

Proposal for

# Mississippi River Direct Drainage Project Prioritization Study

Prepared for:

The Lower Mississippi River WMO

January 26<sup>th</sup>, 2024

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**moore**  
engineering, inc.

January 26<sup>th</sup>, 2024

Joe Barten  
Administrator  
Lower Mississippi River WMO  
4100 220<sup>th</sup> Street, West Suite 102  
Farmington, MN 55024  
[joe.barten@co.dakota.mn.us](mailto:joe.barten@co.dakota.mn.us)



Re: **Proposal for the Mississippi River Direct Drainage Project Prioritization Study**

Dear Mr. Barten,

Thank you for this opportunity to provide a proposal to assist Lower Mississippi River Water Management Organization (LMRWMO) with completion of the Mississippi River Direct Drainage Project Prioritization Study. We at Moore Engineering, Inc (Moore) are excited for the chance to be your partner. Your contact for this project is Jeff Madejczyk, who is based in Plymouth:

Jeff Madejczyk, Senior Project Manager  
Moore Engineering, Inc.  
2 Carlson Parkway, Suite 110  
Plymouth, MN 55447

The specific scope of work includes watershed analysis, field assessments, feasibility analysis to develop projects targeting stormwater BMPs or that address erosion and developing a prioritization matrix for ranking identified projects for the LMRWMO. We are pleased to submit our scope and cost estimate for your consideration. We acknowledge receipt of the addendum providing answers to submitted questions. Our proposal is valid for 90 days from January 26, 2024. We have developed our scope of services based on our previous experience working with LMRWMO, Dakota County, and other clients on similar projects. We believe our team is well qualified to work with you as an invaluable, collaborative partner for several reasons:

➤ **Big Picture Perspective**

Moore has years of experience designing water quality improvement projects, flood mitigation projects, and receiving grants to largely fund the design and construction of these improvements for our clients. We assume that ultimately the LMRWMO desires to leverage this study to pursue water quality and resiliency grants for implementation. We have years of experience working with our current clients finding creative solutions to win grant dollars, whether it be water quality improvements added onto flood storage projects, or adding flood storage to water quality projects, to improve resiliency. We will approach this study with the big picture in mind and how different funding sources can be leveraged without drastically altering project scopes, while also providing the necessary specific details that are needed to complete grant applications and meet funding requirements.

➤ **Previous Experience on Similar Projects**


We have completed similar projects including recent examples completed over the last several years that are highlighted in our project examples. We have conducted subwatershed assessments for a variety of clients for a variety of practices, all with the intent of protecting and improving water quality. Our experience will deliver a project that meets your needs and expectations.


➤ **Commitment to Protecting Natural Resources**

Moore's mission is "Improving lives by building strong communities" which applies to the municipal infrastructure projects we implement, as well as the protection of natural resources in our local communities. We understand the importance of these watershed studies to identify improvement projects that will benefit our local communities and enhance the natural environment.

We appreciate the opportunity to submit this proposal to LMRWMO and look forward to working with you. Should you have any questions or need additional information, please contact me by phone at 952-239-9464 (cell) or by e-mail at [jeff.madejczyk@mooreengineeringinc.com](mailto:jeff.madejczyk@mooreengineeringinc.com).

Sincerely,

  
Jeff Madejczyk  
Senior Project Manager

  
Dan Elemen, PE  
Senior Water Resources Engineer



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## PROPOSED TEAM

To serve the Lower Mississippi River Water Management Organization (LMRWMO) we are excited to present Moore Engineering, Inc to you for this project. While our firm may be new to the LMRWMO, we are not new to consulting. Moore Engineering is a 100 percent employee owned engineering and consulting firm that was founded over 60 years ago. Our home office is located in West Fargo, ND and we have 12 office locations across North Dakota and Minnesota, including our office in Plymouth, MN to serve our Twin Cities clients. We have a team of over 185 engineers, scientists, planners, and landscape architects that work together to deliver successful outcomes to our clients.

Since our company's inception, Moore's technical and engineering teams have completed thousands of civil and environmental projects throughout the Midwest. We work with hundreds of municipalities, counties, water resource and watershed districts, developers, and private citizens to help them thrive.

Moore's mission is to improve lives by building strong communities, which we accomplish through building trusting partnerships with our clients to create solutions. This requires more than providing 'cookie cutter' answers to commonly asked questions. We intently listen and collaborate as we work with our clients to discern their community's needs and brainstorm sustainable solutions together.

We attribute our success to the values that have guided our company and its employees since the beginning. Moore is a family that believes in **Respect**, striving to show **Integrity** in all our work. We consistently maintain our **Accountability** and **Loyalty**, upholding our obligation to the health, safety, and welfare of the people at the center of our work. By giving back to those in need and incorporating **Kindness** into our daily work, we are truly committed to improving lives and building strong communities. We look forward to growing side-by-side with our clients, and we nurture that relationship from day one.

Moore recognizes that your relationship with a professional consultant is about more than technical design – it is about earned trust. We earn that trust with our clients through frequent communication and by listening to understand our client's perspective. Some of our team has previous experience working with members of the LMRWMO while employed at a previous firm and we are excited for the opportunity to continue those relationships here at Moore.

At Moore we are dedicated to forming lasting partnerships with our clients, teaming together to make a positive impact in our communities. We believe in providing the highest level of customer service to ensure our client's needs are met. Our team will be led by Jeff Madejczyk as the Senior Project Manager and Dan Elemes, P.E. as the Senior Water Resources Engineer. Jeff and Dan have worked together since 2017 between their experience here at Moore and employment at their prior firm. Together they have completed several dozen water resource projects that typically start at the feasibility study level to identify concept options and help clients determine the best option to carry forward. From there the projects progress into design, permitting, funding acquisition, bidding, and construction administration, with Jeff and Dan leading the entire process to successful completion. For this project they will be supported by additional team members at Moore, which we have presented in following sections of this proposal. We would be happy to provide additional information about Moore, Jeff and Dan as your project leaders, or the other members of the Moore team to aid the LMRWMO in the evaluation of our proposal and your selection of a consulting partner for this effort.



## PROJECT UNDERSTANDING

The Lower Mississippi River Water Management Organization (LMRWMO) covers over 35,000 acres in northern Dakota County. There are multiple subwatersheds within the WMO boundaries, which intersect with portions of seven municipalities. One of the largest subwatersheds is the Mississippi River Direct which extends along the southern border of the Mississippi River throughout the majority of the WMO boundaries. This drainage area can have significant influence on the water quality within the Mississippi River due to the direct nature of the runoff from storm events. The LMRWMO has noted that there are areas within the direct subwatershed that are experiencing erosion which results in the discharge of sediment and other pollutants into the River. In other areas of this subwatershed there are limited existing stormwater management features, which results in the discharge of nutrients and sediment, as well as floatable trash and debris into the Mississippi River.

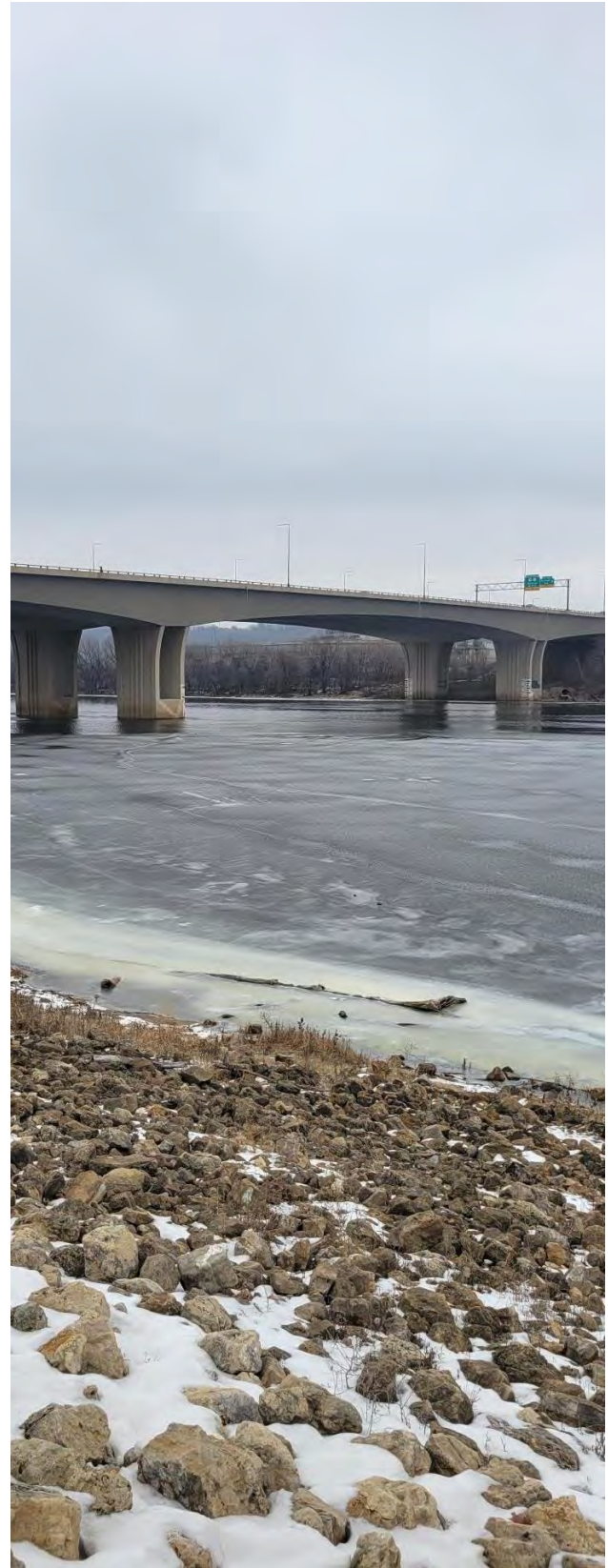
There is some existing stormwater modeling data within the target subwatershed that has been gathered and maintained by the local municipalities. This data can be used as the starting point for an analysis of the direct subwatershed, however, the consists of varying types of modeling efforts at different levels of precision.

The LMRWMO desires to complete an investigation of the Mississippi River Direct subwatershed to identify two potential types of capital improvement projects:

- Erosion Stabilization
- Stormwater BMPs

The LMRWMO intends to partner with a consultant to complete a feasibility evaluation of the direct subwatershed and identify potential improvement projects. The purpose of the feasibility study will be to review the existing modeling data, create an appropriate model to evaluate the entire Direct Subwatershed, utilize the modeling data to identify potential locations for the two types of capital improvement projects, and conduct a field assessment to evaluate the identified project locations. Utilizing the analysis from these efforts, the consulting team will develop a prioritized list of projects and a feasibility level concept design will be completed.

The feasibility design will include the general engineering approach, estimated cost, and estimated pollutant removal for each project. Finally, the overall study will include the development of a prioritization matrix that will provide guidelines for evaluating each project based on multiple factors including cost effectiveness, permitting needs, engineering complexity, and maintenance requirements. The Moore Team has developed a scope and cost to partner with the LMRWMO complete this effort.



# SCOPE OF SERVICES

The following outlines the project team’s approach to completing the scope of work outlined in the RFP. We believe we have the right combination of availability and technical expertise to complete the tasks on time, on budget, and to the level of detail LMRWMO desires.

