Locations and types of all temporary and permanent Sediment Control BMPs.
   a. Sediment control practices established on down gradient perimeters and upgradient of any buffer zones.
   b. All inlets are protected.
   c. Stockpiles have sediment control and placed in areas away from surface waters or natural buffers.
   d. Construction site entrances minimize street tracking?
   e. Plans minimize soil compaction and, unless infeasible to preserve topsoil.
   f. Fifty foot natural buffers preserved or (if not feasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.

☒ Tabulated quantities of all erosion prevention and sediment control BMPs.

☒ Stormwater flow directions and surface water divides for all pre- and post-construction drainage areas.

☒ Locations of areas not to be disturbed (buffer zones).

☒ Location of areas where construction will be phased to minimize duration of exposed soil areas.

NA Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer).

Wetland Performance Standards

☒ Direct discharge of stormwater to wetlands and all other water bodies without water quality treatment is prohibited.

NA Any potential changes to the hydrology of the wetland (i.e. changes to the outlet elevation or contributing drainage area) must be reviewed to evaluate the impact of both the existing and proposed wetland conditions and approved by the MSCWMO.

NA Land-altering activities shall not increase the bounce in water level or duration of inundation from a 2.0-inch 24-hour storm for any downstream wetland beyond the limit specified in Table 7.2 for the individual wetland susceptibility class.

Lake, Stream and Wetland Buffer Performance Standards

☒ A buffer zone of unmowed natural vegetation is maintained or created upslope of all water bodies (wetlands, streams, lakes).

☒ A 50 foot natural buffer or (if a buffer is infeasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and stormwater flows to the surface water.
SWPPP Notes for Construction Activity- Note 10

☒ If adjacent to a Special or Impaired Water an undisturbed buffer zone of not less than 100 linear feet from the special water is maintained both during construction and as a permanent feature post construction.

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
455 HAYWARD AVE. N.
OAKDALE, MINNESTOA 55128
Phone 651.330.8220 x22 fax 651.330.7747 www.mscwmo.org

PROJECT REVIEW

MSCWMO Review ID: 23-001

Project Name: Chapel Hill Flats Apartments

Applicant: T. J. Rose

Purpose: Construction of new apartment buildings with underground parking

Location: 110 Myrtle St E, Stillwater

Review Date: 1/27/2023

Recommendation: Revise and resubmit to address highlighted items and comments in the following checklist.

Applicability:

☐ Any project undertaking grading, filling, or other land alteration activities which involve movement of 100 cubic yards of earth or removal of vegetation on greater than 10,000 square feet of land.

☒ Any project that creates or fully reconstruct 6,000 square feet or more of impervious surface.

☐ All major subdivisions or minor subdivisions that are part of a common plan of development. Major subdivisions are defined as subdivisions with 4 or more lots.

☐ Any project with wetland impacts, grading within public waters, grading within buffers or within 40-feet of the bluff line.

☐ Development projects that impact 2 or more of the member communities.

☐ New or redevelopment projects within the St. Croix Riverway that require a building permit that add 500 square feet of additional impervious surface.

☐ Any project requiring a variance from the current local impervious surface zoning requirements for the property.

☐ Any land development activity, regardless of size, that the City determines is likely to cause an adverse impact to an environmentally sensitive area or other property, or may violate any other erosion and sediment control standard set by the member community.

Submittal Items:

☒ A completed and signed project review application form and review fee.

☐ Grading Plan/Mapping Exhibits:

☒ Property lines and delineation of lands under ownership of the applicant.

NA Delineation of existing on-site wetlands, shoreland and/or floodplain areas (including any buffers).

NA Ordinary High Water (OHW) elevations and datum, as determined by the MDNR (if applicable).

- ☒ Existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929. Datum must be noted on exhibits.
- ☐ Drainage easements covering land adjacent to ponding areas, wetlands, and waterways up to their 100-year flood levels and covering all ditches and storm sewers. Access easements to these drainage easements and to other stormwater management facilities shall also be shown. (Not required for sites within public right-of-way)
- ☒ Minimum building elevation for each lot.
- ☒ Identification of downstream water body.
- ☒ Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns.
- ☒ Location, alignment, and elevation of proposed and existing stormwater facilities.
- ☒ Existing and proposed normal water elevations and the critical (the highest) water level produced from the 100-year 24-hour storms.
- ☒ Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

☐ A Stormwater Pollution Prevention Plan in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.

☒ Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.

- ☒ Impervious areas (Pre- and Post-Construction).
- ☒ Construction plans and specifications for all proposed stormwater management facilities.

NA Location(s) of past, current or future onsite well and septic systems (if applicable).

☒ Other exhibits required to show conformance to these Performance Standards.

☒ Hydrologic/Hydraulic Design Exhibits:

- ☒ All hydrologic and hydraulic computations completed to design the proposed stormwater management facilities shall be submitted. Model summaries must be submitted. The summaries shall include a map that corresponds to the drainage areas in the model and all other information used to develop the model.
- ☒ A table (or tables) must be submitted showing the following:
  - ☒ A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes.
  - ☒ A listing of the normal water levels under existing and proposed conditions and the water levels produced from the storm and runoff events listed above for all on-site wetlands, ponds, depressions, lakes, streams, and creeks.

☐ A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city.

Special or Impaired Water:

☒ This site drains to, and is within one mile of special or impaired water and complies with the following enhanced protections: The site drains to the St. Croix

☐ Stabilization initiated immediately and all soils protected in seven days/provide temp basin for five acres draining to common location.

☒ Treat water quality volume of one inch of runoff by retaining on site unless not feasible due to site conditions

☒ Maintain buffer zone of 100 linear feet from Special Water.

STORMWATER MANAGEMENT PERFORMANCE STANDARDS

☒ Water quality treatment is provided prior to direct discharge of stormwater to wetlands and all other water bodies.

