Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-227

Proposal Title: Evaluating Sulfate, Chloride, and PFAS Wastewater Treatment Technologies

Project Manager Information

Name: Ashley Kneemueller

Organization: Minnesota Pollution Control Agency

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Project Basic Information

Project Summary: Revise existing evaluations of wastewater treatment technologies for chloride, sulfate, and PFAS to include new technologies, revised cost estimates, and an affordability assessment, providing permittees resources to make informed decisions.

ENRTF Funds Requested: $605,000

Proposed Project Completion: June 30, 2030

LCCMR Funding Category: Water (B)

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Wastewater treatment facilities increasingly face contaminants that are widespread, persistent, and difficult to remove using conventional treatment technologies. Chloride, sulfate, and per- and polyfluoroalkyl substances (PFAS) are ubiquitous pollutants, present in both domestic and industrial wastewater, which accumulate in receiving waters over time and pose unique environmental and human health concerns. These pollutants are not readily removed by conventional wastewater treatment, so most of the wastewater treatment facilities in Minnesota are not designed to treat for these contaminants.

Wastewater treatment facilities face significant technical and financial barriers in addressing these pollutants. Assessing and complying with pollutant removal often requires a facility-specific approach because the pollutant sources, concentrations, receiving waters, effluent limits and other permit conditions, and existing treatment technologies vary significantly. Consideration of all viable technologies and methods for pollution reduction is necessary for facilities to make informed decisions to comply with their wastewater permits and reduce pollution. Often, facilities rely on consultants to conduct these analyses and provide recommendations, the cost of which can be prohibitive for some facilities.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

The MPCA seeks to support wastewater treatment facilities across Minnesota that are managing chloride, sulfate, and PFAS by providing a comprehensive evaluation of pollution reduction via treatment and other methods. This assessment will save facilities money on consulting fees by providing broadly applicable information to support decision making.

This project will update and expand upon existing evaluations of wastewater treatment technologies for chloride, sulfate, and PFAS dated December 2018, May 2018, and May 2023, respectively, to consider new treatment technologies and other common pollution reduction opportunities, associated brine and salt disposal, and current costs resulting from inflation.

The sulfate and PFAS evaluations will include an analysis on how a similar evaluation may be conducted for industrial wastewater in consideration of the wide range of industrial processes and waste streams. The chloride and sulfate evaluations will also include an analysis on the affordability of installing these technologies for municipal wastewater treatment facilities, including the revision or replacement of existing MPCA tools to assess financial burden.

The MPCA would issue a competitive request for proposal to solicit three contracts, one per pollutant, for interested parties to conduct these evaluations with oversight and input from the agency.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

Current assessments of wastewater treatment technologies capable of reducing these pollutants provide permittees with better information to base decisions regarding the most likely viable paths for reducing pollutants in their discharge. These assessments will be available at no cost to the facilities, empowering them to make informed decisions about the environmental, financial, technical, and operational realities of constructing these treatment systems. The updated costs and affordability analysis will provide the MPCA and Minnesota communities greater certainty of the cost of treatment technologies necessary to protect water quality.

Activities and Milestones

Activity 1: Request For Proposal Development

Activity Budget: $1

Activity Description:
Full development of three requests for proposal (RFP) for updated and expanded evaluations of the available wastewater treatment technologies for chloride, sulfate, and PFAS, with one RFP per pollutant. Development of the RFPs includes detailing the scope of work, specific deliverables and expectations for quality and content, submission requirements for responses to the RFPs, desired merit and capability of proposers, and evaluation criteria. Differences in work scope for each of the three desired contracts will be refined to meet specific needs per pollutant and expectations for technologies evaluated. MPCA will require the selected bidders to report their results in an MPCA approved peer reviewed journal, see Activity 3.

This activity also includes all internal approvals necessary to post the RFPs and all pre-contract preparation.

Activity Milestones:

Description	Approximate Completion Date
Draft the RFPs, including scope of work, technical requirements, and expected deliverables.	November 30, 2027
Define proposal submission requirements, evaluation criteria, and scoring methodology.	November 30, 2027
Internal review and approval of the RFPs complete.	February 28, 2028
Preparations for contracting complete.	February 28, 2028

Activity 2: Solicitation, Posting, Selection, and Contracting

Activity Budget: $1

Activity Description:
Post and solicit responses to the RFPs per agency and state contracting requirements. Conduct administrative review to determine if they are responsive to the RFPs. Once the deadline for proposals has passed, conduct the technical evaluation of each proposal utilizing the evaluation criteria and scoring methodology. After selection(s) are made, notify proposers of selection or non-selection. Contracts with selected bidders are finalized at the end of this activity.

