

12th Annual Water Resources & Policy Initiatives Conference



**"Comprehensive Impacts of
Water Quality:
Past, Present, and Future"**

April 15 & 16, 2021

Water Resources & Policy Initiatives “Virtual” Conference

April 15, 2021

1:00 pm	Conference Opens – Networking and Poster Session	
1:45 pm	Conference Overview	Laura Ramos
1:55 pm	Land Acknowledgment	Marissa Aranda Gabrielino/Tongva Band of Mission Indians
2:00 pm	Welcome	Chancellor Joseph I. Castro The California State University
2:15 pm	Tribal Colleges and Universities Partnerships	President Tomás D. Morales, CSU San Bernardino President Sean Chandler, Aaniiih Nakoda College
2:30 pm	Keynote Panel – Indigenous Perspectives on Water <i>Looking Back: Historic Legal Aspects of Tribal Water Rights, Montana</i> Aaniiih Nakoda College - Nic-Mni (Water) Center Project Overview Indigenous Water Talks – Research on the Santa Ana and Los Angeles River Environs	Moderator: Boykin Witherspoon Randall Werk Michael A. Kinsey James Fenelon
3:30 pm	Networking Break/Poster Session	
3:45 pm	Water Quality Effects on Humans, and Possible Solutions Water Pollution from Tijuana: Environmental Challenges for U.S. Jurisdictional Authorities and Policy Implications for San Diego Muerte Silenciosa - Silent Death (Film) System Consolidation as a Solution for Water Contamination Engaging and Involving Disadvantaged Communities in Water Issues: Leveraging Data, Technology and GIS	Moderator: Sarge Green Emmanuel Iyegbuniwe Jesse Dizard Laura Ramos Danielle Bram
4:45 pm	Closing Remarks	Boykin Witherspoon
5:00 pm	Networking/Happy Hour	Everyone

Water Resources & Policy Initiatives “Virtual” Conference April 16, 2021

12:30 pm	Conference Opens Networking and Poster Session	
1:00 pm	Welcome/Overview	Laura Ramos
1:15 pm	Water Quantity and Quality Effects on Agriculture Almond Water Footprints: Beyond the One-Gallon-Per-Nut Complex	Moderator: Arlene Haffa Julian Fulton
	Agricultural and Hydrologic Responses to Changing Water Supplies in Imperial Valley, California	Gabriela Morales
	The Treatment and Use of Oilfield Produced Water in Kern County	Luis Cabrales
	Salinity and Crop Choice in California’s Delta Region	Janine Stone
2:15 pm	Networking Break/Poster Session	
2:30 pm	Water Quality Effects on the Environment The Holocene California Precipitation Dipole Tracked Using Lake Sediments	Moderator: Joel Shinneman Matthew Kirby
	Nitrate Oxidation of Trace Elements in Marine Strata Causes Solute Loading in Southern California Watersheds	Barry Hibbs
	Wildfire-Derived Polycyclic Aromatic Hydrocarbons in a Southern California Coastal Watershed	Scott Hauswirth
3:30 pm	Networking Break/Poster Session	
3:45 pm	The Future of Water Quality and its Potential Risks Experimental Investigation of Water Retention in Agricultural Soil With and Without Hydrochar	Moderator: Eileen Cashman Jiangjun Li
	A Pilot Aquaponic System Design and Water Quality Analysis	Tianyu Han
	Analysis in Support of Green and Gray Stormwater Infrastructure Decision-Making	Brian Currier
	Critical Infrastructures at Risk: The Lessons Learned From the Lac-Mégantic Oil Spill	Anais Valiquette L’Heureux
4:45 pm	Update of WRPI Closing of Remarks	Boykin Witherspoon

WRPI Conference

Posters Summary

Title: 9,000 Years of Paleohydrological History Inferred Using Lacustrine Sediments from Maddox Lake, CA

Presenter: Jazleen Barbosa

Abstract: California's well-being depends on the availability of fresh water. Understanding how and why water availability changed in the past is critical for making informed decisions about present and future water management. The objective of this study is to provide a history of hydrologic variability (i.e., lake level) using sediments from a small lake in the northern coast range of California.

Title: Assessing Greywater Systems, Greywater Quality Parameters, in Santa Clara County, California

Presenter: Sara Khosrowshahi Asl

Abstract: Many communities worldwide are facing water shortages and droughts thus making water conservation an emergent need. Greywater reuse is a method to conserve water. After the longest recent drought cycle in California (2011–2017), the Valley Water prioritized the development of unconventional water sources in its master plan. It invested in infrastructure and human resources to promote greywater reuse, expanded recycled water use, and researched options for potable reuse. This study suggests these systems can provide an additional tool for diversifying regional water supply portfolio.

Title: Assessment of the Water Quality Health of Martin Slough and Jacoby Creek in Humboldt County for Habitat Suitability for Salmonids

Presenter(s): Claire Bareilles, Katherine Hardaker, Caleb Wegener, and Margarita Otero-Diaz

Abstract: Some of the watersheds in Humboldt County have been listed as impaired water bodies for the North Coast Region. The data from Humboldt Baykeeper suggest that in 2012 both Martin Slough and Janes Creek were not suitable for salmonid habitat based on turbidity levels. There have been some restoration efforts for both Martin Slough and Jacoby Creek. The current water quality conditions were compared to the data collected by Humboldt Baykeeper in 2012 in order to assess the change in water quality health over the last thirteen years. The objective of this project is to assess the water quality health of Martin Slough and Jacoby Creek in Humboldt County for habitat suitability for salmonids.

