Advancing Stormwater Science, Technology, and Management in Minnesota

2022 Request for Proposals

This request for proposals (RFP) and supporting forms, documents and resources can be found on the Minnesota Stormwater Research Program website and also under the Center's funding opportunities.

The Water Resources Center (WRC) at the University of Minnesota, in cooperation with the Minnesota Stormwater Research Council (MSRC), is pleased to invite proposals to advance urban stormwater science, technology, and management in Minnesota. Funding is provided from the Clean Water Fund, as appropriated by the Minnesota State Legislature:

> "… to evaluate performance and technology transfer for storm water best management practices, to evaluate best management performance and effectiveness to support meeting total maximum daily loads, to develop standards and incorporate state-of-the-art guidance using minimal impact design standards as the model, and to implement a system to transfer knowledge and technology across local government, industry, and regulatory sectors." (Minnesota Session Laws 2021. Chapter 1, article 2, section 9 (b))

Additional funding to support projects is provided by the MSRC, an independent organization of stormwater professionals, practitioners, managers, engineers, researchers and others. MSRC's goals include:

- 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, teaching institutions and others.

More information about the MSRC can be found online at www.wrc.umn.edu/msrc

Eligibility and requirements

Researchers and professionals from any academic institution, government agency, non-profit organization, or private entity are eligible to apply. Note, although this program is administered by the WRC at the University of Minnesota, eligibility is not limited to University of Minnesota employees. Staff affiliated with organizations that have contributed funds to the MSRC may submit research proposals; contributing funds to the MSRC does not make an organization ineligible. MSRC Advisory Board members who are included in any proposal as PI, co-PI or funded as part of the project, must either resign from their role as a board member or excuse themselves from all advisory board functions related to the proposal review and selection process. Projects must focus on urban stormwater management needs in Minnesota and benefit Minnesota waters.

At least one of the lead PIs must be from an academic institution, government agency, non-profit organization, or private entity in Minnesota. Any proposed work on a project to be led by investigators from academic institutions, government agencies, non-profit organizations, or private entities outside Minnesota must clearly justify how that work will address and respond directly to the needs of the state.

Principal investigators of the chosen projects will enter into a contract with the WRC. Recipients will be announced through WRC communication channels including the WRC website, newsletters, social media, and news releases. Progress reports, final reports, and other project deliverables also will be posted on the WRC website. Each research team will be required to present project updates at the annual MSRC meeting and also present project findings to the MSRC upon project completion at times to be arranged. Additional requirements are specified throughout this RFP and subject to terms in the research project contract.

Research Program Priorities

Proposals are sought to address specific research program priorities. Submitted proposals must select the one primary research priority it best fits within and may identify up to two secondary research priorities if applicable. Within each category, the MSRC and WRC have several specific areas of interest for which proposals are sought. Proposals addressing other areas within each category will be considered with justification of their relevance and importance.

Special exclusionary note: Research on urban stormwater ponds
Proposals with the main focus of researching urban stormwater ponds should not be submitted through this RFP. The development of a research strategy and priorities for urban stormwater ponds is ongoing. The WRC and MSRC expect to release a separate competitive RFP solely focused on urban stormwater pond research in 2022. With that said, the WRC and the MSRC acknowledge that proposals and their work in other areas covered in this RFP may have some connection to urban stormwater ponds. Those may be considered. You would be advised to discuss your proposal that may include reference to ponds with center staff or members of the advisory board. In addition, submission of a pre-proposal and the required presentation to the board (see item #3 in application requirements) may provide you with information to inform whether or not you should prepare a full proposal.

1: Improve characterization of urban stormwater and watersheds

2022 research proposal interest areas

- Characterization of pollutants in urban stormwater runoff with specific interest in chloride and bacteria, viruses and other pathogens.
- Course organic material (COM) dynamics; how COM and its contained nutrients move from urban landscapes to streets and to urban stormwater BMPs and the removal efficiency of BMPs (including street sweeping) for COM and nutrients. (*These are also related to research need #3)*
- Chloride or deicing alternatives *(related to research need #6)* and in the fate, trends and impacts from chloride to urban stormwater practices. Researchers intending to submit proposals should familiarize themselves with past and current chloride and road deicing research supported by the LRRB, CTS and other organizations and discuss in their proposal how the work is unique or builds on existing knowledge.

2: Evaluate the efficacy of stormwater management practices at the watershed scale

2022 research proposal interest areas

- Efficacy of stormwater management practices at the individual level, site level or small, defined urban catchment (subwatershed) scale.
- Efficacy of stormwater management practices in a treatment train.
- Efficacy of or comparison of stormwater management practices in paired catchment or at small subwatershed scales.