Rate and Flood Control Standards

☐ The peak rate of stormwater runoff from a newly developed or redeveloped site shall not exceed the 2-, 10-, and 100-year 24-hour storms with respective 2.8, 4.2, and 7.3-inch rainfall depths with MSCWMO approved time distribution based on Atlas 14 for existing and proposed conditions. The runoff curve number for existing agriculture areas shall be less than or equal to the developed condition curve number. The newly developed or redeveloped peak rate shall not exceed the existing peak rate of runoff for all critical duration events, up to and including the 100-year return frequency storm event for all points where discharges leave a site during all phases of development. Proposed peak discharge rates leaving the site to Myrtle St & 3rd Street are higher than existing rates for the 10-year and 100-year events. Additionally the following corrections should be made to the proposed model:

1. Model the outlet from the storage area as a 12" pipe @ 2.0% to demonstrate it's not controlling the outlet conditions and route it to a "catch basin" that represents the outlet structure as configured.
2. Check the size/elevations of the outlet structure orifices and weir. It is likely not constructible as configured since the crown of the 6" orifice will be at 728.3' which is the same as the weir.
3. Proposed subcatchment B shall be routed to a depression area with the hydraulic capacity of the inlet (modeled as a horizontal orifice) as the primary routing to the pipe storage and a secondary overflow to Myrtle Street to account for discharges bypassing the underground pipe storage during large events.

☒ Predevelopment conditions assume "good hydrologic conditions" for appropriate land covers as identified in TR−55 or an equivalent methodology. Runoff curve numbers have been increased where predevelopment land cover is cropland:

Hydrologic Soil Group A	Runoff Curve Number 56
Hydrologic Soil Group B	Runoff Curve Number 70
Hydrologic Soil Group C	Runoff Curve Number 79
Hydrologic Soil Group D	Runoff Curve Number 83

☐ Computer modeling analyses includes secondary overflows for events exceeding the storm sewer systems level-of-service up through the critical 100-year event. See comment 3 above.

NA In sub-areas of a landlocked watershed, the proposed project does not increase the predevelopment volume or rate of discharge from the sub-area for the 10-year return period event.

☐ Flowage easements up to the 100-yr flood level have been secured for stormwater management facilities (such as ditches and storm sewers).

NA Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies are a minimum of two feet above the 100-year flood elevation and a minimum of two feet above the natural overflow of landlocked basins.

Volume Control Standards

☒ Calculations/computer model results indicate stormwater volume is controlled for new development and redevelopment requirements per the MSCWMO Design Standards.

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$9240\ sq.ft. \times \frac{1.1\ in}{12\ in/ft} = 847\ cu.ft.$ **Total Required Volume Retention = 847 cu. ft.**	**BMP** **Volume** BMP #1 855 cu. ft. **Total Provided Volume Retention = 855 cu. ft.**

Flexible Treatment Options (when applicable)

NA Applicant demonstrated qualifying restrictions as defined in Section 7.2.2 (4) of the 2015 MSCWMO Watershed Management Plan that prohibits the infiltration of the entire required volume.

NA FTO #1: MIDS calculator submission removes 75% of the annual total phosphorous.

NA FTO #2: MIDS calculator submission removes 60% of the annual total phosphorous.

NA FTO #3: Offsite mitigation equivalent to the volume reduction standard is provided.

Infiltration/Filtration Design Standards

☐ Proposed stormwater management features meet or exceed NPDES General Construction Permit requirements are designed in conformance with the most recent edition of the State of Minnesota Stormwater Manual. The proposed infiltration system is within a high vulnerability DWSMA but outside of the ERA. Infiltration is prohibited unless a higher level of engineering review approved by the MS4 permittee (City of Stillwater) indicates infiltration is acceptable (NPDES/SDS Permit for Construction Activity 16.19).

☒ None of the following conditions exist that prohibit infiltration of stormwater on the site

a. Areas where vehicle fueling and maintenance occur.
b. Areas with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock. Boring ST-3 indicates waterbearing soils at an approximate elevation of 732 and ST-4 at 729 but this appears to be perched water over a clay lens that is to be excavated below the infiltration area.
c. Areas where industrial facilities are not authorized to infiltrate industrial stormwater under an National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Industrial Stormwater Permit issued by the MPCA.
d. Areas where contaminants in soil or groundwater will be mobilized by infiltrating stormwater.
e. Areas of Hydrologic Soil Group D (clay) soils
f. Areas within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features unless allowed by a local unit of government with a current MS4 permit.

☒ Minimum setbacks from the Minnesota Department of Health for infiltration practices are met

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

☒ Pretreatment devices(s) remove at least 50% of sediment loads. If downstream from a potential hot spot, a skimmer is in place to facilitate cleanup.

NA Water quality volume will be discharged through infiltration or filtration media in 48 hours or less.

NA For bioretention (biofiltration and bioinfiltration) volume control management facilities above ground with vegetation the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA For infiltration basin volume control management facilities the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

☒ Appropriate soil borings have been conducted that meet the minimum standards.

a. A minimum of one boring was conducted at the location of the infiltration facility for facilities up to 1,000 ft²; between 1,000 and 5,000 ft², two borings; between 5,000 and 10,000 ft², three borings; and greater than 10,000 ft², 4 borings plus an additional boring for every 2,500 ft² beyond 12,500 ft².
b. Soil borings extend a minimum of five feet below the bottom of the infiltration practice. If fractured bedrock is suspected, the soil boring goes to a depth of at least ten feet below the proposed bottom of the volume control facility.
c. A minimum of three feet of separation to the seasonal water table and/or bedrock.
d. Identify unified soil classification.

☒ The least permeable soils horizon identified in the soil boring dictated the infiltration rate.

☒ Additional flows are bypassed and are routed through stabilized discharge points.

NA Filtration basin demonstrates a basin draw down between 24 hours and 48 hours.

NA Filtration system Iron Enhanced Sand Filter is sized to bind soluble phosphorous removal for 30 year functional life of the system using the published value of 17lbs.phosphorous removal per 20 yards of 5% by weight iron filings to 95% sand.

☒ Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.

