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REQUEST FOR FACULTY PRE-PROPOSALS FOR THE FY 2020-2021 COMPETITIVE GRANTS PROGRAM

SPONSORED BY

THE WATER RESOURCES RESEARCH INSTITUTE
OF THE UNIVERSITY OF NORTH CAROLINA SYSTEM
AND USGS 104(B) PROGRAM

RFP ISSUE DATE: April 25, 2019

PROPOSAL DUE DATE: JUNE 3, 2019, 8:00 A.M.

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FOR QUESTIONS, PLEASE CONTACT:

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I. OVERVIEW

The Water Resources Research Institute (WRRRI) of The University of North Carolina is part of a national system of 54 institutes authorized by the Water Resources Research Act (WRRRA) of 1964 (as amended), and represents a federal-state partnership between the US Geological Survey (USGS) and state land grant universities. The North Carolina WRRRI is hosted by North Carolina State University.

This Request for Proposals (RFP) is for research and information transfer projects in the areas of water resources as prioritized by WRRRI with input from the WRRRI Advisory Committee, which comprises stakeholders of various water resources sectors and professions working throughout North Carolina. Guidance is also received from the Urban Water Consortium and the Stormwater Consortium, two WRRRI-administered consortia representing drinking water/wastewater utilities and municipal stormwater programs around the state.

Per Section 104(b) of the WRRRA, the North Carolina Water Resources Research Institute shall:

- 1) “plan, conduct, or otherwise arrange for competent applied and peer reviewed research that fosters-
 - A. improvements in water supply reliability;
 - B. the exploration of new ideas that-
 - i. address water problems; or
 - ii. expand understanding of water and water-related phenomena;
 - C. the entry of new research scientists, engineers, and technicians into water resources fields; and
 - D. the dissemination of research results to water managers and the public.

- 2) cooperate closely with other colleges and universities in North Carolina that have demonstrated capabilities for research, information dissemination, and graduate training in order to develop a statewide program designed to resolve State and regional water and related land problems.

Each institute shall also cooperate closely with other institutes and other organizations in the region to increase the effectiveness of the institutes and for the purpose of promoting regional coordination.”

II. PROJECT FUNDING & DURATION

Projects may be funded in whole or part by federal (USGS) funds contingent upon appropriation by Congress. As of the issue date of this RFP, these federal dollars have not been appropriated. As such, no funding can be guaranteed and all funding levels including the maximum amount per project or the number of projects are subject to change. Applicants whose final proposals have been accepted may be asked to revise scopes of work, start dates, and budgets to align with available funding levels, funding sources and receipt of federal funds.

Please use March 1, 2020 as your planning target for a project start date, with a project end date of February 28, 2021. Start and end dates may change.

Historically, WRRRI has been able to support approximately four (4) faculty projects per year, and we anticipate the ability to provide similar levels of support for this cycle pending quality of proposals and willingness of finalist applicants to adapt scope and budgets as needed.

Pre-proposals will be accepted for 1-year projects with a maximum award limit of \$60,000. The limit refers only to direct costs. WRRRI does not pay indirect costs.

Please note that due to the conclusion of a 5-year USGS funding cycle and per guidance from USGS, no-cost extensions will not be issued beyond the end date specified in the official award. All work must be completed within the 1-year proposed timeline.

III. APPLICANT ELIGIBILITY

Faculty of any accredited college or university (public or private) in North Carolina may apply. While students and post-docs are not eligible to apply as a principal investigator (PI), undergraduate, graduate, and post-doctoral support may be included in proposals. We especially encourage student support and student training opportunities. Though not eligible to apply directly, WRRRI encourages industry and private groups to partner with university researchers in response to this call.

A single individual may be listed as an investigator on a maximum of two pre-proposals, and serve as PI on only one. That is, if you are involved in two pre-proposals (the maximum allowed), you may be a co-investigator on both, or a co-investigator on one and PI on the other.

WRRRI strongly encourages collaboration among researchers from different academic institutions, and with federal, state, and local agencies. WRRRI also encourages submissions from principal investigators in early-career status.

Timeliness and researcher performance on past projects funded through WRRRI will be a factor in faculty pre-proposal selection. As a consequence, a researcher who is late reporting on or completing an ongoing study funded through WRRRI without an approved no-cost extension might not be eligible to apply as a PI or co-PI on a pre-proposal for the current funding cycle. If you have any questions about your eligibility in this regard, please contact John Fear at jmfear@ncsu.edu or 919-515-9104.

IV. APPLICANT DIVERSITY

Recognizing that some students and faculty have historically been underserved and under-targeted with research opportunities, and that some students and faculty are underrepresented in the sciences, we encourage submissions by and/or collaborative partnerships with one or more of the following:

- African American, Hispanic and Native American faculty
- Historically Black Colleges and Universities (HBCUs)
- Minority Serving Institutions (MSIs)

V. SUBMISSION PROCESS & DUE DATE

- The deadline for submissions is 8:00 am, Monday, June 3, 2019.
- In fairness to other applicants, late submissions will not be accepted.
- Proposals must be submitted to WRRRI by e-mail to debra_lynch@ncsu.edu.
- Please note formatting requirements below.
- All elements of the proposal must be combined into a single pdf document.
- The document file name should be formatted as "Lastname-faculty-preprop-2019.pdf".
- You will receive an email confirmation of receipt of your proposal within 2 business days of submission. If, after 2 days, you have not received confirmation, call (919) 515-9102.
- Submissions for faculty pre-proposals are submitted directly by PIs and need not come to WRRRI with formal approval from a campus sponsored research office (such approval is only needed for the invited full proposals).