## Task 1 – Kickoff Meeting

The project team will work with the LMRWMO and municipalities within the direct Mississippi River Watershed to identify what information within the watershed exists, including stormwater models, GIS layers, and other available information, such as as-built drawings. We will obtain copies of the data for additional analysis. The project team will review the data provided, with the intent of developing a list of data, categorized by whether it is crucial to acquire for this effort, would be helpful to acquire for this effort, not critical for this current effort, but may be useful someday, or as part of a future initial design phase.

After the project team generates the list of missing data, we will meet with the LMRWMO team to kickoff the project, evaluate missing data needs, discuss how data gaps might be filled, and generally review project objectives and timeline. We propose this meeting be held at Dakota County or LMRWMO offices, depending on number of attendees and space availability. The Moore team anticipates some of the data identified to fill gaps may be collected by LMRWMO, Dakota County SWCD, or Dakota County surveying staff, and that some data may be collected as part of the field investigation. We will work with LMRWMO, Dakota County, and municipalities within the watershed to determine what as-built information may be available to include in this analysis. Upon completion of the kickoff meeting, the Moore team will create meeting minutes to document key decisions, next steps, and the general timeline of data acquisition into initial analysis.

## Task 2 – Watershed Analysis

The Moore project team will develop a master working GIS map, which will ultimately be delivered to the LMRWMO as part of our final data transmittal. The basemap will minimally include LiDAR contours and a DEM, soils information, available parcel information with public land specifically highlighted, public waters, available culvert and storm sewer inventories, and watershed boundaries. The exact stormwater modeling information available will dictate the level of precision and exact data that will be part of the basemap, but the Moore project team anticipates it will include information on hydrologic and pollutant loading on a watershed level, and velocities and/or shear stresses through channels. Where applicable, Moore will execute the stormwater models and export output to GIS format as part of this effort.

The project team’s approach will prioritize feasibility. We will begin the analysis focusing on potential ravine restoration projects, as in our experience, these types of projects are the most cost effective in terms of dollars spent per ton of TSS stabilized. These types of projects are also very effective in trapping TP as well, depending on the soil type (sandy soils have less TP than clayey or organic soils). The project team will identify relatively



steep areas in the watershed to identify potential ravine or streambank stabilization projects, using slope as a proxy for assumed high flow velocity where stormwater model information is unavailable. Then the Moore team will evaluate the following to better understand a potential stabilization practice: soil information, number of landowners affected, upstream watershed area, and historic aerial imagery (to see if there are signs of sediment transport). These parameters will be tabulated for each potential project. Ravine restoration projects will be ranked by a composite

metric that will equally rate each potential restoration based on the steepness, soils, number of landowners (public will be ranked higher than private), hydrologic load, and whether there is visible sediment transport.



After reviewing the watershed for potential ravine stabilization projects, the project team will move on to review possible large scale BMP implementation, prioritizing water quality treatment and adding floodwater storage into the subwatershed. The Mississippi River subwatershed is a mix of medium density residential, commercial & industrial properties, along with some open space and low-density residential land uses. Because of existing land use, the Moore project team anticipates large scale BMPs will likely involve rerouting existing storm sewer to a BMP, rather than looking at wetland restoration or offline filtering of creeks or tributaries that have consistent baseflow. This is not to say we will not look at this type of project, more that we anticipate most large scale BMPs will be more impactful and cost effective when tying into “urban” infrastructure than working with natural features.

Large scale BMPs are anticipated to involve rerouting storm sewer into open greenspace. The project team will begin by looking for areas where there is public greenspace adjacent to storm sewers. We will then review these locations versus contributing watershed, soil type, storm sewer depth, and adjacent ground elevations. Potential BMPs will be classified by practice type (whether infiltration, filtration, or manufactured treatment device), and whether there is sufficient space for an above ground alternative. For ranking these practices, infiltration will be preferred to filtration to manufactured treatment devices. Above ground will be ranked ahead of below ground. Practices with larger hydrologic and pollutant load will be ranked above potential practices higher in the watershed. Practices within subwatersheds that have minimal existing stormwater treatment will be ranked ahead of installing additional (potentially redundant) treatment in watersheds with existing stormwater treatment infrastructure. The project team will generate a list of potential practices with a composite ranking that considers the relevant parameters.



Finally, as part of the initial analysis effort, the Mississippi River watershed will be evaluated to determine if there are any other potential practices that could be implemented, even if they are not specifically ravine stabilization or large-scale practices. These could be wetland restoration projects, establishing or enhancing buffers around surface waters, or hydrodynamic separators on storm sewer trunk lines within watersheds with minimal existing stormwater treatment.

In order to compare potential ravine projects, to large scale practices, to other practices, each potential project will be evaluated qualitatively on its relative cost (low, medium, high), potential pollutant removal (low, medium, high), construction difficulty (low, medium, high), potential for pursuing water quality-oriented grants (low,

medium, high), and potential for pursuing environmental resiliency grants (low, medium, high). This is our initial intent on developing ranking criteria for proposed practices and projects. However, we will review this ranking system with the LMRWMO and other stakeholders during the kick-off meeting and refine the ranking system as needed to ensure the rankings reflect the priorities of the LMRWMO.

Senior staff will review the feasibility methodology and ranking of potential practices. The Moore project team will internally finalize a list of potential practices and draft a technical memorandum summarizing our approach and initial findings. We will provide the memorandum and list to the LMRWMO and entire project team, allow for a two-week review period, then lead a working meeting to screen potential projects and solicit LMRWMO (and other relevant stakeholders) input on potential projects to ultimately identify a list of up to 25 of the best practices to move forward with a field investigation.

### Task 3 – Field Reconnaissance

The Moore project team anticipates the field investigation will take about one week’s worth of time (but this effort could be spread across multiple weeks depending on weather and field conditions). We will group potential investigation locations together by both proximity, and type of practice, to collect as much data as possible, as efficiently as possible. The primary objectives of the field investigation include:

- Verify assumptions from the watershed analysis and confirm exact erosion “hotspots”
- Collect field measurements, such as length and heights of bank failures, or storm sewer depths
- Take photographs of the potential project area, with at least one landscape-oriented photograph, and one portrait-oriented photograph to provide documentation that can be used in formal reports, digital storyboards, and for providing multiple perspectives to document the site
- Inspect site for potential impacts to public or private land and natural resources
- Identify potential feasibility concerns previously unidentified (such as construction access, or working adjacent to existing wetlands which may require additional permitting efforts)

The project team will develop an online GIS map preloaded with data regarding the potential practice location and extents. We will use a tablet-based collector app in the field to collect and log data. This data will be approximately accurate to one foot horizontal. We do not propose collecting specific elevation data as part of this scope of work, other than measuring with a rod. For ravine or stream bank restoration practices, we will collect beginning and ending points of bank failures, and measure height of the banks periodically along the project area. For practices that would involve diverting storm sewer, we will measure the depth of the adjacent storm sewer (whose invert elevations then may be approximated by comparing to LiDAR data), confirm pipe sizes, and inspect where the potential practice could be installed.

The project team has developed a five-day plan for collecting relevant information. We estimate it will take about one hour to inspect each practice.

*Day 1.* A senior water scientist and two technicians from the project team will be in the field. We would also like to invite and would readily welcome LMRWMO staff to accompany us for the first day. Our intent would be to inspect multiple practice types, of each practice identified as part of Task 2. This way senior staff on the Moore project team and LMRWMO staff can discuss and confirm what data is vital, important, nice, and unimportant to collect at this stage of implementation. Inspecting each type of potential practice will allow for completing the fieldwork in the following days efficiently and accurately.



*Day 2.* Depending on the progress and results from the first day, the second day will either include the same team or the senior field scientist may be replaced by the lead engineer for the field assessments, depending

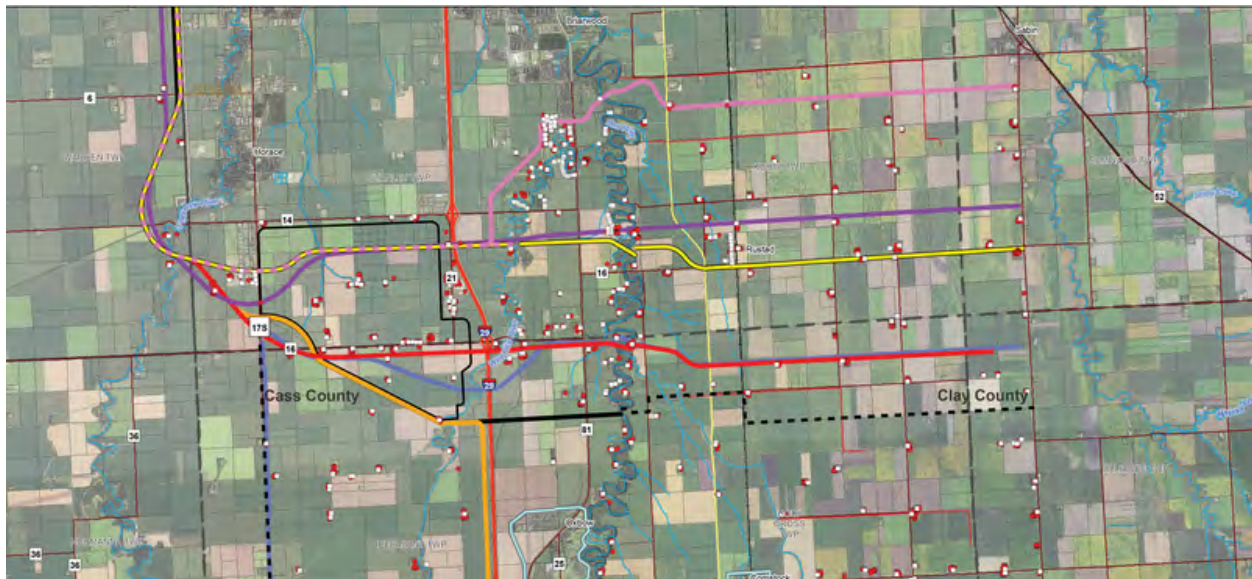


on the needs of the areas to be investigated and the potential practices to be considered. For the second day, we assume we will inspect all potential practices that are located on private land. For this day, we assume LMRWMO or Dakota County staff will participate in the field investigation to facilitate landowner outreach in advance, and coordinate the day of the field inspection. We will collect data for these practices, discuss and explain what a potential restoration would look like with landowners, and solicit input from the landowners as to how they would like to see a project proceed.

Days 3 and 4. The two technicians will return to the field for the third and fourth days. After two days in the field with senior staff and LMRWMO representatives, the technicians will have a good understanding of the field methodologies and what measurements are necessary. Our objective is to complete the initial data collection of all features by the fourth day.

Day 5. The Moore project team will begin Task 4 and analyze the data collected in the field in GIS or AutoCAD Civil3D as appropriate. If additional field efforts are needed to collect final measurements it will be completed on this day by one of the field technicians. After we review the data, we will return to the field and collect relevant missing data.

Throughout the fieldwork process, we will have staff in the office available to consult with questions, and with access to the online GIS map to ensure data is successfully being captured in real time. We will provide LMRWMO with daily updates as to progress, and alert them early in the process if unexpected obstacles are encountered, such as difficulty accessing certain areas, or unsafe field conditions preventing the collection of data that would be important or nice to have.



The project team will meet internally to debrief on the field investigation and discuss findings. After reviewing internally, we will categorize the potential practices as high priority, moderate priority, and low priority based on a combination of the field investigation, prior desktop analysis conducted as part of Task 2, and LMRWMO input throughout the project. We will then meet with the LMRWMO and other stakeholders to discuss which 10 to 12 practices will be identified to move forward to concept design.