☒ Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance.

a. Excavation within 2.0 feet of final grade for infiltration/filtration systems is prohibited until contributing drainage areas are constructed and fully stabilized.
b. Rigorous sediment and erosion controls planned to divert runoff away from the system.
c. Installation of volume control facilities must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
d. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
e. Prior to the release of any remaining fee or security, the permit holder must provide documentation that constructed volume control facilities perform as designed.

☐ There is a way to visually verify the system is operating as designed. An observation port/riser structure should be provided on the perforated section of pipe for future inspection and maintenance.

☒ A minimum 8.0’ maintenance access is provided to all stormwater facilities.

EROSION AND SEDIMENT CONTROL PERFORMANCE STANDARDS

☐ A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements.

Narrative

☐ Identify the person knowledgeable and experienced who will oversee the implementation of the SWPPP; the installation, inspection, and maintenance of the BMPs.

a. Identifies the person who will oversee the BMP inspection and maintenance.
b. Identify the training requirements are satisfied.
c. Inspections performed once every 7 days.
d. Inspections performed within 24 hours of a rain event greater than 0.5 in/24 hours.
e. Inspection and Maintenance records include:
    i. Date and time of inspection.
    ii. Name of person(s) conducting inspections.
    iii. Finding of inspections, including the specific location where corrective actions are needed.
    iv. Corrective actions taken (including dates, times, and party completing maintenance activities).
    v. Date and amount of rainfall events greater than 0.5 in/24 hours.
    vi. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
    vii. Requirements to observe, describe, and photograph any discharge that may be occurring during the inspection.
    viii. All discovered nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow.

☐ Describes procedures to amend the SWPPP and establish additional temporary ESC BMPs as necessary for site conditions.

☐ Describes the installation timing for all Erosion Sediment Control (ESC) Best Management Practices (BMPs).

☐ Describes final stabilization methods for all exposed areas.

☐ Methods used to minimize soil compaction and preserve topsoil must be described.

☐ Describes dewatering technique to prevent nuisance conditions, erosion, or inundation of wetlands.

☐ Identifies any specific chemicals and the chemical treatment systems that may be used for enhancing the sedimentation process on the site, and how compliance will be achieved with the permit requirements.

☐ Describes the following pollution prevention management measures:

a. Storage, handling, and disposal of construction products, materials, and wastes.
b. Fueling and maintenance of equipment or vehicles; spill prevention and response.
c. Vehicle and equipment washing.
d. No engine degreasing allowed on site.
e. Containment of Concrete and other washout waste.
f. Portable toilets are positioned so that they are secure.

Plan Sheets

NA Temporary Sediment Basins required (10 acres draining to common location or 5 acres App. A) and design meets the following criteria:

a. Adequately sized – 2-year, 24-hour storm, minimum 1,800 feet/acre; or no calculative minimum 3,600ft3/acre.
b. Designed to prevent short circuiting.
c. Outlets designed to remove floating debris.
d. Outlets designed to allow complete drawdown.
e. Outlets designed to withdraw water from the surface
f. Outlets have energy dissipation.
g. Have a stabilized emergency spillway.
h. Situated outside of surface waters and any natural buffers.

☒ Locations and types of all temporary and permanent Erosion Control BMPs.
a. Exposed soils have erosion protection/cover initiated immediately and finished within 7 days.
b. Wetted perimeters of ditches stabilized within 200 feet of surface water within 24 hours.
c. Pipe outlets have energy dissipation within 24 hours of connecting.

☒ Locations and types of all temporary and permanent Sediment Control BMPs.
a. Sediment control practices established on down gradient perimeters and upgradient of any buffer zones.
b. All inlets are protected.
c. Stockpiles have sediment control and placed in areas away from surface waters or natural buffers.
d. Construction site entrances minimize street tracking.
e. Plans minimize soil compaction and, unless infeasible to preserve topsoil.
f. Fifty foot natural buffers preserved or (if not feasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.

☐ Tabulated quantities of all erosion prevention and sediment control BMPs.

☒ Stormwater flow directions and surface water divides for all pre- and post-construction drainage areas.

NA Locations of areas not to be disturbed (buffer zones).

NA Location of areas where construction will be phased to minimize duration of exposed soil areas.

NA Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer).

Wetland Performance Standards

NA Direct discharge of stormwater to wetlands and all other water bodies without water quality treatment is prohibited.

NA Any potential changes to the hydrology of the wetland (i.e. changes to the outlet elevation or contributing drainage area) must be reviewed to evaluate the impact of both the existing and proposed wetland conditions and approved by the MSCWMO.

NA Land-altering activities shall not increase the bounce in water level or duration of inundation from a 2.0-inch 24-hour storm for any downstream wetland beyond the limit specified in Table 7.2 for the individual wetland susceptibility class.

Lake, Stream and Wetland Buffer Performance Standards

NA A buffer zone of unmowed natural vegetation is maintained or created upslope of all water bodies (wetlands, streams, lakes).

NA A 50 foot natural buffer or (if a buffer is infeasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and stormwater flows to the surface water.

NA If adjacent to a Special or Impaired Water an undisturbed buffer zone of not less than 100 linear feet from the special water is maintained both during construction and as a permanent feature post construction.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

February 27, 2023

Michelle Elsner
City of Lakeland
690 Quinnell Ave N
PO Box 321
Lakeland, MN 55043

Dear Ms. Elsner,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on February 7th, 2023 for proposed residential reconstruction and flood proofing at 850 Quixote Ave N within MSCWMO boundaries and in the City of Lakeland. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it creates or fully reconstructs more than 500 sf of impervious surface and is in the St. Croix Riverway. The MSCWMO staff recommends the applicant revise and resubmit the plans and materials to address the following:

1. Include location of all blufflines and 40' bluffline setback. Construction is prohibited within the 40' bluffline setback.
2. MSCWMO conforms to the most recent Washington County Floodplain Regulations which requires 2' of freeboard therefore the RFPE = 694.0' (NAVD88). State requirements specify that fill used to elevate residential buildings must extend at least 15' from the building to the point where the slope drops below the RFPE minus one foot and graded side slopes that are not steeper than 2:1 (H:V), 3:1 or flatter recommended.
3. Plans must demonstrate compliance with Erosion and Sediment control performance goals.
4. Plans must demonstrate conformance with MSCMWO volume control performance goals and retain onsite 1.1 inches of runoff from new/fully reconstructed impervious surfaces.

