

The U.S. Geological Survey Water Resources Research Act Program—

Meeting Local, State, and National Needs for Water Resources Science and Training

The U.S. Geological Survey (USGS) has a broad research portfolio that addresses water resource issues that are critical to our Nation's prosperity and quality of life. Socioeconomics, geopolitical stressors, population growth, climate variability, and other factors provide challenges for the management of water resources. Working collaboratively with partners, the USGS observes and monitors water and water-related parameters, provides assessments, conducts targeted research, and delivers information to users. Residing within the USGS Water Resources Mission Area, the Water Resources Research Act (WRRRA) Program is a Federal-State partnership that uses a matching grant program to plan, facilitate, and coordinate water resources research, training, and information transfer to help meet the Nation's water science needs.

Program Summary

Since 1984, the U.S. Geological Survey (USGS) Water Resources Research Act Program and the associated Water Resources Research Institutes have worked to address national, State, territorial, and regional water issues. Program activities include conducting and applying research, sharing information and technology, and developing a diverse workforce through the training of the next generation of water scientists and engineers.

Overview

The Water Resources Research Act of 1984, as amended (42 U.S.C. 10303 et seq.), was originally passed in 1964 and administration of the program was delegated to the USGS in 1984 by the Secretary of the Interior. The WRRRA authorized the establishment of the Water Resources Research Institutes located at universities across the Nation. There are 54 institutes that collectively serve all U.S. States, the District of Columbia, and all U.S. territories (fig. 1). The WRRRA Program connects our Nation's academic research infrastructure to the USGS mission and promotes national, State, and regional coordination of water resources research; student training; and information and technology transfer among USGS and university scientists, water managers, and the general public.

Research

The WRRRA Program provides a platform for research, training, and collaboration at the national, State, and regional level. With Federal funding, university professionals and researchers receive support for the development of applied water science to better inform water resource managers. These efforts start at the local level and can have broader effects across the United States.