Title: Development of a Field-Applicable Water Disinfection System from Agricultural By-Products

Presenter: Victor Ornelas

Abstract: Agricultural water, which comes from a variety of sources, including surface water, groundwater and rainwater, is essential for maintaining an adequate food supply, raising farm animals, and making it possible for fresh fruits, vegetables and plants to grow. However, water scarcity is a major issue. California's 2012-2014 drought severely impacted California's agricultural production due to the shortage of water supply. Because of this, a better strategic plan for water recycling is required. In addition to water scarcity, poor agricultural water quality can affect the quality of crops and if not sanitized or cleaned properly, can harbor bacteria and can lead to foodborne illnesses to the people who consume them. In order to improve the quality and safety of agricultural water and minimize the risk of cross-contamination, a newer water disinfection system is needed to sanitize agricultural water more efficiently.

Title: Evidence for a Large Middle Holocene Flood Event in the Pacific Southwestern United States (Lake Elsinore, California)

Presenter: Matthew Kirby

Abstract: While drought represents a serious threat to the Pacific southwestern United States, floods represent an equally formidable threat. This risk is so significant that the U.S. Geological Survey created the ARkStorm Project. This project aims to prepare California for a future storm(s) on the scale of the disastrous A.D. 1861–1862 events.

Title: Evolving Headwater Stream Resiliency: Modeling Surface Water Trends Across the San Bernardino National Forest to Support Sustainable Water Resources Management

Presenter: Jennifer D Alford

Abstract: High quality water resources are essential to sustaining ecological and human health, however, less focus has centered on watershed landscape and climatic impacts to headwater streams. The San Bernardino National Forest (SBNF) in Southern California contains numerous perennial headwater streams that serve both the Santa Ana and Mojave River Basins as well as recreational streams and lakes utilized by locals and tourists alike. Using a teacher-scholar model, undergraduate and graduate research assistants collaborated with faculty to monitor surface water quality at 10 sites across the SBNF including headwater streams entering Silverwood Lake, Lake Gregory and Lake Arrowhead.

Title: Microplastics Removal in Water using Coagulation and Flocculation

Presenter: Dashil Jha

Abstract: The objective of this experiment was to assess microplastics removal through coagulation and flocculation processes using a dependent variable as turbidity. Microplastics, including polyethylene (PE), polystyrene (PS), polyvinyl chloride (PVC) and nylon in various sizes, were tested in order to decrease the final turbidity after treatment. Prior to safer and cleaner water supplies, our study validated flocculation was more efficient in microplastics treatment than coagulation.

Title: Reliability of Large Rainwater Tanks in Semi-Arid Climate

Presenter: Tanjina Akter

Abstract: Rainwater tanks systems are an attractive alternative to save water even in semi-arid climates like Southern California where the annual average rainfall is about 19 inches/year. Efficiency of these systems depend on tank size, local climate, and potable water demand. This study investigates rainwater saving potential of rainwater tank system using a simple daily water balance model.

Title: Toxic Water Emissions and Economic Growth: A County Level Analysis of the United States

Presenter: Anthony Ponce

Abstract: Prior research has postulated that regional preferences for environmental degradation change over time with changing levels of income; as economies accumulate more wealth, they grow more environmentally conscientious, and abate pollutant intensive machinery or labor in favor of innovative technology that reduces emission levels, harmful toxins and hazardous pollutants (i.e. tertiary sectoral growth). This study discusses the long term, economic implications behind pollution intensive activities: why specific regions choose to forgo environmentally sustainable economic activities, how industry/household characteristics and preferences affect decisions to enact pollution abatement, and what potential policy responses/proposals entail for regional economic growth if enacted. Given growing concerns over water conservation efforts in wake of rising global temperatures, this study is of particular importance for discussions involving resource efficiency and sustainable operation practices.

Title: Water Quality Monitoring to Assess the Effectiveness of Restoration Activities in the Salmon Creek Watershed

Presenters: Kai Narum, Jenny Turk, and Eileen Cashman

Abstract: The Headwaters Forest Reserve, currently managed by the U.S. Bureau of Land Management in partnership with the California Department of Fish and Game, is approximately 7,400 acres of forest. The Reserve provides critical habitat for threatened and endangered species such as Coho and Chinook Salmon, Steelhead and Coastal Cutthroat Trout, Marbled Murrelet, and the Northern Spotted Owl. The implementation of this project contributes to the on-going scientific development of turbidity threshold monitoring and methods to estimate sediment yield in a watershed. This poster presentation will summarize the site setting and data analysis conducted to date.

Title: Younger Dryas to Early Holocene (12.9 and 8.1 ka) Limnological and Hydrological Change at Barley Lake, California (Northern California Coast Range)

Presenter: Jenifer A. Leidelmeijer

Abstract: Paleoperspectives of climate provide important information for understanding future climate, particularly in arid regions such as California, where water availability is uncertain from year to year. Here, we present a record from Barley Lake, California, focusing on the interval spanning the Younger Dryas (YD) to the early Holocene (EH), a period of acute and rapid global climate change. Our paleoperspective emphasizes California's sensitivity to climate change and how that change can generate abrupt shifts in limnological regimes.

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