This recommended approval is based on the technical review of MSCWMO performance standards and does not constitute approval by the City of Lakeland. MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

SLR PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-005

Review Date: 2/27/2023

Project Name: Ashford Residence

Location: 850 Quixote Ave N, Lakeland

Applicant: Bruce Lenzen

Purpose: Residential reconstruction

Recommendation: Revise and resubmit to address the following items:

1. Include location of all blufflines and 40' bluffline setback. Construction is prohibited within the 40' bluffline setback.
2. MSCWMO conforms to the most recent Washington County Floodplain Regulations which requires 2' of freeboard therefore the RFPE = 694.0' (NAVD88). State requirements specify that fill used to elevate residential buildings must extend at least 15' from the building to the point where the slope drops below the RFPE minus one foot and graded side slopes that are not steeper than 2:1 (H:V), 3:1 or flatter recommended.
3. Plans must demonstrate compliance with MSCWMO Erosion and Sediment control performance goals.
4. Plans must demonstrate conformance with MSCMWO volume control performance goals and retain onsite 1.1 inches of runoff from new/fully reconstructed impervious surfaces.

Submittal Items:

☒ A completed and signed project review application form and $350 review fee.

☒ Grading plan showing grading limits, existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929.

☒ Location of proposed and existing permanent structures.

☒ Ordinary High Water (OHW) elevations and location of all existing water bodies.

☐ Location of all bluff lines. Construction prohibited within 40' of the top of blufflines.

☐ Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies must be a minimum of two feet above 100-year flood elevation. BFE = 692.0 ft (NAVD88), RFPE = BFE + 2.0' freeboard = 694.0'.

☒ Delineation of existing wetlands, shoreland, ordinary high water levels, drain tiling, and floodplain areas.

☐ Details of proposed buffer upslope of water resources including site and vegetation characteristics (when applicable). Show blufflines and 40' setback on plans.

☒ Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

☐ Erosion and sediment control plan demonstrating locations, specifications, and details of the following items:

A. Erosion Prevention

i. Stabilize all exposed soil areas (including stockpiles) with temporary erosion control (seed and mulch or blanket) within 7 days after construction activities in the area have temporarily or permanently ceased.
ii. Identify location, type and quantity of temporary erosion prevention practices.
iii. Identify permanent vegetation.

B. Sediment Control
i. Sediment control practices will be placed down-gradient before up-gradient land disturbing activities begin.
ii. Identify the location, type and quantity of sediment control practices.
iii. Vehicle tracking practices must be in place to minimize track out of sediment from the construction site. Streets must be cleaned if tracking practices are not adequate to prevent sediment from being tracked onto the street.

C. Inspections and Maintenance
i. Applicant must inspect all erosion prevention and sediment control practices once every 7 days or after a ½" rain event to ensure integrity and effectiveness. All nonfunctional practices must be repaired, replaced or enhanced the next business day after discovery.
ii. Plans shall include contact information including email and a phone number of the person responsible for inspection and compliance with erosion and sediment control.

D. Pollution Prevention
i. Solid waste must be stored, collected and disposed of in accordance with state law.
ii. Provide effective containment for all liquid and solid wastes generated by washout operations (concrete, stucco, paint, form release oils, curing compounds).
iii. Hazardous materials that have potential to leach pollutants must be under cover to minimize contact with stormwater.

E. Final Stabilization
i. For residential construction only, individual lots are considered final stabilized if the structures are finished and temporary erosion protection and down gradient sediment control has been completed.
ii. Grading and landscape plans shall include soil tillage and soil bed preparation methods that are employed prior to landscape installation to a minimum depth of 8" and incorporate amendments to meet Minnesota State Stormwater Manual predevelopment soil type bulk densities.
1. Observe minimum setbacks for areas within the dripline of existing trees, over utilities within 30 in of the surface, where compaction is required by design and inaccessible slopes.

☐ Details of proposed structural stormwater practices (Meets Minnesota Stormwater Manual guidelines)

A. Stormwater flows are diverted away from bluffs whenever feasible.
B. Volume control facilities must drain down within 48 hours, as required by the MPCA NPDES Construction Stormwater Permit.
i. The period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.
C. The maximum water depth for volume control facilities is 1.5 feet.
D. Planting plan identified vegetation suitable for the hydrology of the basin.
E. Separation from seasonally saturated soils or bedrock is 3 feet or more for bioretention and infiltration practices.

F. Volume control facilities meet the following setback requirements:

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

G. Volume control is provided for the first 1.1”inch of runoff for all impervious:

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$XX,XXX\ sq.ft. \times \frac{1.1\ in}{12\ {}^{in}/_{ft}} = X,XXX\ cu.ft.$	**BMP** **Volume** BMP #1 X,XXX cu. ft. BMP #2 X,XXX cu. ft.
Total Required Volume Retention = X,XXX cu. ft.	**Total Provided Volume Retention = X,XXX cu. ft.**

H. Construction Standards
   i. To prevent soil compaction, the proposed volume control facility must be staked off and marked during construction to prevent heavy equipment and traffic from traveling over it.
   ii. Facilities may not be excavated within 2.0 feet of final grade until the contributing drainage area has been constructed and fully stabilized.
   iii. Facilities are in-place during construction activities, all sediment and runoff must be diverted away the facility, using practices such as pipe capping or diversions.
   iv. Facilities installation must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
   v. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
   vi. Prior to the release of any remaining fee or security, the owner must provide documentation that constructed volume control facilities perform as designed.