Where to find us

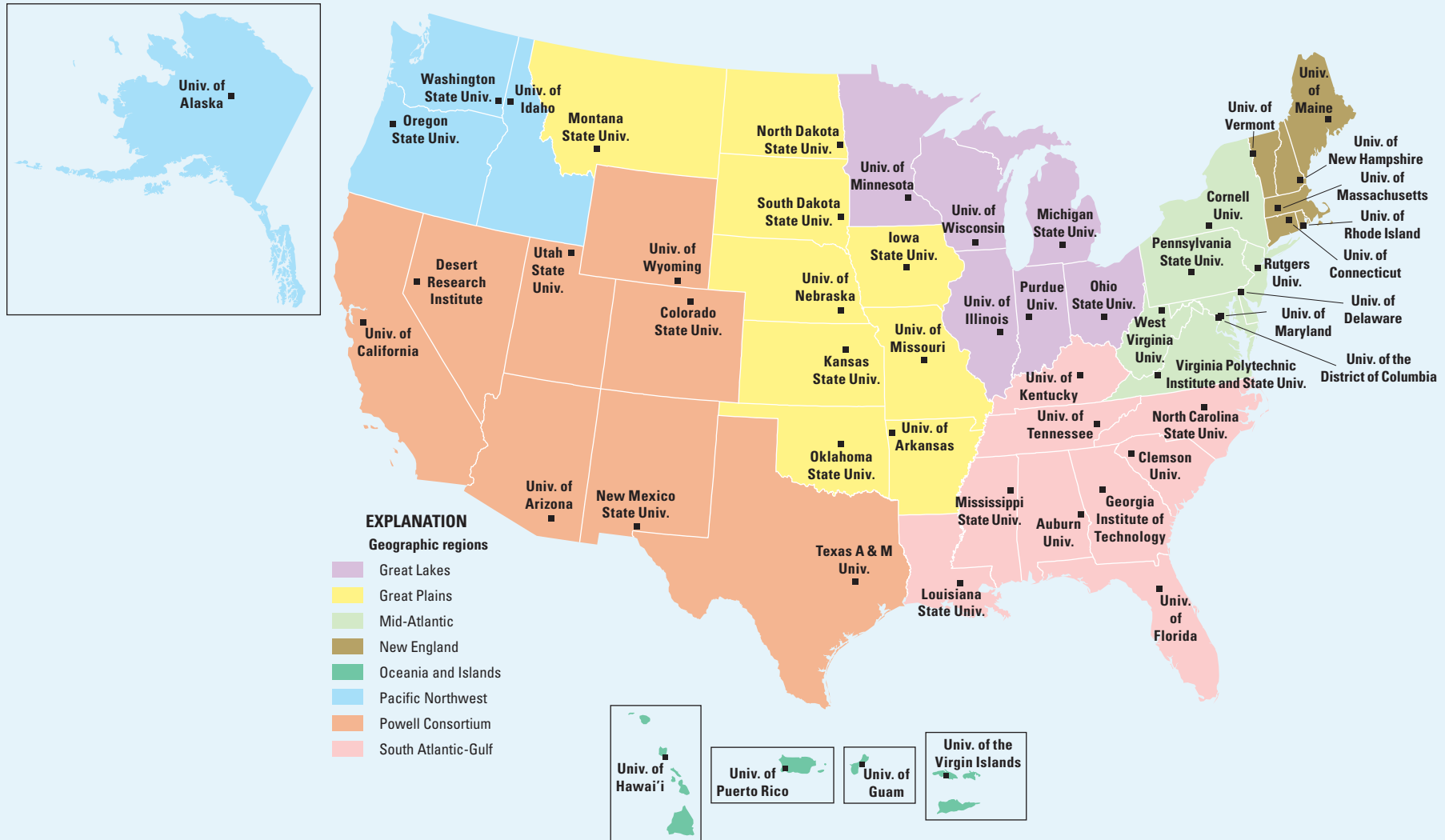


Figure 1. Map showing the universities that host the 54 Water Resources Research Act Program institutes and the geographic regions in which they are located. These institutes serve all U.S. States, the District of Columbia, and all U.S. territories. Figure modified from Donohue and others (2021). Univ., university.

The WRRRA Program, as defined in the Water Resources Research Act of 1984, provides annual base grant funding for each institute. There are also nationally competitive calls for proposals to fund research on water issues of a regional or interstate nature with the goal of fostering collaboration between the USGS and the academic community. In recent years, this funding was supplemented by Congress to address specific priorities. Recent research areas include water quality conditions that drive harmful algal blooms (HABs) and hypoxia, expansion and persistence of aquatic invasive species, and occurrence of per- and polyfluoroalkyl substances (PFASs) in streams and other water bodies. Coordination awards, another mechanism to fund water-resources research, enable Federal agencies to take advantage of the expertise and capabilities that are available through the network of institutes established by the WRRRA.

Training and Workforce Development

The USGS, like other government agencies, anticipates a shortage of science and technology professionals, who are needed to serve our Nation and stay competitive in today's global economy (U.S. Geological Survey, 2015). As we experience increased stress on our Nation's water resources, the need to understand and protect them will require highly trained and skilled individuals in the fields of water resources and water management.

As part of their charter, the 54 institutes provide training opportunities for graduate and undergraduate students through a combination of research and education, both locally and in collaboration with USGS scientists. Many institutes also support early-career professionals, who provide new perspectives on water resources research, training, and communication. These activities encourage early-career professionals to pursue or continue careers in the fields of water resources and water management.

Core Capabilities of the Water Resources Research Act Program

The Water Resources Research Act (WRRRA) Program has four core capabilities that serve as the foundation for the program's thematic work (below): (1) a university-based national network; (2) stakeholder-driven research; (3) outreach and engagement; and (4) infrastructure to support workforce development and water literacy. These core capabilities

define the operational scope and distinctive character of the WRRRA Program within the U.S. Geological Survey Water Resources Mission Area, and they reflect the mandates of the WRRRA (Donohue and others, 2021). Society's changing science needs, as identified by Congress and stakeholders, drive the focus of work performed under the WRRRA Program.

