



Call for Water Resources Research Project Pre-Proposals for 2022

Updated December 2, 2021

THE OPPORTUNITY

The New York State Water Resources Institute (WRI) and the New York State Department of Environmental Conservation (DEC) invite you to submit pre-proposals for applied research, outreach, and policy analysis to WRI in support of WRI's statewide water resource research and outreach agenda, and the state's watershed action agenda goals. The primary objective of this funding opportunity is to provide research and assessment support to watershed-based management, policy, outreach, and education.

RESEARCH & OUTREACH AGENDA AND PRIORITIES

WRI has established a Research and Outreach Agenda to address critical water resource issues in NYS. Proposals seeking funding through this call should address the items within this document. The agenda is available as Appendix 2 below, and at the following link:

https://wri.cals.cornell.edu/sites/wri.cals.cornell.edu/files/shared/NYSWRI_Water_Agenda.pdf

In addition to the specific needs identified in our agenda, WRI is also interested in broadly supporting important water resources research and outreach throughout New York state. Apart from the agenda cited above, funding through this call may be justified based on the relevance of the proposed work to various watershed and thematic action agendas (see below). Proposals that do not directly address research and action agenda priorities may advance if they demonstrate exceptional novelty and value as it pertains to emerging critical water resource issues for NYS. Researchers supported through these programs will be expected to work within a broader integrated group and to work closely and collaboratively with WRI staff.

Watershed-based and thematic programming:

Hudson River Estuary Program

Action Agenda - <http://www.dec.ny.gov/lands/5104.html>

Research & Outreach Agenda - <https://wri.cals.cornell.edu/grants-funding/>

Liaison: Scott Cuppett (scott.cuppett@dec.ny.gov)

Mohawk River Basin Program

Action Agenda - https://www.dec.ny.gov/docs/water_pdf/mohawkactionag.pdf

Liaison: Kathy Czajkowski (katherine.czajkowski@dec.ny.gov)

Great Lakes Basin Program

Action Agenda - <https://www.dec.ny.gov/lands/91881.html>

Liaison: Emily Fell (emily.fell@dec.ny.gov)

Aquatic Invasive Species Management

Management Plan - https://www.dec.ny.gov/docs/fish_marine_pdf/nysaisplan15.pdf

Liaison: Seth Lutter (shl72@cornell.edu)

This opportunity is also available on the internet at <https://wri.cals.cornell.edu/grants-funding/>.

For more information on this opportunity, please contact WRI Director Brian Rahm at bgr4@cornell.edu, copying Seth Lutter (shl72@cornell.edu).

SUPPORT DETAILS

Project relevance & location

Geography: Proposals submitted to WRI should address water resource issues in New York State.

Funding period

Start date: Project start date is negotiable. It can be as early as January 1, but no later than September 1, 2022.

End date: Project terms will typically be one year in duration from the start date, though requests for no-cost extensions may be granted on a case-by-case basis.

Funding amount

Funding range: Subject to federal and state funding we anticipate making \$130,000 of total support available but note that there is no *a priori* projection or target for the number of proposals that will ultimately be supported. Individual projects should budget for between \$10,000 and \$40,000 (direct costs), with potential for additional funds if deemed necessary and approved by WRI.

Indirect costs: Charging indirect costs (IDC) on these grant funds is generally prohibited. Foregone overhead may be used as a contribution to non-federal matching should it be required (see below for Cost sharing information). Please contact WRI if you have questions about this stipulation.

Cost sharing: If your project is approved, you may be required to formally record your effort to meet a cost share obligation. There is no action you need to take at this stage in the process, though we encourage you to engage your department's financial staff as you prepare your budgets. If applicable, you will be given the opportunity to create a plan to meet your cost share obligation prior to submission of your full proposal (Refer to the Application timeline below). **Note** that cost sharing requirements will be waived for proposals requesting \$10,000 or less, and that predominantly support student training.

Eligibility

Principal Investigator: Proposals must be submitted by researchers affiliated with a university or college based in New York and be qualified to conduct research through their institution's grant application process.