#### Task 4 – Analyze and Prioritize

The project team will develop the following for each of the 10 to 12 potential practices identified for concept design:

- Plan view identifying parcel boundaries, project extent, and type of practice

- Linework and hatching will display ravine or streambank stabilization practices by type
- A concept grading plan will be developed for above ground, large scale practices using LiDAR
- Profile view that shows either existing and proposed ravine/streambank profiles, or shows existing ground with proposed storm sewer
- Detailed line-item life cycle cost estimates that will include future design and construction engineering, permitting costs, land or easement acquisition costs, maintenance costs, plus contingencies
- TSS and TP removal estimates. These will either be calculated in P8, or using NRCS methods to estimate pollutant loading from bank failure
- Quantify how much additional storage volume is added to the watershed with this project

The practices will then be ranked based on project cost, TSS removal, TP removal, storage volume provided, effective pollutant removal cost, feasibility, maintenance, grant funding likelihood (for both water quality and resiliency related grants), and a composite ranking that combines all of the individual rankings into one metric. We will also note permitting needs or complexities that need to be considered for each project type.

The project team will develop a report that summarizes our approach, methodology, and findings. We will use the memorandum developed in Task 2 as a starting point, add detail, summarize field investigation findings, the approach to concept design, and practice rankings. The draft report will be reviewed by our Senior Water Resources engineer before sharing with the LMRWMO and project team. The project team will give LMRWMO approximately two weeks to review internally. After the LMRWMO team provides the Moore team with written comments, we will schedule and lead a *Final Deliverable Meeting* to discuss how comments from LMRWMO and City staff shall be addressed.

#### Task 5 – Final Deliverables

The Moore project team will update the report to address LMRWMO comments as agreed to in the meeting. The Moore team will provide a copy of the final report, supporting photos, maps, tables, and plan sheets. At the final deliverable meeting, we will discuss with stakeholders the preferred format of GIS data, whether it be in geodatabase or shapefile format, and if there is a desire for specific subsets of the data (such as clipping the practices to municipal boundaries, or subdividing practices into specific files for each practice type).

We also are aware the LMRWMO likes to present the public with virtual story boards (such as for the Thompson Lake Project) describing LMRWMO projects. The Moore project team will work with LMRWMO to generate written and graphic content if a storyboard is going to be created after completion of this project. In our final deliverable submittal, we will include a separate folder of images, graphics, and schematic drawings that we think would be good candidates for inclusion in a storyboard.



Finally, we understand the storyboard creation may lag the deadline of December 13<sup>th</sup>, 2024, where the consultant can no longer bill work on this project. The Moore project team understands this and will happily donate up to 20 hours of our time to assist with storyboard creation after the deadline on the 13<sup>th</sup>.

## Task 6 – Drone Flight (Optional)

The Moore team is pleased to present an additional optional task for LMRWMO's consideration. If selected, Moore will use a drone to collect georeferenced aerial imagery. A drone pilot will be available for up to two (negotiable), eight-hour days in the field, and will collect as much information as possible during that time. We will work with the LMRWMO to prioritize which practices make the most sense to collect, and we will ensure that these are the first practices flown. If selected, Task 6 will increase the project budget by \$3,500.



## ASSUMPTIONS


The scope of services presented in this proposal are based on the following list of assumptions:

- Stormwater models and GIS base layers that will be provided by LMRWMO and municipalities will be in executable condition. The Moore team will provide limited troubleshooting for minor issues if we are merging models or running different storm events, but a detailed quality-control review of existing models to address stability issues, continuity error, or other errors that would take substantial effort to address are not included in this scope of work.
- LMRWMO staff will coordinate any and all private landowner outreach and coordination. LMRWMO staff will be available to make in person introductions between the Moore team and landowner.
- A limit of 25 practices will be identified for field investigation. A limit of 12 practices will be identified for concept design.



# COST ESTIMATE

Based on our current understanding of the project, we estimate the cost for the scope described above to be **Seventy-Four Thousand Seven Hundred Fifteen Dollars (\$74,715)**. The table below provides a detailed breakdown of staff hours and expenses anticipated to complete this scope of work. If Task 6 – Drone Flight (Optional) is selected, the total contract fee would increase by \$3,500 to \$78,215 (though this is not included in detail in the table below).

Lower Mississippi River Watershed Management Organization													
		JEFF MADEJCYK   SR. PROJECT MANAGER	DAN ELMES, PE   LEAD WATER RESOURCES ENGINEER	JOSH HASSELL, PE   SENIOR WATER RESOURCES ENGINEER	QUENTIN SCOTT, EIT   WATER RESOURCES ENGINEER	KELSEY KLINE   ENVIRONMENTAL TECHNICIAN II	KELSEY KLINE   ENVIRONMENTAL TECHNICIAN II	STORY BOARD ASSISTANCE (MULTIPLE STAFF)	TOTAL TASK HOURS AND AVERAGE BILLING RATE	LABOR COST	DIRECT COST	TOTAL COST	
JOB CLASSIFICATION		\$205	\$195	\$195	\$155	\$110	\$195	\$0	\$136	---	---		
RATE PER HOUR													
<b>TASK 1 - KICKOFF MEETING</b>													
1.01	Internal Kickoff Meeting and Data Gap Analysis	1	5	1	4	20	1		32	\$4,390		\$4,390	
1.02	Kickoff Meeting with LMRWMO and Other Stakeholders	2	2			2			6	\$1,020		\$1,020	
<b>TASK 2 - WATERSHED ANALYSIS</b>													
2.01	Hydrology, Hydraulic, and Water Quality Model Review and Integration	3	4		20	18			45	\$6,475		\$6,475	
2.02	Review Potential Project Locations	6	4	2	12	40	2		66	\$9,050		\$9,050	
2.03	Meeting with LMRWMO and Other Stakeholders to Review Findings and Identify Projects to Move to Field Investigation	2	2			2			6	\$1,020		\$1,020	
<b>TASK 3 - FIELD RECONNAISSANCE</b>													
3.01	Field Investigation	2	8	2	40	40	8		100	\$14,520	\$1,800	\$16,320	
3.02	Meeting with LMRWMO and Other Stakeholders to Review Findings and Identify Projects to Move to Concept Design	4	4			4			12	\$2,040		\$2,040	
<b>TASK 4 - ANALYZE AND PRIORITIZE</b>													
4.01	Concept Design for 10 Sites	1	8	1	40	56	1		107	\$14,515		\$14,515	
4.02	Quantify TSS and TP Removal Rates and Estimate Practice Costs	2	4		24	8			38	\$5,790		\$5,790	
4.03	Draft Report and Figures	8	7	1		40	1		57	\$7,795		\$7,795	
4.04	Meeting with LMRWMO and Other Stakeholders to Review Comments on Draft Report	2	2			2			6	\$1,020		\$1,020	
<b>TASK 5 - FINAL DELIVERABLES</b>													
5.01	Address Stakeholder Comments and Finalize Report	1	2	1	4	20	1		29	\$3,805		\$3,805	
5.02	Data Transmittal	1	2			8			11	\$1,475		\$1,475	
5.03	Story Board Content Assistance							20	20	\$0		\$0	
<b>TOTAL</b>		<b>35</b>	<b>54</b>	<b>8</b>	<b>144</b>	<b>260</b>	<b>14</b>	<b>20</b>	<b>535</b>	<b>\$72,915</b>	<b>\$1,800</b>	<b>\$74,715</b>	
<b>PERCENT OF EFFORT</b>		<b>6.5%</b>	<b>10.1%</b>	<b>1.5%</b>	<b>26.9%</b>	<b>48.6%</b>	<b>2.6%</b>	<b>3.8%</b>	<b>100%</b>				

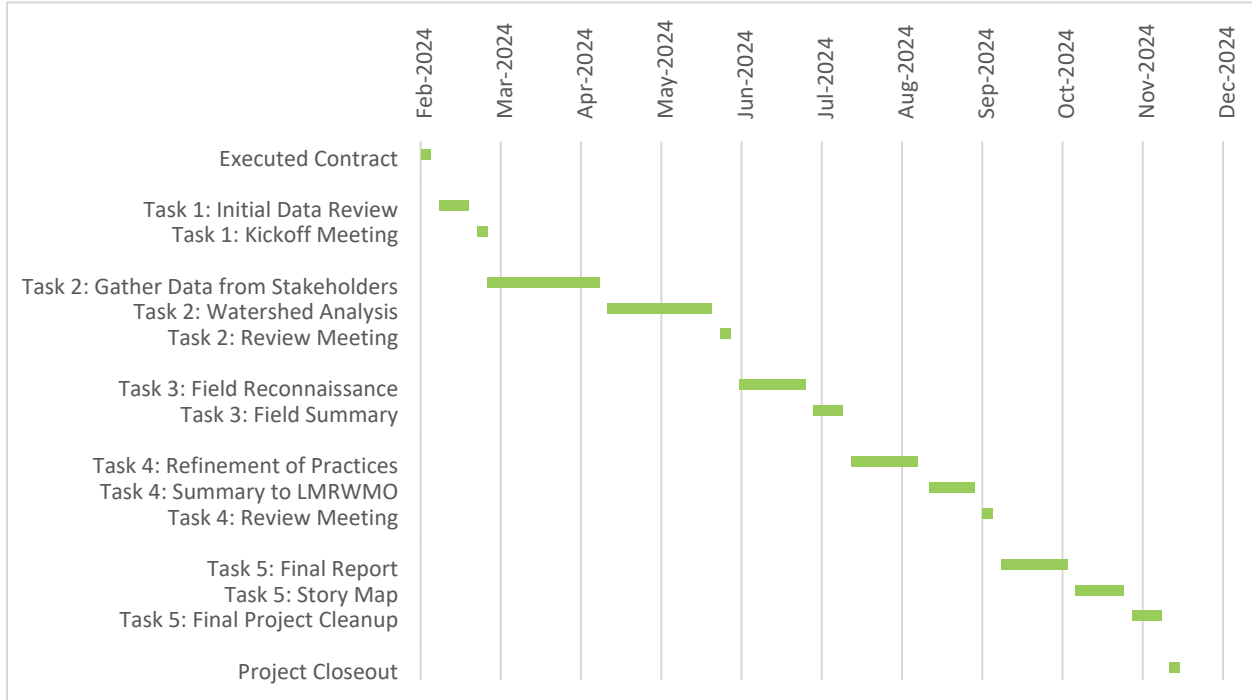
The fee breakdown listed above is for informational purposes only. Moore may alter the distribution of compensation between individual phases listed above to be consistent with services actually rendered but shall not exceed the total contract compensation amount unless approved in writing by LMRWMO. Potential changes to scope and budget will be brought to LMRWMO's attention as soon as feasible to discuss and determine the appropriate course of action.

# SCHEDULE

Moore is prepared to meet the schedule outlined in the RFP. The bullet points below and Gantt Chart describe how this would be achieved. We have assumed a March 1<sup>st</sup> start date for the project for the purposes of preparing this schedule. Based on our experience and the tasks requested in the RFP, we would target fieldwork during July. This would allow the team sufficient time to complete Tasks 1 and 2 prior to field work and complete Tasks 4 and 5 after field work. We would be happy to discuss and update the construction schedule based on LMRWMO input and preferences.

