

# Minnesota Stormwater Research Council

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September 2020

## ***2020 Applied stormwater research project funding request***

The Minnesota Stormwater Research Council (Council) in partnership with the University of Minnesota Water Resources Center (WRC) is soliciting a request for funds to complete collaborative applied research to address priority stormwater management needs for Minnesota.

Over the past three years, more than \$325K was contributed and pooled together from watershed organizations, cities, organizations and private businesses. These were then leveraged with Clean Water Legacy funds to support twenty research projects and support the use of that information by professionals, practitioners, and policy makers. This collective and collaborative work helps prevent, minimize and mitigate the impacts of urban stormwater runoff.

The portfolio of this work being conducted by the Council and the Water Resources Center continues to grow. We encourage you to review the 2019-2020 Program Highlights - a short, full-color easy read summary of the program's success and efforts available online [HERE](#).

A few examples of the work being funded include:

- Determining which iron minerals in iron-enhanced sand filters remove phosphorus from stormwater runoff (*completed in 2019*)
- Capture of Gross Solids and Sediment by Pretreatment Practices for Bioretention (*completed in 2020*)
- Equipping Municipalities with Climate Change Data to Inform Stormwater Management (*started in 2020*)
- Pollutant Removal and Maintenance Assessment of Underground Filtration Systems (*started in 2020*)

These are just some of the twenty projects seeking to find new information to make urban stormwater management and practices more effective and more efficient. Find out more about all these projects online at [www.wrc.umn.edu/projects/stormwater](http://www.wrc.umn.edu/projects/stormwater).

**Why contribute:** These investments in research will lead to more innovative management techniques and increased effectiveness and efficiency in stormwater management, fulfilling critical needs for professionals and policy makers in cities, watersheds, agencies and organizations across Minnesota. Your organization's financial contribution to the Council directly supports research important to you. Pooling resources provides a mechanism for completing work together.

**The annual goal is to acquire \$150K or more in pooled funds. Your indication for contributing support is appreciated before October 31, 2020, but is welcome at any time. Use the online form ([HERE](#)) to indicate your organization's financial support.**

The operation of the Council allows these pooled funds to be used to support future projects and also support the following recently selected 2020 projects:

- Understanding Solids Loading in Minnesota Stormwater
- Biofiltration Media Optimization – Phase II: Multi-Year Performance, Impacts of Road Salt, and Optimized Organic Ratio
- Leveraging Minnesota’s stormwater data for improved modeling and management of water quality in cities
- Evaluation of Microbial and Chemical Contaminant Removals in Different Stormwater Reuse Systems
- Equipping municipalities with climate change data to inform stormwater management
- Field evaluation of stormwater best management practices to characterize the comprehensive contaminant removal performance of biochar-augmented filter media
- [Pollutant Removal and Maintenance Assessment of Underground Filtration Systems](#)
- Monitoring Methods for Prioritization and Assessment of Stormwater Practices

### **Management and use of funds**

- ✓ The use of pooled applied research funds will be managed by the Advisory Board of the Council in partnership with the WRC.
- ✓ Submissions and projects will be reviewed, ranked, and awarded as determined by the Advisory Board of the Council and by the WRC.
- ✓ All researchers, professionals, and experts from Minnesota will be invited to submit proposals. Organizations contributing funds and their staff are eligible to apply. The Council and Center has a process to manage conflicts of interest in its review, ranking, and awarding of projects.
- ✓ Acknowledgement of funding partners is required by the researchers for each project and on WRC and Council reports, website and other publications.
- ✓ Contributing organizations and businesses are invoiced for their amount of support; no contracting is executed between the organization and the Council and the WRC.
- ✓ Once chosen, funded researchers enter into a contract with the WRC with requirements for reporting, recognition of the funding sources, methods, data collection and sharing, quality assurance, and other standard University contracting requirements.

### **About the Minnesota Stormwater Research Council**

Learn more about how cities, watersheds, consultants, state agencies, and research institutions are coming together to guide stormwater research in the [Minnesota Stormwater Research Council Framework](#) (also available at [wrc.umn.edu/msrc](http://wrc.umn.edu/msrc)).

