

## Indigenous ecological knowledge: state of the practice

September 15, 2025

### Abstract:

This webinar is an overview of a new-start research project with the objective to develop a framework for integrating traditional knowledge (ITEK) in USACE aquatic ecosystem restoration. The use of local knowledge is anticipated to improve project effectiveness, community and customer satisfaction, and increase benefits. In this presentation we will discuss our first-year findings and challenges related to collating the state of the practice through a literature review with over 600 papers and a LLM, a questionnaire answered by over 170 USACE employees, and semi-structured interviews based on USACE case studies. This effort will inform our next steps in developing a framework that supports USACE decision-making and co-development of projects with tribal partners.



### **Aubrey Harris, PE, PhD**

Research Civil Engineer  
Environmental Laboratory  
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### **Bio:**

Dr. Aubrey Harris is a research civil engineer at the U.S. Army Engineer Research and Development Center (ERDC), Environmental Laboratory. She is stationed in Albuquerque, New Mexico. She received her BS in Biological and Agricultural Engineering from Texas A&M University, and a MS in Civil Engineering at West Virginia University. She has a PhD in Civil Engineering with a minor in Community and Regional Planning at the University of New Mexico. Her research focus is ecosystem hydraulics using environmental flows analyses to aid in ecological model development and project planning.



Hailie Suk, PhD, EIT

Hailie Suk is a research engineer at the Cold Regions Research and Engineering Laboratory, ERDC. Her background is in environmental and mechanical engineering with expertise in water and energy systems, complex system dynamics, and modeling. Hailie has a Ph.D. and M.S. in Mechanical Engineering and B.S. in Environmental Engineering from the University at Buffalo. She sits at the USACE Buffalo district.



Mark Gilfillan – Sr. Tribal Liaison, USACE - Tribal Nations Technical Center of Expertise

Mark Gilfillan is a Senior Tribal Liaison (TL) for the Tribal Nations Technical Center of Expertise (TNTCX), US Army Corps of Engineers (USACE). He is an enrolled member of the Sac and Fox Nation of Missouri (in Kansas and Nebraska). With the Sac and Fox, he served as the Tribal Gaming Chairman including assistance for Native American Graves Protection and Repatriation Act and cultural history preservation activities. For the Sac and Fox, he also developed Economic Development Strategies, Sovereignty Plans, and produced an extensive Treaty Analysis for Tribal Court adjudication. In 2001, he started his work with USACE as a Regulatory Project Manager and as the District Tribal Liaison for Sacramento District. Throughout his USACE career, he has assisted Major Subordinate Commands (i.e., Divisions) and HQ-USACE, including the Office of the Assistant of the Secretary of the Army (CW) with tribal training programs, government-to-government consultation protocols and tribal program initiatives. For six years, he served as the Tribal Liaison for the US Army regarding the Carlisle Indian Industrial School disinterment actions at the Carlisle Post Barracks for the return of Indian students to families and tribes. He has been a TL with the TNTCX since 2021.

He started his career in 1985 with the US Department of Energy as an environmental scientist, covering a wide range of contaminant and treatment issues, including National Science Foundation grant products for the transfer of science and engineering curriculum to the American Indian Higher Education Consortium Colleges. In 1996, he transitioned to a senior scientist position and moved into the private sector with various mining and engineering firms. In 2001, as a senior scientist with the state of Kansas, he managed Brownfields programs and RCRA related work activities. He has a Bachelor of Science in Environmental Restoration, Engineering and Waste Management from Colorado Mesa University and a Master of Jurisprudence in Indian Law, from the University of Tulsa.