Co-Principal Investigators: Co-PIs may be from institutions both in or outside of NY, and may come from the following:

- Faculty at universities and colleges,
- Researchers at not-for-profit institutions,
- Researchers who are personnel of state or local agencies, and
- Researchers at for-profit institutions or companies.

Student training

Student support: WRI encourages the funding and training of students, professionals, and community scientists. This is reflected in our review criteria. Please note that, depending on the prime sponsor of funds routed through WRI, the payment of tuition may be limited and require approval.

Collaboration

Collaboration statement: WRI strongly encourages cooperation between researchers, WRI staff, and other stakeholders (e.g., NYSDEC Division of Water, NYS Dept of Health, other government agencies, local municipalities, NGO's, etc). A demonstration of collaboration is desirable prior to funding. Such demonstrations must clearly identify the actionable information, tools, or outputs to be produced, the individual(s) or

organizational users/beneficiaries who will apply or utilize the products, how these users/beneficiaries will be engaged in the process, and the anticipated management outcomes. Submissions that merely state that the information generated has value to managers, without adequate elaboration, will not be competitive. Applicants should consider involving the users/beneficiaries early in the process.

SUBMISSION & REVIEW

Submission

Preliminary proposal: This WRI funding call is soliciting **preliminary proposals (pre-proposals)**. Following the review process outlined below, WRI will either encourage or discourage the submission of full proposals. Applicants who are encouraged to create full proposals will be required to first engage in one or more scoping conversations with WRI staff in order to generate the most effective workplans.

Complementarity: Pre-proposals requesting funding that is complementary to that sought from other sponsors are welcome. In this case, other funding sources and amounts should be disclosed, and work being funded or proposed elsewhere should be distinguished from, and not duplicative of, work proposed under this Call.

Submission format: The pre-proposal narrative must conform to stated word/page limitations, including minimum 1-inch margins and 12-point font of Times New Roman or equivalent. Illustrations and tables must be of legible size, and will be included in the page limitation. References cited may be included as a separate section and will not be included in the stated page limits. **Pre-proposal packages should be submitted as single PDF documents inclusive of all elements.**

Application timeline:

- All pre-proposals must be received by **Friday, January 14th, 2022** close of business.
- Each Principal Investigator will be notified by Monday, February 7th, 2022 as to whether or not a full proposal is encouraged. Note that submission of full proposals will only be encouraged for those prospective principal investigators with the highest-ranked preliminary proposals following the Panel review and evaluation.
- For those investigators encouraged to submit full proposals, the deadline for these full proposals will be Monday, March 14th, 2022.

Review

A review and evaluation panel will rate proposals according to the following criteria:

1. **Relevance of Proposed Research/Information Dissemination Activity** – Extent to which pre-proposal addresses the priority themes in this Call. Documentation of supporting local partners or agencies, and collaborative funding. Transferability of project outcomes throughout New York State.
2. **Quality of workplan** – Technical merit of pre-proposal, probability of successful completion, qualifications of principal investigator and other team members.
3. **Awareness of Previous and On-going Work** – Evidence that investigators are building upon relevant literature and existing projects in New York State. Pre-proposals that duplicate prior work will not be funded.
4. **Social Impact Component** – 1) The extent to which the proposed research engages students in a capacity to further their training as scientists, engineers, researchers, or technical professionals and/or 2) the extent to which the work is likely to improve the capability of government agencies or community-based watershed groups to address water resource management needs.

PRE-PROPOSAL NARRATIVE FORMAT AND GUIDELINES

Please use the following format for your submission (i.e., create a “Summary” section with labeled elements A through G, etc.). In total, the Summary, Engagement, Workplan, and Budget elements should be not more than 4 pages.