***Please contact one of the following representatives to provide input or for more information:***

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Bob Fossum, [bob@capitolregionwd.org](mailto:bob@capitolregionwd.org) or 651-644-8888  
Rena Weis, [rweis@wenck.com](mailto:rweis@wenck.com) and 763-252-6889.  
John Bilotta, [jbilotta@umn.edu](mailto:jbilotta@umn.edu) or 612-624-7708

*This letter is distributed on behalf of the Minnesota Stormwater Research Council Advisory Board.*

# Minnesota Stormwater Research Council and Minnesota Stormwater Research Program

2019 - 2020

HIGHLIGHTS



Advancing science, technology and management of stormwater in Minnesota by investing in and facilitating research to prevent, minimize, and mitigate the impacts of runoff from the built environment.

MINNESOTA STORMWATER RESEARCH COUNCIL (MSRC) - The Council supports the research program by facilitating relevant, applied stormwater research and supports education and transfer technology. The Council is composed of professionals, practitioners, managers, engineers, and researchers who advise and provide direction for urban stormwater research in Minnesota. The Council's Advisory Board assists with the Water Resources Center and all stakeholders by setting research priorities, acquiring funds to support research and choosing projects.

[wrc.umn.edu/stormwater](http://wrc.umn.edu/stormwater)

## Stormwater Research Program (SWRP)

This program advances research that informs urban stormwater management to prevent, minimize, and mitigate the effects of runoff from the built environment. Through Extension education and technology transfer, the SWRP also disseminates information to professionals, policy leaders, managers in industry, and at all levels of government.

### COMPLETED PROJECTS 2019 - 2020

Establishing a Geodata Standard for Stormwater Infrastructure

Effectiveness of Sump Manholes for Pretreatment Particulate Removal

Capture of Gross Solids and Sediment by Pretreatment Practices for Bioretention

Temporal Dynamics of Pathogens and Antibiotic Resistance in Raw and Treated Stormwater

Determining Which Iron Materials in Iron-Enhanced Sand Filters Remove Phosphorus from Stormwater Runoff

### PROJECTS UNDERWAY

**to be completed in 2020**

- Detecting Phosphorus Release from Stormwater Ponds to Guide Management and Design
  - Developing a Street Sweeping Credit for Stormwater Phosphorus Source Reduction
- Identifying Sources of Contaminants in Urban Stormwater and Evaluation of Their Removal Efficacy Across a Continuum of Urban Best Management Practices
  - Inspiring Community Action for Stormwater Management
  - Biofiltration Media Optimization
- Detecting Phosphorus Release from Stormwater Ponds to Guide Management and Design
  - Pond Treatment with Spent Lime to Control Phosphorous Release from Sediments



## NEW PROJECT INVESTMENTS 2020 - 2022

- Understanding Solids Loading in Minnesota Stormwater
- Biofiltration Media Optimization - Phase II: Multi-Year Performance, Impacts of Road Salt, and Optimized Organic Ratio
- Leveraging Minnesota's Stormwater Data for Improved Modeling and Management of Water Quality in Cities
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    - Equipping Municipalities with Climate Change Data to Inform Stormwater Management
    - Field Evaluation of Stormwater Best Management Practices to Characterize the Comprehensive Contaminant Removal Performance of Biochar-Augmented Filter Media
  - Pollutant Removal and Maintenance Assessment of Underground Filtration Systems
    - Monitoring Methods for Prioritization and Assessment of Stormwater Practices



State contribution of

# \$1.5M



2019 pooled funds from

- Capitol Region Watershed District
- Mississippi Water Management Organization
- Ramsey Washington Metro Watershed District
  - South Washington Watershed District
    - Valley Branch Watershed District
    - City of Edina
    - City of Woodbury
    - City of Minnetonka
    - City of Bloomington
- Comfort Lake-Forest Lake Watershed District
  - Nine Mile Creek Watershed District
  - BARR Engineering
  - Wenck Associates
  - Minnesota Cities Stormwater Coalition

Total contribution

# \$115K

# Forward in 2020

- Request \$1.5M of continued funding from the Minnesota Clean Water Fund
- Solicit program support funds from watersheds, cities, and businesses
- Appoint new Minnesota Stormwater Research Council Advisory Board Members for 2021-2023
- Hire a new stormwater Extension Educator to advance efforts in technology transfer



## The future of stormwater pond research

- There are more than 30,000 stormwater ponds across Minnesota
- The proliferation of this practice requires investigating how they can be designed to be more effective, discovering maintenance needs, and optimize methods for management.
- The Council and Center has established a dedicated pool of resources to address research on ponds

