REQUEST FOR FACULTY PRE-PROPSALS and STUDENT FULL PROPOSALS

August 1, 2022

The Water Resources Research Institute (WRRI) has initiated the request for proposals (RFP) for the FY2023-2024 Competitive Grants program. This RFP has two aspects, each described in detail on the following pages:

1) **FACULTY:** A two-stage faculty process involving a pre-proposal stage and full proposal stage.
   Due date: September 16, 2022 at 5pm.

2) **STUDENT:** A single stage request for student full proposals.
   Due date: October 3, 2022 at 5pm.

OVERVIEW:

WRRI is a multi-campus Center of the University of North Carolina system. We are part of a national system of 54 institutes authorized by the Water Resources Research Act (WRRA) of 1964 (as amended). WRRI represents a federal-state partnership between the US Geological Survey (USGS) and state land grant universities. North Carolina State University hosts WRRI administratively.

This RFP is for research, engagement, and information transfer projects in the areas of water resources as prioritized by WRRI with input from the WRRI Advisory Committee, which comprises stakeholders of various water resources sectors and professions in North Carolina. The Urban Water Consortium and the Stormwater Consortium, two WRRI-administered consortia representing drinking water/wastewater utilities and municipal stormwater programs around the state, also provide guidance.

Proposals must include language that describes the significance and relevance of the project to North Carolina and the interests of WRRI (go.ncsu.edu/wrri-plan). Projects should also address WRRI's commitment to diversity, equity, inclusion, justice, and accessibility (https://wrri.ncsu.edu/about/diversity-equity-inclusion-justice-and-accessibility/). We strongly encourage proposals from HBCUs and MSIs and/or from traditionally underserved and

underrepresented communities, as well as from those who can demonstrate how their work and related outreach will benefit underserved and underrepresented communities.

Proposed research must take place in the state of North Carolina. Research projects should be hypothesis-driven or contain clear research objectives. Engagement and information transfer projects do not require a hypothesis.

Faculty pre-proposals/student full proposals ("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 proposals that include meaningful public engagement, public participation, extension activities, and/or collaboration with members of the communities where research will take place.

Proposals not eligible for funding under this call include those that focus on monitoring-only activities, those that focus only on ocean waters, and those that focus on health effects involving human subjects. Research that addresses the link between environmental and human health, as related to the focus areas below, is acceptable.

All submitted proposals must fit within one of more of the following focus areas.

RFP FOCUS AREAS:

RESEARCH PRIORITY AREA 1: NON-POINT SOURCE POLLUTION MANAGEMENT

Operational Research and Infrastructure Asset Management:
- Economic assessment of stormwater rates across N.C. Are utilities breaking even compared to increased cost and implementation needs? Can populations afford a rate increase? What alternative can be explored?
- What innovative techniques can be used to identify pollution sources through outfall screening?
- Can models be adapted to assist stormwater divisions in planning the timing for infrastructure replacement/restoration?
- How do changing precipitation patterns impact stormwater control devices, both for existing structures and in the design for new systems? Is the storm size design standard still appropriate?

Pollutant Removal Processes and Credits: How does the benefit of various stormwater control techniques in terms of pollutants removed and flooding mitigated compare over the 30-year time frame of a typical mortgage against the upfront costs of installation and implementation? Are stormwater control techniques providing the return we think they are?

Impervious Cover Impacts and 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 warrant further evaluation to address the effects of impervious cover? How can implementing watershed restoration activities achieve macroinvertebrate recovery and recolonization?

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

Water Treatment and Management: What are innovative techniques and methods in biosolids treatment and management, especially as they relate to land application versus incineration? How can carbon emissions related to alternative biosolids treatment be better managed?

Water Affordability: What influences water affordability (beyond income), and can existing datasets be used to conduct analyses on utility-specific affordability? Can models be developed to investigate water affordability in NC?

Emerging Contaminants: What is the distribution and concentrations of emerging contaminants (including PFAS) in our water supplies, and who is at risk?

Climate Change Impacts on Water Resources: How will more severe droughts and changes in rainfall patterns and amounts impact water supply and planning? How will flooding and increased high intensity storms impact reservoir sedimentation rates? How will increased temperatures impact toxic algal blooms in water supply source waters?

