REQUEST FOR PROPOSALS (RFP)

Advancing the Disinfection of Wet Weather-Driven Sewer Overflows: Best Practices and Case Studies (5243)

Date Posted
Monday, July 1, 2024

Due Date
Proposals must be received by 3:00 pm Mountain Time on Thursday, August 29, 2024.

WRF Project Contact
Harry Zhang, PhD, PE, hzhang@waterrf.org

Project Sponsors
This project is funded by The Water Research Foundation (WRF) as part of WRF's Research Priority Program.

Project Objectives

- To improve receiving water quality by fostering widespread adoption of disinfection practices and technologies, when needed, at strategic locations throughout sewersheds and at potential peak wet-weather flow management points within water resource recovery facilities (WRRFs) and stormwater treatment systems.
- To identify cost-effective solutions and develop a user-friendly guidance document to add to a utility's decision toolbox for combined sewer overflow (CSO) and sanitary sewer overflow (SSO) mitigation strategies.

Budget
Applicants may request up to $200,000 in WRF funds for this project.

Background and Project Rationale
Wastewater and stormwater utilities, including those with fully implemented long-term control plans for CSO, SSO, and peak wet-weather flow bypass events at WRRFs, can expect to continue experiencing some level of such events as the frequency, duration, and magnitude of storms increase due to climate change. These events can occur at locations throughout a sewershed and at WRRFs, resulting in untreated or partially treated/non-disinfected wastewater entering receiving streams, thus posing a public health threat to both local and downstream populations. Variabilities in weather, particularly more severe and more frequent storms, are not limited to any geographical area and have already resulted in an increasing number of overflow and flooding events worldwide.

Utility decision makers need a single, robust resource that allows them to evaluate disinfection practices and emerging techniques for implementation at their facilities. Utilities and regulators may also be monitoring chloride levels in receiving waterbodies, which puts pressure on utilities to think about alternatives to chlorine disinfection. Utilities need best practice and case studies across geographic and climate regions to inform disinfection practices, technologies, and opportunities at CSO and SSO points in sewersheds.

This project will develop an effective resource (e.g., "guidebook") for decision makers at wastewater, stormwater, and water reclamation utilities of all sizes to identify the best options suitable for implementing disinfection programs at their facilities and across their entire sewershed. It is also anticipated that this project will, through successful case studies and valuable lessons learned, identify the limitations of current disinfection best practices and identify further research opportunities to advance the science and technology of disinfection.

Research Approach

WRF is looking for a rigorous research approach that can objectively and thoroughly evaluate available practices and utility case studies at a national level. The research team will undertake activities in four main tasks as part of this study.

First, the research team will conduct a comprehensive literature review, including research efforts to date by WRF and other organizations. Please refer to the selected examples in the "References and Resources" section of this RFP.

Second, the research team will conduct a survey and targeted interviews with selected utilities and municipalities that cover wastewater and stormwater issues, with a goal of synthesizing real-world practices and case studies across geographic regions and different sizes of utilities.

Third, the research team will develop a utility-facing "state-of-the-practice" guidance document, which includes a synthesis of case studies across different geographic regions and utility sizes, focused on utilities and municipalities in North America. The state-of-the-practice will include applications of combined disinfection technologies/practices (e.g., a combination of chloride and ultraviolet (UV) disinfection or other combination) in wastewater and stormwater treatment by utilities and municipalities, including related decision rationale and performance versus a single type of disinfection (if available). The guidance document will also include a specific chapter on ongoing research and emerging technology development on wastewater and stormwater disinfection. In addition, a separate chapter in the guidance document will be included to summarize the knowledge gaps, research needs, suggested research roadmap and preliminary project concepts for recommended future research projects.

Furthermore, the research team will create a related user-friendly utility-facing web page and/or another format such as StoryMaps for easy access by utilities and municipalities to support the decision-making process.

To facilitate feedback by utilities and municipalities, the research team will host one invitation-only virtual workshop. The virtual workshop participants will include the Project Advisory Committee (PAC) members (i.e., a technical review committee managed by WRF), representatives from participating utilities, WRF's collaborators and partners, and other invitees recommended by WRF.

Fourth, the research team will conduct one webcast hosted by WRF and collaborating organizations on the overall findings of this project. The research team is encouraged to submit one open access peer-reviewed journal paper, after the completion of the project. In addition, the research team should consider additional outreach activities, such as presenting project findings at conferences.

