



## REQUEST FOR PROPOSALS (RFP)

### ***Balancing Human and Natural Assets into a Holistic Water Resource Management Framework (5295)***

#### **Date Posted**

March 4, 2025

#### **Due Date**

Proposals must be received by 3:00 pm Mountain Time on Wednesday, May 7, 2025.

#### **WRF Project Contact**

Lola Olabode, MPH, BCES, [lolabode@waterrf.org](mailto:lolabode@waterrf.org)

#### **Project Sponsors**

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

#### **Project Objectives**

This project aims to create a more effective watershed management framework by balancing human and natural land uses to overcome the limitations of past approaches focused on individual pollutants. The goal is to integrate human and natural systems to foster resilient watershed health, supported by a user-friendly decision-support framework and real-world case studies to guide stakeholders in improving holistic watershed management strategies:

- Review and develop watershed condition metrics and assessment protocols for both human and natural asset structures and functions that best describe holistic approach watershed health and benefits in a social-ecological system context.
- Evaluate landscape conservation, recovery, and mitigation management strategies to assess their effectiveness in maintaining and improving watershed conditions and achieving aquatic ecosystem health targets along a disturbance gradient.<sup>1</sup>
- Build an Ecosystem-Based Management (EBM) and Natural and Nature-Based (NNB) decision-support framework to set watershed and ecosystem health goals that support

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<sup>1</sup> The disturbance gradient refers to the variation in the intensity or impact of disturbances across a particular area or ecosystem. Disturbances can include natural events like wildfires, storms, or floods, as well as human activities such as deforestation, urban development, or pollution. In ecological studies, the disturbance gradient helps researchers understand how different levels of disturbance affect species composition, community structure, and ecosystem functions. For example, areas that experience frequent and intense disturbances may have different plant and animal communities compared to areas with minimal disturbance. Understanding this gradient is crucial for conservation planning and ecosystem management.

desired social-ecological outcomes. Ensure the framework is adaptable and can be **applied to multiple ecosystems and landscapes** beyond the initial watershed.

### **Budget**

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

### **Background and Project Rationale**

Balancing human and natural needs, uses, and benefits is an enormous challenge in the face of major change drivers, especially the loss of watershed structural and functional integrity and pervasive climate change. Managing the challenges of shifting ecological baselines caused by these change drivers requires new and strategic, ecosystem-based management and decision support. To address and more effectively manage these complex systems and their interactions in an appropriate Social-Ecological System (SES) context, a better understanding of the interdependencies of human systems, geophysical settings, ecosystem structures, and interrelated vulnerabilities is needed. Holistic, watershed scale Ecosystem-Based Management (EBM) approaches that link watershed health to aquatic ecosystem health and social benefits are flourishing.

Increasingly, the management focus is on EBM alternatives that integrate Natural and Nature-Based (NNB) practices into One-Water management frameworks (<https://uswateralliance.org/>) for the self-sustaining and resilient services they bring to both ecosystems and social systems. Conservation and recovery tools incumbent in NNB practices have the power to holistically manage and mitigate landscape and climate change drivers and underlying pressures—including nutrients—that collectively impact our waters and their security. NNB management practices have the potential to return structural and functional integrity to the watershed and restore balance to human and natural assets that meet the Clean Water Act and WRF subscriber water resource quality and sustainability objectives. Natural and nature-based remedies emphasize conservation and natural recovery practices that expand upon One Water principles and protocols by providing more sustainable and resilient outcomes for climate, biodiversity, and society.

Actionable policies and regulations are essential to incite meaningful management outcomes, but current practices are often costly and lack adequate application scale and power to attain health and well-being objectives for ecosystems and social systems alike. Financial capital models often attempt to balance human and natural assets on a monetary basis. However, these models tend to lean heavily toward meeting inelastic human needs that can undervalue the non-monetary, existential worth that integrated social and natural values provide. Pluralistic value models integrate competing human and natural asset values (i.e., non-monetized “capital”) toward optimized functionality consistent with resilient and sustainable SES outcomes. With a better understanding of these optimal coexistence options and solutions, WRF subscribers can more effectively guide policy and management within economic, technological, and legal constraints.

WRF subscribers have created tens of thousands of watershed-based plans (e.g., 9-key element plans, Integrated Water Resource Management [IWRM] plans, and Enhanced Watershed

Management Plans [EWMP]), and Total Maximum Daily Loads (TMDL) that have, according to the GAO (2013), not produced desired results in the field. Usually, the narrow focus on individual pollutants does not provide the collective chemical, physical, and biological outcomes, and broader benefits of “healthy” watersheds. “Integrated” plans and protocols are often limited to regulated source management that provide pollutant “treatments”, rather than enduring remedies for ecosystem degradation and climate change. Conserving or improving watershed and aquatic ecosystem integrity adds value with more resilient and self-sustaining natural outcomes often at a lower cost than engineering solutions. The importance of balancing human and natural uses of the land to successful One Water outcomes should not be underestimated.