3: Inform effective pollution reduction at the source (pollution prevention)

Source reduction, also called pollution prevention, means reducing the production of pollutants from the source before they become part of the stormwater runoff stream. Source reduction also includes reducing the volume and rate of stormwater runoff.

2022 research proposal interest areas

- The implementation of pollution prevention practices and strategies and their effect on downstream water quality.
- The comparison of pollution prevention practices to other stormwater practices in regards to performance and cost benefit for water quality effectiveness.
- Course organic material (COM) and nutrient removal efficiency of pollution prevention practices.

4: Improve design, construction, and performance and reduce maintenance of structural practices

Examples of structural practices include but are not limited to pollutant capture and removal such as filters, practices that reduce runoff volume and rate, and pollution treatment practices.

2022 research proposal interest areas

- Temporary and permanent practices including study of the effectiveness of temporary (during construction) practices.
- Pre-treatment practices - design and sizing, effectiveness, maintenance requirements and frequency, cost-benefit, and the application, comparison and evaluation of one or more specific types of pre-treatment practices to downstream stormwater practices.

5: Determine the costs and benefits cost efficiency of stormwater practices

2022 research proposal interest areas

- Comparison or study of the most effective approaches and tools practitioners could use to evaluate cost-benefit and/or co-benefits of urban stormwater practices.
- Technical research review and summary of past and current research and grey literature on urban stormwater cost-benefit and/or co-benefit approaches, analysis, and methods.

6: Develop new and innovative stormwater management practices

2022 research proposal interest areas

- New and innovative types of pre-treatment practices. *(See also research need #4)*
- Deicing alternatives and winter road management practices. *(See also research need #1)*
- Other new and innovative types of practices that reduce volume and/or remove, filter, or prevent pollutants from stormwater runoff.

7: Improve education approaches to increase public perception and knowledge

Education approaches include but are not limited to community social marketing, training, and outreach.
2022 research proposal interest areas

- Study of the most effective education approaches, methods and resources to increase knowledge and elicit behavior change. If appropriate, research work could be segmented or examined by audience.
- Evaluation or study of how urban stormwater education can lead to improvements in water quality and/or health of water resources.

8: Evaluation of stormwater-related policies and identification and feasibility analysis of policy alternatives.

2022 research proposal interest areas

- For the 2022 RFP, the policy related research interest is largely related to and has been folded into RN#5 - Determine the costs and benefits cost efficiency of stormwater practices *(see above)*.
- Other policy related proposals are welcomed.

Applicants are encouraged to review the Minnesota Stormwater Research Roadmap quick guide and full report and to reflect on the Legislative funding and the purpose and goals of the Council referenced on page one of this RFP.

Proposal tracks

Proposals may be submitted under one of two tracks. Proposals can address any of the research program priorities and interest areas.

Track 1	Rapid-Response Projects
Track 2	Discovery Projects

Track 1: Rapid-Response Projects

Project proposals in track one will address topics of immediate need, quickly transferring cutting-edge research results to stormwater practitioners and managers. Applied rapid-response projects may include synthesis of existing research conducted in Minnesota or elsewhere, a focused extension of an existing study, or original research component with data collection on a short time frame. Outputs from these projects are expected to include reports, presentations, training materials, fact sheets, or other media.

Outputs should be targeted to stormwater practitioners, professionals and policymakers or integrated into technical design guides including the Minnesota Stormwater Manual and other technical and policy guidance documents as appropriate. Peer-reviewed publications may result from these projects but are not necessarily expected. These projects require education and technology transfer with specific activities to transfer the science or technology to the relevant groups of practitioners and managers in Minnesota.
Project duration: 12-24 months.
Start date: July 1, 2022*. Completion date: June 30, 2024
* Projects may begin earlier or later subject to having an executed (signed) agreement in place.
Budget range: $15,000 - $75,000
Expected number of funded projects: 3-6

Track 2: Discovery Projects

Project proposals in track two will address one or more of the research needs and interest areas that are larger in scale and require more time to fully address. Discovery projects will generate new knowledge through original data collection and/or original analysis. Research outputs may include, but are not limited to, datasets, research protocols, models, and scientific publications. Projects in this track could include researchers from multiple disciplines. These projects require a strong and comprehensive professional education and technology transfer component with specific activities to transfer the science or technology to the relevant groups of practitioners, professionals and policymakers in Minnesota. Project teams should include Extension educators or others with the appropriate expertise to develop and execute education and technology transfer activities. Outputs from these activities may include, but are not limited to, webinars and other educational materials, stand-alone course modules, training curricula, and changes to technical design guides including the Minnesota Stormwater Manual and other technical and policy guidance documents as appropriate. Projects in this track may include proposals for the first phase of a longer term study (+3 years). Discussion of future phases would need to be included in the description.