I. Details
   i. Include a standard cross section of the infiltration device similar to those identified in the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php/Bioretention_plan_and_section_drawings)
   ii. The cross section must detail the infiltration media used in the device. Typically, devices use Mix B as described in the Minnesota Stormwater Manual: A well-blended, homogenous mixture of 70 to 85 percent washed construction sand; and 15 to 30 percent MnDOT Grade 2 compost.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

February 27, 2023

Shawn Sanders
City of Stillwater
216 N Fourth Street
Stillwater, MN 55082

Dear Mr. Sanders,

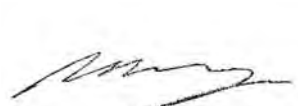
The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on January 27th, 2023 for proposed parking lot improvements for the Oak Park School at 6355 Osman Ave N within MSCWMO boundaries and in the City of Stillwater. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it disturbs more than 10,000 sf of land and creates or fully reconstructs more than 6,000 sf of impervious surface. The MSCWMO staff recommends the applicant revise and resubmit the plans and materials to address the following:

1. Confirm new/reconstructed impervious areas. Report states 71,044 sf of new/reconstructed impervious, however approximately 75,000 sf of new/reconstructed impervious was measured from the plans.
2. The site is located within a high vulnerability drinking water source management area (DWSMA) and wellhead protection area, however, it is outside of an emergency response area. The high vulnerability DWSMA does not prohibit infiltration. Please follow the Minnesota Stormwater Manual process for determining applicability of infiltration and if applicable conduct a higher level of engineering review approved by the City of Stillwater to determine if infiltration is appropriate.
3. Check existing and proposed time of concentration for subcatchment E. Proposed time of concentration is longer although existing subcatchment consists of more sheet flow where proposed subcatchment should be primarily shallow concentrated ditch flow with a shorter time of concentration.
4. Check proposed time of concentration for subcatchment G. There does not appear to be an area where 100 feet of sheet flow will occur across a grass surface resulting in an over estimation of the time of concentration.
5. MIDS model should be revised and resubmitted. The model substantially overestimates the volume and TP removal credit of the pre-treatment sump structures. The sumps should be removed from the MIDS model as the removal credits provided by a biofiltration basin assume that stormwater entering the biofiltration basin has undergone pretreatment.
6. Submit documentation that the filtration basin draws down within 24-48 hours from the peak high water level.
7. Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.

8. Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance of the filtration basin (see highlights in checklist).
9. A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements is required (see highlights in checklist).

This recommended approval is based on the technical review of MSCWMO performance standards and does not constitute approval by the City of Stillwater. MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,



Matt Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-004

Review Date: 2/24/2023

Project Name: Oak Park Parking Log

Location: 6355 Osman Ave N, Stillwater, MN

Applicant: Greg Buchal | Larson Engineering

Purpose: Expansion of the existing parking lot

Recommendation: Revise and resubmit to address the following:

1. Confirm new/reconstructed impervious areas. Report states 71,044 sf of new/reconstructed impervious, however approximately 75,000 sf of new/reconstructed impervious was measured from the plans.
2. The site is located within a high vulnerability drinking water source management area (DWSMA) and wellhead protection area, however, it is outside of an emergency response area. The high vulnerability DWSMA does not prohibit infiltration. Please follow the Minnesota Stormwater Manual process for determining applicability of infiltration and if applicable conduct a higher level of engineering review to determine if infiltration is appropriate.
3. Check existing and proposed time of concentration for subcatchment E. Proposed time of concentration is longer although existing subcatchment consists of more sheet flow where proposed subcatchment should be primarily shallow concentrated ditch flow with a shorter time of concentration.
4. Check proposed time of concentration for subcatchment G. There does not appear to be an area where 100 feet of sheet flow will occur across a grass surface resulting in an over estimation of the time of concentration.
5. MIDS model should be revised and resubmitted. The model substantially overestimates the volume and TP removal credit of the pre-treatment sump structures. The sumps should be removed from the MIDS model as the removal credits provided by a biofiltration basin assume that stormwater entering the biofiltration basin has undergone pretreatment.
6. Submit documentation that the filtration basin draws down within 24-48 hours from the peak high water level.
7. Identify as build survey **and** method to demonstrate infiltration or filtration basin is functioning.
8. Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance of the filtration basin (see highlights in checklist).
9. A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements is required (see highlights in checklist).

Applicability:

☒ Any project undertaking grading, filling, or other land alteration activities which involve movement of 100 cubic yards of earth or removal of vegetation on greater than 10,000 square feet of land.

☒ Any project that creates or fully reconstruct 6,000 square feet or more of impervious surface.

☐ All major subdivisions or minor subdivisions that are part of a common plan of development. Major subdivisions are defined as subdivisions with 4 or more lots.

☐ Any project with wetland impacts, grading within public waters, grading within buffers or within 40-feet of the bluff line.

☐ Development projects that impact 2 or more of the member communities.

☐ New or redevelopment projects within the St. Croix Riverway that require a building permit that add 500 square feet of additional impervious surface.

☐ Any project requiring a variance from the current local impervious surface zoning requirements for the property.

☐ Any land development activity, regardless of size, that the City determines is likely to cause an adverse impact to an environmentally sensitive area or other property, or may violate any other erosion and sediment control standard set by the member community.

Submittal Items:

☒ A completed and signed project review application form and review fee.

☐ Grading Plan/Mapping Exhibits:

- ☒ Property lines and delineation of lands under ownership of the applicant.
- NA Delineation of existing on-site wetlands, shoreland and/or floodplain areas (including any buffers).
- NA Ordinary High Water (OHW) elevations and datum, as determined by the MDNR (if applicable).
- ☐ Existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929. Datum must be noted on exhibits.
- ☐ Drainage easements covering land adjacent to ponding areas, wetlands, and waterways up to their 100-year flood levels and covering all ditches and storm sewers. Access easements to these drainage easements and to other stormwater management facilities shall also be shown. (Not required for sites within public right-of-way)
- NA Minimum building elevation for each lot.
- ☐ Identification of downstream water body.
- ☒ Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns.
- ☒ Location, alignment, and elevation of proposed and existing stormwater facilities.
- ☒ Existing and proposed normal water elevations and the critical (the highest) water level produced from the 100-year 24-hour storms.
- NA Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

☐ A Stormwater Pollution Prevention Plan in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.