## **Research Approach**

### **1. Review Existing Efforts:**

- a. Review current watershed condition (1) management plans and (2) metrics and assessment protocols for human and natural asset structures and functions that best describe watershed health and benefits in a social-ecological system context.
- b. Review the current landscape conservation, recovery/restoration, and mitigation management strategies to maintain and improve watershed conditions and achieve aquatic ecosystem health targets along a disturbance gradient. Watershed landscape conservation and recovery practices will consider both riparian buffers and upland watershed areas assessment and management potential.
- c. Use applicable case studies or hypothetical management application scenarios to scope watershed landscape conservation and recovery practices with consideration of both riparian buffers and upland watershed areas assessment and management potential to meet WRF user-defined objectives with consideration of changing landscape and climate drivers.
  - Identify derived benefits of balancing human and natural asset management for individual pollutant management, and how holistic, integrated watershed management outcomes can strategically guide policy and management of regulated wastewater and stormwater in watershed-based plans and TMDLs.
  - Incorporate adaptive management approaches associated with changing landscapes and climate.

### **2. Identify Gaps:**

- a. Evaluate the gaps from (1. Review Existing Efforts).
- b. Survey representative utilities (including conservation authorities as applicable) nationwide of different sizes (small, large) and weather conditions (wet/dry/hot/cold) about their practices and success levels. Consider including targeted interviews to complement the “surveys” to get more detailed information.
- c. Identify derived benefits of balancing human and natural asset management for individual pollutant management, and how holistic, integrated watershed management outcomes can strategically guide policy and management of regulated wastewater and stormwater in watershed-based plans and TMDLs.

- d. Refine and develop watershed condition metrics and assessment protocols based on (1.a.).
3. Develop Decision Framework:
    - a. Develop a disturbance gradient to evaluate the potential for landscape conservation, recovery, and mitigation management strategies reviewed in (1.b.).
    - b. Build a decision-support framework for setting watershed condition goals and targets along a gradient that are consistent with user-defined designated use and ecosystem health goals and objectives that support desired social-ecological outcomes.
    - c. Apply and test the decision-support framework and associated non-monetary social-ecological models to quantitatively connect watershed condition management actions to desired water quality targets and aquatic ecosystem health outcomes. Actual case studies will be used.
    - d. Consider adaptive management associated with the risk and uncertainties of changing landscape and climate drivers.
  4. Develop and/or refine an Implementable Dashboard Template (optional):
    - a. Create a customizable dashboard template that allows users to input local data and visualize key watershed health metrics.
    - b. Include example scenarios to demonstrate how users can populate and use the dashboard with their data.
    - c. Ensure the dashboard is interactive, enabling stakeholders to test different management actions and make data-driven decisions.
  5. Identify Next Steps with Utility Guidance:
    - a. Suggest a series of next steps to improve on and move further the effort performed under this RFP.

Proposers are encouraged to partner with:

- Federal agencies—U.S. Environmental Protection Agency (EPA)
- Water associations—Water Environment Federation (WEF), American Water Works Association (AWWA), National Association of Clean Water Agencies (NACWA)
- Key stakeholders—Green Infrastructure Leadership Exchange in the United States and Canada, Natural Assets Initiative in Canada.

### **Expected Deliverables**

Possible deliverables will be associated with the four steps identified in the approach described above.

1. Comprehensive synthesis document that includes:
  - a. Review document of utility actual practices and literature hypothetical cases. Include type of plans, models (simulation, scenario analysis, risk-based tools, optimization tools) used, and metrics evaluated.
  - b. Summary analysis of benefits and gaps identified in the review document (a

literature review and an industry scan to differentiate between published materials and real-world use cases to help clarify the scope and focus of each component in the synthesis document).

2. Decision-support framework and utility facing guidance.
3. Implementable dashboard (ideally with an example utility).
4. Synthesis of next steps and proposed future research.

### **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.

### **References and Resources**

- Schuurman, G.W., C. Hawkins Hoffman, D.N. Cole, D.J. Lawrence, J.M. Morton, D.R. Magness, et al. 2020. "Resist-accept-direct (RAD)—a framework for the 21st-century natural resource manager." Natural Resource Report NPS/NRSS/CCRP/NRR—2020/ 2213. Fort Collins, CO: National Park Service. 30 p. <https://doi.org/10.36967/nrr-2283597>.
- GAO (U.S. Government Accountability Office). 2013. *Clean Water Act: Changes Needed If Key EPA Program Is to Help Fulfill the Nation's Water Quality Goals*. Report to Congressional Requesters. GAO-14-80. Washington, DC: GAO. 108 p. <https://www.gao.gov/products/gao-14-80>.

### **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](#). These 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 tools, such as websites, Excel spreadsheets, Access databases, etc., must follow the criteria outlined for web tools 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 Wednesday, May 7, 2025.

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-5295>.

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Lola Olabode, MPH, BCES, [lolabode@waterrf.org](mailto:lolabode@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](mailto: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.)**

### **Andrea Suarez Abastida**

Director  
NMB Water  
17050 NW 19 Avenue, 2<sup>nd</sup> floor  
North Miami Beach, FL 33143  
(305) 948-2983  
[andrea.suarez@citynmb.com](mailto:andrea.suarez@citynmb.com)

### **Caroline Nguyen**

Principal Scientist  
WSSC Water  
14501 Sweitzer Lane  
Laurel, MD 20707  
(301) 206-8141  
[caroline.nguyen@wsscwater.com](mailto:caroline.nguyen@wsscwater.com)

### **Jessica Koop**

Senior Engineer  
Water Replenishment District  
4040 Paramount Boulevard  
Lakewood, CA 90712  
(562) 275-4300  
[jkoop@wrd.org](mailto:jkoop@wrd.org)