Project duration: Up to 36 months.
Start date: September 1, 2022* or January 1, 2023**
Completion date: December 31, 2025
* Projects that begin September 1, 2022 may extend for 39 months.
** Projects may begin earlier or later subject to having an executed (signed) agreement in place.
Budget range: $75,000 - $300,000
Expected number of funded projects: 3-6

Application requirements and instructions

1. Pre-proposal are required and due by 5pm CST on Friday, January 28th, 2022.
2. Full proposals are due by 5pm CST on Friday, March 18, 2022.
3. Discovery Projects must make a presentation to the Center and the Council on February 3rd or 4th.

All project proposals will be submitted online through the WRC-CFANS online grant portal. Direct links can be found on the Center's funding opportunities website. **NOTE*:*** The submission portal will not open until January 2022. Everything applicants need to consider and begin preparing for is contained within this RFP.

Note to investigators from the University of Minnesota Proposals should **not** be submitted through Sponsored Projects Administration (SPA). Grants will be awarded using internal account transfers. We recommend, however, that proposers notify their unit head(s) and finance professionals about their proposal prior to submission. In addition, UofMN researchers should use the specified link to the WRC-CFANS online grant portal that requires use to login with your x500 credentials.

1. Pre-proposal requirements and instructions New for 2022

Pre-proposals are required for all proposals and due by 5pm CST on Friday, January 28th, 2022

The pre-proposal must include the following items:

- A preliminary project title
- Identify the PI and research team. This can be revised in the full proposal.
- Indication of the proposal track
    A) Rapid Response project
    B) Discovery project
- Identify the research priority category the proposal primarily addresses.
- Approximate total budget. (The estimated total budget. You may indicate a low-high range. No budget detail or worksheet is required.)
- State your research question(s)
- Short description - what are you trying to accomplish? Describe the project
- Short description of approach, methods and procedures
- Peer expert reviewer suggestions. You are required to suggest at least three peer experts that may serve as reviewers and must include at least one non-Minnesota expert. You do not need to contact your potential reviewers. Individuals must not have a conflict of interest with any project team member and will be asked to certify that no conflicts exist. Required information includes name, title, affiliation, email, phone and link to a webpage profiling the reviewer's background, if available. List your recommendations on page three of your pre-proposal. These do not count towards the two page limit for the pre-proposal.

Pre-proposals must be submitted through the WRC-CFANS online grant portal that can be found on the Center's funding opportunities website. The online grants submission process will require data entry by the investigator some of which may be accomplished by text entry or by copy and paste text into the online submission form. Investigators are also required to prepare and upload (submit) their pre-proposal following the pre-proposal template available online on the Center's funding opportunities website. It is limited to two pages.

2. Full proposal requirements and instructions

Full proposals are due by 5pm CST on Friday, March 18th, 2022

The online grants submission process will require data entry by the investigator some of which may be accomplished by text entry, by copy and paste text into the online submission form and by submitting required uploads of specific documents or files. Investigators are required to prepare the six documents. File names for any upload documents should begin with the last name of the principal investigator. For example "LASTNAME-Project Summary", "LASTNAME-Project Description", "LASTNAME-Budget"

- Document #1 Project Summary Page (PDF or Word accepted)
- Document #2 Project Description (PDF or Word accepted)
- Document #3 Technology Transfer Plan (PDF or Word accepted)
- Document #4 Budget (Excel file) Use the template available online on the Minnesota Stormwater Research Program website and also under the Center's funding opportunities.
- Document #5 Budget Justification (PDF or Word accepted)
- Document #6 Team Qualifications (PDF or Word accepted)

A complete proposal includes the following elements:

- **Project title, track designation, and principal investigator(s) and team members.** Includes full name, affiliation, and contact information for all team members. Identify the team member who will be the PI or project lead (primary point of contact). This information does not need to be formatted into a document for upload, but should be gathered for entry into the grants portal.

- **Project summary page** (one page) Includes title, abstract (max 250 words), succinct bullet list of up to five projected outcomes, and a list of the project team members (name and organization only).