SUMMARY

* **The Summary section should occupy its own page**

- A. Project Title:** *Project titles should be written for a non-technical, non-scientific audience. An example of a good title is: The Impact of Drought on Waterbirds and Their Wetland Habitats in California’s Central Valley (straight forward, avoids scientific jargon, compelling, and easy to understand).*
- B. Investigators:** *List the principal, and all co-principal investigators, including their affiliation, telephone numbers and email addresses.*
- C. Geography:** *Which watershed or region will the work take place in or be relevant to? Indicate all that apply.*
- i. The Hudson Estuary Watershed
 - ii. The Mohawk River Watershed
 - iii. The Great Lakes Watershed Region (Including the Lake Erie, Lake Ontario, Genesee River, Finger Lakes, Black River and St. Lawrence River watersheds)
 - iv. Other (Specify:)
- D. Priority:** List the agenda item(s) this proposal addresses or is most closely related to. For example: WRI Agenda Goals C8 and C9, HREP Agenda Goal C17.
- E. Executive summary** (200 words max): In lay terms, provide a brief description of your proposal that will be available to the general public.
- F. Budget total**
- G. Project timeline:** Indicate desired/estimated start and end dates
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ENGAGEMENT (half a page)

* Start this component on a new page

- H. Collaboration statement:** Description of collaborative partnerships involved in this project. Provide evidence that the problem to be addressed is a priority for NY stakeholders. Provide evidence for stakeholder need for the proposed work. Examples include, but are not limited to, extension/research priority lists from trade groups or organizations, survey data that assesses extension/research needs. If available, cite a source.
- NOTE: Documentation of stakeholder interest and or collaboration in the form of letters of support (or other communication) may be included in your overall application package; include these at the end of the submitted PDF.
- I. Training potential:** Estimate the number and level of graduate and undergraduate students, by field of study and degree that are expected to receive training in the project.
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WORKPLAN (maximum of two pages)

- J. Background:** What real-world issue, problem, or opportunity does the proposed work address? Include brief information about the approach to be used and whether there are linkages to other past, current, or

proposed efforts, especially those supported through WRI and partners (See note on complementarity in the Support Details section).

- K. Objectives & Rationale:** List the overall objectives of your proposed study, with a statement of the hypothesis(es) to be tested. If this is model development or a synthesis effort, clearly state the intent. Describe how the outcomes benefit or are relevant to NY and how they align with WRI's priority areas of the 2021 Research, Outreach and Management Agenda and/or watershed action agendas.
- L. Applicability:** Explain how the research and anticipated results are actionable and can be used to inform and direct management. Submissions that merely state that the information generated has value to managers, without adequate elaboration, will not be competitive. Applicants should consider involving the users/beneficiaries early in the process.
- M. Methods:** Describe the research plan and/or extension approach you propose to use.
- N. Environmental Justice:** Describe how the proposed work has considered, or will impact, environmental justice in NYS.
- O. Timeline:** Provide a summary of the timeline envisioned. It may be important, for example, to note whether some elements, such as field work, are seasonal, and the extent to which some phases of work may depend on successful completion of previous phases.

BUDGET (half a page)

- P. Budget breakdown:** Please provide a budget breakdown estimating expected costs across the following categories:
 - i. Salary & wages*
 - ii. Fringe
 - iii. Supplies and equipment
 - iv. Services**
 - v. Travel (note that out-of-state travel may require prior approval)
- Q. Budget rationale:** Please give a descriptive account of the above budget, using one to two sentences for each category above.

** Students and staff can be supported, though tuition may require explicit WRI approval.*

*** See Appendix 1 for information on water quality monitoring and sampling stipulations that may impact your workplan and budget.*

OTHER ELEMENTS

- **References/literature:** Starting on a new page, present the full citations for any work referenced above.
- **Suggested reviewers:** You are invited to suggest three potential peer reviewers who would not have a conflict of interest with you, your team, or your institution, should you be encouraged to submit a full proposal. We may or may not select these peer reviewers, so there is no need for you to contact them. If there is anyone who you feel should not be asked to provide a review, you may list up to two people and we will do our best to accommodate this request. Leaving this blank is acceptable.
- **Qualifications:** Please provide resumes for listed investigators. Each resume should be no more than **two pages, maximum**.

