



A PROPOSAL FOR

Mississippi River Direct Drainage Project Prioritization Study

FOR THE LOWER MISSISSIPPI RIVER WATERSHED MANAGEMENT ORGANIZATION

January 26, 2024

Lower Mississippi River WMO
c/o: Joe Barten, Administrator
Dakota County Soil & Water Conservation District
4100 220th St. West, Suite 102
Farmington, MN 55024



Re: Proposal for Mississippi River Direct Drainage Project Prioritization Study

Dear Mr. Barten,

On behalf of WSB, thank you for this opportunity to submit our qualifications. The requested feasibility study will position the Lower Mississippi River Watershed Management Organization (LMRWMO) to address erosion and improve water quality on direct drainage tributaries to the Mississippi River. In addition to identifying and managing erosion, the study will identify suitable locations for large-scale best management practices (BMPs) and rank them by priority. It will give the LMRWMO an actionable plan to reduce stormwater volume and pollutant loadings to the Mississippi River.

Experienced Team | A team spanning the breadth and depth of streambank restoration, hydrologic and hydraulic modeling, and BMP design will be able to efficiently identify potential solutions while recognizing their various opportunities and potential pitfalls. Our team's ability to identify and prioritize erosion issues, recognize their root causes, and choose the right stabilization method is born from our work on many comparable projects. Similarly, our team's capacity to interpret model results and use them to identify realistic BMPs has been developed over many years and many models. These factors demonstrate the experience that WSB's proposed team will provide the LMRWMO.

Actionable Solutions | WSB's proposed team has brought erosion mitigation and large scale BMP projects from concept and feasibility, through design and construction. Because we understand the project lifecycle from start to finish, we know what it takes to implement long-term solutions. The LMRWMO gains the most value from the requested feasibility report if it can be used to move directly to the final design and construction of the recommended improvements. We will present clear, easy-to-understand solutions to position the LMRWMO for action.

Familiarity with the Watershed and its Communities | WSB's drainage team has a history of completing successful projects within the watershed and is extremely familiar with the member communities. Our team completed a similar watershed assessment for Interstate Valley Creek in 2022 which we delivered to the LMRWMO and the City of Mendota Heights on schedule and budget. WSB updated and created the City of Mendota Heights' HydroCAD and P8 models within the LMRWMO as part of their Surface Water Management Plan update in 2018. WSB developed the XP-SWMM and P8 models for St. Paul's Riverview subwatershed, which encompasses the portion of the Mississippi River Direct drainage area within the City of St. Paul. Finally, our team is currently working on Seidls Lake improvements in South St. Paul and Inver Grove Heights and erosion improvements in West St. Paul.

Please contact Jake at 612.990.3576 or jnewhall@wsbeng.com or Amy at 612.209.8602 or aanderson@wsbeng.com with any questions about our qualifications or availability. This proposal shall remain valid for 90 days from the submittal date.

Sincerely, WSB

Jake Newhall
Principal/ QC Lead

Amy Anderson, PE
Project Manager



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Firm Overview



Forge ahead.

WSB is a design and consulting firm specializing in engineering, community planning, environmental, and construction services. Together, our staff improves the way people engage with communities, transportation, infrastructure, energy and our environment. We offer services that seamlessly integrate planning, design and implementation.

We share a vision to connect your dreams for tomorrow to the needs of today—the future is ours for the making.

1,100+
STAFF

30+
SERVICE AREAS

36
OFFICES

7
STATES

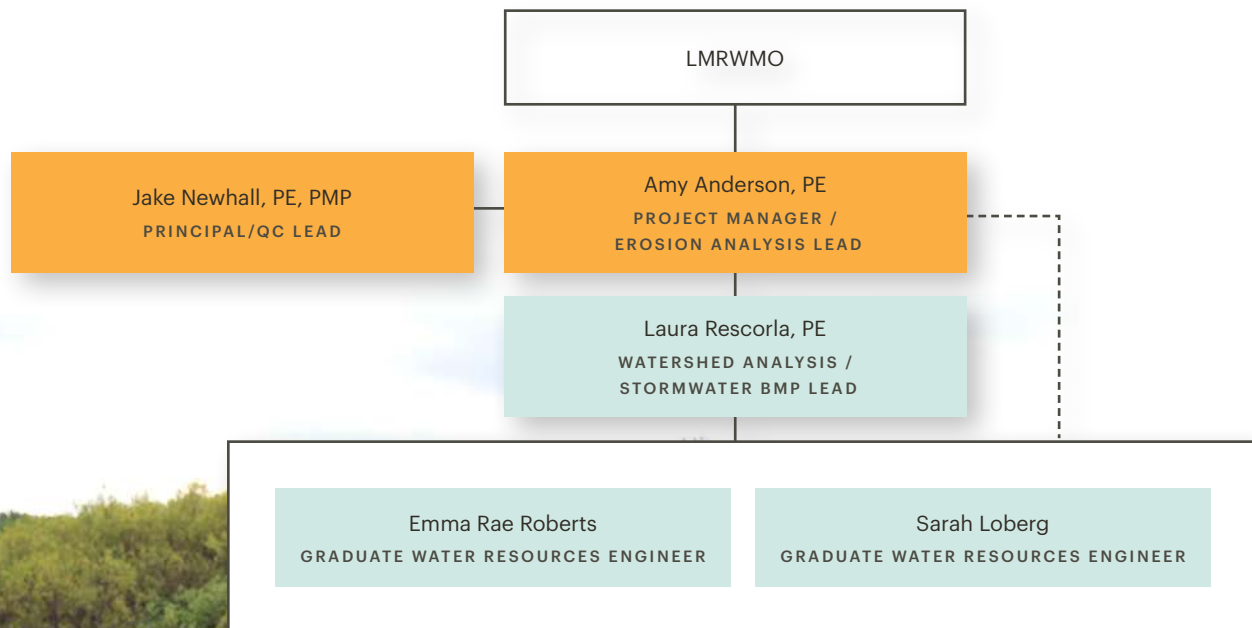
Alternative Project Delivery | Asset Management | Biogas | Bridges & Structures | City Engineering | Community Planning | Constructability Review | Construction Materials Testing & Special Inspection | Contractor Modeling | Drinking Water | Economic Development | Environmental Compliance | Geohazard Risk Management | Geospatial | Geotechnical Engineering | GIS Services | Grants & Funding | Health & Safety Compliance | Intelligent Transportation Systems | Investigation & Remediation | Land Development | Landscape Architecture | Managed Services | Natural Resources | Pavement Management | Pipeline | Project Management & Construction Administration | Public Engagement | Public Works Management | Right of Way | Roadway Design | Smart Cities | Solar | Survey | Sustainability | Technology Solutions | Traffic Engineering | Transit Planning | Transportation Planning | Urban Design | Vibration Monitoring | Visualizations | Water Resources | Water Reuse | Wind

Proposer's Team



The LMRWMO will be best served by our experienced, collaborative team that works together frequently to deliver high-quality studies and projects.