- **Project Description** (up to six pages, excluding references and assurances). It should include the following elements in order and with section headers accordingly. Review the evaluation criteria for proposals to guide the content of the project description.
    - **Objectives**. Clearly identify the research objectives of the project. State the research questions. Identify and discuss the primary research need category and secondary categories the proposal addresses and discuss how the proposal addresses priority interest areas.
    - **Background and rationale.** Explain the problem you are addressing and how it responds to the priorities in this RFP. Clearly identify the value of the proposed work to stormwater practitioners and how the work benefits Minnesota waters. Also relate your project to previous work and explain how it builds upon it or will make new contributions to the existing knowledge base.
    - **Major research activities, tasks and procedures.**
        - Clearly explain how you will achieve the research objectives, identifying activities, tasks and procedures with enough detail for reviewers familiar with the nature of your work to understand and assess the scientific merit.

        - Identify the timeframe of each major task and activity, including the nature and timing of project outputs. Note that final reports are due on the project end date so project timelines should be constructed to allow adequate time for report preparation. Identify the roles and responsibilities of each project team member in relation to project tasks and outputs.
        - For projects that may be the first phase of a longer term study (three+ years), identify the likely next phase(s) of work that would build upon the work in the first phase.
    - **Deliverables.** Identify the project outputs. For all projects, one output must be a final report written for stormwater practitioners and managers.
    - **Impact statement and community partner involvement.** In a short statement, say how this research is applicable to Minnesota cities, counties, watersheds and/or the professionals, practitioners and policy makers across the state. If the research project involves field sites, case studies or application in communities, identify the cities, counties, watersheds or other partners involved.
    - **Assurances** (one page). Include assurance that you are using good research practices as appropriate for your project. This will likely include quality assurance and quality control (QA/QC) and data management plans. If you are using a lab to test items, indicate that the lab you are using is certified (for whatever standards are appropriate to your work) and/or documentation or statement regarding how any instruments that are used have a calibration or maintenance schedule; a plan that includes blanks and duplicates for certain types of samples or at least some knowledge of the variability inherent in their sampling and evidence that they will collect sufficient samples to deal with this variability. A data management plan would specify how data are checked and backed up routinely so that they can't be lost in a computer hard drive failure or simply by losing a lab notebook, etc. This also includes acknowledging how your final report and data will be reported and available in the University of Minnesota Digital Conservancy and/or submit their final report and materials for inclusion to the Minnesota Water Research Digital Library within one month of completion.
    - **References cited** (no page limit).

- **Technology Transfer.** (one page) Describe your plan to transfer the science and results (the deliverables) of your research project to urban stormwater practitioners, managers, and policy leaders. Include specific elements of education, training and outreach, identify desired outcomes, and the intended audiences.

- **Budget**. Use the template available online at the Center's funding opportunities website. Submit as an Excel file. Indirect costs are not an allowable expense for this program. Out-of-state travel will be scrutinized carefully and requires sufficient justification of how it benefits the project and the waters of Minnesota. International travel expenses are not allowed. Investigators who are awarded grant funds will be allowed to move up to 10% of the total award budget between major categories without prior approval. However, you may not add a budget category without prior approval. Inquire with the WRC for specific budget questions.

- **Budget justification**. Provide a budget narrative describing the expenses and connecting each expense to specific activities and objectives. In-kind and matching funds are not required but indicate if you have the opportunity to leverage other funds.

- **Team qualifications** (up to two pages per team member). Include a biosketch or abbreviated curriculum vitae for each team member, highlighting professional experience and qualifications related to the proposed work.

3. Presentation requirements and instructions New for 2022

Presentations are required for discovery projects and will be scheduled on Thursday and Friday, February 3rd and 4th. Presentations for Rapid Response projects are not required but may be requested.

Researchers submitting pre-proposals and subsequently full proposals under Track 2 Discovery Projects are required to make a presentation to the WRC and MSRC Advisory Board. Presentations will occur on Thursday and Friday, February 3rd and 4th from 8am to 12pm CST. This will allow you to gather input on your pre-proposal and incorporate ideas or clarifications as you prepare your full proposal.

Presentations specifics

- February 3rd and 4th, 2022 8am-12pm CST
- A date and a time slot will be scheduled and sent to you on Monday, January 31st.
- The main PI or another team member must be available these dates.
- You will have a total of 25 minutes allowing for 10-15 minutes of presentation and up to 10 minutes for questions or input from the MSRC Advisory Board.
- Presentations will be virtual through Zoom.
- Additional guidance will be available on the website in January.

Review and selection process

Proposals will be subject to external review by peer scientists and other stormwater professionals and internal reviews by staff at the WRC and the MSRC Advisory Board. Proposals will be evaluated using the criteria noted in the next section. The review and selection committee will approach their decisions incorporating both scores on the evaluation criteria and discussions focusing on fulfilling applied urban stormwater research that benefits Minnesota waters, communities, and professionals in a timely, cost-efficient, and effective manner. Furthermore, proposals will be evaluated for their ability to fulfill the legal requirements of the Clean Water Fund appropriations as described on page one.