RESEARCH PRIORITY AREA 3: GROUNDWATER AND 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 in urban and rural settings for consumptive uses (e.g., domestic and agricultural irrigation, home use, industry) and non-consumptive uses (e.g., maintaining riparian flow)? What regulated and unregulated contaminants of concern (PFAS and others) are impacting North Carolina waters, and how? What is the impact of microplastics in North Carolina waters?

RESEARCH PRIORITY AREA 4: ECOSYSTEM MANAGEMENT

What is driving the increase in Harmful Algal Blooms in the Albemarle region? What watershed scale approaches (natural and social sciences) can address the sources, transport, and fate of nutrients, sediments, and other contaminants in North Carolina riparian ecosystems? What new aquatic invasive species are present and need to be accounted for in our watershed planning? Have climate change and altered weather patterns impacted the effectiveness of our current river basin planning approaches? What innovative approaches can address nuisance flooding along our river basins?

PROJECT FUNDING AND 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. If federal funding is not received, WRRI may opt not to support any proposals received from this RFP.

Historically, WRRI has been able to support approximately five faculty projects and five student projects per year, and we anticipate the ability to provide similar levels of support for this cycle.

All work must be completed within the proposed timeline. Barring extreme circumstances, no-cost extensions are historically difficult to secure for USGS supported projects, due to the annual budget cycle used by the USGS.

Faculty

Pre-proposals may be submitted for either 1- or 2-year projects. The maximum award for a 2-year project is $120,000, with a $60,000 annual limit. The maximum award for a 1-year project is $60,000. The limit refers only to direct costs. **Per the language in the WRRA, WRRI does not pay indirect costs.**

Please use September 1, 2023 as your planning target for a project start date, with a project end date of August 31, 2024 or 2025 depending on whether you are proposing a 1- or 2-year project. Actual start and end dates may be subject to change based on appropriation of federal funds and other federal guidelines.

Funding for the second year of a 2-year award is not guaranteed. Year 2 funding is contingent upon the appropriation of funds by Congress in the following fiscal year. Year 2 funding also depends on satisfactory performance in year 1, as determined by timely submission of progress reports and satisfactory justification and communication with WRRI in the event year 1 objectives are unmet.

Two-year projects must have distinct year 1 and year 2 objectives, timelines, and costs. **Year 1 must be able to stand on its own in case year 2 does not occur**. WRRI will issue separate contracts for each project year. Year 1 funds will **not** carry forward into year 2.

Students

Full proposals for student research may be submitted for 1-year projects only. The maximum award for a 1-year student project is $10,000.

Please use January 3, 2023 as your planning target for a project start date, with a project end date of January 31, 2024. The final month of the performance period is reserved for final report preparation. Actual start and end dates may be subject to change.

Student submissions should be distinct, stand-alone proposals and will be evaluated as such through a review process that is separate from the faculty pre-proposal reviews (see below). Student proposals should not depend on another faculty WRRI proposal submission for supplemental information or justification. Submissions to the two tracks (student and faculty funding) should not be duplicative (i.e., a student submission should not be a "back-up" proposal that is an excerpt or pared down version of a larger faculty pre-proposal). **Student proposals must be written by the applying student, not their faculty advisor.**

Funding will be provided via student stipends of $10,000 to the winning applicants. Please engage with your faculty sponsor and university office of sponsored research (or similar) for assistance in understanding how this stipend will mesh with your other funding streams.

APPLICANT ELIGIBILTY

Faculty

Faculty and University Affiliates 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. Although not eligible to apply directly, WRRI 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 but may 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.

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

Timeliness and researcher performance on past projects funded through WRRI 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 WRRI without an approved no-cost extension is not eligible to apply as a 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.

Students

For student proposals, only full-time graduate students in good academic standing who are attending an accredited college or university (public or private) in North Carolina may apply. Undergraduate participation in the proposed projects is encouraged.

Students must have a faculty sponsor who will provide a letter of support as part of the student's application. Students interested in applying for this funding opportunity but who do not have a defined or suitable faculty sponsor are encouraged to reach out to WRRI to discuss options for facilitating a connection with a faculty member. International students are eligible to apply, but WRRI will have to utilize a different funding model than noted above. This alternative model will require additional time to coordinate and implement. As such, project's led by international applicants may have a delayed start date.