Jake Newhall has extensive experience executing a wide variety of streambank stabilization and subwatershed assessment projects and will manage the team to deliver a comprehensive study on time and within budget. **Amy Anderson** specializes in streambank and ravine stabilization and watershed management. Assisted by **Emma Rae Roberts** and **Sarah Loberg**, she will lead the field review of the stream reaches and the development of recommendations for erosion identification and stabilization. **Laura Rescorla** will lead the watershed BMP analysis, combining her experience identifying City-wide volume and pollutant reduction opportunities with Sarah Loberg's subwatershed assessment experience, to model the subwatershed and identify the most suitable BMP locations.



Qualifications and Experience

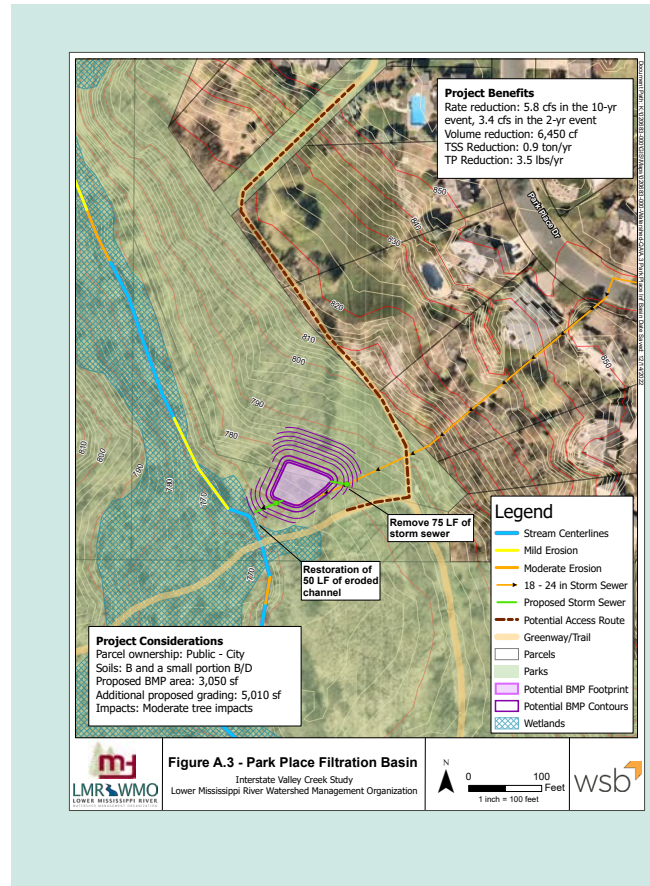


Interstate Valley Creek Stabilization and Volume Reduction Study

CLIENT: LMRWMO
LOCATION: MENDOTA HEIGHTS, MN
DURATION: APR 2022 - FEB 2023

LMRWMO selected WSB to provide engineering services for an erosion, discharge rate, and volume reduction study on Interstate Valley Creek (IVC) within the City of Mendota Heights. WSB was tasked with determining locations for BMPs to reduce stormwater flows and pollutant loadings from the IVC tributary drainage area, providing preliminary designs and estimating peak flow and pollutant reductions. WSB also conducted a field survey of the IVC main stem and two major tributaries and cataloged existing erosion issues. Using the survey results, WSB prioritized the most severe erosion issues based on criteria developed with the LMRWMO and provided feasibility-level stabilization designs and sediment loading estimates for the highest-priority sites. The results of the study produced feasibility level designs for six stormwater BMPs and ten streambank erosion sites. WSB also created a prioritization matrix that assists LMRWMO and City of Mendota Heights staff in determining which sites should be completed first and the pollutant load reductions that could result from completing these projects.

REFERENCE: JOE BARTEN | LMRWMO ADMINISTRATOR
| FARMINGTON, MN | 651.480.7784 | JOE.BARTEN@CO.DAKOTA.MN.US



Jake Newhall, Project Manager:

Jake oversaw the project team to develop impactful solutions and deliver an actionable study on-time and on-budget.

Laura Rescorla, Water Resources Engineer:

Laura used GIS and modeling data combined with partner observations and site visits to determine potential BMP sites. Estimated rate, volume, and pollutant reductions and developed preliminary designs and cost estimates.

Amy Anderson, Water Resources Engineer:

Amy conducted site visits to document erosion issues, performed sediment loading estimates, and developed a 2D model of the stream reaches to identify the highest priority stabilization projects. She also developed feasibility designs and cost estimates.