VI. PROPOSAL ELIGIBILITY

Proposed research must take place in the state of North Carolina.

Pre-proposals may address research questions and methods in the fields of social science, education, communications, natural science, engineering, economics or policy, or a combination of these disciplines (as applied to the focus areas below). We encourage pre-proposals that include meaningful public engagement, public participation, or collaboration with members of the communities where research is to take place.

Pre-proposals must address a specific research question or address clear, need-based objectives (e.g. in the case of informational transfer projects).

Pre-proposals not eligible for funding under this call include those focused on monitoring-only activities, those focused only on ocean waters, and those on health effects involving humans subjects.

Research that addresses the link between environmental and human health as related to the focus areas below is acceptable (which may require IRB approval from the applicant's campus).

Only invited pre-proposal teams will be eligible to submit full proposals. WRRRI anticipates inviting approximately 50% of the pre-proposals teams to submit full proposals, with anticipated funding for approximately four full proposals.

VII. RFP FOCUS AREAS

Proposals must address one of the focus areas below.

RESEARCH PRIORITY AREA 1: STORMWATER MANAGEMENT

Low impact development How do the lifecycle costs and benefits of low impact development (LID) compare to conventional development in new, retrofit, and redevelopment applications, particularly regarding LID for stormwater treatment in urban and rural settings? What are the

short-term and long-term implementation and maintenance cost and benefits of LID for developers, municipalities, communities, and individuals compared to that of conventional stormwater control measures (SCMs)? What is the short-term and long-term effectiveness of low impact development, specifically as related to stormwater treatment, costs and benefits, and water quality improvement? How can low impact development be encouraged and incentivized in North Carolina? For the questions above, how do costs and benefits for LID and conventional development compare across the different regions of the State?

Impervious cover impacts & mitigation How can we quantifiably mitigate the effects of impervious cover on water quality and aquatic life in different urban and rural stream settings and stormwater systems? What realistic management measures (including stream restoration practices, riparian buffers, and floodplain-stream reconnection) exist or can be further evaluated to address effects of impervious cover? How can watershed restoration activities be implemented to achieve macroinvertebrate recovery and recolonization?

Pollutant removal processes and credits How should pollutant removal credits be determined and evaluated for urban and rural stormwater control measures (SCMs), stream restoration practices and other management practices, in particular those aimed at managing nutrients, pathogens, and sediment? How can we better understand the processes by which SCMs and other management practices remove contaminants from stormwater and reduce impacts to receiving streams? Specifically for the state of North Carolina, and its physiographic regions (mountains, piedmont, and coastal plain), what location-based methods and criteria can be developed for evaluating SCM, stream restoration and management practice performance, credit accounting, and removal rates for pollutants (particularly nutrients, pathogens, and sediment)?

RESEARCH PRIORITY AREA 2: DRINKING WATER, WASTEWATER & WATER INFRASTRUCTURE

Risk and uncertainty In the face of changing population, land use, climate, and regulations, how can we quantify and manage risks and uncertainties in public water supplies? How should rate setting and financing capital improvements for water and sewer utilities be determined in the face of these risks and the changing physical and regulatory landscapes? How can utilities increase their resilience to these changes? What risks exist for human health and well-being related to water consumption and contact? How can these risks be adequately managed and communicated?

Customer behavior and utility relations Using social science and economic valuation methodologies, how can water/wastewater utilities better understand customers' level-of-service expectations, motivations for behaviors, willingness to pay for services (including ecosystem services that are protected through water treatment and management), and customer perceptions, attitudes, opinions and beliefs related to drinking water, wastewater, and reclaimed water? How can this information be applied to utility management? How do the aforementioned questions regarding expectations, behaviors, willingness to pay, etc. apply to private well owners? How do these factors influence the risk and health impacts assumed by private well owners? For private well owners, how are decisions made related to conducting testing, managing their systems and understanding and assuming risks related to supply, health and contamination?

Alternative water sources What alternative sources (graywater, harvested rainwater, reclaimed water) exist for differing consumptive uses (e.g. home irrigation)? What are the health risks of these alternatives sources? What are the impacts of alternative water use on overall water supply and demand? How can public perception barriers or economic barriers be overcome to increase likelihood of acceptance, adoption and use of alternative sources?

Innovative processes What/how can innovative processes and technologies be applied to NC utilities for water and wastewater treatment, plant operation, energy production, distribution systems, waste discharge management, potable and reclaimed water supply, and the repair, management and planning of infrastructure? What information gaps exist and what processes are needed for effective utility management and treatment of emerging contaminants of concern?