APPENDIX 1

Projects proposing to perform water quality monitoring and sampling are subject to quality control and assurance standards. For work with a water quality sampling component, NYS Public Health Law, Section 502, mandates the use of a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified lab for the analysis of environmental samples collected within NYS. Additionally, all monitoring projects shall include a Quality Assurance Project Plan to ensure proper sampling methods are followed, and that traceable, reproducible results are generated. For projects that involve the assessment or monitoring of water quality, all monitoring and measurement activities conducted in the field or laboratory shall be:

- (A) Performed in accordance with an effective quality system for planning and assessing environmental measurements and tests, and for conducting required quality assurance and quality control procedures to promote and maintain the accuracy and reliability of environmental measurements and test results;
- (B) Performed by a laboratory certified by the New York State Department of Health (NYSDOH) under the Environmental Laboratory Approval Program (ELAP) pursuant to Section 502 of the Public Health Law. This requirement shall not apply to specific parameters when ELAP has not issued a certificate for the specific parameter; and
- (C) Performed in a manner that ensures all requisite quality control and calibration requirements of the method are met including field testing, sample collection, preservation, and record keeping. When the method does not detail requirements for any or all of these items, the basic quality assurance and quality control requirements defined in 40 CFR Part 136.7 shall be followed.

All monitoring projects are required to identify the NYSDEC Waterbody Inventory/Priority Waterbodies List segment where the monitoring will occur. Applicants are highly encouraged to build upon, and reference, known and suspected water quality problems and sources identified in this list to develop their research approach.

The NYSDEC Waterbody Inventory/Priority Waterbodies List can be found at:
<https://www.dec.ny.gov/chemical/36730.html>

APPENDIX 2

Statewide Water Research and Outreach Agenda

Last Updated December 1, 2021

Theme A. Water Quality

1. Analyze and model previous, current, and future nutrient and sediment loads to help control and limit their impacts to NYS waterbodies.
2. Engage in water quality monitoring method development and policy analysis to assess the effectiveness of pollution control policies and their public awareness/acceptance.
3. Identify strategies to incorporate water quality data and information into local land use decision making processes and policies.
4. Continue to improve conceptual models of integrated watershed health and assist NY stakeholders in utilizing such models.

Micropollutants & Emerging Contaminants

5. Conduct hydrological studies to identify major sources of micropollutants, transport pathways, frequency of occurrence, impacts, and opportunities for mitigation.
6. Identify the occurrence, distribution, and effects of micropollutants and emerging contaminants on source and drinking waters to assist in mitigating their impacts on public health.
7. Analyze the connections between access to safe drinking water and community demographics (e.g., race, income, and housing).
8. Determine the degree of success of conventional water and wastewater treatment plants in the removal of micropollutants.
9. Create research summaries to effectively communicate the findings of WRI to local communities, municipalities, and state and local government agencies.
10. Synthesize the research findings to create ArcGIS StoryMaps that can be shared with the staff of state and federal agencies.

Harmful Algal Blooms

11. Evaluate the effectiveness of watershed nutrient control strategies and best management practices (BMPs) in preventing and mitigating HABs.
12. Identify the factors that impact the efficacy and feasibility of available in-waterbody HABs control methods.
13. Evaluate the environmental conditions that influence the occurrence, severity, toxicity, and duration of HABs in NY's surface waters.

Theme B. Watershed Management

Stream Barrier Assessment and Mitigation

1. Efficiently identify previously un-inventoried dams and contribute to a state-wide dam inventory that can be used for aquatic connectivity restoration and assessment.
2. Implement a dam barrier mitigation analysis which identifies optimal strategies to improve aquatic connectivity restoration given the realities of limited restoration budgets and on-the-ground social obstacles to barrier mitigation.
3. Monitor barriers for biological, chemical, physical, and landscape impacts associated with management decisions such as removal or alteration.
4. Improve understanding of social barriers to aquatic connectivity restoration; develop tools to inform decision making processes in communities; and improve outreach and communication practices utilized by resource managers.
5. Identify and assess the impacts of undersized culverts on local hydrology as it pertains to both flooding risk and aquatic community health.
6. Identify approaches that incorporate transportation and other infrastructure considerations into analyses of stream barriers and subsequent efforts to manage them.