Watertown Streambank Feasibility Study

CLIENTS: CARVER COUNTY WATER MANAGEMENT ORGANIZATION, CARVER COUNTY SOIL AND WATER CONSERVATION DISTRICT

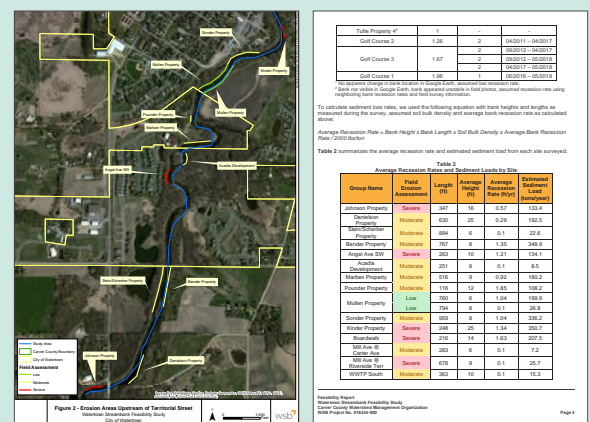
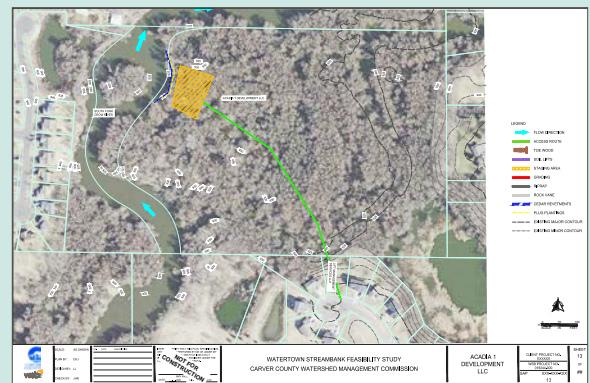
LOCATION: CARVER COUNTY, MN

DURATION: MAY 2021 - OCT 2021



WSB teamed with Carver County Water Management Organization (CCWMO) and Carver County Soil and Water Conservation District (CCSWCD) staff to survey all streambanks along the South Fork of the Crow River within the City of Watertown. The survey documented 19 properties with erosion issues ranging from minimal to severe. Working with CCWMO staff, WSB developed a feasibility level stabilization plan for each site which favored vegetation-based stabilization methods over hard armoring techniques and included a feasibility-level cost estimate. WSB developed estimates of sediment loading from each site to quantify proposed water quality improvements and related them to the existing Total Maximum Daily Load (TMDL) which is in place for the South Fork of the Crow River. Finally, WSB made quantitative assessments of the relative instability of each site and the risk of no action if stabilization activities were not completed.

REFERENCE: TIM SUNDBY | WATER RESOURCES TECHNICIAN | CARVER COUNTY, MN | 952.361.1816 | TSUNDBY@CO.CARVER.MN.US



Amy Anderson, Project Manager:

Conducted field survey with CCWMO staff, performed sediment loading estimates, designed proposed stabilization measures, and presented study findings to the clients.

Volume Reduction and Water Quality Improvements Master Plan

CLIENT: CITY OF BLAINE
LOCATION: BLAINE, MN
DURATION: MAY 2020 - AUG 2021

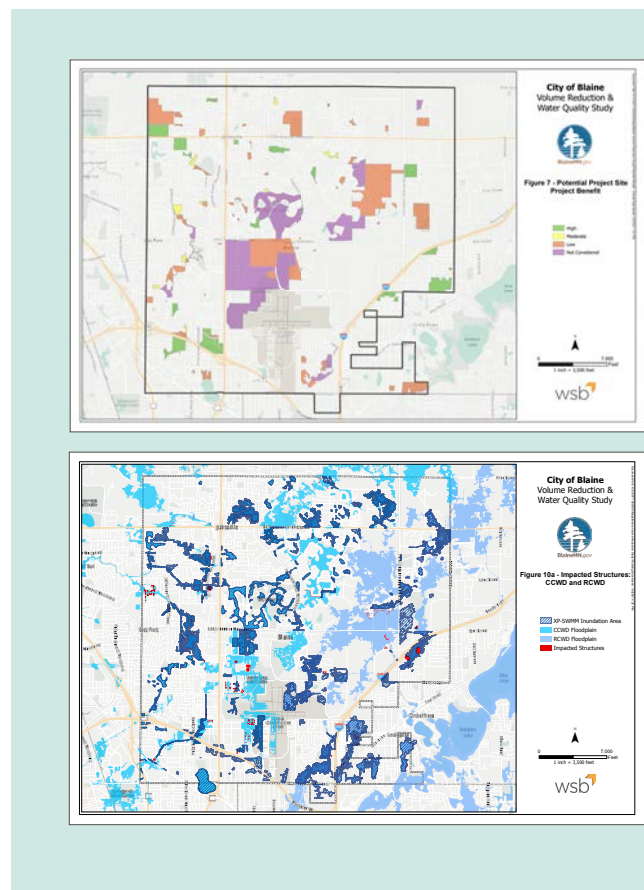


WSB assisted the City of Blaine in their goal to be proactive and efficient in their approach to volume reduction and water quality improvements. WSB identified future opportunities for stormwater management on city or publicly owned property to offset the impacts of future linear reconstruction projects, provide flood reduction, and work toward addressing TMDLs within the city.

Stormwater management locations were identified and prioritized based on their potential for volume reduction via infiltration, drainage area size, and the downstream receiving water. While volume reduction is a goal of the city, general water quality improvements are too. Those locations with low infiltration potential were considered for other water quality interventions. The city's Capital Improvement Plan (CIP) was overlaid with these locations to determine where opportunities existed to mitigate future improvements.

Sites with high potential for either volume reduction or water quality improvements were analyzed further to develop recommended options. The recommendations include the type of stormwater improvement and its associated treatment capacity, load reduction, anticipated cost, and potential funding sources. This master plan provides the city with a valuable resource and road map for holistic water quality improvements throughout the city.

REFERENCE: DAN SCHLUENDER | DIRECTOR OF ENGINEERING | CITY OF BLAINE, MN | 763.785.6158 | DSCHLUENDER@BLAINEMN.GOV



Laura Rescorla, Water Resources Engineer:
Used GIS data and previously completed subwatershed studies to identify future opportunities for BMPs (with a priority for volume reduction) on City or publicly owned parcels.