- Executed Contract March 1<sup>st</sup>, 2024
- Task 1: Initial Data Review 3/4 to 3/15
- Task 1: Kickoff Meeting 3/18 to 3/22
- Task 2: Gather Data from Stakeholder 3/22 to 5/3
- Task 2: Watershed Analysis 5/6 to 6/14

- Task 2: Review Meeting 6/17 to 6/21
- Task 3: Field Reconnaissance 6/24 to 7/19
- Task 3: Field Summary 7/22 to 8/2
- Task 4: Refinement of Practices 8/5 to 8/30
- Task 4: Summary to LMRWMO 9/3 to 9/20
- Task 4: Review Meeting 9/23 to 9/27
- Task 5: Final Report 9/30 to 10/25
- Task 5: Story Map 10/28 to 11/15
- Task 5: Final Project Cleanup 11/18 to 11/29
- Project Closeout December 2<sup>nd</sup>, 2024



Moore has the capacity to achieve this timeline and we are open to discussing the schedule with LMRWMO. We will be flexible in the scheduling of meetings and the submittal of deliverables to ensure the goals of the project are met prior to the deadline stated in the RFP.

## PROJECT TEAM AND BIOS

Our project team was assembled to best serve this project and LMRWMO. Our team is comprised of a mix of water resource engineers and environmental scientists that have experience completing similar watershed feasibility analysis and development of BMP projects. Jeff Madejczyk will be the project manager for this effort, Dan Elmes will serve as the lead water resources engineer. Jeff and Dan have worked together since 2017 (together at Moore and while at a prior firm) and have completed similar feasibility assessment projects for municipal, watershed, and County clients. Wes Boll is an experienced field scientist that will lead the field assessment efforts and Josh Hassel, P.E. is a senior water resources engineer that will help with the identification and selection of BMPs. Our team is rounded out by a combination of field scientists, engineers, and GIS professionals needed to complete the project. We have provided bios of our key team members describing their experience and role for this project. Resumes can be provided if requested. We have listed our key team members who will be dedicated to this project. Other members of Moore will also be available as needed to support the project and are included in the overall cost estimate.

JEFF MADEJCZYK | Senior Project Manager



Jeff is an environmental scientist and project leader with over 24 years of consulting experience. He serves as a senior project manager to help lead clients through complex and challenging design, permitting, and construction projects. He enjoys helping clients identify the best way to address a problem and then provides strategic input to help them move forward to the desired successful outcome. His clients appreciate his commitment to customer service and his excellent communication skills. Jeff has experience completing similar projects including with clients such as Dakota County, the Vermillion River Watershed Joint Powers Organization, and the City of Lakeville. Jeff will serve as the Project Manager organizing and leading tasks to ensure the goals of the LMRWMO are achieved.

DAN ELEMES, PE | Lead Water Resources Engineer



Dan has ten years of experience in water resources engineering. His experience in stormwater includes hydrologic and hydraulic analysis, BMP design for water quality treatment, and floodplain modeling and analysis for municipal, county and watershed districts, in both urban and rural areas. Dan's specialties include stormwater modeling, feasibility studies, engineering design, and construction management. He is passionate about taking projects from the brainstorming phase, all the way through construction. While employed at a previous firm Dan served as the lead engineer and project manager for the construction of the Thompson Lake Restoration Project. Dan will serve as the senior engineer to lead the development of the watershed models, identification of potential improvement projects, and development of cost estimates.

WES BOLL | Senior Environmental Scientist



Wes has over 20 years of experience with a wide variety of professional duties, focusing especially on wetland and natural resource management with experience using GIS and surface water quality monitoring. He has performed wetland delineations, stream assessments, and lake monitoring efforts throughout the Midwest. He is familiar with wetland regulations, and has prepared permit applications meeting Federal and State regulatory requirements for many projects. He has also prepared plans for and overseen the approval, establishment, and management of several wetland mitigation banks. He is also familiar with conducting wetland determinations and drainage assessments on agricultural land and has provided technical assistance and regulatory guidance to numerous landowners. Wes will lead the field assessments and help with the data analysis and compilation.

JOSH HASSEL P.E. | Senior Water Resources Engineer



Josh has worked at Moore for 15 years as a water resource engineer. His experience includes hydraulic studies of natural and manmade channels, floodplain management, hydrologic studies ranging from a few acres to 1,000+ square miles of contributing area, urban stormwater modeling, dam design and analysis, FEMA flood damage recovery projects and levee certification. Josh leads a team of 15 engineers and technicians through the region's most complex water challenges. Managing the design team to solve complicated drainage, storage, and flooding issues. For this project Josh will serve as the Senior Water Resource Engineer to review modeling analysis, provide input on BMP identification and project selection, and review the project evaluation matrix.



#### QUENTIN SCOTT, EIT | Water Resources Engineer



Quentin has four years of experience in municipal and water resources engineering, stormwater modeling, and has worked on projects that range from site grading to utility improvements to complete street reconstruction. He has been on both the design and inspection side of municipal and water resource engineering projects. Quentin served as one of the design engineers for a recent channel stabilization project as well as new large stormwater pond in Lakeville, where he also provided construction oversight for both projects. For this project Quentin will assist with the modeling, feasibility evaluation, identification of projects, development of cost estimates, and reporting.

#### KELSEY KLINE | Environmental Technician II



Kelsey has three years of experience as a consultant working through the environmental regulatory process and studying projects' environmental impacts. Kelsey is a Certified Stormwater Inspector and has experience working with MS4 Cities conducting stormwater site inspections and reviewing site plans. Kelsey is a GIS analyst with expertise completing various levels of mapping analysis and figure creation to support field studies and design projects. She also has experience completing field assessments for various natural resource projects. Kelsey will serve as the GIS analyst for the project, lead the data evaluation effort, and will also help with the field assessment and reporting.

## PROJECT EXPERIENCE AND REFERENCES

Water resource engineering is one of the core service sectors at Moore. As a regional expert in water resource services, Moore has completed projects ranging from small feasibility studies to multi-million-dollar construction projects, small urban HydroCAD models to regional SWMM models, and environmental studies to completed restorations. All the while, Moore has brought decades of experience in public engagement, project management, and the support of outside funding to these efforts. Our work in water resource management over the past half century has contributed greatly to the growth and sustainability of our region. We partner with numerous local and regional watershed districts, as well as local, state, and federal units of government, helping them to develop environmentally sound solutions for the most complex challenges. From the most basic, to the multifaceted, we have extensive experience, a thorough knowledge of regulatory processes, and a proven track record of bringing ideas to reality. We listen first, then work hard to develop creative and sustainable solutions, recognizing that communities are strongest when people feel part of the decision-making process.

We have provided a subset of project examples completed by the Moore Team and members of our team related to water resource management, including specific projects that are relevant to LMRWMO's current project. If you have questions regarding our experience, we would be happy to discuss a specific project with you or provide additional details to ensure you have all the information needed to be confident in the Moore Team as your partner to complete the Mississippi River Direct Drainage Project Prioritization Study.

At Moore we value our client relationships and the reputation our teams have built with our existing clients is the basis for the repeat business that has fueled our firm's success for decades. As part of our project experience, we have provided references for clients that we worked with on the listed projects. We encourage you to reach out to each of these references to hear first-hand about their experience working with our team. Additional references can be provided at your request. We can also be available to discuss our relationship with each of these clients or provide additional details needed by the LMRWMO to aid in your evaluation.

## NORTH CREEK WATERSHED EVALUATION AND FOXBOROUGH POND PROJECT

**Client:** City of Lakeville **Contact:** Mr. McKenzie Cafferty, Environmental Resources Manager

**Phone:** 952-985-4520 **Email:** [mcafferty@lakevillemn.gov](mailto:mcafferty@lakevillemn.gov)

**Team members:** Jeff Madejczyk – Project Manager. Dan Elemen – Lead Engineer. Quinten Scott – Design & Construction Engineer.

North Creek is a tributary of the Vermillion River that is eight miles long, starting in Lakeville and ending in Farmington. Members of Moore Engineering completed a feasibility assessment to identify potential improvement projects for the upper watershed within the City of Lakeville (City). The assessment included using the City's XPSWMM model to evaluate areas where erosion and flooding could be reduced as well as finding locations where stormwater BMPs could be developed. The initial assessment identified multiple improvement projects including a channel stabilization project for North Creek and a new stormwater pond. The feasibility study was completed while the Moore team was working at another firm, however after joining Moore, the team assisted the City with applying for grant funds.



The City and the Vermillion River Watershed submitted a grant application for the project, which was awarded \$350,000 in Clean Water Fund dollars. Moore was contracted by the City to design and construct a new detention pond to provide stormwater treatment to a 220-acre untreated watershed in the City draining directly to North Creek. Moore used the City's XPSWMM stormwater model to evaluate the potential impacts to the floodplain and complete a "no rise" analysis the project. The final design included a one-acre pond with a new outlet control structure to regulate runoff into North Creek as well as a filtration bench to provide additional water treatment. The pond provides an estimated removal of 18 tons/yr of total suspended solids and 40 lbs/yr of total phosphorus. Moore lead the survey, stormwater modeling, design, state & federal permitting, public bidding process, contractor management, and construction oversight efforts for the project. Construction was completed in August 2023.

## ON CALL WATER RESOURCE ENGINEERING

**Client:** Washington County Public Works **Contact:** Ms. Eden Rogers, Engineer II

**Phone:** 651-430-4352 **Email:** [eden.rogers@co.washington](mailto:eden.rogers@co.washington)

**Team members:** Jeff Madejczyk – Project Manager. Dan Elemen – Lead Engineer. Quinten Scott – Design Engineer. Kelsey Kline – GIS Support



The Moore Team currently services as the on-call water resource and natural resource engineering team for the Washington County Public Works department. The services provided to the County include wetland delineations, development of feasibility options for stormwater design, hydrologic and hydraulic modeling, stormwater BMP evaluation, floodplain evaluation including No Rise analysis, and development of engineering plans and cost estimates. A recent project included the design of a new pond to provide stormwater to fit within an intersection reconstruction project for CR 61, that will provide stormwater storage and water quality treatment to an area that had previous issues with stormwater management. Moore completed the design in 2022 and the pond was constructed in 2023. The Moore Team also previously provided these same On-Call Water Resource Engineering services to the County while at a previous firm.

## RCPP PLANNING: CASS, BARNES, STEELE COUNTY, ND

Client: Cass County – Southeast Cass Water Resource District Contact: Mr. Keith Weston, Chair

Phone: 701-391-0722 Email: [wqcoord@msn.com](mailto:wqcoord@msn.com)

Team members: Josh Hassel – Lead Engineer

The Cass County Joint Water Resource District needed to implement a planning process to evaluate flood damage reduction options and alternatives for the Upper Maple River Watershed. A project team, formed of landowners, municipalities, and local, state, regional and federal government representatives, led the planning effort. Moore Engineering facilitated and guided the project team during the planning process and developed alternatives based on the chosen flood damage reduction strategies. Moore generated more than 30 possible alternatives for the project team to review and analyze and assisted the project team in narrowing alternatives to two for further review and analysis. The project team instructed Moore to develop a preliminary design, initial cost estimates, environmental and wetland reviews and land impacts for the remaining possible alternatives.

Moore conducted public meetings, an agency input meeting, six project team meetings and numerous landowner meetings to inform those impacted of the selected planning alternatives. The project required an extensive coordination effort with several state and federal agencies along with the Natural Resources Conservation Service (NRCS). Moore tracked and submitted quarterly progress reports and periodic data submissions (review points) to the NRCS for review and approval. Six review point submissions were due to the NRCS for the entirety of the watershed plan development.