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than 1,500 participants

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For more information about the program,  
Council and stormwater projects, please visit:  
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# Minnesota Stormwater Research Council

Framework | April 2018

## Executive Summary: About the Minnesota Stormwater Research Council (MSRC)

The Minnesota Stormwater Research Council is an organization established in 2016 to

- Facilitate the completion of needed applied research that enables more informed decisions about the use, management and protection of our water resources in urbanized areas.
- Periodically assess the status of research, identify consensus research priorities, and communicate these to Minnesota's public and private research agencies and organizations.
- Promote coordination of research goals, objectives and funding among the research agencies and organizations.
- Facilitate technology transfer of stormwater research to practitioners, agencies, organizations and others. For the Council, technology transfer includes support for and facilitation of education, outreach and training and translation of research results into related manuals and policies.

## Statement of Need

*Minnesota is the land of nearly 12,000 lakes and 63,000 miles of rivers and streams.* Minnesota has more freshwater than any of the country's other contiguous 48 states. Water is part of Minnesota's identity and a defining force in our state's history, heritage, environment, and quality of life. At the headwaters of three of the largest river basins in North America, Minnesota receives 99% of its water from rain and snow—consequently, most of our water quality problems originate right here in our own state. While this means we are not forced to clean up water problems originating elsewhere, it also means we have a responsibility to take care of our waters for our sake and for all those downstream. (Minnesota Water Sustainability Framework, 2011).

The management of these resources is closely regulated by the Minnesota Pollution Control Agency and the U.S. Environmental Protection Agency. Current water quality standards demand a response by local governments to meet these standards through TMDL implementation plans, MS4 permits and individual permits and local water management plans. How to best respond to meet clean water goals in urbanized areas requires information on alternative Best Management Practices (BMPs), their potential clean water benefit, cost and maintenance requirements.

Major identified problems include:

- Local governments and watershed organizations spend significant funds on planning, design, and construction of stormwater BMPs to meet water quality standards and implement MS4 and TMDL requirements. Current implementation is resulting in significant expense without clear service expectations. Private construction is being required to comply with stringent permit requirements that may be inefficient and costly with unknown outcomes.
- Stormwater research funding is limited and not coordinated.
- There is a current lack of efficient information/technology transfer.
- Maintenance of BMPs is required and is often not provided efficiently by existing Public Works operations. New skills, personnel, equipment, and training are needed along with proven practices and procedures.
- Current Federal and State rules require maintenance of stormwater ponds to maintain BMP performance. However, disposal of the dredge material is cost prohibitive. The impact of nutrients, contaminants, and thermal pollution from ponds requires more study.
- Local governments, watershed districts, universities, and other US research organizations are completing research. However, these research reports, findings, and recommendations are not communicated efficiently to local implementing agencies that need the information.

## **Purpose of the Minnesota Stormwater Research Council:**

The MSRC will facilitate relevant, applied stormwater research and support education and technology transfer to connect water managers, practitioners, and other professionals to actionable research that is responsive to their needs, to benefit Minnesota and its public waters through the following efforts:

- Coordinate and build partnerships at local, regional, state, and federal levels to leverage stormwater research resources (personnel and funding).
- Provide a clear process for identifying research needs, prioritizing, soliciting, submitting, approving and implementing stormwater-related research proposals.
- Find solutions that improve the design, constructability, maintainability, cost effectiveness, hydraulic performance, and treatment efficiency of stormwater facilities, as well as stormwater management operations and maintenance practices.
- Improve the compilation, tracking, and dissemination of stormwater research findings.
- Facilitate a collaborative approach that ensures the involvement of stakeholders in identification, prioritization, and implementation of stormwater research.
- Provide a sustainable source of funding and a process that insures independent, unbiased, and objective research.

## **Council Structure, Governance, and Process**

The MSRC is an organization of stormwater professionals, practitioners, managers, engineers, researchers and others. Coordination of MSRC activities, including administration and fiscal management, is provided by University of Minnesota Extension and the Water Resources Center (WRC).