Subwatershed XP-SWMM Model and Volume Reduction Studies

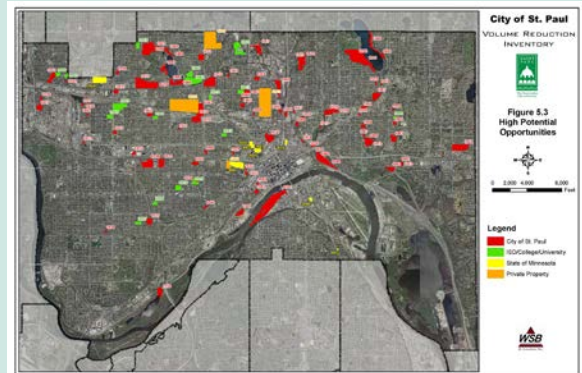
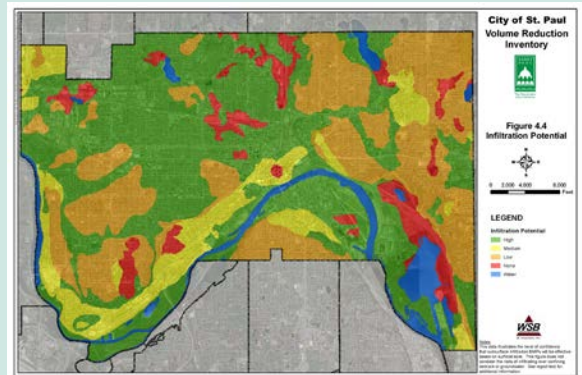
CLIENT: CITY OF ST. PAUL
LOCATION: ST. PAUL
DURATION: 2011 - PRESENT



To help City of St. Paul become a leader in stormwater management and meet local agency requirements, WSB developed stormwater volume reduction strategies to be used by City of St. Paul staff. We reviewed numerous parameters and hydrologic characteristics in GIS to identify the highest potential locations to construct regional best management practices to infiltrate and treat stormwater runoff. WSB also developed many additional options to incorporate stormwater treatment into the City's street reconstruction projects. WSB developed XPSWMM and P8 models of the existing storm sewer system throughout three major subwatersheds within the City to identify flooding issues and ideal locations for future stormwater treatment BMPs.

Although the volume reduction inventory was originally completed in 2011, it has continued to be an important resource for the City. Recently, including in 2022, WSB has updated the volume reduction inventory in several subwatershed to reflect additional site characteristics and permitting requirements that impact the suitability and need for volume reduction. This project provided City staff with valuable tools necessary to continue improving the quality of the City's water resources.

REFERENCE: PATRICK MURPHY | CIVIL ENGINEER,
SEWER UTILITY | ST. PAUL, MN | 651.266.6254 |
PATRICK.G.MURPHY@CI.STPAUL.MN.US



Laura Rescorla, Water Resources Engineer:

Updated volume reduction considerations for two subwatersheds in 2022. Provides ongoing support to the City as they consider planning for and implementing projects.

Mt. Olivet Streambank Restoration and Parkers Lake Drainage Improvement Project

CLIENT: CITY OF PLYMOUTH

WSB worked with the City of Plymouth and the Bassett Creek Watershed Management Commission (BCWMC) to address erosion along two intermittent streams in the City. The goals of the project at both sites, Mt. Olivet and Parkers Lake, were to slow the velocity of water through the channels and provide permanent stabilization of the streambanks to reduce the pollutant loads to the downstream impaired water bodies. To techniques employed to meet these goals included the installation of rock or rock log ditch checks to hold and slow down water within the channel, the installation of plunge pools, regrading and widening the channel, and native seeding along with live stakes. Hard armoring of the banks was used in the locations with the most evidence of or susceptibility to erosion.

WSB completed hydraulic modeling using a HEC-RAS 2D model to determine the areas along the streambanks with the highest velocities and therefore highest susceptibility to erosion. We also completed water quality modeling to quantify the reductions in downstream Total Phosphorus (TP) and Total Suspended Solids (TSS) loads as a result of the improvements. Annually, this project will reduce TP and TSS loads by 27 pounds and 27 tons respectively.

This project also provided an opportunity for the City and BCWMC to clear out debris and brush that had accumulated within the stream channels and along their banks. At the Mt. Olivet site, the project also included approximately 0.67 acres of wetland restoration. The area was regraded to provide varying types of wetland (Types 2, 3, 4) habitat, invasive vegetation was removed, and the area reseeded with native species.

REFERENCE: BEN SCHARENBOICH | WATER RESOURCES SUPERVISOR | PLYMOUTH, MN | 763.494.6354 | BSCHARENBOICH@PLYMOUTHMN.GOV



Jake Newhall, Project Manager:

Jake coordinated the project team and the relationship between WSB, BCWMC, and the City to deliver final plans that fit the desires and needs of all parties. He and Laura collaboratively designed the final stabilization measures and drainage improvements throughout the project area.

Laura Rescorla, Water Resources Engineer:

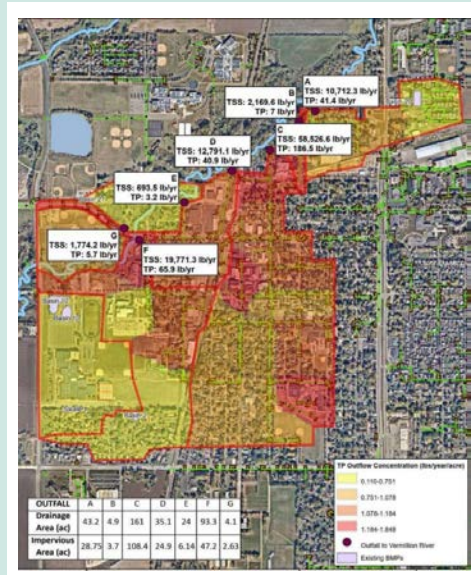
Laura combined information from a previously completed feasibility study with observations from site visits and 2D modeling results to design the proposed improvements. She performed sediment loading calculations to quantify the impacts of the proposed improvements.

Direct Drainage Prioritization and Stormwater Management Preliminary Design

CLIENT: CITY OF FARMINGTON
LOCATION: FARMINGTON, MN
DURATION: SEPT 2021 - MAR 2023

WSB completed a subwatershed assessment that analyzed the existing City of Farmington’s tributary drainage area to the Vermillion River and detailed Best Management Practice (BMP) recommendations to reduce phosphorus loading to the river. Various levels of treatment upstream of the river were analyzed, including no treatment, local BMPs, regional BMPs, and treatment trains. This modeling and analysis helped create an existing condition baseline from which to evaluate potential stormwater improvement options. Potential BMP options and specific locations were identified by the City, Watershed, and WSB as part of this study and were based on BMPs already in place, areas with large tributary areas to Vermillion River, and areas with green space available. Modeling was completed to determine the most feasible size for each BMP. A cost benefit and constructability matrix was created to help rank and prioritize the best stormwater improvements for consideration. WSB evaluated previous studies to identify characteristics of Vermillion River to investigate and manage further improvements.