Activity Milestones:

Description	Approximate Completion Date
Post RFPs.	February 28, 2028
RFPs close.	April 30, 2028
Administrative review of proposals.	May 31, 2028
Technical review of proposals.	June 30, 2028
Final selection and notification of proposers for all 3 evaluations.	July 31, 2028
Negotiate contract, workplan, and budget for all three evaluations.	August 31, 2028
Contracts finalized.	September 30, 2028

Activity 3: Contract Execution and Dissemination

Activity Budget: $604,998

Activity Description:
Once contracts are finalized for each of the three evaluations, begin technical meetings with the selected entities to

establish routine coordination. MPCA staff will manage the projects, provide input as necessary, and request routine status updates. As materials and draft deliverables are available, MPCA will review for compliance with contract expectations and provide feedback. By the activity deadline, contractors will complete the full scope of work, provide final work products, and submit an article to an MPCA approved peer reviewed journal. MPCA will complete all dissemination activities by the activity deadline.

Activity Milestones:

Description	Approximate Completion Date
Begin technical meetings with contracted parties.	October 31, 2028
Contracted parties begin work.	October 31, 2028
Draft evaluations, affordability analysis, and industrial wastewater feasibility assessment available for MPCA review.	October 31, 2029
Present current status of work at the MPCA annual wastewater conference.	November 30, 2029
MPCA review of the draft evaluations, affordability analysis, and industrial wastewater is complete.	December 31, 2029
Final chloride, sulfate, and PFAS evaluations, affordability analysis, and industrial wastewater feasibility assessment complete.	March 31, 2030
MPCA completes dissemination activities.	June 30, 2030
Contractors submit their reports to an MPCA approved peer reviewed journal.	June 30, 2030

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
The MPCA will post all final deliverables, the three updated evaluations, assessment of feasibility of conducting similar evaluations for sulfate and PFAS in industrial wastewater, and the affordability assessment tools on the MPCA website. All materials will acknowledge the ENRTF by inclusion of the trust fund logo or trust fund approved attribution language as detailed in the ENRTF Acknowledgement Requirements and Guidelines.

When the materials are posted to MPCA's website, the MPCA will conduct broad outreach through GovDelivery, social media post, or similar avenues to inform the public of their availability. All such outreach will include trust fund approved attribution language and social media posts will tag the trust fund as detailed in the ENRTF Acknowledgement Requirements and Guidelines.

Additionally, a preliminary summary of findings will presented at the MPCA's 2029 Wastewater Facility and Collection System Operators' Conference. The presentation slides will include both the attribution language and the trust fund logo, and the speaker will verbally acknowledge the ENRTF. The results will also be shared when opportunities arise at applicable conferences, stakeholder or public meetings, and other appropriate venues for information sharing.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?
The findings will be used by MPCA and permittees to consider permit compliance and infrastructure needs. Permittees refer to these evaluations to consider what technology may be appropriate for their facilities, especially if a technology will remove multiple pollutants for which the facility has received new effluent limits. Permittees will be better able to make informed decisions on funding needs based on the cost information, and for municipalities, the affordability analysis. As these evaluations will be available at no cost, this project will save permittees, especially municipalities, significant money that could be directed to implementing solutions rather than researching them.

Project Manager and Organization Qualifications

Project Manager Name: Ashley Kneemueller

Job Title: Supervisor

Provide description of the project manager's qualifications to manage the proposed project.
As the project manager, Ashley Kneemueller meets all LCCMR requirements for ensuring timely and complete project fulfillment. Ashley is a supervisor within the MPCA's wastewater program where she leads a diverse team. She works frequently with several of the other project team members and with wastewater permittees whom this project will impact. Ashley is responsible for organizing and leading the MPCA project team for this project.

She is the primary point of contact for the project with LCCMR and is authorized to represent the project on behalf of the MPCA, including responding to questions or requests from LCCMR as needed. As the MPCA is a state entity, no authorizing letter or resolution is needed. Ashley is authorized to submit the proposal, work plan, work plan amendments, progress and spending reports, and budget and scope amendments on behalf of MPCA. As the representative of MPCA for the project, she maintains responsibility for fulfilling the outcomes of the project as

determined in the appropriation language and approved work plan, including reporting progress and expenditures and ensuring all project requirements are met. Ashley will ensure funds are spent only as allowed per the approved work plan, expense guidelines, and applicable laws, and that funds are acknowledged appropriately. She will monitor project progress, maintain documentation and records, and coordinate the project team for successful project completion.

Organization: Minnesota Pollution Control Agency

Organization Description:
The Minnesota Pollution Control Agency (MPCA) is an environmental agency responsible for protecting and improving Minnesota's environmental and human health. Under state and federal law, the MPCA works to prevent and reduce pollution of air, land, and water and leads statewide efforts to address climate change.