RESEARCH PRIORITY AREA 3: GROUNDWATER & SURFACE WATER

What are the human impacts to groundwater and/or surface water availability and quality in North Carolina? What fundamental hydrogeological interactions of surface water and groundwater resources do we need to further understand in order to support the sustainable use of water resources? How can information and data gaps be addressed to better understand and manage groundwater and/or surface water resources?

RESEARCH PRIORITY AREA 4: WATERSHED MANAGEMENT

In NC watersheds where Total Maximum Daily Loads (TMDLs), nutrient management plans, and allocation management strategies and studies have been implemented, what changes in water quality and quantity have been observed? What are the sources, transport and fate of nutrients and sediments in surface waters in these watersheds? What physical, hydrological, biological and/or community dynamics need to be understood to enhance watershed management approaches to improve stream and human health, and ensure adequate supply?

VIII. PRE-PROPOSAL SUBMISSION FORMAT

In fairness to all applicants, if we receive a pre-proposal that does not adhere to the following format guidelines, we will unfortunately have to disqualify your pre-proposal from the competition. Please double-check the formatting of your pre-proposal carefully before submitting.

Pre-proposals must adhere to the following format:

- 1-inch margins all around
- Times New Roman 12-point font
- Strict page limits as listed below. Note, figures and diagrams are considered part of each section narrative and count towards section page limits.
- Page numbers, starting with the cover page as page 1

Pre-proposals must contain all of, and only, the following elements:

1. Cover page
2. Objectives and technical approach
3. Significance to N.C. water resources

4. References cited
 5. CVs
 6. Letters of support (optional)
1. **Cover Page** (limited to 1 page)
Cover pages must include the following elements:
 - Pre-proposal title
 - Proposed start and end dates (should be between March 1, 2020 and February 28, 2021)
 - Budget request (total amount only, no breakdown)
 - Name, academic rank or title, university and department/school, mailing address, phone number, and e-mail address for the principal investigator (PI)
 - Name, academic rank or title, university and department/school, and e-mail address for each co-investigator(s), or relevant information for non-academic co-investigator(s)
 - One to five keywords for the proposed project
 - Statement that “The proposed project would OR would not [pick one] involve funds going to a USGS collaborator.” (This is only for WRRRI administrative purposes and is not a factor in identifying the successful pre-proposals.)
 2. **Objectives and Technical Approach** (limited to 1 page)
Describe your project and the RFP focus area(s) it addresses. State specifically what you plan to accomplish in the proposed project in terms of goals, objectives, hypotheses to test, or research questions to answer; how it will be done (i.e., the technical approach, engagement/partnership approach, and/or communication approach, brief timeline, major milestones and tasks, and leveraging of existing resources [if applicable]); and/or needs to be met through communication and information transfer†. Be specific and provide detail for reviewers to assess the feasibility and appropriateness of your approaches.
 3. **Significance to North Carolina and Funding Program‡** (limited to one page)
Explain the significance and relevance of the proposed project for one or more important water resource issues in North Carolina, and the interests/mission of NC WRRRI. Who wants the results of your project?
 4. **References Cited** (no page limit)
Use a standard bibliographic format to list the references cited in your pre-proposal. This section does not count towards the page limit of the body of your proposal.
 5. **Curricula Vitae** (limited to 2 pages per CV)
CVs are required for lead faculty PI and co-PIs. CVs must be in standard National Science Foundation (NSF) format (see the section on “biographical sketches” at http://www.nsf.gov/pubs/policydocs/pappguide/nsf11001/gpg_index.jsp).
 6. **Letters of Support – Optional** (no page limit)
Letters of support, particularly those that speak to the applicability of the proposed project results, are strongly encouraged. Letters may be submitted from partnering organizations, agencies or potential users of the information the proposed project intends to produce. This section does not count towards the page limit of the body of your proposal.

† WRRRI encourages PIs to consider approaches to information and technology transfer and dissemination of research results for all projects. While not a required component of the pre-proposal stage, successful applicants will be asked to address this in a full proposal.

‡ While the reviews of pre-proposals are based on the entire submission, the reviews will prioritize the significance of the project to NC water resources. Submissions will be ranked based on received reviews. Pre-proposal reviewers will primarily be from the WRRRI advisory committee, which includes scientists, engineers, and policy professionals working on water resource issues in N.C., mainly in government agencies, water utilities, non-governmental organizations, and other non-academic settings. As a group, they will have a wide range of backgrounds in physical, chemical, biological, and policy aspects of water resources. Additional reviewers from outside of the WRRRI advisory committee will be solicited as needed.

IX. TIMELINE

April 25, 2019	RFP issued
June 3, 2019	Pre-proposals due
July 19, 2019	Faculty notified of pre-proposal outcome
August 29, 2019	Invited full proposals due
December 9, 2019	Technical committee meets for proposal and peer review evaluation
December 20, 2019	Faculty notified of full proposal outcome
January, 2020	Submission of finalist packages to USGS for ratification, pending appropriation of federal funds
March 1, 2020	First eligible spending by approved projects, pending appropriation of federal funds