☐ Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.

- ☐ Impervious areas (Pre- and Post-Construction). Check proposed impervious area – report vs. plan discrepancy
- ☒ Construction plans and specifications for all proposed stormwater management facilities.
- NA Location(s) of past, current or future onsite well and septic systems (if applicable).

☒ Other exhibits required to show conformance to these Performance Standards.

☒ Hydrologic/Hydraulic Design Exhibits:

- ☒ All hydrologic and hydraulic computations completed to design the proposed stormwater management facilities shall be submitted. Model summaries must be submitted. The summaries shall include a map that corresponds to the drainage areas in the model and all other information used to develop the model.
- ☐ A table (or tables) must be submitted showing the following:
  - ☒ A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes.
  - ☐ A listing of the normal water levels under existing and proposed conditions and the water levels produced from the storm and runoff events listed above for all on-site wetlands, ponds, depressions, lakes, streams, and creeks.

☐ A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city.

☐ This site drains to, and is within one mile of special or impaired water and complies NPDES CSW additional requirements.

Stormwater Management Performance Standards

☒ Water quality treatment is provided prior to direct discharge of stormwater to wetlands and all other water bodies.

Rate and Flood Control Standards

☐ The peak rate of stormwater runoff from a newly developed or redeveloped site shall not exceed the 2-, 10-, and 100-year 24-hour storms with respective 2.8, 4.2, and 7.3-inch rainfall depths with MSCWMO approved time distribution based on Atlas 14 for existing and proposed conditions. The runoff curve number for existing agriculture areas shall be less than or equal to the developed condition curve number. The newly developed or redeveloped peak rate shall not exceed the existing peak rate of runoff for all critical duration events, up to and including the 100-year return frequency storm event for all points where discharges leave a site during all phases of development. Proposed peak discharge rates offsite to Osman Ave N exceed existing.

☒ Predevelopment conditions assume “good hydrologic conditions” for appropriate land covers as identified in TR−55 or an equivalent methodology. Runoff curve numbers have been increased where predevelopment land cover is cropland:

Hydrologic Soil Group A	Runoff Curve Number 56
Hydrologic Soil Group B	Runoff Curve Number 70
Hydrologic Soil Group C	Runoff Curve Number 79
Hydrologic Soil Group D	Runoff Curve Number 83

☒ Computer modeling analyses includes secondary overflows for events exceeding the storm sewer systems level-of-service up through the critical 100-year event.

NA In sub-areas of a landlocked watershed, the proposed project does not increase the predevelopment volume or rate of discharge from the sub-area for the 10-year return period event.

☐ Flowage easements up to the 100-yr flood level have been secured for stormwater management facilities (such as ditches and storm sewers).

☒ Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies are a minimum of two feet above the 100-year flood elevation and a minimum of two feet above the natural overflow of landlocked basins.

Volume Control Standards

☐ Calculations/computer model results indicate stormwater volume is controlled for new development and redevelopment requirements per the MSCWMO Design Standards.

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$75{,}000\ sq.ft. \times \frac{1.1\ in}{12\ {}^{in}/_{ft}} = 6{,}875\ cu.ft.$ $XX,XXX\ sq.ft. \times \frac{0.55\ in}{12\ {}^{in}/_{ft}} = X,XXX\ cu.ft.$ **Total Required Volume Retention = 6,875 cu. ft.**	**BMP** **Volume** BMP #1 X,XXX cu. ft. BMP #2 X,XXX cu. ft. **Total Provided Volume Retention = X,XXX cu. ft.**

Flexible Treatment Options (when applicable)

☐ Applicant demonstrated qualifying restrictions as defined in Section 7.2.2 (4) of the 2015 MSCWMO Watershed Management Plan that prohibits the infiltration of the entire required volume. The site is located within a high vulnerability drinking water source management area (DWSMA) and wellhead protection area, however, it is outside of an emergency response area. The high vulnerability DWSMA/WHPA alone does not prohibit infiltration.

☐ FTO #1: MIDS calculator submission removes 75% of the annual total phosphorous. MIDS model should be revised and resubmitted. The model substantially overestimates the volume and TP removal credit of the pre-treatment sump structures. The sumps should be removed from the MIDS model as the removal credits provided by a biofiltration basin assume that stormwater entering the biofiltration basin has undergone pretreatment.

NA FTO #2: MIDS calculator submission removes 60% of the annual total phosphorous.

NA FTO #3: Offsite mitigation equivalent to the volume reduction standard is provided.

Infiltration/Filtration Design Standards

☐ Proposed stormwater management features meet or exceed NPDES General Construction Permit requirements are designed in conformance with the most recent edition of the State of Minnesota Stormwater Manual. See drawdown requirement.

☒ None of the following conditions exist that prohibit infiltration of stormwater on the site

a. Areas where vehicle fueling and maintenance occur.
b. Areas where contaminants in soil or groundwater will be mobilized by infiltrating stormwater.
c. Areas where soil infiltration rates are field measured at more than 8.3 inches per hour unless amended to slow the infiltration rate below 8.3 inches per hour.

d. Areas with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
e. Areas of Hydrologic Soil Group D (clay) soils
f. Areas within DSWMAs and ERAs unless infiltration is deemed appropriate based on Minnesota Stormwater Manual Guidance
g. Areas within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features unless allowed by a local unit of government with a current MS4 permit.
h. Areas that receive runoff from industrial facilities not authorized to infiltration stormwater under the NPDES stormwater permit for industrial activites.

☒ Minimum setbacks from the Minnesota Department of Health for infiltration practices are met

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

☒ Pretreatment devices(s) remove at least 50% of sediment loads. If downstream from a potential hot spot, a skimmer is in place to facilitate cleanup.

NA Water quality volume will be discharged through infiltration media in 48 hours or less.