REFERENCE: JOHN POWELL | PUBLIC WORKS DIRECTOR AND CITY ENGINEER | CITY OF FARMINGTON | 651.280.6841 | JPOWELL@FARMINGTONMN.GOV



Jake Newhall, Project Manager:

Jake led the project team to model pollutant load estimates, develop cost effective improvement options, and prioritize BMPs for City considerations.

Key Personnel



Jake Newhall, PE, PMP

PRINCIPAL | QC LEAD

Jake has more than 17 years of engineering experience and has managed and designed many types of water resources projects, including modeling, planning, design, maintenance programs, and construction. He has worked with numerous watershed municipalities, counties and state agencies. Jake's well-rounded water resources skills and experience allow him to collaborate and be innovative while solving challenging water quality and water quantity problems.

SERVICE GROUP:
Water Resources

REGISTRATION:
PE MN #49170

EDUCATION:
Bachelor of Civil
Engineering, University of
Minnesota, 2006

MEMBERSHIPS +
CERTIFICATIONS:
Certified PMP #1989038

Prior Lake Subwatershed Assessment | Prior Lake, MN

CLIENT: CITY OF PRIOR LAKE PROJECT DURATION: OCT 2021 - APRIL 2022

As project manager, Jake led the assessment within the Upper and Lower Prior Lake Subwatershed. BMP options to achieve total phosphorus removal and volume control were outlined and evaluated. The goal of the study was to find effective regional BMP solutions to obtain credits and help offset future permitting needs for situations with restrictive conditions. Both P8 modeling and the recently completed City-wide XPSWMM model were utilized in the study. A comparison matrix was developed to rank and prioritize BMPs for consideration. Recommendations for implementation were provided.

Mt. Olivet & Parkers Lake Stabilization Improvements | Plymouth, MN

CLIENT: CITY OF PLYMOUTH PROJECT DURATION: JAN 2021 - FEB 2022

Jake worked with the City of Plymouth and the Bassett Creek Watershed Management Commission (BCWMC) to address erosion along two intermittent streams in the City. The goals of the project at both sites, Mt. Olivet and Parkers Lake, were to slow the velocity of water through the channels and provide permanent stabilization of the streambanks to reduce the pollutant loads to the downstream impaired water bodies. Techniques included the installation of rock or rock log ditch checks and plunge pools, regrading and widening the channel, native seeding, and live stakes. Hard armoring of the banks was completed in locations with the most evidence of or susceptibility to erosion. Hydraulic modeling using a HEC-RAS 2D model determined the areas with the highest velocities and therefore highest susceptibility to erosion.

Everest Lane Streambank Improvements | Maple Grove, MN

CLIENT: CITY OF MAPLE GROVE PROJECT DURATION: JUN 2020 - OCT 2022

Jake was the project manager responsible for design and construction services of the Everest Lane Streambank Stabilization Project located directly upstream of Elm Creek. Approximately 800 linear feet of streambank was significantly eroded and full of dead brush. Improvements included removal of debris and sediment, hard and soft armoring, ditch checks, and plunge pool installations. 2D modeling techniques determined the appropriate location for hard armoring of the side slopes and ditch checks based on anticipated velocities and shear stresses within the channel. The project also included sediment cleanout and streambank stabilization at the discharge point to Elm Creek.



Amy Anderson, PE



PROJECT MANAGER | EROSION ANALYSIS LEAD ENGINEER

Amy has over 13 years of professional experience in water resources engineering, specializing in stream restoration and watershed management. Amy’s experience in water resources spans the project cycle, from surveying and design through construction observation and post-project monitoring. Amy works closely with all stakeholders in watershed projects and sees these types of projects as a way to improve connection between people and the natural environment.

SERVICE GROUP:

Water Resources

REGISTRATION:

Professional Engineer

MN #50820

EDUCATION:

Masters, Aquatic Science,
University of Michigan,
2010

Masters, Civil Engineering,
University of Michigan,
2010

Bachelors, Civil
Engineering, Marquette
University, 2008

TRAINING

Wildland Hydrology,
Applied Fluvial
Geomorphology

Wildland Hydrology,
River Morphology and
Applications

DNR River Science -
Applied Geomorphology
and Ecology; River
Restoration Design and
Application; Restoration
in Fragmented River
Ecosystems

Mississippi Gateway Regional Park Assessment | Brooklyn Park, MN

CLIENT: THREE RIVERS PARKS DISTRICT

PROJECT DURATION: MAY 2021 - NOV 2021

Amy was the project engineer on a feasibility study which assessed shoreline erosion within Mississippi Gateway Regional Park. Amy designed restoration practices for five separate erosion areas within the park which focused on reducing sediment loads to the Mississippi River using natural methods while protecting existing park infrastructure.

Watertown Streambank Feasibility Study | Watertown, MN

CLIENT: CARVER COUNTY WMO

PROJECT DURATION: MAY 2021 - OCT 2021

Amy led the WSB team that worked with CCWMO and Carver SWCD staff to assess erosion issues on the South Fork of the Crow River through Watertown, MN. Amy’s responsibilities on this project included being part of the survey team, writing the feasibility study, producing draft designs and cost estimates, and project management.

Interstate Valley Creek Stabilization and Volume Reduction Study | Mendota Heights, MN

CLIENT: LOWER MISSISSIPPI RIVER WMO

PROJECT DURATION: APR 2022 - FEB 2023

Amy lead the survey team which assessed the full length of Interstate Valley Creek as well as two tributaries to document existing erosion issues. Amy was also the lead designer on concept designs for stabilization and supervised the construction of a HEC-RAS 2D model to assist in mapping areas of high velocity that should be targeted for future stabilization efforts.

Surface Water Management Plan Update | West St. Paul, MN

CLIENT: CITY OF WEST ST. PAUL

PROJECT DURATION: JAN 2018 - MAR 2020

Amy was the primary author of the Surface Water Management Plan for the City of West St. Paul. Amy’s responsibilities included writing and editing text, preparing and updating tables and figures, presenting on the draft plan to the West St. Paul City Council, tracking comments received from all stakeholders, and submitting the plan for review and approval to the MetCouncil and neighboring communities and watershed districts.