For student submissions, only one proposal per student is allowed. There is no limit to the number of students for whom a faculty member may provide letters of support.

REVIEW CRITERIA

Faculty

The pre-proposal stage of our funding cycle is designed to allow applicants to convey their ideas to WRRI with minimal effort,. Preproposals are evaluated on:
- The objectives and technical approach (40%)
- The significance of the proposed project and its results for real-world water resource issues or opportunities in North Carolina (40%).
- The qualifications of the investigators (20%).

Reviewers of preproposals may include WRRI's advisory committee, representatives of state and federal agencies, WRRI staff, and other water resource stakeholders. Based on this review stage, **WRRI will invite** a subset of investigators representing the most highly competitive preproposal submissions to submit full proposals. **Only invited faculty pre-proposal teams will**

be eligible to submit full proposals. WRRI anticipates inviting approximately 50% of the preproposals teams to submit full proposals.

We will provide the application instructions, review criteria, and any revisions to the RFP schedule (see below) for full proposals, after the preproposal stage is complete, to those applicants we invite to the next stage.

Students

A technical review panel will evaluate proposals. Proposals will be evaluated on these criteria: relevance to North Carolina and the strategic priorities of WRRI; quality of the proposed science; clearly stated research questions/objectives; appropriate timeline to complete the project in one year; quality of the letter/s of support; thoughtfulness of the outreach strategies; and adherence to the instructions in this request for proposals.

SUBMISSION PROCESS

WRRI will only accept faculty and student submissions through our proposal management system, eWater, at **go.ncsu.edu/ncewrri**.

- The deadline for faculty preproposals is **September 16, 2022 at 5 p.m**.
- The deadline for student full proposals is **October 3, 2022 at 5 p.m.**
- The portal will automatically close at these deadlines. **Late submissions cannot be accepted for any reason.**
- Please do not wait to the last minute to begin your submission process.
- Please note the proposal formatting requirements, submission elements, and page limits in the attached appendices. These same formatting instructions are available within the portal.
- You will receive an email confirmation when you submit your proposal. If you do not receive a confirmation email, please check your spam filters. If you still cannot find your confirmation, please email ktucker@ncsu.edu or jmfear@ncsu.edu and we will confirm for you.

QUESTIONS

WRRI welcomes PIs to contact us if they would like to discuss a research concept or have questions about topic eligibility. **WRRI will offer an informational webinar (on 8/23/22: register at go.ncsu.edu/wrri_rfp_info_webinar) for engagement about this RFP.** WRRI also encourages investigators to work with WRRI extension experts to assist in proposal development around stakeholder engagement and application of results to end users. Students who need assistance with identifying a faculty sponsor are also encouraged to contact WRRI.

Please note, email is the preferred method of contact to ensure a timely response to your questions.

Investigators can reach out to the following WRRI staff members as appropriate:
- Kaitlin Tucker, Coordinator for Research and Engagement, ktucker@ncsu.edu
- John Fear, Deputy Director, jmfear@ncsu.edu
- Frank Lopez, Extension Director, fmlopez@ncsu.edu

FULL RFP TIMELINE:
8-1-22:   RFP released (faculty pre-proposal and student full proposal)
8-23-22:   Informational webinar: register at go.ncsu.edu/wrri_rfp_info_webinar
9-16-22:   Faculty pre-proposals due
10-3-22:   Student full proposals due
11-4-22:   WRRI releases full proposal faculty decisions
11-11-22: WRRI releases student winner notifications
12-19-22: Faculty full proposals due (peer review process starts)
1-3-23:   WRRI student projects start
3-27-23:   WRRI technical review panel for faculty full proposals
4-10-23:   WRRI releases faculty winner notifications (estimated)
9-1-23:   New WRRI 104b faculty projects start (estimated)

APPENDIX 1: PRE-PROPOSAL FORMAT FOR FACULTY SUBMISSIONS

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
- 3-page limit (front and back counts as 2 pages) for items A-C below. If you want to include figures and diagrams, they must be incorporated into items A-C below and **do** count toward your page limit.

