

Opportunity Title: Engineering / Hydrology: Reservoir Sediment Management Research

Opportunity Reference Code: ERDC-CHL-2021-0003

Organization U.S. Department of Defense (DOD)

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How to Apply Components of the online application are as follows:

- Profile Information
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - [Click here for detailed information about acceptable transcripts](#)
- References

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blacked out, blackened out, made illegible, etc.) prior to uploading into the application system.


If you have questions, send an email to usace@orise.orau.gov. Please list the reference code of this opportunity in the subject line of the email.

All documents must be in English or include an official English translation.

Description The U.S. Army Engineer Research and Development Center's Coastal & Hydraulics Laboratory (CHL) performs research on ocean, estuarine, riverine, and watershed systems in support of the U.S. Army Corps of Engineers (USACE) and the Department of Defense (DOD) Task Force in support of the Ocean Commission. A multi-disciplinary team of scientists, engineers, and support personnel work in CHL's internationally known, unique facilities. This team has developed state-of-the-art experimental and computational models for solving water resource problems worldwide. CHL research and development addresses water resource and navigation challenges in a variety of hydrodynamic systems including aquifers, watersheds, rivers, reservoirs, lakes, estuaries, harbors, coastal inlets, and wetlands. Physical facilities of approximately 1.7 million square feet and high-performance computing facilities at the DOD Supercomputing Research Center (<http://www.erd.c.hpc.mil>) are the basic infrastructure for producing cutting-edge products for successful coastal, inland water resources, and navigation management. CHL work, although primarily in support of the DOD and the Corp's districts, also interfaces with other federal, state and local agencies, academia, conservation groups, and the general public, as appropriate. The Research Participation Program for USACE-ERDC-CHL provides opportunities to participate in new and on-going applied research and development projects. Under the guidance of a mentor, research participant projects range from design guidance to three-dimensional computational models. Focus is placed on inland and coastal navigation, military logistics over the shore, dredging, flood control, storm and erosion protection, waterway restoration, fish passage, hydro-environmental modeling, water/land management, and other water and sediment-related issues facing the nation. For more information about USACE-ERDC-CHL, please visit <https://www.erd.c.usace.army.mil/Locations/CHL/>.


Project Title: Reservoir Flushing and Sediment Bypass


The U.S. Army Corps of Engineers (USACE) maintains and operates more than 380 reservoirs within the United States. Many reservoirs are experiencing decreased project benefits due to sediment deposition and these issues will continue to worsen as reservoirs age. To achieve long-term sustainable performance of reservoirs, it is necessary to identify and understand sediment


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management techniques that can be effective for each reservoir. Flushing and other means of sediment bypass through and around reservoirs offer potential solutions for reducing the deposition of sediment and extending their useful lives.

The selected candidate will research screening and implementation criteria for reservoir flushing, sediment bypass, and other reservoir sediment management techniques. Additionally, the research team will be collaborating with members of the regulatory and environmental community to improve guidance about downstream sediment impacts from these management activities. There will also be opportunities to interact with teams making improvements to USACE sediment transport models (HEC-RAS, AdH) in support of reservoir sediment management.

Appointment Length

This ORISE appointment is for a 12 month period. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

Participant Benefits

Participants will receive a stipend to be determined by ERDC-CHL. Stipends are typically based on the participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement. *Participants are eligible to purchase health insurance through ORISE.*
- Relocation Allowance
- Training and Travel Allowance

Nature of Appointment

The participant will not enter into an employee/employer relationship with ORISE, ORAU, DOD, or any other office or agency. Instead, the participant will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment.

Qualifications Candidates should have or be pursuing a Master's degree or Ph.D. in a field related to water resources, such as Civil Engineering, Environmental Engineering, or Hydrology. Candidates are expected to have skills in data analysis software, such as R, Matlab, GIS, or Python. Candidates with experience in sediment transport and water quality are particularly encouraged to apply. Minimum GPA requirement is 3.0.

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
 - **Overall GPA:** 3.00
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#))
 - **Communications and Graphics Design** ([1](#))
 - **Computer, Information, and Data Sciences** ([17](#))
 - **Earth and Geosciences** ([21](#))

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Research

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- **Engineering** ([27](#))
- **Environmental and Marine Sciences** ([14](#))
- **Life Health and Medical Sciences** ([45](#))
- **Mathematics and Statistics** ([10](#))
- **Other Non-Science & Engineering** ([1](#))
- **Physics** ([16](#))
- **Science & Engineering-related** ([1](#))
- **Social and Behavioral Sciences** ([12](#))
- **Age:** Must be 18 years of age