Laura Rescorla, PE



WATERSHED ANALYSIS | STORMWATER BMP LEAD ENGINEER

Laura is a Project Engineer in WSB's Water Resources Group. She has over seven years of engineering experience collaborating across technical groups to deliver quality products to clients in a variety of water resource project areas. Her experience includes planning, hydraulic and hydrologic modeling, design, permitting, and construction management. Laura's engineering computer skills include XPSWMM, HyrdoCAD, HY-8, ArcGIS, MircoStation, and P-8.

SERVICE GROUP:

Water Resources

REGISTRATION:

Professional Engineer

MN #58716

EDUCATION:

Bachelor of Science
in Engineering, Civil/
Environmental
Concentration, Calvin
College 2010

Volume Reduction and Water Quality Study | Blaine, MN

CLIENT: CITY OF BLAINE

PROJECT DURATION: MAY 2020 - AUGUST 2021

This project entailed developing a City-wide approach for volume reduction and water quality improvements. Laura identified future opportunities for stormwater management on City or publicly owned property to offset the impacts of future linear reconstruction projects, provide flood reduction, and work toward addressing TMDLs within the City. Sites with high potential for either volume reduction or water quality improvements were analyzed further to develop recommended options. The recommendations include the type of stormwater improvement and its associated treatment capacity, load reduction, anticipated cost, and potential funding sources.

Mt Olivet Streambank Restoration and Parkers Lake Drainage Improvement Project | Plymouth, MN

CLIENT: CITY OF PLYMOUTH & BASSETT CREEK WATERSHED MANAGEMENT COMMISSION

PROJECT DURATION: JAN 2021 - FEB 2022

This project, a collaboration between the City and Bassett Creek Watershed Management Commission, addressed erosion along two intermittent streams in the City. Laura conducted site visits and identified stabilization techniques to permanently stabilize the banks. Bioengineering was prioritized over hard armoring, where possible, including reusing trees from the site for bank stabilization and log ditch checks. Construction plans, specifications, and cost estimates were produced as final deliverables; WSB also provided construction support to the City.

Interstate Valley Creek Stabilization and Volume Reduction Study | Mendota Heights, MN

CLIENT: LOWER MISSISSIPPI RIVER WATERSHED MANAGEMENT ORGANIZATION (LMRWMO)

PROJECT DURATION: APR 2022 - FEB 2023

Laura led the study of the Interstate Valley Creek (IVC) subwatershed to identify potential locations for BMPs to reduce stormwater peak discharge rates, volumes, and pollutant loadings. GIS data, HydroCAD models, and P8 models were used to identify sites with the highest potential impacts. Laura conducted site visits to field verify the desktop analysis and further determine the opportunities and challenges of each site. In collaboration with the LMRWMO and City of Mendota Heights, a prioritization matrix was developed. The study included feasibility level designs, cost estimates, and discharge rate, volume, and pollutant reductions for the 6 highest priority BMPs, giving the LMRWMO an actionable plan from which to secure funding and move into final design.



Emma Rae Roberts, EIT

WATER RESOURCES GRADUATE ENGINEER

Emma Rae is a graduate engineer in WSB's Water Resources group. She has experience in the engineering consulting field as well as working in multiple municipalities. She has experience with storm sewer design, street rehabilitation projects, stormwater pond improvements, water reuse projects, and erosion and sediment control inspections. Her skills include ArcGIS, HydroCAD, and all Microsoft Office programs.



Sarah Loberg

WATER RESOURCES GRADUATE ENGINEER

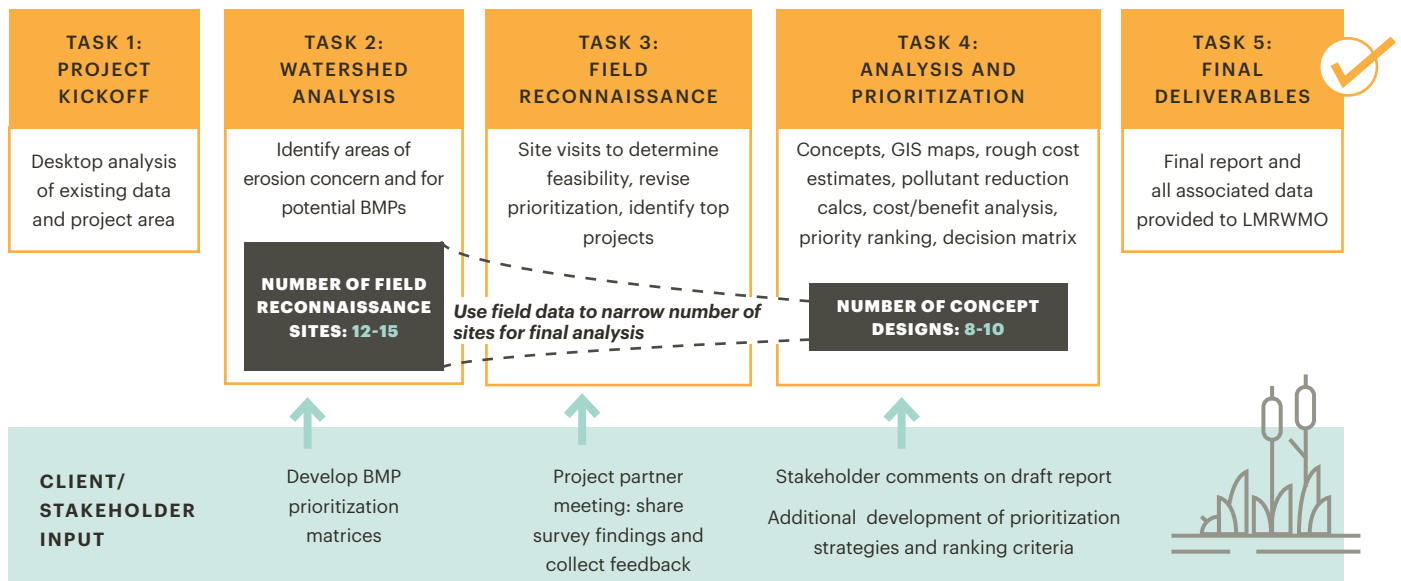
Sarah has three years of experience in the engineering consulting field. As a graduate engineer in WSB's Water Resources group, Sarah has experience in the creation of project plan sets, hydrologic and hydraulic modeling, water quality modeling, and permitting. She has used AutoCAD Civil 3D to design storm sewer, stormwater BMPs, and restoration projects ranging from feasibility to plan production to construction observation. Sarah has used HydroCAD, MIDS, and P8 to evaluate project impacts and meet permit and project requirements for project design. Sarah is skilled in a variety of software including AutoCAD Civil 3D, HydroCAD, GIS, P8, MIDS, and all Microsoft Office programs to help meet clients' needs.