NA For bioretention (biofiltration and bioinfiltration) volume control management facilities above ground with vegetation the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA For infiltration basin volume control management facilities the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA Appropriate soil borings have been conducted that meet the minimum standards.
a. A minimum of one boring was conducted at the location of the infiltration facility for facilities up to 1,000 ft²; between 1,000 and 5,000 ft², two borings; between 5,000 and 10,000 ft², three borings; and greater than 10,000 ft², 4 borings plus an additional boring for every 2,500 ft² beyond 12,500 ft².
b. Soil borings extend a minimum of five feet below the bottom of the infiltration practice. If fractured bedrock is suspected, the soil boring goes to a depth of at least ten feet below the proposed bottom of the volume control facility.
c. A minimum of three feet of separation to the seasonal water table and/or bedrock.
d. Identify unified soil classification.

NA The least permeable soils horizon identified in the soil boring dictated the infiltration rate.

☒ Additional flows are bypassed and are routed through stabilized discharge points.

☐ Filtration basin demonstrates a basin draw down between 24 hours and 48 hours. The filtration basin reaches a peak elevation (100-yr HWL) of 909.52’ @ 12.45 hours. Please submit documentation from the HydroCAD® report that the basin is drawn down (within 1-2” of bottom) within 36.45 and 60.45 hours.

NA Filtration system Iron Enhanced Sand Filter is sized to bind soluble phosphorous removal for 30 year functional life of the system using the published value of 17lbs.phosphorous removal per 20 yards of 5% by weight iron filings to 95% sand.

☐ Identify as build survey and method to demonstrate infiltration or filtration basin is functioning. An as-built survey will only demonstrate that the basin was built to the correct size, an infiltration test or other acceptable method will be required to demonstrate if functions as designed with a 1.6" inch per hour filtration rates.

☐ Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance.

a. Excavation within 2.0 feet of final grade for infiltration/filtration systems is prohibited until contributing drainage areas are constructed and fully stabilized.
b. Rigorous sediment and erosion controls planned to divert runoff away from the system.
c. Installation of volume control facilities must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
d. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
e. Prior to the release of any remaining fee or security, the permit holder must provide documentation that constructed volume control facilities perform as designed.

☒ There is a way to visually verify the system is operating as designed.

☒ A minimum 8.0' maintenance access is provided to all stormwater facilities.

Erosion and Sediment Control Performance Standards

☐ A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements.

Narrative

☐ Identify the person knowledgeable and experienced who will oversee the implementation of the SWPPP; the installation, inspection, and maintenance of the BMPs.

a. Identifies the person who will oversee the BMP inspection and maintenance.
b. Identify the training requirements are satisfied.
c. Inspections performed once every 7 days.
d. Inspections performed within 24 hours of a rain event greater than 0.5 in/24 hours.
e. Inspection and Maintenance records include:
    i. Date and time of inspection.
    ii. Name of person(s) conducting inspections.
    iii. Finding of inspections, including the specific location where corrective actions are needed.
    iv. Corrective actions taken (including dates, times, and party completing maintenance activities).
    v. Date and amount of rainfall events greater than 0.5 in/24 hours.
    vi. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
    vii. Requirements to observe, describe, and photograph any discharge that may be occurring during the inspection.
    viii. All discovered nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow.

☒ Describes procedures to amend the SWPPP and establish additional temporary ESC BMPs as necessary for site conditions.

☒ Describes the installation timing for all Erosion Sediment Control (ESC) Best Management Practices (BMPs).

☒ Describes final stabilization methods for all exposed areas.

☒ Methods used to minimize soil compaction and preserve topsoil must be described.

NA Describes dewatering technique to prevent nuisance conditions, erosion, or inundation of wetlands.

NA Identifies any specific chemicals and the chemical treatment systems that may be used for enhancing the sedimentation process on the site, and how compliance will be achieved with the permit requirements.

☐ Describes the following pollution prevention management measures:
a. Storage, handling, and disposal of construction products, materials, and wastes.
b. Fueling and maintenance of equipment or vehicles; spill prevention and response.
c. Vehicle and equipment washing.
d. No engine degreasing allowed on site.
e. Containment of Concrete and other washout waste.
f. Portable toilets are positioned so that they are secure.

Plan Sheets

NA Temporary Sediment Basins required (10 acres draining to common location or 5 acres App. A) and design meets the following criteria:
a. Adequately sized – 2-year, 24-hour storm, minimum 1,800 feet/acre; or no calculative minimum 3,600ft3/acre.
b. Designed to prevent short circuiting.
c. Outlets designed to remove floating debris.
d. Outlets designed to allow complete drawdown.
e. Outlets designed to withdraw water from the surface
f. Outlets have energy dissipation.
g. Have a stabilized emergency spillway.
h. Situated outside of surface waters and any natural buffers.

☐ Locations and types of all temporary and permanent Erosion Control BMPs.
a. Exposed soils have erosion protection/cover initiated immediately and finished **within 7 days.**
b. Wetted perimeters of ditches stabilized within 200 feet of surface water within 24 hours.
c. Pipe outlets have energy dissipation within 24 hours of connecting.

☒ Locations and types of all temporary and permanent Sediment Control BMPs.
a. Sediment control practices established on down gradient perimeters and upgradient of any buffer zones.
b. All inlets are protected.
c. Stockpiles have sediment control and placed in areas away from surface waters or natural buffers.
d. Construction site entrances minimize street tracking?
e. Plans minimize soil compaction and, unless infeasible to preserve topsoil.
f. Fifty foot natural buffers preserved or (if not feasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.

☐ Tabulated quantities of all erosion prevention and sediment control BMPs.

☒ Stormwater flow directions and surface water divides for all pre- and post-construction drainage areas.

NA Locations of areas not to be disturbed (buffer zones).

NA Location of areas where construction will be phased to minimize duration of exposed soil areas.

NA Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer).

Wetland Performance Standards

NA Direct discharge of stormwater to wetlands and all other water bodies without water quality treatment is prohibited.

NA Any potential changes to the hydrology of the wetland (i.e. changes to the outlet elevation or contributing drainage area) must be reviewed to evaluate the impact of both the existing and proposed wetland conditions and approved by the MSCWMO.