Watershed planning was recently completed, with Moore developing preliminary designs and estimates and a benefit cost analysis for two of the remaining alternatives. As the projects evolved into final design, what was initially primarily a flood mitigation project evolved to include water quality improvements, including wetland restoration, stream re-meandering, biomass harvesting, and bank stabilization. This is because Moore determined that without additional grant funding, achieved by including water quality improvement practices, the project did not achieve the requisite benefit/cost ratio to meet Federal requirements. Moore, in coordination with the NRCS, was able to identify a creative solution to address the funding issue, while developing a project to increase resiliency throughout the watershed and enhance water quality.

## MIDDLE CREEK CHANNEL EVALUATION AND RESTORATION

Client: City of Lakeville Contact: Mr. McKenzie Cafferty, Environmental Resources Manager

Phone: 952-985-4520 Email: [mcafferty@lakevillemn.gov](mailto:mcafferty@lakevillemn.gov)

Team members: Jeff Madejczyk – Project Manager. Dan Elemen – Lead Engineer. Quinten Scott – Design & Construction Engineer.

Middle Creek is a tributary of the Vermillion River with most of the stream located within the City of Lakeville. The watershed of the creek has undergone significant and rapid development over the last ten years. Over 75 percent of the immediate drainage area has been converted from agricultural and open lands to a mix of high and medium density residential development combined with new roads, schools, and stormwater infrastructure, the rapid development and increased volume of stormwater was causing impacts to the Middle Creek channel, including incision from down cutting, and bank erosion leading to mass failures and an over widening of the channel. The Moore team began an initial assessment of the stream channel in 2018 while employed at another firm. Partnering with the City and Lakeville and the Vermillion River Watershed, over one mile of channel was restored and stabilized.





In fall 2021, a new development was proposed along the upper most reaches of Middle Creek. After joining Moore, the team completed an initial channel assessment for the City of Lakeville along this last stretch of channel. The assessment confirmed that restoration efforts were necessary to prevent further failure of the channel which would potentially encroach on new homes, road, and trails. Moore completed the preliminary design for the restoration project and partnered with the City to secure Watershed Based Implementation Funding for the project during summer of 2022. Moore then completed the final design, permitting, no-rise study for the project. The design included a mix of hard armoring such as rock vanes to address channel incision and bio-engineering practices including brush mattresses, vegetated rip-rap, and coir logs to stabilize the stream banks and address the over-widened condition. Moore also led the public bidding, contractor management, and construction oversight for the project. Final design was completed in summer 2023 and project was constructed in the fall.

### EAST AUBURN WETLAND COMPLEX RESTORATION FEASIBILITY STUDY

Client: Minnehaha Creek Watershed District **Contact:** Mr. Michael Hayman – Director of Planning  
Phone: 952-471-8226 **Email:** [mhayman@minnehahacreek.org](mailto:mhayman@minnehahacreek.org)

**Team members:** Jeff Madejczyk – Project Manager. Dan Elemes – Design Engineer. Wes Boll – Senior Environmental Scientist.

Minnehaha Creek Watershed District (MCWD) wanted to evaluate options to restore a wetland that would improve water quality and protect downstream lakes. Previous studies had identified the wetland complex as a significant source of exported phosphorus to Auburn Lake, located immediate downstream. Moore was contracted to complete a feasibility study to review existing data, determine potential data gaps, and develop potential restoration projects to address the water quality issues. The study evaluated multiple options including hydraulic restoration of the wetland, elimination of the channel through the center of the basin, excavations of accumulated sediment in the basin to remove accumulated nutrients and increase storage, and chemical amendments to the wetland sediments. Moore developed cost estimates for seven different options that were included as part of a decision matrix evaluating the complexity and effectiveness of the potential projects. Variables within the decision matrix included level of impacts to the wetland, engineering complexity, phosphorus export reduction, permitting complexity, capital costs, operation and maintenance costs, project time scale, and project risk. The study was used by MCWD staff to provide recommendations to the board on a selected option for implementation.



## KINGSLEY-ORCHARD LAKE WATERSHED IMPROVEMENT PROJECTS\*\*

Client: City of Lakeville Contact: Mr. McKenzie Cafferty, Environmental Resources Manager

Phone: 952-985-4520 Email: [mcafferty@lakevillemn.gov](mailto:mcafferty@lakevillemn.gov)

Team members: Jeff Madejczyk – Project Manager. Dan Elmes – Lead Engineer.

Kingsley and Orchard Lakes are in the northwest corner of the City of Lakeville. Both lakes are important recreational resources in the City with each basin having a combination of excellent water quality, recreational opportunities, and high-value residential properties along the lake shores. In 2019 the City assessed the watershed for the two lakes and identified problem areas. These included a failing outlet structure on Kingsley Lake, clogged culverts under a railroad, sediment deltas, and high-water conditions potentially impacting residential properties. The Moore team, working for a different employer at the time, evaluated multiple improvement projects to help the City address the identified concerns around the two lakes.



The project team led the design evaluation effort on behalf of the City which included field assessments, topographic surveys, hydrologic modeling utilizing the City's XPSWMM model, and conceptual design. The process identified several improvement projects for the two lakes including: construction of a new outlet structure for Kingsley Lake to stabilize water levels, replacement of two failing culverts under a railroad connecting a large wetland complex to Orchard Lake, three separate pond/sediment delta maintenance projects, and installation of a new underground stormwater treatment device to improve water quality in stormwater runoff discharging to the lakes.

The projects were broken into several smaller phases to allow the City to secure funds for each project and allow the City to utilize the more efficient quote process as opposed to a full public bid process. The project team completed engineering construction plans for each separate improvement project then led the agency permitting efforts, quote process, contractor management, and construction oversight for the City. The Kingsley Lake Outlet Structure was replaced in September of 2020. Construction of the failing railroad culverts was completed in October of 2021. The final phase of the project to install the new stormwater treatment device and complete the maintenance of the sediment deltas was completed in Spring 2022.

\*\* = project completed by the Moore team while employed at a previous firm

## CONFLICT OF INTRESTS

We have reviewed the RFP and the requirements of the project in regard to potential conflicts of interest. Moore will be a new consultant to the LMRWMO and as such there are no past projects or other efforts that would be a conflict to this project. We have also reviewed, and can confirm, that there would be no issues stemming from serving our existing clients that would present a conflict to this project.

## LMRWMO RESOURCES

In developing this proposal, Moore assumes LMRWMO Staff will be able to perform the following tasks:

- Task 1 – Kickoff Meeting
  - Identify stakeholders from local government offices to be included in kickoff meeting, and provide contact information if possible
  - Host meeting at office
  - Provide input regarding ranking criteria that are important to project stakeholders
  - Collect additional data, as agreed to at the kickoff meeting
- Task 2 – Watershed Analysis
  - Generally be available for informal update meetings to clarify questions as they arise

- Provide written comments on submittals within two weeks' time
- Task 3 – Field Reconnaissance
  - Have staff available for the first day of field investigation to provide input from LMRWMO's perspective and experience
  - Coordinate scheduling and introducing the Moore project team staff to landowners when inspecting practices on private property
- Task 4 – Analyze and Prioritize
  - Provide written comments on submittals within two weeks' time
- Task 5 – Final Deliverables
  - Provide input regarding additional data needs for story board
- Task 6 – Drone Flight (Optional)
  - Provide direction as to which practices to prioritize

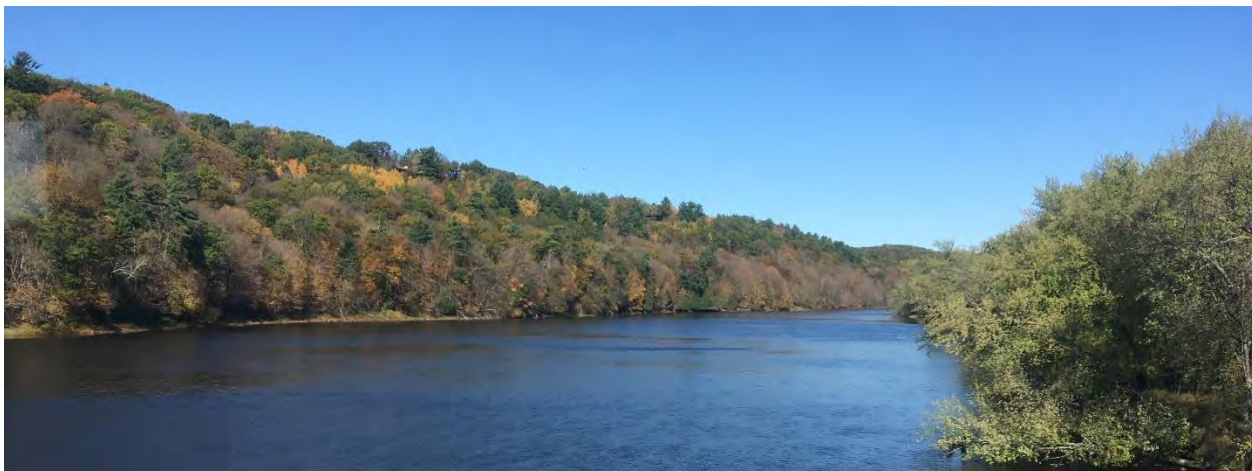
## CLOSING

At Moore, we believe we understand both the details and nuances of this specific project, but also the LMRWMO's mission. We understand that the LMRWMO strives to protect and improve the water quality of the watershed, while preserving the natural resources and promoting sustainable development. LMRWMO works to achieve this by coordinating with local communities, businesses, and government agencies to implement effective and innovative solutions that address the challenges facing the watershed, with the goal of creating a healthy and thriving ecosystem that benefits both people and wildlife.

Moore's values of respect, integrity, accountability, loyalty, and kindness align with the LMRWMO's mission of protecting and improving water quality, preserving natural resources, and promoting sustainable development. Moore's commitment to respect, integrity, and accountability will help the LMRWMO implement effective and innovative solutions to address the challenges facing the watershed, prioritizing projects that are respectful of tax payer dollars, meet grant objectives, and will stand the test of time. Leveraging our strengths of loyalty and kindness will help the LMRWMO work with local communities, businesses, and government agencies to implement projects that benefit all. By working together, Moore and LMRWMO can create a healthy and thriving ecosystem that benefits both people and wildlife.

Though we are new to the LMRWMO, we are confident that we have the right staff to make this project a success. We have technical expertise in water resources engineering, environmental science, and grant funding. We will work collaboratively with LMRWMO and partner cities to address stakeholder concerns and deliver a successful project for this study, and for future improvement projects.

We thank you for your consideration.





# Appendix A - Resumes



**moore**  
engineering, inc.



## Jeff Madejczyk

### Senior Project Manager

Jeff.Madejczyk@mooreengineeringinc.com  
320.281.5493 ext. 1116

### EDUCATION

- BS in Ecology,  
Winona State University
- MS in Fisheries & Wildlife Biology,  
Iowa State University

### PROFESSIONAL EXPERIENCE

- Moore Engineering since 2021
- Other Firms – 22 years

## RELEVANT EXPERIENCE

### Middle Creek Channel Restoration

#### » Lakeville, MN

Project Manager for a channel improvement project completed in Lakeville. Efforts included surveys to evaluate the problems with the stream channel and identify the engineering practices that would stabilize the stream and improve habitat conditions. The design used a combination of hard armoring and bioengineering practices. The project included field topographic surveys, concept design, securing grant funding, hydrological modeling to achieve no-rise conditions, state & federal permitting, project design, construction plans, public bidding, and construction administration & oversight. Construction was complete in October 2023.