Work Plan and Budget for Scope of Services



The direct drainage areas tributary to the Mississippi River are a high priority area for the LMRWMO due to erosion in ravines near the river, the high volume of urban stormwater, and opportunities to improve water quality in this reach of river impaired for excess nutrients and TSS. The identification of a combination of erosion stabilization techniques and stormwater BMPs in the tributary watershed will allow the LMRWMO to identify long-term, cost-effective solutions to improve water quality and reduce floatable trash, phosphorus, and sediment in the Mississippi River.



TASK 1

Project Kickoff

After the project is awarded and contracts are signed, WSB will facilitate a project kickoff meeting with LMRWMO and staff of the Cities within the study area. We will review existing data, including:

- GIS data from the Cities of St. Paul, West St. Paul, South St. Paul, Mendota, Lilydale, Mendota Heights, and Inver Grove Heights
- Existing subwatershed, citywide or watershed-wide stormwater models for the Cities of St. Paul, West St. Paul, South St. Paul, Mendota, Lilydale, Mendota Heights, and Inver Grove Heights



TASK 2

Watershed Analysis

The GIS watershed analysis of the direct drainage area to the Mississippi River will identify areas of erosion concern and opportunities for stormwater management, particularly for areas identified to have little to no existing treatment or high susceptibility to pollutant loading (including floatable trash, sediment, and phosphorus). WSB will analyze topography (using LiDAR data), soil characteristics (using SSURGO data), land use and parcel ownership, tree cover, presence of existing wetlands (using NWI database), presence of city/county parks, and existing utilities (particularly storm sewer systems). Stormwater modeling outputs, including drainage area size and flow, from the provided models, will also be incorporated.

In this analysis, WSB will identify the following:

- Ravines (areas with side slopes 2:1 or greater)
- Erosion, sloughing, or soil loss which is visible in aerial photos
- Areas with more than 5 acres of untreated surface runoff
- Public parcels with opportunity for stormwater management. Those with the highest potential would contain existing stormwater infrastructure, soil types suitable for infiltration, open space that could be converted to a BMP, and surface slopes possible for BMP construction.
- Private parcels with opportunity for stormwater management. Private parcels with the highest potential would be over 0.5 acres in size and contain soil types suitable for infiltration, open space that could be converted to a BMP, and surface slopes possible for BMP construction.

With this information, WSB will prioritize 12 to 15 potential sites for erosion stabilization and stormwater management BMP implementation for field survey and assessment. These sites will be reviewed with the LMRWMO and City staff for input. At this point, WSB will also solicit feedback from the project partners regarding their priorities, to inform future ranking and prioritization of recommended improvements.

TASK 3

Field Reconnaissance

After the watershed analysis, WSB will conduct site visits to 12-15 sites prioritized for erosion stabilization and stormwater management opportunities. The site visits will be used to validate the previously gathered information on existing site conditions, as well as collect site-specific information on above-ground utility conflicts, grades, access, and other site impacts. For potential stabilization sites, WSB will estimate the volume of soil loss and the annual TSS and phosphorus loading rate to the ravines and surface waters using the BWSR Water Erosion Pollution Reduction Estimator. Challenges and opportunities of each site will be documented, including impacts to wetlands, parks, trees, existing infrastructure, and private property. Permitting implications will be noted as well.

High-quality geotagged photos of the sites will be taken for the report and future use by the LMRWMO.



TASK 4

Analysis and Prioritization

WSB will continue to use all data from Tasks 1-3, as well as LMRWMO and stakeholder feedback, to identify the most impactful potential improvements investigated during Task 3. WSB will also work with LMRWMO and stakeholders to articulate a prioritization and ranking scheme so that the projects selected for concept design align with the priorities and values of project partners.

Characteristics for stabilization and BMP prioritization include (but are not limited to):

- Drainage area size
- Pollutant reduction potential (measured based on estimated removal in pounds or tons as well as percentage of the city's assigned TMDL)
- Volume reduction potential
- Estimated construction cost
- Property/existing infrastructure impacts
- Impacts on parks and wetlands
- Public vs. private land ownership



Upon identifying the most impactful potential projects, WSB will meet with the LMRWMO and stakeholder Cities to discuss the potential projects, further identify stakeholder priorities, and receive feedback before moving into feasibility-level design.

Feasibility-level designs, including example visuals of the proposed improvements, will be completed for the top 8-10 potential projects. Preliminary opinions of cost and pollutant reduction calculations will be included with these designs. A decision matrix with priority rankings and cost-benefit analysis will also be provided.

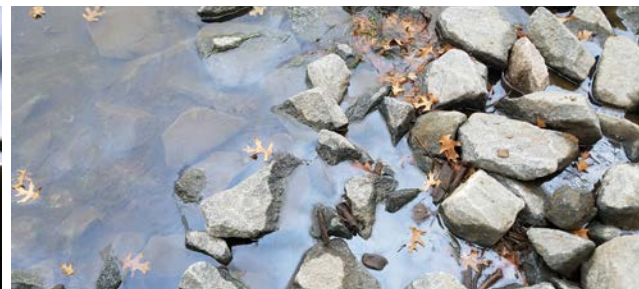
A draft report will be provided to LMRWMO and City staff which contains the feasibility level designs, as well as the overall project scope and narrative, for feedback and comments before finalization.