The WRC and the MSRC reserve the right to request changes or alterations to the proposals. Researchers and investigators may be asked but not required to consider and respond to those changes or alterations.

Evaluation criteria

Proposals will be evaluated for the following:

- **Relevance** Does the proposed project relate to urban stormwater management or concerns in Minnesota? Does it benefit Minnesota waters? Is it applicable and does it have high value to Minnesota stormwater professionals, managers, engineers, and policy leaders? Does this project evaluate, improve, or innovate the performance and effectiveness of stormwater BMPs? Does the project evaluate or innovate standards and guidance? Does the work avoid duplicating previous efforts?

- **Priority research** Does the research examine specific ideas or concepts well-suited under the research need? Does the proposal address one of the more specific 2020 priority focus areas? Does the research and do the deliverables sufficiently address the priority research need identified?

- **Scientific merit** What is the quality of the research plan? Is the approach scientifically valid? Are the objectives and activities clearly explained? Will proposed activities achieve objectives? Will the research activities result in a significant advance in knowledge? Will this research provide us with new information needed by managers or stakeholders?

- **Technology Transfer** How strong is the technology transfer plan? Are audiences and objectives of education and outreach identified? Will the education and technology proposed lead to changes in learning or actions for an identified audience?

- **Capacity and collaboration** Do the personnel and institutions have the capacity and expertise to effectively complete proposed work? Are the budget and timeframe realistic and reasonable for completing activities and objectives? Does the proposal identify collaborations that strengthen the work? Does the proposal identify and discuss connections or communication with any of the major entities involved in urban stormwater management in Minnesota (PCA, MDH, METC and others)?

- **Cost** How does the proposed budget compare to the work proposed? Is the budget in-line with the specifications of track 1 or track 2? Is there specification of how the project could be phased?

- **Project timeline** Is the proposed timeline appropriate, with time allowed for completion of final reports? Are project benchmarks identified? Is there an indication of how the project could be phased?

Urban Stormwater Research Grant Program Timeline

- RFP released January 3, 2022
- Pre-proposals due by 5pm CST on Friday, January 28, 2022
- Full proposals due by 5pm CST on Friday, March 18, 2022
- Discovery projects proposal presentations on February 3 and 4, 2022
- Review decisions announced in May 2022
- Rapid Response projects begin July 1, 2022
- Discovery projects begin September 1, 2022 or January 1, 2023

Requirements and contracts for chosen projects

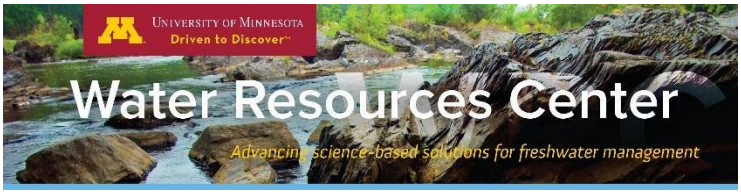
Principal investigators and their organizations for chosen projects will be subject to all the terms and conditions in an executed research contract with the WRC. Requirements of the contract include but are not limited to the following:

- Funding the project is contingent on signing an approved contract with the University of Minnesota WRC.
- A final work plan must be submitted that will be part of the contract. Your proposal may serve this purpose, subject to changes requested by the WRC and MSRC.
- Principal investigators and project teams may be required to participate in a pre-project kickoff meeting *(in-person, conference call, online TBD)*.
- Annual project reports and presentations to the WRC and the MSRC are required.
- Final reports are due on the project end date.
- Principal investigators are required to enter their final report and materials into the University of Minnesota Digital Conservancy and/or submit their final report and materials for inclusion to the Minnesota Water Research Digital Library within one month of the project end date.
- Principal investigators and team members must acknowledge the Center and the Minnesota Stormwater Research Council in any publicly distributed or displayed printed or electronic documents, reports and presentations. Materials and presentations must include the WRC and Clean Water Land and Legacy Amendment logos and acknowledgement text. Those will be available on the WRC website.

Inquire with the WRC for additional contract requirement questions.

Contacts

For questions about the submission process or the suitability of a proposed topic, please send an email to msrc@umn.edu. Your inquiry will be directed to the appropriate representative from the WRC or the Council. Alternatively, you may contact John Bilotta by phone 612-624-7708.



Minnesota Stormwater Research Council

CLEAN WATER LAND & LEGACY AMENDMENT