Pre-proposals elements:
A. Abstract
B. Objectives and technical approach
C. Significance to N.C. water resources
D. References cited (not required. If included, there is no page limit, and it does not count toward the 3-page limit for items A-C.)
E. CVs (2-page limit, does not count toward the 3-page limit for items A-C.)

Please combine all elements into a single pdf for submission into eWater: **go.ncsu.edu/ncewrri**.

A: Abstract
Brief overall description of the proposal

B: Objective and Technical Approach
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, or research questions; how you will do it (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 you will address/meet through communication and information transfer†. Be specific and provide detail for reviewers to assess the feasibility and appropriateness of your approaches.

C: Significance to North Carolina and Funding Program
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 WRRI, including its commitment to DEIJA. Who wants and/or could use the results of your project?

D: References Cited (not required, 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.

E: 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.)

† WRRI 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.

APPENDIX 2: FULL PROPOSAL FORMAT FOR STUDENT SUBMISSIONS

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.

Student proposals must adhere to the following format:
- 1-inch margins all around
- Times New Roman 12-point font
- Strict page limits as listed below
- Page numbers, starting with the cover page as page 1

A complete application package includes items A-F as noted below:
- A. Cover page
- B. Project proposal
- C. References cited
- D. Letter of support from sponsoring faculty member
- E. CVs
- F. Data Management Plan

Cover Page (limited to 1 page)
Cover pages must include the following elements:
- Proposal title
- Proposed start and end date.
- Name, degree being pursued, university and department/school, mailing address, phone number, and e-mail address for the student researcher/applicant
- Name, academic rank or title, university and department/school, mailing address, phone number, and e-mail address for the faculty writing the student's letter(s) of support.
- Name, academic rank or title, university and department/school, and e-mail address for any other project participants (i.e. undergraduate assistants).
- Three to five keywords for the proposed project

Project Proposal (limited to 4 pages)
The body of the proposal should have the following sections:
- <u>Description</u> Describe your project and the RFP focus area/s it addresses. Include what you plan to accomplish in the proposed project in terms of goals, objectives, hypotheses to test, research questions to answer, or needs you will address through communication and information transfer.
- <u>Methods, Tasks and Timeline</u> Describe your scientific methods, technical approaches, **and** engagement/partnership approaches and/or communication/outreach approaches. Clearly define your tasks, including information dissemination; **provide a timeline to complete the tasks**; and list project milestones. Be specific and provide detail for

reviewers to assess the feasibility and appropriateness of your approaches. As a reminder, the 13th month of the fellowship is reserved for final report preparation.

- <u>Significance to North Carolina and Funding Programs</u> Describe the significance and relevance of the project to N.C. and the interests of WRRI, including our commitment to DEIJA. Who wants and/or could use the results of your project?

References Cited (as needed, does not count towards page limit of body of proposal) Use a standard bibliographic format to list the references cited in your proposal.

Letters of Support (no page limit)
Students must include a letter of support from a sponsoring faculty member. Other letters, particularly those that speak to the applicability of the proposed project results, are optional but strongly encouraged.

Curricula Vitae (limited to 2 pages per CV)
CVs are required for the student researcher and for the sponsoring faculty. CVs can be of any standard format but are limited to 2-pages.

Data Management Plan (limited to 2 pages)
The USGS (WRRI's federal lead funding agency) requires federally funded projects to comply with a data and publication sharing directive for grants and contacts. As such, each applicant must develop and submit a data management plan (DMP) with their proposal submission. The DMP does not count toward the page limit above for the body of your proposal.

Please review the guidance document available at WRRI's [research funding page](#) to assist you in preparing your plan. Plans should be no more than 2 pages and should include: descriptions of the types of environmental data and information expected to be created during the course of the project; the tentative date by which data will be shared; the standards to be used for data/metadata format and content; methods for providing data access; approximate total volume of data to be collected; and prior experience in making such data accessible.

If your project is not expected to develop any environmental data, then your DMP should simply include the declaration: "This proposal is not expected to generate environmental data. Therefore, a Data Management Plan is not required."

Please access our proposal management system eWater: **go.ncsu.edu/ncewrri**, to submit your proposal. It will provide you a place to input all elements required for your proposal.