TASK 5

Final Deliverables

At the conclusion of the project, LMRWMO will receive a high-quality digital report that positions them to address erosion and provide stormwater management and pollutant reduction in the drainage area directly tributary to the Mississippi River. The report will include site maps and photos, along with graphics detailing the proposed improvements for each feasibility-level design. These deliverables will communicate the opportunities and challenges of each potential project in a way that makes it easy for all stakeholders, including the LMRWMO, landowners, and potential future funding partners, to envision them. The report will also include proposed impact tables, documenting the pollutant reductions and cost for the recommended improvements. The final deliverables will be developed with grant funding in mind to help position these projects for possible grant applications in 2025 and beyond.

In addition to the report, all drawings, models, GIS data, photos, and tables will be delivered to the LMRWMO at the conclusion of the project, on or before December 13, 2024.



Project Cost



TASK DESCRIPTION	JAKE QA/QC	AMY PROJ. MGR.	LAURA PROJ. ENG.	EMMA RAE GRAD. ENG.	SARAH GRAD. ENG.	MONICA ADMIN	TOTAL
1 PROJECT KICKOFF							
Kickoff meeting with stakeholders	2.0	2.0	2.0	0.0	2.0	0.0	\$1,472
Review of existing data	1.0	2.0	2.0	8.0	2.0	0.0	\$2,203
Desktop analysis of project area	1.0	4.0	2.0	8.0	2.0	0.0	\$2,563
TOTAL HOURS:	4.0	8.0	6.0	16.0	6.0	0.0	
PRODUCT 1 SUBTOTAL SERVICES							\$6,238
2 WATERSHED ANALYSIS							
Identify erosion hotspots	1.0	4.0	2.0	14.0	0.0	0.0	\$3,011
Identify stormwater management opportunities	1.0	2.0	4.0	16.0	8.0	0.0	\$4,365
Develop prioritization matrices for BMPs with stakeholders	1.0	4.0	4.0	8.0	2.0	0.0	\$2,923
Preliminary location of large scale stormwater management BMPs - public properties	1.0	2.0	6.0	16.0	8.0	0.0	\$4,725
Preliminary location of large scale stormwater management BMPs - private properties	1.0	2.0	6.0	12.0	6.0	0.0	\$3,963
TOTAL HOURS:	5.0	14.0	22.0	66.0	24.0	0.0	
PRODUCT 2 SUBTOTAL SERVICES							\$18,987
3 FIELD RECONNAISSANCE							
Field surveys and assessments to validate analysis and desktop findings	0.0	24.0	0.0	32.0	10.0	0.0	\$9,582
Revise prioritization and feasibility based on field surveys	2.0	6.0	0.0	12.0	10.0	0.0	\$4,396
Project partner meeting to discuss survey findings & receive feedback	2.0	4.0	0.0	4.0	4.0	0.0	\$2,234
TOTAL HOURS:	4.0	34.0	0.0	48.0	24.0	0.0	
PRODUCT 3 SUBTOTAL SERVICES							\$16,212
4 ANALYSIS AND PRIORITIZATION							
Additional development of prioritization strategies and ranking criteria	1.0	4.0	4.0	4.0	0.0	0.0	\$2,161
Concept/feasibility level designs and visual details for erosion areas and stormwater BMPs	2.0	10.0	10.0	8.0	24.0	0.0	\$8,378
OPCs for concept/feasibility level designs	2.0	4.0	4.0	4.0	4.0	0.0	\$2,954
Pollutant reduction calcs for concept/feasibility level designs	1.0	8.0	8.0	4.0	4.0	0.0	\$4,157
Cost/benefit analysis for concept/feasibility level designs	1.0	2.0	4.0	4.0	4.0	0.0	\$2,357
Priority ranking for concept/feasibility level designs	3.0	4.0	4.0	4.0	4.0	0.0	\$3,191
Provide draft of final report for stakeholder review & comment	2.0	16.0	12.0	8.0	12.0	8.0	\$9,014
TOTAL HOURS:	12.0	48.0	46.0	36.0	52.0	8.0	
PRODUCT 4 SUBTOTAL SERVICES							\$32,212
5 FINAL DELIVERABLES							
Finalize and submit final report	2.0	4.0	4.0	8.0	4.0	8.0	\$4,302
Compile & submit all associated project data to LMRWMO	0.0	2.0	1.0	3.0	0.0	0.0	\$903
TOTAL HOURS:	2.0	6.0	5.0	11.0	4.0	8.0	
PRODUCT 5 SUBTOTAL SERVICES							\$5,205
TOTAL PROJECT HOURS:	27.0	110.0	79.0	177.0	110.0	16.0	
HOURLY BILLABLE RATE	\$237	\$180	\$180	\$121	\$139	\$108	
TOTAL FEE BY JOB CLASSIFICATION	\$6,399	\$19,800	\$14,220	\$21,417	\$15,290	\$1,728	
TOTAL SERVICES							\$78,854

Project Schedule



TASK	2024											
	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Contractor Selection	■											
Contract Processing	■											
Project Kickoff Meeting		■										
All existing data delivered to WSB by March 29, 2024		■										
Watershed Analysis			■	■	■							
Identify erosion hotspots and stormwater management opportunities			■	■	■							
Develop prioritization matrices for BMPs with stakeholders				■	■							
Preliminary location of large scale stormwater management BMPs - public and private properties				■	■							
Field Reconnaissance/ Survey				■	■	■						
Meeting to Discuss Survey Findings					■	■						
Meeting to Establish Ranking Criteria						■	■					
Analysis and Prioritization					■	■	■	■	■			
Concept/feasibility level designs and visual details for erosion areas and stormwater BMPs					■	■	■					
OPCs for concept/feasibility level designs							■	■				
Pollutant reduction calculations for concept/feasibility level designs							■	■				
Cost/benefit analysis for concept/feasibility level designs								■	■			
Priority ranking for concept/feasibility level designs								■	■			
WSB to provide draft report for comment by September 30, 2024									■			
Comment Review Period									■	■		
Comments due to WSB by October 22, 2024										■		
Report Revisions										■	■	
Final Submittal by December 13, 2024												■

Conflict of Interest

WSB is not aware of any conflicts of interest.

Forge ahead.



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