Watershed Planning and Modelling

7. Identify strategies to incorporate water quality data and information into local land use decision making processes and policies.
8. Continue to improve conceptual models of integrated watershed health, and assist NY stakeholders in utilizing such models.
9. Analyze traits of effective local watershed groups, as well as outline strategies for their success. Identify challenges and solutions encountered by said groups.
10. On a tributary scale, identify reasonable and technically feasible approaches that stakeholders may use to monitor pollutants and determine pollution sources.
11. Assist stakeholders in developing and understanding watershed planning processes, including 9e and TMDL.
12. Provide technical and outreach support to community groups, watershed groups, and municipalities on water resource information, watershed management, water quality monitoring, and assessments, etc.
13. Develop inter-municipal arrangements and strategies to address watershed water resource challenges and needs.
14. Build the capacity of local watershed groups, municipalities, regional environmental groups, county agencies, and other partners.

Roadside and Agricultural Ditches

15. Identify and assess best management practices (BMPs) for in-ditch management of sediment and nutrients, particularly from agricultural runoff.
16. Better understand the role and prevalence of tile drains and their impact on ditch sediment and nutrient loading.
17. Develop policy and planning tools that can be employed by local municipalities and highway personnel to improve ditch management (e.g., flood damage prevention ordinance; stormwater management plans; etc.).
18. Model and assess the impact of roadside ditches on watershed hydrology, transport of nutrients and sediment, and the morphology and function of receiving waters.

Riparian Buffer Restoration and Assessment

19. Explore the benefits of and ways of knowing about riparian systems from multiple perspectives, including Traditional Ecological Knowledge, and develop approaches to better communicate those benefits and knowledge systems.
20. Seek to understand and reduce the barriers to implementation of riparian protection and restoration efforts.
21. Assess and develop tools for riparian protection and restoration.
22. Understand and promote equitable distribution of the benefits of riparian areas in NYS.
23. Analyze trends in green gentrification resulting from green infrastructure projects, including riparian efforts. Where possible develop and promote tools and approaches that would reduce the impacts of green gentrification on marginalized communities.
24. Develop and promote equitable community engagement in the planning process for riparian restoration and protection efforts.
25. Provide materials, tools, and trainings for groups that are looking to protect or restore riparian areas that help promote the benefits of riparian areas, prioritize where to site projects based on biophysical and socioeconomic goals, and promote protection and restoration through municipal actions.
26. Promote coordination and networking throughout NYS of practitioners working to protect and restore riparian areas.

Theme C. Climate Change and Resilience

1. Work towards identifying, understanding, and lowering the inequitable distribution of flood, drought, and water scarcity vulnerability in NYS.
2. Research and employ approaches, when possible, that minimize green gentrification from green infrastructure projects, particularly for projects that we facilitate or fund.
3. Identify and evaluate actions that could increase resiliency to flooding, erosion and other climate stressors, including policy changes and outreach.

4. Produce analyses that connect various climatological drivers of extreme events with impacts, managements actions, and outreach that are tailored to the various watersheds of NYS.
5. Advance our understanding of how human decision making and infrastructure systems can impact drought likelihood.
6. Develop probabilistic forecasting streamflow models based on historic records, and accounting for climate non-linearity.
7. Research into the carbon sequestration potential of natural lands, especially with respect to freshwater and tidal wetlands.

Building Community Climate Resilience

8. Better understand how individuals and communities perceive flood risk and define resilience with the goal of improving extension and outreach to achieve flooding mitigation and adaptation.
9. Identify barriers to the adoption of climate adaptation actions and strategies to overcome those barriers.
10. Identify how equity concerns intersect with flooding and adaptation planning.
11. Help to develop methods for of predicting flood flows and their impacts in NYS under future climatic and landscape conditions.
12. Identify means and strategies for reducing the magnitude of flooding, particularly using green infrastructure and nature-based solutions.
13. Create and support networks of research, outreach, governance, and implementation practitioners that promote learning and coordinate to leverage opportunities to promote flood and drought resilience in NYS.
14. Promote tools, materials, and practices that reduce inequities in flood resiliency.
15. Establish links between different NYS, other state, and federal programs designed to assist communities become more flood resilient: CSC, CRS, EDEN, Flood Smart, etc.
16. Promote and develop web-based applications that allow users to better understand and plan for drought.
17. Assist in the creation of drought management plans where appropriate.

18. Create summaries of research findings and engage with local/regional stakeholders involved in drought forecast and response.

The Food-Energy-Water Nexus

19. Evaluate the water-related impacts of expanded renewable energy development, especially renewables such as solar and wind.
20. Identify the benefits of land use conversions between food and energy in terms of water quantity and quality.
21. Analyze the effect that climate change has on the tensions and trade-offs across the water-energy-food nexus.
22. Assess how climate change effected the tensions across the water-energy-food nexus.
23. Create summaries of research findings and engage with local/regional stakeholders involved with energy development and/or food production, including Cornell University and their contractors.

Theme D. Urbanization and Infrastructure

1. Assess opportunities to fund and finance infrastructure projects and delineate the impacts of financing choices on project development.
2. Identify effectiveness of asset management at helping municipalities operate their infrastructure systems and summarize how to structure asset management programs in a way that is beneficial to NY's various communities.
3. Outline available options for managing onsite wastewater treatment at the community level in NY. Assess how can we best match governance models to community characteristics for maximum effectiveness.
4. Assess the results of state and federal programs with respect to ultimate improvement of water resources and community vitality.

Theme E. Aquatic Invasive Species

1. Implement an effective AIS public awareness campaign that will target those likely to introduce AIS or be impacted by AIS introductions. Regularly evaluate these efforts to ensure their effectiveness in preventing the introduction and spread of AIS in New York State.
2. Identify and evaluate risks associated with pathways for AIS introduction into and movement within New York State.
3. Identify AIS species most likely to be moved to and within New York State.
4. Identify and evaluate mechanisms for preventing transport to and within New York State, including boat wash stations, and implement effective options.
5. Incorporate potential impacts of climate change on AIS introductions to New York State over various time horizons.
6. Research efficacy, safety, and utility of practical materials, equipment, and techniques for preventing AIS transport.
7. Develop a means of identifying waters that are/are not high risk for AIS invasion and adverse impacts.
8. Identify a common set of monitoring metrics to be used in AIS impact assessments addressing ecological, health, water quality, recreational, economic, and social factors.
9. Conduct a review of existing laws and regulations that may be impediments to AIS prevention, and develop and propose consolidated, coordinated replacements.
10. Identify and seek technology for identification of invasive species, including environmental DNA (eDNA) and remote sensing.
11. Explore innovative control strategies, including biological control and integrated pest management.
12. Investigate potential beneficial uses for harvested AIS.
13. Research connections between dams, impoundments, canals, and other infrastructure alterations and opportunities they provide to both inhibit and foster the movement and occupation of invasive species such as carp and knotweed.

Theme F. Water Literacy

1. Engage with students, communities, and statewide stakeholders to increase water literacy in NY.
2. Partner with State and Federal agencies to improve their water literacy and communication efforts in geographies of interest.
3. Develop water literacy curriculum, events, and programs for K-12 students.
4. Evaluate the use of outreach and educational programs in post-flood awareness efforts to reduce community risks/vulnerability to future flood events.
5. Investigate how watershed outreach and support correlate with stream health. Assess if watershed outreach and stewardship lead to an improved water resource.
6. Understand how field experiences improve classroom learning and change student attitudes and behavior towards the environment.
7. Outline what makes an effective and sustainable community science project.
8. Assess how to make student-collected data appropriately robust for various stakeholders, including the public, decision makers, and scientists.