

Developing Solutions for Utah's Rising Water Management Crisis | College of Engineering

10/23/2019

Civil and environmental engineering researchers are developing coupled human-natural water management methods in Utah

News Release — Oct. 23, 2019 — According to a 2014 household survey, Utahns are expressing rapidly growing interest in protecting water resources for outdoor recreation and environmental benefits.

Limited freshwater resources in the Western U.S. are under increasing pressure and uncertainty from population growth, climate change and shifting societal values. To more efficiently manage these resources for humans and ecosystems, USU Professor Belize Lane is developing methods to measure, model and allocate scarce water resources during the critical summer dry season when water is most needed for humans and river ecosystems.

Lane is an assistant professor in the Department of Civil and Environmental Engineering. Her focus is hydrology and river basin management, and more recently, the development of tools that support coupled human-natural water management. She has received multiple research grants in the past five years.



From left, graduate student Yesica Leon, Professor Belize Lane, and graduate students Jesse Rowles and Madison Alger. Lane and her team are studying the hydrological and ecological consequences of altering the flow of rivers and streams across the Western U.S.

In California, Lane is leading a multi-million dollar, multi-university project to develop in-stream flow standards for California's rivers and streams. This research is informing reservoir operations and water withdrawals to better balance critical human water needs with sensitive aquatic ecosystems.

Building on that effort in Utah, Lane is now examining how water temperature and aquatic ecosystems respond to changes in streamflow from irrigation diversions and return flows in lowland agricultural streams. In June, she and a group of graduate students placed water temperature sensors and streamflow gauges along the Blacksmith Fork River in Cache County. The data will help Lane and her team better understand how river diversions and irrigation efficiency projects impact water temperature and temperature-sensitive aquatic species during hot summer months.

Lane received two grants from the United States Geological Survey to fund the research. The grants also support intensive field-based pilot studies to help inform sustainable water management practices and systems in Utah. She says part of her objective is to work with municipalities, non-profits and water districts to develop science-driven local solutions to Utah's mounting water management challenges.

"Western water management is fundamentally about trade-offs, but there are often ways to manage systems to benefit both humans and ecosystems," she said. "This research also highlights the potential unintended consequences of irrigation efficiency projects that reduce summer critical return flows to streams."

By better understanding the ecological consequences of flow and water temperature alterations, Lane's research can more accurately assess trade-offs between water uses to support sustainable coupled human-natural water management.

###

Research Contact: Belize Lane, belize.lane@usu.edu

Writer: Carson Wolf, – USU, College of Engineering | eng.marketing@usu.edu