### Foxborough Pond Improvement Project

#### » Lakeville, MN

Project Manager to lead the design and construction of a new stormwater pond in the City of Lakeville. The pond was constructed within a City park to capture runoff from a 220-acre residential watershed lacking stormwater treatment. The design incorporated a filtration bench to

address nutrient removal. The pond will remove 18-ton of TSS/yr and 32-lb of TP/yr. The project included survey, design engineering, no-rise modeling, state permitting, bidding assistance and construction oversight. Construction was completed in August 2023.

### North Creek Culvert Improvement Project

#### » Farmington, MN

Project Manager for a feasibility evaluation to determine improvement options for three failing culverts for the Vermillion River Watershed Joint Powers Organization. The project developed concept plans and cost estimates to improve each private culvert crossing on North Creek, near its discharge to the Vermillion River. Primary objective of the project was to size new crossings to facilitate aquatic organism passage, and restore overwidened and eroding sections of the Creek, caused by undersized culverts. Concept plans were developed for purposes of pursuing grant funding to construct the improvements.

### Kingswood Ravine Stabilization Project

#### » Minnetrista, MN

Project Manager to complete feasibility investigation and preliminary design for a ravine stabilization project for Three Rivers Park District. The project developed concept plans and cost estimates to stabilize an actively eroding ravine that discharges to a Tamarack Bog in Kingswood Park. Concept design involved presenting numerous site improvement concepts to the Park District, Hennepin County, and City staff in a collaborative effort to find a way to prevent further erosion and protect the bog, as it is a rare resource for its area. Moore developed a hydrology model, water quality model, and concept plans for the agreed upon alternative, which was used to secure grant funding to implement the project.

### North Dakota DOT Wetland Mitigation Banks

#### » Bismarck, ND

Project manager leading the identification and development of two separate wetland mitigation banks for the North Dakota DOT. Moore led efforts to identify potential sites for wetland restoration and meeting with landowners to introduce the program Moore found two sites in North Dakota simultaneously led the development of each project. Services included field group and topographic surveys, wetland investigations, development of the banking plan, environmental evaluation through a Categorical Exclusion, engineering design, right-of-way coordination, and development of utility relocation. The mitigation plan document and the engineering plans will be

finalized in March 2024, with construction planned in summer/fall of 2024.

### **East Auburn Wetland Restoration Feasibility Study Victoria, MN**

Project manager to complete a feasibility study and alternatives evaluation to develop potential improvement projects for the East Auburn Wetland Complex. Minnehaha Creek Watershed District wanted to evaluate options to restore the wetland that would improve water quality and protect downstream lakes. The study evaluated multiple options including hydraulic restoration, elimination of the channel, basin excavations, and chemical amendments. Cost estimates for seven options were developed and included as part of a decision matrix evaluating the complexity and effectiveness of each potential improvement project.

### **Vermillion River Watershed Fish Community Monitoring (2009-2022)**

#### **» Dakota County, MN**

Project Manager and Lead Biologist for the Vermillion River Watersheds annual fish community biological monitoring study for coldwater trout streams and warmwater streams in the watershed. The monitoring efforts collected data via stream electrofishing to determine biotic health of the streams and support the Biotic Total Maximum Daily Load (TMDL) study. The field study was continued annually to track changes in the fish community as well as identify stream reaches for target improvement and restoration projects.

### **Golden Pond Channel Improvement Project (2016-2018)\*\***

#### **» Lakeville, MN**

Project Manager for a pond and channel improvement project. Completed a feasibility study to evaluate options to repair a stormwater pond that was discharging warm water into a coldwater stream channel. Options from the feasibility study were used to secure grant funding. The project included hydrological modeling, state & federal permitting, engineering design, construction plans, public bidding, contractor management, and construction oversight. Through the installation of a new pond outlet structure and channel stabilization measures, the project successfully stabilized the stream channel and separated the warmwater flows from the pond into the channel. This resulted in a decrease of the water temperature in the stream channel by 5 to 10 degrees Fahrenheit to protect the coldwater fish community.

### **Kingsley Lake Outlet Reconstruction (2019-2020)\*\***

#### **» Lakeville, MN**

Project Manager for a project to evaluate concerns with fluctuating water levels on Kingsley Lake which were impacting shoreline property owners and threatening residential structures. The project included field investigations and hydrological modeling to determine possible causes and solutions to address the water level concerns in the lake. Lead efforts to perform temporary maintenance to alleviate short term issues. Ultimately the occur was to design and install a new outlet structure to replace the aging structure that was in disrepair. Lead the design, permitting, and construction efforts for the project.

### **South Creek Trout Stream Restoration (2016 – 2017)\*\***

#### **» Farmington, MN**

Project Manager for a trout stream restoration project completed in Farmington, MN. South Creek is a coldwater tributary to the Vermillion River with a trophy class brown trout population. Aquatic habitat within the stream has been impacted by erosion, failing banks, and siltation. The restoration project include evaluation of 2,300 ft of channel to identify the engineering practices to improve habitat conditions. Project used a combination of hard armoring and bioengineering practices. The project included field channel assessments, concept design, securing grant funding, hydrological modeling to achieve no-rise conditions, state & federal permitting, project design, construction plans, public bidding, and construction administration & oversight.

### **Crystal Lake Golf Course Stormwater Maintenance Project.**

#### **» Lakeville, MN**

Project Manager for a stormwater maintenance and repair project within the Crystal Lake Golf Club in Lakeville, MN. Moore completed a field survey, sediment depth estimate, sediment sampling, and stormwater modeling to develop the scope of the maintenance efforts. The project included removal of several thousand yards of accumulated sediment from four ponds as well as repair and replacement of stormwater structures and pipes. Moore completed the engineering plans and specifications, lead the public bidding process, and provided construction oversight.

**\*\* = project completed at prior firm**





## Daniel T. Elemen, PE

### Water Resources Group Leader

dan.elemen@mooreengineeringinc.com

651-338-7986

## EDUCATION

- BS in Civil Engineering  
North Dakota State University
- BS in Economics  
North Dakota State University
- Master of Business Administration  
University of St. Thomas

## PROFESSIONAL EXPERIENCE

- Moore Engineering since 2021
- Other Firms – 8 Years

## PROFESSIONAL CERTIFICATIONS

- PSMJ Project Management Bootcamp
- XP-SWMM Stormwater Management and Floodplain Modeling Training

## PROFESSIONAL REGISTRATIONS

- PE (CO, MN, MT, ND, NE, NM, SD, TX, WI)

## PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers
- Order of the Engineer

## ROLE/BIO

Dan has more than ten years of experience in water resources engineering and municipal engineering. His experience in stormwater includes hydrologic and hydraulic analysis, best management practice design for water quality treatment, floodplain modeling and analysis, and project management. His experience has included projects in the municipal, transportation, and aviation sectors, in both urban areas and rural areas. Dan's specialties include project management, stormwater modeling, feasibility studies, plans and specifications

creation, funding and permitting agency coordination, and construction management. He is passionate about taking projects from the brainstorming phase, all the way through construction. Dan has successfully designed and managed projects ranging from less than \$50,000 to over \$2 million for a variety of public and private clients.

## RELEVANT EXPERIENCE

*\*Completed while at different firm*

### Spring and Long Lake Feasibility Study (2022)

#### » Cokato, MN

Developed a feasibility study for improving water quality on Spring and Long Lakes. Reviewed and summarized prior studies on the lakes, and developed a matrix to summarize what recommended lake management strategies have or have not been completed over the last thirty years of management.

### 165th Street Drainage Improvements (2019-2021)\*

#### » Lakeville, MN

Evaluated street flooding for the City of Lakeville, where undersized infrastructure was causing extensive ponding and damage to an adjacent retaining wall. Feasibility study involved nearly 100 XP-SWMM model iterations due to high water level sensitivity of connected ponds and wetlands. Recommended improvement was designed and partially constructed throughout 2021.

### Lemay Lake Feasibility Study (2019-2020)\*

#### » Eagan, MN

Provided preliminary design and analysis for siting stormwater BMPs within an industrial area for the City of Eagan, MN. Project included collecting soil borings, a utility survey, preliminary design and analysis. Final deliverables included a summary report with a ranking of potential BMPs based on cost, pollutant removal efficacy, and other quantitative and qualitative rankings.

### Rural PC-SWMM Modeling (2018-2020)\*

#### » Dakota County, MN

Managed a project that involved modeling the Vermillion River and Northern Cannon River watersheds in Dakota County. Project involved reviewing and indexing existing County-wide hydrology models, FIS studies, as-built drawings, survey data, and other provided information, and constructing a calibrated PC-SWMM model for the project area.

### County Water Resources Services (2017-2021)

#### » Washington County, MN

Provided a variety of water resources engineering services to County projects. Such services ranged from providing stormwater design and supporting calculations for County road expansion projects to inlet capacity analyses to providing complete plans and specifications for water resources related projects. Deliverables included stormwater calculations and complete plan sets.

### **Foxborough Pond Improvement Project (2022-2023)**

#### **» Lakeville, MN**

Project Engineer to lead the design and construction of a new stormwater pond in the City of Lakeville. The pond was constructed within a City park to capture runoff from a 220-acre residential watershed lacking stormwater treatment. The design incorporated a filtration bench to address nutrient removal. The pond will remove 18-ton of TSS/yr and 32-lb of TP/yr. The project included survey, design engineering, no-rise modeling, state permitting, bidding assistance and construction oversight. Construction was completed in August 2023.

### **Middle Creek Channel Restoration (2022-2023)**

#### **» Lakeville, MN**

Project Engineer for a channel improvement project completed in Lakeville. Efforts included surveys to evaluate the problems with the stream channel and identify the engineering practices that would stabilize the stream and improve habitat conditions. The design used a combination of hard armoring and bioengineering practices. The project included field topographic surveys, concept design, securing grant funding, hydrological modeling to achieve no-rise conditions, state & federal permitting, project design, construction plans, public bidding, and construction administration & oversight. Construction was complete in October 2023.

### **North Dakota DOT Wetland Mitigation Banks (2023)**

#### **» Bismarck, ND**

Design Engineer leading the development of two separate wetland mitigation banks for the North Dakota DOT. Moore led efforts to identify potential sites for wetland restoration and meeting with landowners to introduce the program. Moore found two sites in North Dakota simultaneously led the development of each project. Services included field group and topographic surveys, wetland investigations, development of the banking plan, environmental evaluation through a Categorical Exclusion, engineering design, right-of-way coordination, and development of utility relocation. The mitigation plan document and the engineering plans will be finalized in February 2024, with construction planned in summer/fall of 2024.

### **Carlson Lake Park Improvements (2018-2021)\***

#### **» Eagan, MN**

Supported the City of Eagan through conceptual design, preliminary design and final design and bidding for a water quality BMP. Tasks included project management, modeling, design, plans and specifications, and coordinating between the City and several subcontractors. Iron enhanced sand filters, infiltration, and cartridge filter devices were evaluated, with a cartridge filter, coupled with an underground storage tank, eventually being selected for the most cost-effective means of phosphorus treatment.

### **Eagandale Stormwater Improvement Project (2020-2021)\***

#### **» Eagan, MN**

Managed and was responsible engineer for plans, specifications and construction administration for a large underground infiltration gallery within public road right-of-way. The project involved eight-foot-tall chambers, redundant pretreatment devices, and over-excavation and installation of daintile to increase the practices infiltration footprint. Project was TMDL driven, was identified the Lemay Lake Feasibility Study, and is estimated to remove approximately 34 pounds of phosphorus on an annual basis based on conservative model assumptions. City Water Resources Staff and Public Works Staff were involved throughout the design and construction process of this project.