The MPCA administers many provisions of the federal Clean Water Act in Minnesota through its wastewater program. The program protects rivers, lakes, streams, and groundwater by regulating industrial and municipal wastewater discharges. The program issues and enforces water discharge permits under the federal Clean Water Act and Minnesota's State Disposal System, establishes effluent limits, ensures compliance, and provides technical assistance to wastewater treatment facilities. The MPCA also adopts and implements water quality standards and assesses waterbody health to ensure the current and long-term protection of Minnesota's waters.

The MPCA's wastewater program collaborates with permittees, businesses, governments, organizations, and Tribal Nations to advance practical, community-centered solutions that protect Minnesota's water resources, support human health, and promote sustainable economic growth.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
							Sub Total	**-**
Contracts and Services								
TBD	Service Contract	The selected bidder for the chloride evaluation will provide an assessment of wastewater treatment technologies capable of chloride removal, their associated costs, and an affordability analysis tool for municipalities. The evaluation includes an analysis of centralized drinking water treatment capable of removing chloride, which reduces this pollutant in municipal wastewater.				6		$200,000
TBD	Service Contract	The selected bidder for the sulfate evaluation will provide an assessment of wastewater treatment technologies capable of sulfate removal, their associated costs, an assessment of how a similar evaluation may be conducted for industrial wastewater, and an affordability analysis tool for municipalities.				6		$200,000
TBD	Service Contract	The selected bidder for the PFAS evaluation will provide an assessment of wastewater treatment technologies capable of PFAS removal, their associated costs, and an assessment of how a similar evaluation may be conducted for industrial wastewater.				6		$200,000
							Sub Total	**$600,000**
Equipment, Tools, and Supplies								
							Sub Total	**-**
Capital Equipment								
							Sub Total	**-**

Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Conference Registration Miles/ Meals/ Lodging	Either the contractors, MPCA, or representatives from both will present on preliminary results of the evaluations at the 2029 Annual Wastewater Conference hosted by MPCA. This conference is well attended by wastewater treatment facility operators, consultants, vendors, and others who are a primary audience for this information. Cost includes registration fee, hotel stay, meals, and miles for 4-5 presenters. Historically, registration for this event is $585 per person.	Inform conference attendees these evaluations are being updated, a summary of report updates and additions, how this information is beneficial to the attendees, and where and when they can access the final materials once complete.	X				$5,000
							Sub Total	**$5,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$605,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Travel In Minnesota	Conference Registration Miles/Meals/Lodging	Either the contractors, MPCA, or representatives from both will present on preliminary results of the evaluations at the 2029 Annual Wastewater Conference hosted by MPCA. This conference is well attended by wastewater treatment facility operators, consultants, vendors, and others who are a primary audience for this information. Cost includes registration fee, hotel stay, meals, and miles for 4-5 presenters. Historically, registration for this event is $585 per person.	MPCA requests these expenses be explicitly approved to accomplish the dissemination and presentation activities as outlined in the activities and milestones. The MPCA Annual Wastewater Conference targets the desired audience for sharing the preliminary findings of this project, and to provide conference attendees with information on where to find final results. The conference audience is composed of wastewater professionals, including representatives of permitted entities, who will benefit from a formal presentation of project progress and findings. Per the LCCMR Guidance on Allowable Expenses, conference attendance is allowable to participate in formal presentation of project findings, which this project seeks to do.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**-**

Total Project Cost: $605,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: 18165bd7-60a.pdf

Alternate Text for Visual Component

The graphic depicts a sewer collection system connecting to a wastewater treatment plant, which is discharging treated water into a river. The incoming water is labeled with the chemical compounds for chloride, sulfate, and PFAS. Accompanying text states the pollutants are not removed by conventional treatment technology....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Barr Engineering Co - Evaluation of Current Alternatives and Estimated Cost Curves for PFAS Removal and Destruction	cf1575de-c01.pdf
Bolton & Menk and Barr Engineering Co - Analyzing Alternatives for Sulfate Treatment in Municipal Wastewater	007d6087-c89.pdf
Eligibility tool for streamlined chloride variance approach	7b2e09d7-62a.xlsx
Evaluating substantial and widespread economic and social impacts for sulfate variance eligibility	8f3c8fad-5e2.xlsx
MPCA - Alternatives for addressing chloride in wastewater effluent	ec91aefe-ca5.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I understand the Commissioner's Plan applies.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

The following MPCA employees contributed to the completion of this proposal: Ian Babson, Scott Kyser, Ryan Huele, Fawkes Char, Aida Mendez, Qais Banihani, Paul Pestano, Paul Kimman, Elise Doucette, Sarah Remer, Kaity Taylor, Bill Cole, Mauricio Leon Mendez, Suzanne Baumann, and Theresa Haugan

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand