INDIANA WATER RESOURCES RESEARCH CENTER

Submission Guidelines for Water Resources Research Act Program 104g National Competitive Grants Program

104g General, Aquatic Invasive Species, and PFAS

Intent to Submit email to IWRRC: 5:00PM EST September 3, 2025
Budget submission deadline to IWRRC: 10:00AM EST September 18, 2025
Proposal submission deadline to IWRRC: 10:00AM EST September 26, 2025

FY2025 – 3 grant programs

The U.S. Geological Survey in cooperation with the National Institutes for Water Resources has issued **three** different 104g requests for proposals for matching grants:

1. 104g General
2. Per-and polyflouroalkyl (PFAS) substances
3. Aquatic invasive species (AIS)

These national competitions focus on water problems and issues of a regional or national concern. Specific information on research priorities for each competition is summarized below:

1. 104g General ($1.85M available in funding; Award ceiling $310,000)

Priority 1: Economic value of Information of the USGS streamgage network and associated National Water Information System (NWIS). Applicants should review the National Hydrologic Warning Council 2006 report for a listing of benefits categories. For this proposal, USGS is most interested in categories (1) through (3) in the 2006 report; categories (4) and (5) are of significant but lesser interest. USGS appreciates that proposals may seek a tradeoff between examining multiple benefit categories at a reduced geographic scale versus a limited number of benefits categories at a national scale. While preference will be given to those proposals that provide a Nation-wide assessment, please consider the minimum geographic scope to be Hydrologic Unit Code 12 (Hydrologic Unit Maps | U.S. Geological Survey).

An economic valuation should include the following items:

- **Define the program**: objective identification and scope
- **Identify Costs and Benefits**
    - Direct Costs: Include expenses such as funding, resources, labor, and implementation costs
    - Benefits: Identify direct market and non-market benefits
- **Quantify Costs and Benefits**

    - Monetary Valuation: Assign a monetary value to both costs and benefits where possible. This may include:
    - Market prices for goods and services
    - Willingness to pay for non-market benefits
    - Cost savings or increased productivity.
- **Analyze timeframe and discounting**
    - Time horizon: Determine the timeframe over which the costs and benefits will be evaluated.
    - Discount rate: Apply a discount rate to account for the time value of money, ensuring future benefits and costs are appropriately valued in present terms.
- **Stakeholder Analysis**
    - Identify Affected Parties: Understand who will benefit from or bear the costs of the program
- **Report Findings**
    - Documentation: Present the methodology, assumptions, and results clearly.
    - Recommendations: Provide actionable insights based on the analyses, discussing implications for policy and practice.

Available resources for USGS Streamgage Network:

- Congressional Research Service Report – USGS Streamgaging Network: Overview and Issues for Congress
- National Water Monitoring Network | U.S. Geological Survey
- Federal Priority Streamgages (FPS) and Re-Prioritization of the U.S. Geological Survey Federal Priority Streamgage Network
- Previous, similar work
    - https://water.usgs.gov/osw/pubs/nhwc_report.pdf
    - nhwc report final 030806.pub
- National Water Information System (NWIS)
    - Water Data for the Nation
    - National Water Dashboard
    - Explore USGS Water Data

Priority 2: Model Advancement and Machine Learning Integration
Explore methods to develop new hydrologic models in large, regional areas or, where possible, at the national level to enhance understanding of water availability. Provide information on promising modeling approaches to inform science questions specific to a region. Examples include:

- **Machine Learning Techniques for Water Quality Data:** Apply AI and machine learning methods to harmonize water quality data across different sources, improving integration and accessibility for hydrologic modeling.
- **Groundwater and Base Flow Predictions:** Specifically apply machine learning techniques to predict transient groundwater levels or base flow to streams, enhancing the understanding of these critical hydrologic processes.

Causal Machine Learning Exploration: Investigate the use of causal machine learning to evaluate current or ongoing studies impacted by non-causal modeling. This approach should help quantify the extent of the problem associated with non-causal machine learning modeling and inform the development of more robust, process-based modeling frameworks

2. PFAS ($2.775M available in funding; Award ceiling $309,000)

The challenges and opportunities of understanding the effects of per-and polyfluoroalkyl (PFAS) substances on water resources are poorly understood, despite the real and growing effect of this group of man-made substances on water quality and the resultant exposure to humans, other organisms, and ecosystems. Research is needed to better understand these interactions and guide management decisions that will improve water resources at the regional or national scale.

Proposals are sought on the following specific areas of inquiry (levels of priority are not assigned, and the order of listing does not indicate the level of priority):

Media-specific methods: Enhanced methods for detection on specific media, with a clear indication of

- new or different compounds,
- new or different methodological approaches,
- lower detection levels for specific media or compounds, especially with respect to EPA health guidelines for PFOA (Perfluorooctanoic Acid) and PFOS (Perfluorooctane Sulfonate).

Media of interest include (in ranked order) (1) Tissues/plasma, (2) sediment, (3) air or interfaces, (4) water.

Atmospheric sources: Improved understanding of atmospheric exchange in PFAS distribution and fate. This may include methods to determine transport of PFAS to the atmosphere and to subsequent receiving waters, such as a water method that determines "new" compounds based on their likelihood to occur in the atmosphere.

Processes oriented at molecular level: Process-oriented research of PFAS fate, transport, and effects, with emphasis on *molecular-level* understanding of PFAS precursor transformation, sorption dynamics, or mechanisms of bioaccumulation and(or) biological/ecological effects, or biodegradation of PFAS along source to receptor pathways and identification of mitigation methods and engage modeling and forecasting processes for prediction, prevention, and mitigation of environmental risk of exposure to PFAS in ecosystems and human population.

3. Aquatic Invasive Species [restricted to the upper Mississippi River basin] ($1.3875M available in funding; Award ceiling $346,875)

The challenges and opportunities that link aquatic invasive species and water resources are poorly understood, despite the real and growing effect of numerous aquatic invasive species on water quality, water quantity, and aquatic ecosystems. Research is needed to better identify and understand these interactions and to guide management decisions that will help to improve invasive species management and thus reduce effects of invasive species on water resources and aquatic ecosystems at local, regional, and national scales. Proposals are sought on the following specific areas of inquiry (levels of priority are not assigned, and the order of listing does not indicate the level of priority):

- **Effects:** Research that improves our understanding of the effects of aquatic invasive species on lakes, rivers, and associated tributaries in the upper Mississippi River basin, including changes to water quantity, water quality, and ecosystem dynamics.
- **Characteristics:** Research that identifies physical, biological, and chemical characteristics of water bodies that infer resistance and resilience to the distribution, establishment, and effects of aquatic invasive species in the upper Mississippi River basin. Research is needed to better understand these interactions to guide management decisions that will improve invasive species management and result in positive effects on aquatic ecosystems.

- **Management:** Research on assessment of the detection, spread, and management of aquatic invasive species in the upper Mississippi River basin and the connections to human dimensions, both socially and economically. Note that this does not include physical control of AIS.

Eligibility and other considerations

Awards are available only to Water Resources Research Institutes established pursuant to the provisions of section 104 of the Water Resources Research Act - http://water.usgs.gov/wrri/index.php. However, any investigator at an institution of higher learning in the United States is eligible to apply for an award through a Water Resources Research Institute. The application, with full proposal along with the SF-424 and SF-424B and budget forms, must be submitted through grants.gov (http://www.grants.gov) by the university at which the Institute is located.

Intent to Submit email

We require that you submit an intent to submit email to the IWRRC **no later than 5:00PM EST on Wednesday, September 3, 2025**. The email must include:

- Which program you are applying for: 104g-General, AIS, or PFAS
- The proposed title of your proposal
- Name and email address of any Co-PI(s) with corresponding institutions

Send Intent to Submit email to IWRRC: email Dr. Keith Cherkauer (cherkaue@purdue.edu) and Laura Esman (lesman@purdue.edu). **Remember to copy all Co-PIs on this email.** You will receive a confirmation email from IWRRC within 24 hours.

Budget Deadline

Project budgets are required to be completed using two forms; the budget sheet (.xlsx) and the budget justification (.docx). There has been intense scrutiny on the budget documents that cause funding delays. Please use the example budget justification as a guide to the information required. If you are proposing a multi-year project, make sure to separate costs per year as done in the example template. Both documents are due to IWRRC no later than **10:00AM Eastern Standard Time on Thursday, September 18, 2025.** Please email both attachments to Dr. Keith Cherkauer (cherkaue@purdue.edu) and Laura Esman (lesman@purdue.edu).

Proposal Deadline

Please note that the information on deadlines and submission guidelines documented in the Fiscal Year 2025 Announcements, released by the US Geological Survey, is for the staff of the Indiana Water Resources Research Center (IWRRC) and other Centers only. This information does not apply for Principal Investigators submitting research proposals.

Full proposals for the Water Resources Research Act Program, National Competitive Grants Program and additional required documentation are due to the IWRRC **no later than 10:00AM Eastern Standard Time on Friday, September 26, 2025**. Anything received after this time will not be eligible for submission.

Submit full proposals to IWRRC (as a Word Document): email Dr. Keith Cherkauer (cherkaue@purdue.edu) and Laura Esman (lesman@purdue.edu). You will receive a confirmation email within 24 hours.

Principal Investigators – please do not submit your proposal to grants.gov. IWRRC staff are required to complete these tasks. Proposals for the National Competitive Grants Program are only accepted for review if received from IWRRC. Therefore, Principal Investigators are required to submit proposals to the IWRRC.

Proposal Preparation

Please follow the proposal preparation guidelines outlined starting on **page 6** (PFAS and AIS) and **page 7** (104g General) of the Fiscal Year 2025 Announcements, with the exception of document format. Proposals submitted to IWRRC should be submitted as a **Word Document** and not a PDF. IWRRC staff will convert the final files to PDF and will enter your proposal information into grants.gov on behalf of the PI (PIs will not have access to grants.gov).

Please note that:

- **Elements 3-8 shall not exceed 10 single-spaced pages with 12-point font and at least 1-inch margins, including tables, pictures, graphs, figures, and appendices.**
- **Supplemental information (Elements 1, 2, 14, and 15) does not count towards the page limit.**
- **Include page numbers and short title in either header or footer. Do not include any other information in the header or footer.**

Additional required documentation (forms are available at https://iwrrc.org/funding-opportunities):

- **Required Statements document**
- **Copy of your institution's current negotiated indirect cost rate agreement**
- **Common Form for Biographical Sketch (OMB 3145-0279) –** For PI only, template provided. If you have an NSF or SciENcv biosketch, please contact Laura Esman and that may be allowable.
- **Common Form for Current and Pending Support (OMB 3145-0279) –** For PI only, template provided. If you have an NSF or SciENcv current and pending document, please contact Laura Esman and that may be allowable.
- **SF-LLL, Disclosure of Lobbying Activities**
- **Certification Regarding Lobbying –** Your Sponsored Programs Office should assist with this.
- **SF-424, Application for Federal Assistance –** Your Sponsored Programs Office should assist with this.
- **SF-424A, Budget Information –** Your Sponsored Programs Office should assist with this.

Contact Sponsored Programs

Make sure to contact your institution's Sponsored Programs immediately. The proposal should be submitted to your institution's Sponsored Programs for processing. The proposal must include an intuitional cost-sharing agreement letter.

Federal Employee Collaboration

Federal employees are encouraged to collaborate with research scientists at colleges and universities. They can serve as Co-PIs in this proposal. **If you are applying for a 104g-General grant and you have included a federal employee, the federal employee must prepare a Statement of Government Involvement to be included in the proposal.**

Letters of Support

If your proposal includes a federal collaborator, a letter of support is required. This letter of support must be signed by someone in leadership at the designated center (not by the collaborator). Other letters of support are optional. Letters of support do not count against the proposal page limit.

Proposal Preparation Checklist

1. Review these IWRRC Submission Guidelines carefully.
2. Review the Fiscal Year 2025 Announcements carefully for full eligibility for these grant competitions.
3. Submit Intent to Submit email to cherkaue@purdue.edu and lesman@purdue.edu by **September 3, 2025 at 5:00PM EST**
4. Complete proposal following guidelines outlined starting on page 6 (PFAS and AIS) or page 7 (104g General) of the Fiscal Year 2025 Announcements.
5. Complete budget forms (budget sheet and budget justification; include project start and end dates) and submit to cherkaue@purdue.edu and lesman@purdue.edu by **September 18, 2025 at 10:00AM EST**.
6. Complete the additional required documents (listed above). These should be submitted with your final proposal.
7. Obtain institutional cost-sharing agreement documentation. Incomplete cost-share documentation will disqualify your proposal.
8. Have federal employee collaborator prepare a Statement of Government Involvement, if applicable.
9. Obtain letters of support, if applicable.
10. Submit proposal (as a Word document) to cherkaue@purdue.edu and lesman@purdue.edu by **September 26, 2025 at 10:00AM EST**
    a. Email subject line: example - 104g Proposal_[PI last name]
    b. All Co-PIs must be copied on this email submission
11. IWRRC staff will provide an email confirmation to each PI that the proposal was submitted to grants.gov by **5:00PM EST on September 30, 2025**. Email confirmation may take 24 hours.

Questions

Please contact Laura Esman at lesman@purdue.edu or 765-496-3135.