Expected Deliverables

- A stand-alone comprehensive literature synthesis document, including annotations for the list of publications and resources used.
- A user-friendly utility-facing guidance document, including case studies.
    - In addition, the guidance document will include a specific chapter on ongoing research and emerging technology development on wastewater and stormwater disinfection.
    - Furthermore, this document will include a chapter and supporting technical appendix that summarizes the knowledge gaps, research needs, and preliminary concepts for recommended future research projects, including recommended means to address those remaining gaps.
- A user-friendly utility-facing web page and/or another format such as StoryMaps (must follow the criteria outlined for technology deliverables presented in the *Technology Deliverables Guidance*).
- One invitation-only virtual workshop, along with workshop planning and all supporting materials (e.g., agenda, presentations, meeting notes, and workshop summary).
- Broader outreach:
    - Webcasts and public outreach materials such as conference presentations.
    - Submitting one open access peer-reviewed journal paper and additional outreach products as applicable.

Communication Plan

Please review WRF's *Project Deliverable Guidelines* for information on preparing a communication plan. Conference presentations, webcasts, peer-reviewed publication submissions, and other forms of project information dissemination are typically encouraged.

Project Duration

The anticipated period of performance for this project is 24 months from the contract start date. The submission of one open access peer-reviewed journal paper can go beyond the project end date.

References and Resources

The following list includes examples of research reports, tools, and other resources that may be helpful to proposers. It is not intended to be comprehensive, nor is it a required list for consideration.

Leong, L. Y. C., J. Kuo, and C. -C. Tang. 2008. *Disinfection of Wastewater Effluent: Comparison of Alternative Technologies.* Project 1174. Denver, CO: The Water Research Foundation. (https://www.waterrf.org/research/projects/disinfection-wastewater-effluent-comparison-alternative-technologies)

Moffa, P. E., J. J. LaGorga, L. Henry, P. Goodrum, M. Boner, F. Doherty, and T. Alexander. 2005. *Identifying Technologies and Communicating the Benefits and Risks of Disinfecting Wet Weather Flows.* Project 1027. Denver, CO: The Water Research Foundation. (https://www.waterrf.org/research/projects/identifying-technologies-and-communicating-benefits-and-risks-disinfecting-wet)

Olivieri, A. W., A. Boehm, C. A. Sommers, J. A. Soller, J. N. S. Eisenberg, R. Danielson, R. Spear, and R. Cooper. 2007. *Development of a Protocol for Risk Assessment of Microorganisms in Separate Stormwater Systems*. Project 1137. Denver, CO: The Water Research Foundation. (https://www.waterrf.org/research/projects/development-protocol-risk-assessment-microorganisms-separate-stormwater-systems)

Sharvelle, S., J. Alja'fari, A. Branch, and J. Rasmus. 2023. *Assessing the Microbial Risks and Impacts from Stormwater Capture and Use to Establish Appropriate Best Management Practices*. Project 5034. Denver, CO: The Water Research Foundation. (https://www.waterrf.org/research/projects/assessing-microbial-risks-and-impacts-stormwater-capture-and-use-establish)

Tang, C. -C., N. Munakata, S. -J. Huitric, A. Garcia, S. Thompson, and J. Kuo. 2010. *Combining UV and Chlorination for Recycled Water Disinfection.* Project 1628. Denver, CO: The Water Research Foundation. (https://www.waterrf.org/research/projects/sequential-uv-and-chlorination-reclaimed-water-disinfection)

Wright, H., T. Brooks, M. Heath, E. Wicklein, B. Sotirakos, and A. Salveson. 2020. *UV Disinfection Knowledge Base for Reuse Applications.* Project 4764. Denver, CO: The Water Research Foundation. (https://www.waterrf.org/research/projects/uv-disinfection-knowledge-base-reuse-applications)

Proposal Evaluation Criteria

The following criteria will be used to evaluate proposals:

- Understanding the Problem and Responsiveness to RFP (maximum 20 points)
- Technical and Scientific Merit (maximum 30 points)
- Qualifications, Capabilities, and Management (maximum 15 points)

- Communication Plan, Deliverables, and Applicability (maximum 20 points)
- Budget and Schedule (maximum 15 points)

PROPOSAL PREPARATION INSTRUCTIONS

Proposals submitted in response to this RFP must be prepared in accordance with WRF's *Guidelines for Research Priority Program Proposals* and *Instructions for Budget Preparation*. The guidelines contain instructions for the technical aspects, financial statements, indirect costs, and administrative requirements that the applicant must follow when preparing a proposal.