### Council Membership

Participation and membership is free and open to anyone showing an interest in stormwater research and the technology transfer of stormwater related information and research results. Members may include but are not limited to stormwater practitioners, managers, consultants, builders, engineers and organizations including cities, watersheds, counties, state agencies, research institutions, NGOs, and vendors. Individuals can join by submitting their name, role, organization, and contact information to [msrc@umn.edu](mailto:msrc@umn.edu)

### Governance

The MSRC Board is the decision-making body choosing research priorities, funding options, and guiding other Council activities. The Board will consist of a diverse set of twenty individuals from the following:

- Cities
- Watershed districts or organizations
- Consultants
- Research institutions
- State agencies
- NGOs
- Counties/SWCDs
- Builders
- Vendors
- Others at-large or tbd

### Board 2016--18

*Eventually the list of Board members will be removed from the framework document and kept separate so that we do not have to update it annually.*

1. Cliff Aichinger (*watershed rep*)
2. Bob Fossum (*watershed rep*)
3. John Loomis (*watershed rep*)
4. Mike Isensee (*watershed rep*)

- |   |   |
|---|---|
| 5. Udai Singh ( <i>watershed rep</i> )                    | 13. David Fairbairn ( <i>agency rep</i> )         |
| 6. Erik Anderson ( <i>SWCD rep</i> )                      | 14. Joe Mulcahy ( <i>agency rep</i> )             |
| 7. Ross Bintner ( <i>city rep</i> )                       | 15. Brad Wozney ( <i>agency rep</i> )             |
| 8. Steve Gurney ( <i>city rep</i> )                       | 16. Greg Wilson ( <i>private consultant rep</i> ) |
| 9. Sharon Doucette ( <i>city rep</i> )                    | 17. TBD ( <i>city rep</i> )_____                  |
| 10. Dr. Valerie Brady ( <i>research institution rep</i> ) | 18. TBD ( <i>city rep</i> )                       |
| 11. Jeff Peterson ( <i>research institution rep</i> )     | 19. TBD_____                                      |
| 12. Richard Strong ( <i>research institution rep</i> )    | 20. TBD_____                                      |

Coordination, fiscal and administrative functions are performed by University of Minnesota Extension and the Water Resources Center.

### Financial Structure

- An annual request for funding to a broad range of public agencies and organizations and private entities will be issued.
- Entities can support the MSRC by contributing through a process established by the WRC. The Board will oversee allocation of the funds annually.
- Funds acquired will be used to support applied research submitted through a request for proposal process established by the Board and administered by the WRC.
- A portion of the core funding (10%-15%) will be used to fund the coordination, administrative and financial roles of the WRC and Extension. A level of in-kind service will be provided by the WRC and University of Minnesota Extension.
- Additional financial support and grants will be pursued to fund priority research projects.

### Responsibilities of the Board

- Identify stormwater research needs and contribute to and review the Stormwater Research Roadmap (SWRR) project led by the WRC in 2016-18.
- Identify and prioritize research needs including the following subtasks:
  - Soliciting input from a broad-base of stakeholders
  - Identify ranking criteria
  - Confirm priorities established
  - Prepare biennial reports of needs
  - Disseminate report of needs
- Develop, request, and solicit funding from MSRC members and organizations to support priority research needs including:
  - Increases to dedicated stormwater research funding
  - Funding for technology transfer
  - Identify leveraging opportunities
- Develop annual budget
- Develop and implement a MSRC RFP process for awarding research funds to needs including:
  - Review, submittal, ranking, and selection process
  - Contribute ideas to strengthen research proposals
- Develop a QA/QC process for both
  - The data collected during research projects
  - For centralized reporting of results
- Establish a not-for-profit organization (or other organizational structure as determined by the Board). Fulfill annual obligations as required.

- Serve in an advisory role for the WRC and Extension stormwater related efforts in research, education and technology transfer including but not limited to providing input, review, and ranking of proposals.

### **WRC and Extension Leadership and Administrative Roles and Responsibilities**

- Coordinate the MSRC Board
- Serve as the liaison between the Board and Members, the University, and other stakeholders
- Identify additional funding opportunities and support grant writing
- Lead and coordinate the (annual/biennial) plan to identify stormwater research needs
- Develop processes and documents in coordination with the Board
- Manage the RFP process
- Financial management to facilitate
  - Applying for grants (as directed by Board)
  - Managing incoming sources of funds for stormwater research
  - Overseeing financial reporting of awarded projects
  - Developing an annual budget for the program housed within the WRC.
- Log stormwater research projects into Department of Ag research database (or equivalent – tbd)
- Disseminate and communicate research results
- Provide communication support
  - Updates on Board activities for Council Members, newsletters to stakeholders and others on a regular basis
  - Website