NA Land-altering activities shall not increase the bounce in water level or duration of inundation from a 2.0-inch 24-hour storm for any downstream wetland beyond the limit specified in Table 7.2 for the individual wetland susceptibility class.

Lake, Stream and Wetland Buffer Performance Standards

NA A buffer zone of unmowed natural vegetation is maintained or created upslope of all water bodies (wetlands, streams, lakes).

NA A 50 foot natural buffer or (if a buffer is infeasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and stormwater flows to the surface water.

NA If adjacent to a Special or Impaired Water an undisturbed buffer zone of not less than 100 linear feet from the special water is maintained both during construction and as a permanent feature post construction.

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
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Staff Report- January/February 2023

Administration

- Prepared March meeting materials
- Coordination of Grant and Permit Program
- Prepared 2022 Annual Report
- 2022 Year end reporting and Audit Preparation

Project Reviews

- Baylon Boathouse/Home Reconstruct-ACTION
- CSAH 5 Reconstruction-ACTION
- MNDOT I94-ACTION
- Chapel Hill Flats -INFORM
- Ashford Residence -INFORM
- Oak Park Parking Lot -INFORM

Lily Lake Phosphorus Reductions for Delisting – CWF Grant C20-6055

Description: Awarded $513,500 for in-lake alum treatment and filtration basin to remove 120lbs of phosphorus from Lily Lake.
Activities This Month: Year-end reporting completed. EOR has been contracted to design and install interpretative signage, draft presented at this meeting.
Staff: Matt Downing-MSCWMO

Lake St. Croix Small Communities Phosphorus Reduction Grant – PHASE II

Description: $158,000 grant for stormwater quality improvement south of Bayport (2021-2023). Implement practices in the LSCD South SWA area to achieve a load reduction of up to 7lbs of TP/yr.
Activities This Month: Lake St. Croix Beach has awarded the construction contract to Max Todo Marine Services for additional bluff toe stabilization (100 lf) north of the 2021 project area and utilization of the remaining Phase II funds. Tree removal has commenced to prepare the site for rip rap placement in spring.
Staff: Brett Stolpestad - WCD; Matt Downing - MSCWMO

Water Monitoring Program

Description: The MSCWMO water monitoring program includes the monitoring of flow at three sites. These sites have that equipment serves to collect data on the total volume of water flowing into Lily Lake at the Greeley Street Inlet, through Perro Creek at the Diversion Structure, as well as, the Perro Creek Diversion Structure Overflow. Water quality is also collected at the Greeley Street Inlet and the Perro Creek Diversion Structure on a monthly basis, as well as during storm events.
Additionally, the MSCWMO monitors two lakes, Lily and McKusick for several parameters from April-October. Data is collected on both lakes on a biweekly basis and

includes: water level, clarity, pH, temperature and dissolved oxygen profiles, an aesthetics and user profile, and field conditions. Additionally, water quality samples are collected from the surface of the lakes and analyzed for total phosphorus, total Kjeldahl nitrogen, and chlorophyll.

Activities This Month: All MSCWMO monitoring equipment has been brought in and stored for the winter season. Equipment cleaning and testing is complete, and no major repairs or replacements are needed. Equipment is being prepared for 2023 deployment. The annual Water Monitoring Summary is being prepared.

Staff: Rebecca Oldenburg, WCD; Aaron DeRusha, WCD

Erosion and Sediment Control Inspections

Description: The MSCWMO has contracted with the WCD to conduct erosion and sediment control inspections for construction projects that have been reviewed and recommended for permit approval by partner communities.

Activities This Month: None.

Staff: Aaron DeRusha, WCD

BMP Maintenance

Description: The MSCWMO has a maintenance obligation for its Capital Improvement Projects and projects funded by Clean Water Fund grants. The MSCWMO partners with the Washington Conservation District to fulfill this maintenance requirement.

Activities in November/December:

Annual BMP inspection follow up activities and maintenance planning started. Field work planned to start in April.

Staff: Cameron Blake, WCD

Erosion and Sediment Control Inspection, BMP Project, and Plan Review Database

Description: The MSCWMO has partnered with WCD to develop a new erosion control inspection, BMP project tracking, and project plan review applicant database via ESRI's ArcGIS Online. The database will increase efficiency of erosion control and BMP project reporting, the application process for project plan reviews, and serve as a replacement to the current Mapfeeder software.

Activities this Month: None.

Staff: Rebecca Nestingen, WCD; Aaron DeRusha, WCD

Small Scale Habitat & Water Quality Enhancement Projects

Description: The WCD has requested Conservation Corps crew time on behalf of the WMO under FY23 Clean Water Funding to continue small-scale habitat and water quality enhancement projects in throughout the District. Projects will include a vegetative buffer enhancement along Perro Creek in Bayport, support for a 215-foot buffer expansion between Riviera Avenue S and the St. Croix River in Lake St. Croix Beach under the WCD FY22 Lawns to Legumes Grant, and continued support for private

shoreline enhancement. The MSCWMO has partnered with WCD to develop proposals for each project.

Activities This Month: Site prep for the LSCB buffer enhancement and Perro Creek buffer expansion is underway with installation planned for the spring. The MSCWMO and WCD have solicited quotes from qualified contractors to burn the buffer enhancement area as a final site preparation measure before seeding and planting in the spring. Plant and seed material will be funded through the WCD Lawns to Legumes Demonstration Neighborhood Grant. Perro Creek buffer enhancement prep is underway, and will continue into early spring 2023.

Staff: Brett Stolpestad – WCD

Meetings

- Andersen Floodplain Mitigation – January 18th
- Alum Treatment Sharing Session – January 23rd
- Lake St. Croix Beach Vegetative Management – January 23rd
- WMP Update Process – January 26th
- Field Season Planning – February 8th
- St. Croix Local Officials Outreach – February 21st
- Stillwater Raingardens Maintenance – February 23rd
- St. Croix Valley Trail TAC – February 28th