Proposals that include the production of web- or software-based deliverables, such as websites, Excel spreadsheets, Access databases, etc., must follow the criteria outlined for technology deliverables presented in the *Technology Deliverables Guidance*.

Eligibility to Submit Proposals
Proposals will be accepted from both U.S.-based and non-U.S.-based entities, including educational institutions, research organizations, governmental agencies, and consultants or other for-profit entities.

WRF's Board of Directors has established a *Timeliness Policy* that addresses researcher adherence to the project schedule. Researchers who are late on any ongoing WRF-sponsored studies without approved no-cost extensions are not eligible to be named participants in any proposals. Direct any questions about eligibility to the WRF project contact listed at the top of this RFP.

Administrative, Cost, and Audit Standards
WRF's research program standards for administrative, cost, and audit compliance are based upon, and comply with, Office of Management and Budget (OMB) Uniform Grants Guidance (UGG), 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, and 48 CFR 31.2 Contracts with Commercial Organizations. These standards are referenced in WRF's *Guidelines for Research Priority Program Proposals* and include specific guidelines outlining the requirements for indirect cost negotiation agreements, financial statements, and the Statement of Direct Labor, Fringe Benefits, and General Overhead. Inclusion of indirect costs must be substantiated by a negotiated agreement or appropriate Statement of Direct Labor, Fringe Benefits, and General Overhead. Well in advance of preparing the proposal, your research and financial staff should review the detailed instructions included in WRF's *Guidelines for Research Priority Program Proposals* and consult the *Instructions for Budget Preparation*.

Budget and Funding Information
The maximum funding available from WRF for this project is $200,000. The applicant must contribute additional resources equivalent to at least 33% of the project award. For example, if an applicant requests $100,000 from WRF, an additional $33,000 or more must be contributed by the applicant. Acceptable forms of applicant contribution include cost share, applicant in-kind, or third-party in-kind that comply with 2 CFR Part 200.306 cost sharing or matching. The applicant may elect to contribute more than 33% to the project, but the maximum WRF funding available remains fixed at $200,000. Proposals that do not meet the minimum 33% of the

project award will not be accepted. Consult the *Instructions for Budget Preparation* for more information and definitions of terms.

Period of Performance
It is WRF's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, WRF and its sub-recipients have a contractual obligation to adhere to the agreed-upon schedule. Under WRF's *No-Cost Extension Policy*, a project schedule cannot be extended more than nine months beyond the original contracted schedule, regardless of the number of extensions granted.

Utility and Organization Participation
WRF encourages participation from water utilities and other organizations in WRF research. Participation can occur in a variety of ways, including direct participation, in-kind contributions, or in-kind services. To facilitate their participation, WRF has provided contact information, on the last page of this RFP, of utilities and other organizations that have indicated an interest in this research. Proposers are responsible for negotiating utility and organization participation in their particular proposals. The listed utilities and organizations are under no obligation to participate, and the proposer is not obligated to include them in their particular proposal.

Application Procedure and Deadline
Proposals are accepted exclusively online in PDF format, and they must be fully submitted before 3:00 pm Mountain Time on Thursday, August 29, 2024.

The online proposal system allows submission of your documents until the date and time stated in this RFP. To avoid the risk of the system closing before you press the submit button, do not wait until the last minute to complete your submission. Submit your proposal at https://forms.waterrf.org/cbruck/rfp-5243 .

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Harry Zhang, PhD, PE; 571.384.2098 or hzhang@waterrf.org. Questions related to proposal submittal through the online system may be addressed to Caroline Bruck at 303.347.6118 or cbruck@waterrf.org.

Utility and Organization Participants

The following utilities have indicated interest in possible participation in this research. This information is updated within 24 business hours after a utility or an interested organization submits a volunteer form, and this RFP will be re-posted with the new information. **(Depending on your settings, you may need to click refresh on your browser to load the latest file.)**

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