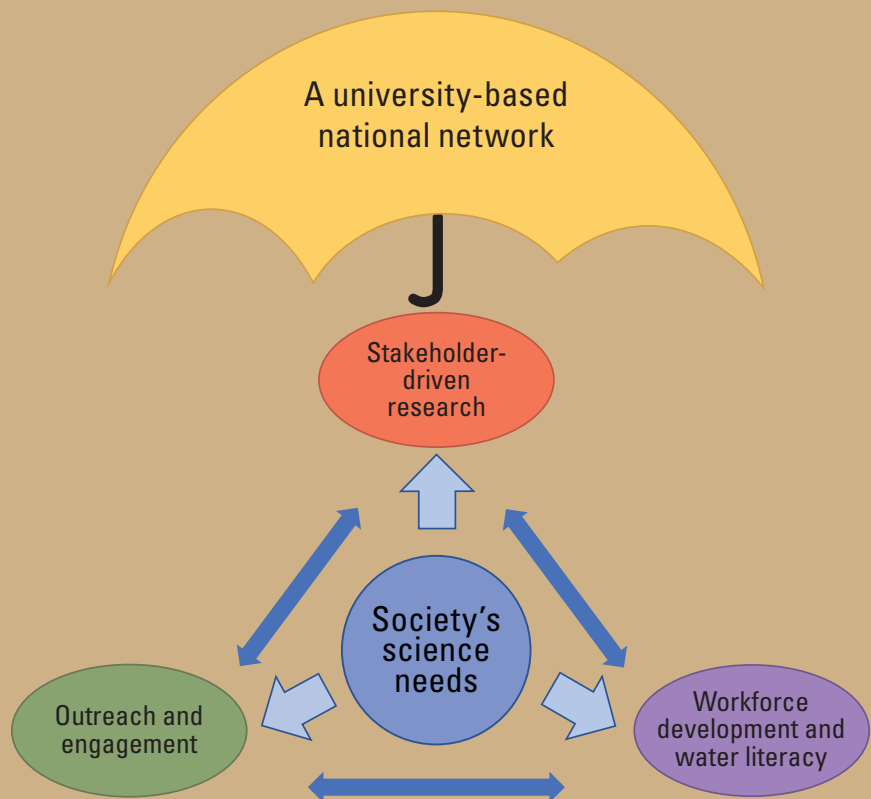


Diagram depicting the relations among society's changing science needs and core capabilities of the Water Resources Research Act (WRRRA) Program. The university-based national network is the core capability that acts as an overarching operational framework (depicted as an umbrella) for the program. The other three core capabilities—stakeholder-driven research, outreach and engagement, and infrastructure to support workforce development and water literacy—form the functional basis of the WRRRA Program's Federal legislative mandate. Figure modified from Donohue and others (2021).

Information Transfer

The Water Resources Research Institutes communicate new information and technology through the outreach and engagement activities of the WRRRA Program. Communication efforts highlight research results and facilitate technology transfer among Federal agencies, States, localities, the public, and other users of water-related technology and information. Outreach efforts promote the effects, relevance, and applicability of research performed at the institutes to address State water resource management needs; these efforts also support sound public policy through effective science communication. Outreach activities of the institutes include hosting State water conferences, developing websites, posting social media content, and creating public radio programs for different media outlets.

—By Mark P. Miller, Earl A. Greene,
and Tanja N. Williamson

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Banner on front page: Scientist collecting water-quality samples. Photograph by Gwen Davies, U.S. Geological Survey.

Bottom of front page: Scientists discussing biological sampling in the Mississippi Delta. Photograph by Shane Stocks, U.S. Geological Survey.

Back page: The western shore of Lake Tahoe, which is the field site for a Water Resources Research Institute project. Photograph by Christine Albano, Desert Research Institute.

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