### **Empire Dam Rehabilitation (2017-2019)\***

#### **» Farmington, MN**

Modeled, designed, and prepared plans and specifications for a dam rehabilitation project in Dakota County, MN. Empire Dam had fallen into disrepair due to lack of maintenance. Project included XP-SWMM modeling, outlet control structure and emergency spillway design, permit assistance, preparation of plans and specifications and construction administration.

### **Orchard Lake Stormwater Improvement Project (2020-2021)\***

#### **» Lakeville, MN**

Modeled, designed, oversaw the preparation of plans and specifications, and provided construction management for a variety of water quality improvement projects adjacent to Orchard Lake, for purposes of preserving its high-water quality. Projects included repair of defunct, sedimentation prone infrastructure, sediment removal, and a hydrodynamic structure to treat runoff from a public road that has no other means of treatment prior to discharging to a wetland connected to the lake.

### **Thompson Lake Construction Management (2018-2020)\***

#### **» West St. Paul, MN**

Managed construction engineering and inspecting services for Dakota County for a \$2.1 million lake dredging and stormwater BMP project at a county park in West St. Paul, MN. Specific tasks included instructing and coordinating with resident project representatives, communicating with the client and contractor, reviewing construction submittals and pay requests, and handling project financials.



## Wes Boll

### Environmental Scientist

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612.518.6592

### EDUCATION

- BA, Environmental Studies with Biology Emphasis  
Gustavus Adolphus College

### PROFESSIONAL EXPERIENCE

- Moore Engineering since 2021
- Other Firms - 21Years

### PROFESSIONAL CERTIFICATIONS

- Certified Wetland Delineator - MN

## RELEVANT EXPERIENCE

### North Dakota DOT Wetland Mitigation Banks

#### » Bismarck, ND

Lead scientist for the identification and development of two separate wetland mitigation banks for the North Dakota DOT. Moore led efforts to identify potential sites for wetland restoration and meeting with landowners to introduce the program Moore found two sites in North Dakota simultaneously led the development of each project. Services included field group and topographic surveys, wetland investigations, development of the banking plan, environmental evaluation through a Categorical Exclusion, engineering design, right-of-way coordination, and development of utility relocation. The mitigation plan document and the engineering plans will be finalized in March 2024, with construction planned in summer/fall of 2024.

### Root Wetland Restoration Project (2018-2023)

#### Watkins, MN

Senior Environmental Scientist to complete a wetland restoration project and establish a certified wetland mitigation bank for a private landowner. Assisted with field evaluation and concept design of the proposed restoration. Developed wetland permitting and mitigation banking documents, guided the project owner through agency consultations, coordinated construction bidding, and provided construction oversight. The project construction was completed in summer 2020 and the initial wetland bank credits were granted to the project owner. Lead the monitoring and maintenance activities from 2021 – 2023 to secure wetland credit releases.

### East Auburn Wetland Restoration Feasibility Study

#### Victoria, MN

Senior Environmental Scientist to complete a feasibility study and alternatives evaluation to develop potential improvement projects for the East Auburn Wetland Complex. Minnehaha Creek Watershed District wanted to evaluate options to restore the wetland that would improve water quality and protect downstream lakes. The study evaluated multiple options including hydraulic restoration, elimination of the channel, basin excavations, and chemical amendments. Cost estimates for seven options were developed and included as part of a decision matrix evaluating the complexity and effectiveness of each potential improvement project.

### Vatten Wetland Bank (2022-Ongoing)

#### » Stockholm, MN

Project manager and lead biologist to develop a wetland restoration project that will restore nearly 70 acres of wetland in southern Wright County. Lead the development of the wetland mitigation plan, restoration design, agency consultations, easement coordination, utility relocation, Project involved modeling the restoration area to design the outlet structure and determine onsite, upstream, and downstream high-water levels. The restoration will be a large bank creating over 50 wetland credits and restoring an additional 50 acres of upland habitat. Construction is anticipated in Summer 2024. Challenges included managing the inflow from a greater than 3,000 acre upstream watershed, designing and negotiating impacts to neighboring properties, and abandoning a portion of a legal ditch.



## **Wetland Mitigation Banking and Ecological Restoration**

### **» Wetland Banks**

Project manager and technical lead for the development of several wetland mitigation banks in Minnesota and South Dakota. Preparation of draft prospectus, prospectus, and full bank plan applications. Evaluation of potential mitigation sites and preparation of economic feasibility analysis. Development of restoration strategies and vegetation establishment plans. Coordination of regulatory (WCA, Army Corps, NRCS) approval. Construction and vegetation establishment oversight. Completion of annual monitoring and preparation of annual monitoring reports. Management of credit ledgers and oversight of credit transactions.

### **» Private Landowner Restorations**

Developed wetland restoration plans for private landowners for the primary purpose of wildlife habitat enhancement. Conducted site investigations to determine existing site conditions and collect information for restoration plans. Developed restoration and vegetation establishment plans for sites. Coordination of regulatory approval. Oversight of restoration work. Annual monitoring to determine health of wetland and upland buffer vegetation communities, aquatic macroinvertebrate community, and water quality.

## **Wetland Delineation**

### **» Agricultural Wetland Determinations and Drainage Assessments**

Conducted numerous off-site and on-site wetland determinations according to NRCS/USDA Food Security Act Manual and WCA methodology in Minnesota, South Dakota, and North Dakota. Determined appropriate drainage setbacks and conducted scope-and-effect drainage analysis. Conducted technical reviews of Certified Wetland Determinations for regulatory appeals. Conducted assessments of historical drainage (prior to 1985). Provided technical expert documentation and expert witness testimony for wetland determinations and drainage disputes in Minnesota and South Dakota.

### **» Wetland Delineations**

Conducted numerous wetland boundary delineations and wetland type determinations according to Army Corps 1987 Manual and Regional Supplements to 1987 Manual in Minnesota, South Dakota, North Dakota, and Iowa. Conducted off-site reviews for actively cropped sites. Conducted delineations for agricultural producers, landowners, private developers, government agencies, highway corridors, utility pipelines, and mine sites.

## **Natural Resource Assessment and Monitoring**

### **» Wetland Function and Values Assessments**

Conducted wetland functions and values assessments using the Hydrogeomorphic Method (HGM) for the purposes of determining wetland functions for mitigation projects in South Dakota. Conducted assessments using MnRAM for regulatory purposes and for wetland inventories for cities and watersheds in Minnesota.

### **» Wetland and Aquatic Vegetation Surveys**

Conducted point-intercept aquatic vegetation surveys according to MN DNR methodology on lakes and waterbodies for watershed districts, lake associations, and Cities in Minnesota. Identified vegetation species and delineated aquatic invasive species. Conducted lake bathymetry and vegetation mapping using Lowrance sonar and CiBioBase software. Prepared summary reports and vegetation maps used for management purposes. Conducted wetland vegetation surveys using the Rapid Floristic Quality Assessment method and transect survey methods to assess vegetation quality and composition in restored and natural wetlands.

### **» Water Quality Monitoring**

Technical lead for water quality monitoring programs for multiple MN Watershed Districts for over 10 years. Familiar with water quality monitoring methodologies. Skilled in the operation of surface water quality monitoring equipment and automated water quality and water level monitoring equipment. Compilation of data and preparation of annual monitoring reports.

## **Minnesota Wetland Conservation Act Enforcement**

Acted as the WCA Agent for several Local Government Units (LGUs) in MN (Cities of Delano, Corcoran, Dayton, Shingle Creek-West Mississippi WMO) and provided temporary assistance with other LGUs (Carver County, Minnehaha Creek Watershed District) for over 15 years. WCA agent duties included the review and approval of applications, coordination of TEP reviews, enforcement of WCA violations, and correspondence with residents.



## Joshua Hassell, PE, CFM

### Senior Water Resources Group Leader

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701.499.5829

### EDUCATION

- BS in Civil Engineering, University of North Dakota
- Master's Degree, Engineering, University of North Dakota

### PROFESSIONAL EXPERIENCE

- Moore Engineering since 2010

### PROFESSIONAL REGISTRATIONS

- Professional Engineer – ND, MN
- Certified Floodplain Manager (CFM)

### PROFESSIONAL AFFILIATIONS

- F-M Engineers Club – NDSPE Chapter 4
- Association of State Floodplain Managers
- Minnesota Association of State Floodplain Managers
- Association of State Dam Safety Officials
- American Society of Civil Engineers

### PROFESSIONAL AWARDS

- NDSPE Chapter 4 – 2020 Young Engineer of the Year

## ROLE/BIO

Josh will be responsible for all water resources projects, including the management and administration of the engineering staff to meet the needs of the project. More specifically, he will manage the design team for projects involving stormwater analysis and hydraulic design. Josh works with federal, state and local governments as well as private parties on water resource projects. His experience includes hydraulic studies of natural and manmade channels, floodplain management, hydrologic studies ranging from a few acres to 1000+ square miles of contributing area, urban stormwater modeling, dam design and analysis, FEMA flood damage recovery projects and levee certification.

## RELEVANT EXPERIENCE

### Storm Sewer Rehabilitation for City Street and Sewer Improvement in Mayville, ND

#### » City of Mayville, ND

Engineer responsible oversight of the development of an XPSWMM model for the existing storm sewer system, identifying deficiencies within the system, recommendation for storm sewer system improvement. Work includes using the tools available within ArcGIS to delineate subcatchment boundaries for the entire City, inserting the existing storm sewer system in the model, developing the model to assist with design of storm sewer system, inlets/manholes, and gravity outlets to meet design criteria.

### Hobart Lake Drainage Improvements

#### Client: Barnes County Water Resource District

#### » Barnes County, ND

Duties included assisting with the coordination of survey crew, coordinating with drafting technicians to complete a preliminary design for the proposed outlet, downstream culvert analysis and design based on peak outflow from the proposed project, cost analysis based on the proposed design, completion of an application for funding from the North Dakota State Water Commission, completing an application for Hazard Mitigation Grant Program funding which included drafting, sending, and recording responses of environmental solicitation letters to various agencies, coordinating with the University of North Dakota to complete a Class III Cultural Resource Inventory of the site, completion of a benefit cost analysis using flooded roads as the primary impact to the region, and creation of maps for FEMA review.

## **Berlin Township Drainage Improvements**

### **Client: Rush River Water Resource District**

#### **» Cass County, ND - 15978**

Duties included completing watershed analysis of the proposed drainage project, performing culvert analysis for each culvert crossing in the project for a 10-yr design storm event, and assisting with submitting for cost share and permitting from the North Dakota State Water Commission.

## **Jackson Township Drainage Improvement District 1,**

### **Client: Dickey-Sargent Joint Water Resource District**

#### **» Dickey & Sargent Counties, ND**

Duties prior to construction included completing a watershed analysis of the area upstream of the proposed drainage project, performing an analysis computing draw down times of various closed basins along the drainage path, calculating the hydrology for the design of the culvert crossings along the new and existing drains according to North Administrative code, assisted in developing preliminary plans for cost estimating, submitting for cost-share and permitting from the North Dakota State Water Commission & United States Army Corps of Engineers, coordinating with the NRCS to determine wetlands, calculating lateral effect and determine impacted wetlands, preparing final plans and specifications, coordinating utility relocations, coordination and negotiation the purchase of permanent easement & permanent right-of-way for the project. Duties during construction included contract administration, review and approval of submittals, preparing pay applications, preparing cost share reimbursement requests, preparing and negotiating change orders, meeting with the client to update on project progress.

## **Comprehensive Detention Studies**

### **Client: Maple, Rush & Traill County Water Resource Districts**

#### **» Maple River, Rush River, & Elm River**

Duties included assisting with watershed delineation utilizing Geographic Information System (GIS), calculating elevation storage curves, backwater pools, identifying potentially impacted structures, inputting proposed structure into existing HEC-HMS Models, modeling of structures to determine impacts and benefits downstream, assisting with HEC-HMS model review, and writing project report summary.

## **AnnAGNPS Water Quality Monitoring**

### **Client: ND Department of Health**

#### **» Sheyenne River Watershed, ND**

Duties included watershed delineation using GIS version 3.4, creation of multiple AnnAGNPS models to analyze the Sheyenne River Watershed, summarizing land use within the watersheds utilizing 2007 land use data, utilizing Thiessen

polygon method to calculate weather parameter from 13 weather stations in the area, summarizing results of the modeling, creating maps, and compilation of the report.

## **Rush River RCPP**

### **Client: Cass County Joint Water Resource District**

#### **» Amenia, Cass County, ND**

Duties included coordination with the project team to develop alternatives for 100-year flood protection for the City of Amenia. Evaluated and modeled various alternatives including levee, diversions and impoundments. Preliminary design on two levee alternatives selected for further analysis. Preparing documentation per National Watershed Program Manual/Handbook for NRCS review.

## **Thompson Drain Improvements**

#### **» Grand Forks-Traill Joint WRD, ND**

Duties prior to construction included completing a watershed analysis of the area upstream of the proposed drainage project, calculating the hydrology for the design of the culvert crossings along the new drain according to North Administrative code, assisted in developing preliminary plans for cost estimating, submitting for cost-share and permitting from the North Dakota State Water Commission, coordinated final plans and specifications, assisted with coordinating utility relocations, assisted coordination and negotiation the purchase of permanent easement & permanent right-of-way for the project. Duties during construction included contract administration, review and approval of submittals, preparing pay applications, preparing and negotiating change orders, meeting with the client to update on project progress.

## **Silver Lake Dam Improvements**

#### **» Sargent County WRD, ND**

Lead Engineer for development of a feasibility study to address seepage concerns for Silver Lake Dam in Sargent County, ND. Lead the final design and construction contract administration of recommended alternative of a toe drain. Was also involved in project funding including applications for ND State Water Commission cost share and acquisition of Outdoor Heritage Fund Grant.





## Quentin Scott

### Project Engineer

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612.474.2280

### EDUCATION

- BS in Civil and Environmental Engineering  
North Dakota State University

### PROFESSIONAL EXPERIENCE

- Moore Engineering since 2022
- Other Firms - 3 Years

### PROFESSIONAL CERTIFICATIONS

- IADOT – Concrete – Level 1 & 2
- MnDOT – Concrete Testing – Level 1

### PROFESSIONAL REGISTRATIONS

- EI

## ROLE/BIO

Quentin has three years of experience in municipal engineering and in stormwater quality. His experience in municipal engineering varies from site grading to utility improvements to complete street reconstruction. He has been on both the design and inspection side of municipal projects. Quentin also has worked closely with sizing and determining proprietary stormwater treatment products on projects across the country. At Moore, Quentin has enjoyed working on a variety of water resources projects, ranging from stormwater modeling in a variety of softwares, to designing water quality improvement and flood mitigation practices.

## RELEVANT EXPERIENCE

*\*Completed while at different firm*

### Grant County Ditch 8 Fish Barrier Removal (2023)

**Moore Project Number: 21548**

» **Grant County, MN**

Provided the preliminary design to reset a culvert that was being used as a fish barrier. The culvert had four feet of fall to prevent fish from crossing but lead to high velocities at the downstream end which led to scouring. A 2D HEC-RAS model was created to check existing and proposed ditch velocities and plans were drafted to show the reset culvert at a flat slope and ditch reinforcement with riprap and boulder vanes up and downstream of the crossing. Findings, a cost estimate, and preliminary plans were composed into a preliminary design memo and submitted to the county.

### Middle Creek Restoration (2023)

» **Lakeville, MN**

Designed, permitted, and oversaw construction for approximately 3,500 feet of stream restoration. There were two streams that required a combination of bank grading, bank reinforcement with vegetated riprap, banks with coir toes, and arch vanes within the stream. The project required a nationwide permit, which involves an Army Corps of Engineers review, and MN public water permit.

### Foxborough Pond (2023)

» **Lakeville, MN**

Oversaw construction of a new stormwater treatment pond. The pond included a forebay, storage area, and a filter bench. Project primarily consisted of excavating the pond footprint, berm construction, and storm sewer installation.

### KayJay/Cose Levee (2023)

» **Cass County, ND**

Designed and modeled a preliminary ring levee to protect crop testing fields from new flood levels from the FM Area Diversion project. The levee was a non-certified levee. The levee was modeled in XPSWMM. The project involved several outside engineering firms working through land acquisition, landowner meetings, and design input.

### **Mathiowetz Wetland Bank Restoration (2023)**

#### **» Brown County, MN**

Drafted plans and modeled wetland restoration plans for approximately 55 acres of wetland banking credits. Plans and models included mass grading and ditch blocks. The project required a HEC-RAS model to show no rise conditions were met.

### **Vatten Wetland Bank Restoration (2023)**

#### **» Stockholm, MN**

Drafted plans and modeled wetland restoration plans for approximately 100 acres of wetland banking credits. Plans and models included mass grading, ditch blocks, ditch rerouting, and sheet piles. The project was modeled in XPSWMM, and plans were drafted between Civil 3D and ArcGIS.

### **City of Steele's Northwest Drainage Study (2023)**

#### **» Steele, ND**

Modeled the northwest portion of town which was mixed between residential, commercial, and agricultural land using XPSWMM. Existing conditions had a large part of the town flooding so the model was created to determine possible solutions between adding ditching, storm sewer, or some combination of both.

### **Stormwater Pond Cleanout at Crystal Lake Golf Course (2023)**

#### **» Lakeville, MN**

Provided construction oversight on the sediment removal for four stormwater ponds located on a golf course. The clean out occurred over the winter with restoration and storm sewer replacement in the spring.

### **Stormwater Pollution Prevention Plans (2023)**

#### **» Varies, MN**

Create SWPPP narratives, maps, and layouts for varies projects throughout Minnesota. Projects ranged from tree cleaning in boulevards to street reconstruction projects.

### **\*Michigan Lake Parking Lot Improvements**

#### **» Storm Lake, IA**

Provided full time construction oversight on the full pavement reconstruction and striping. The project also included stormwater sewer replacement. During the removal phase of the project, an abandoned building footing was found and required close documentation and change order for removal.

### **\*FEMA Lakeshore Restoration, Lighthouse Drive**

#### **» Storm Lake, IA**

Designed approximately 300 feet of lakeshore restoration after a winter storm caused ice to heave up and caused damage to the shoreline. Design included providing alternates between a riprap and stone restoration option and a natural restoration with planting and a riprap toe option.

### **\*Willow Avenue Development**

#### **» Worthington, MN**

Inspected the new lot development for nine multi-family lots. Site development included initial grade, sanitary sewer, watermain service connections, storm sewer network, and a stormwater pond with sand filter bottom.

### **\*43<sup>rd</sup> Avenue NE Reconstruction**

#### **» Bismarck, ND**

Determined sizing and design for five hydrodynamic separators, used for TSS removal. Assisted with stormwater modeling through the system and flow directed to each unit.

### **\*Nuevas Fronteras Stormwater Improvements**

#### **» Saint Paul Park, MN**

Worked closely with the engineer of record and the watershed reviewer to treat stormwater runoff. The site required filtration treatment for a high treatment flow and also had bedrock which restricted bury depth. A custom design was required which resulted in a hydrodynamic separator vault upstream to act as pretreatment to remove larger TSS. Then a custom filtration vault was needed to maximize the treatment flow.



## Kelsey Kline

### Environmental Technician II

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320.281.5493 ext. 1109

### EDUCATION

- B.S. in Environmental Science with a Geographic Information Science Minor, University of Minnesota Duluth

### PROFESSIONAL EXPERIENCE

- Moore Engineering since 2022
- Other Firms - 2 Years

### CERTIFICATIONS AND TRAINING

- University of Minnesota: Construction Site Management, Design of Construction SWPPP, Regulatory Enforcement, Construction Installer and Illicit Discharge
- National Stormwater Center: Certified Stormwater Inspector

### RELEVANT EXPERIENCE

#### Big Lake Outlet EAW

##### » Herman, Minnesota

Assisted in writing and preparing the Big Lake Outlet EAW. The project will control lake water levels to reduce flooding and allow for increased ability to manage the aquatic habitat. This project, proposed by the Bois de Sioux Watershed District, is part of the Red River Basin Commission Flood Damage Reduction Strategy.

#### LaFave Park Environmental Narrative

##### » East Grand Forks, Minnesota

Prepared the Environmental Narrative for the proposed improvements in LaFave Park. Utilized GIS to assist in completing the Environmental Narrative figures. The project is intended to improve LaFave Park and will provide better access to the park's facilities.

#### SCDP DEED Environmental Clearance

##### » Minnesota

The environmental clearance documents are a requirement for the funding process. Federal Law under the National Environmental Policy Act of 1969 (NEPA) and HUD Regulations (24 CFR Part 58) were followed to create the environmental clearance documents.

#### Critical Issues Analysis Report

##### » Kansas and Oklahoma

Prepared a Critical Issues Analysis (CIA) reports for multiple potential solar development sites. The CIA reports provides a preliminary desktop analysis of sensitive environmental resources, regulatory permits, and clearances that will need to be addressed to complete environmental studies and permitting for the evaluation area. Environmental resources and permitting requirements were identified from publicly available information and publicly available geographic information system (GIS) databases.

#### Alexandria MS4 Inspections

##### » Alexandria, Minnesota

Completed monthly site inspections for active construction sites throughout the city. Reviewed construction stormwater site plans for new construction sites within the city's MS4 boundary. Coordinated with city officials and contractors to assure the project is within compliance of the city ordinances and the MPCA permits.

#### Wetland Delineation Reports

##### » Minnesota and North Dakota

Assisted in field wetland delineations, wetland report writing and completed the GIS figures in ArcPro. Kelsey also created an ArcGIS Online map that is used in the Field Map app to assist in field data collection for wetland delineations.



## **Redpath Impoundment**

### **» Traverse and Grant County, MN**

Construction Resident Project Representative for this off-channel floodwater impoundment project for the Bois de Sioux Watershed District in Traverse County, Minnesota. This \$50 million flood damage reduction project provides 24,000 acre-feet of storage for the 200+ square mile watershed. Reducing damage from flooding both locally and along the Red River. This project additionally addresses over five miles of an eroding federally straitened river and creates 260 acres of grassed wetland. Worked on site inspecting the earthen levee construction, digging out the meandering channel, and overall construction site inspections.

## **NFCRWD Screening Tool Web Map**

### **» North Fork Crow River Watershed District**

Provided the NFCRWD an interactive GIS web map to assist in the annual reporting for their Comprehensive Watershed Management Plans and in practice implementation and day-to-day assistance to the grant coordinator. The web map illustrates the planning regions and their targeted areas for work reducing pollutants.