



CODE: TPS1

TITLE: King County's Water Quality Benefits Evaluation – Connecting Actions to Endpoints

Local wastewater and stormwater utilities invest millions of dollars collected from ratepayers to protect water quality and meet regulatory requirements. Utilities consider many factors as they prioritize their work, including environmental outcomes. Utilities often compare the environmental benefits of potential projects by evaluating changes in pollutant loads rather than looking at whether those projects will accomplish better environmental outcomes for people and wildlife. In an effort for better-informed decision-making in King County, WA, we developed a framework (the [Water Quality Benefits Evaluation \[WQBE\]](#) toolkit) that connects management actions to projected environmental outcomes.

The toolkit is an adaptable framework containing a watershed pollutant loading model, a pollutant-reduction and cost optimization model, and a suite of causal models representing systems surrounding specified environmental outcomes, like swimming beaches and healthy salmon populations.



CODE: TPS2

TITLE: TOOL TIME! Water Data Improvements

As water data becomes more open and accessible, new tools and uses of these data are being developed to inform sustainable water management. This technical session will provide demonstrations of the latest tool and dashboard developments in water data from a range of scales - from national level to state and local efforts. By providing information on open-source tools and lessons learned, attendees will gain ideas on how they may contribute to the open water data movement through shared practices and experiences. Attendees will learn about the key data and insights offered by these tools and how they complement each other.



CODE: TPS3

TITLE: Stormwater Infiltration Testing and Analysis – State of the Practice

Stormwater infiltration is the processing of directing runoff into the underlying soil. Infiltration moves water from the surface into the ground. Infiltration eliminates flooding, repair water quality, replenishes groundwater supplies and restores aquifer habitats. Because of the many benefits, infiltration has become the focus of most new stormwater management practices.

Infiltration is not always feasible because of the variable nature of subsurface conditions. Designing and implementing successful infiltration systems requires careful planning, clear understanding of system goals, and a multiple disciplinary approach.

There are wide variety of infiltration facilities, including bioretention, permeable pavements, surface basins and subsurface facilities. Each of the different facilities interact with the subsurface in different ways, the stormwater planning and design approach must be adaptable to design challenges.

We propose a technical session that will focus on recent developments in subsurface investigation and testing methodologies that are used to support stormwater infiltration design. Methods for evaluating subsurface conditions to support infiltration system have evolved rapidly over the last 20 years. The technical session will summarize recent developments in subsurface analysis. Because our practice in the Pacific Northwest our initial focus in on state of the practice in the Pacific Northwest. We encourage and will attempt to recruit additional speakers to share practices in other regions in the country.



CODE: TPS4

TITLE: Citizen Volunteer Monitoring Programs and Their Importance in Water Resources Management

The inland Northwest has a variety of CVMP's focused on different types of data collection for a variety of uses. In this session we will examine several of these. The overarching theme is: using citizen science for gaining public support for water resources and habitat protection. Topics discussed will include training citizen volunteers receive in the IDAH2O program in the proper methods for data collection, assessing the value of IDAH2O data for informing local responses to changing water quality, using citizen collected turbidity data to evaluate stream restoration project success on Latah Creek. We will learn some of what 20 + years of citizen monitoring on Priest Lake, Idaho says about water temperature trends and hear an update on The River Mile network and the Columbia Basin wide Crayfish Study the network is conducting.



CODE: TPS5

TITLE: Native American Values and Influence in Shaping Water and Natural Resources Management in the Pacific Northwest

Powerful treaty rights, federal law, and fisheries co-management authorities give Pacific Northwest Native American Tribes strong influence over water and natural resources management. Through their sovereign authorities and as part of watershed communities, many tribes choose to participate in collaborative watershed management efforts. Each tribe is unique, and the perspectives, governance structure, and decision-making process is nearly always different than standard operating norms for U.S. federal, state, regional, and local governments. The collaborative process can be challenging and frustrating for all, especially when these differences are not understood and respected. When collaborative groups seek to understand each other's underlying values, opportunities usually emerge. This panel discussion will focus on collaborative water and natural resource management from the perspectives of tribal representatives from tribes in Washington State, in the hopes that all participants will gain insights that lead to more productive relationships and outcomes.



CODE: TPS6

TITLE: Modeling Propeller Wash Impacts on Sediment Transport

Resuspension and redistribution of sediments induced by propeller wash from vessel traffic may significantly influence water quality at contaminated sediment sites. The propeller wash has also been identified as the primary cause of scour around quay structures; such scour may result in structural instability. Modeling flow and sediment transport patterns induced by propeller wash will benefit researchers, engineers, and regulators in contaminant remediation planning, engineered channel designing, and long-term port management.

This workshop will introduce theoretical and algorithmic concepts of propeller wash modeling and offer the step-by-step practice of propeller wash model development. Following this workshop, the participants will be able to:

1. Obtain and process Automatic Identification System (AIS) vessel tracking data
2. Build and run a propeller wash model
3. Analyze the model results using post-processing tools (e.g., map visualization, animation, time series plot).



CODE: TPS7

TITLE: Yakima Basin Integrated Plan – Keeping our Stride through Implementation

A coalition of diverse interests came together in 2009 and created a nationally-recognized resource management framework around water management and aquatic habitat restoration for the Yakima River Basin. Now in implementation mode, the Yakima Basin Integrated Plan partners continue to engage challenges in delivering on their ambitious goals. A panel of YBIP partners will discuss how they work together through implementation-phase issues. Challenges include adaptive management as new urgent issues are learned and/or new projects identified, succession planning to keep the coalition strong, and funding and capacity acquisition to scale up work to meet the 30+ year implementation schedule. Partners must also remain focused and aligned to build the more controversial elements of YBIP. Collaborative watershed management is key to attaining vibrant, resilient watersheds, and YBIP partners want to share the essential knowledge and perspectives they have gained through being part of YBIP.



CODE: TPS8

TITLE: A Multidisciplinary Approach in Fish Passage Barrier Removal in Washington State

In 2013, a federal court injunction required Washington State to correct complete or partial fish barriers in Western Washington by removing state owned culverts that block access to spawning and rearing habitat for salmon and steelhead by 2030. As a result of the injunction, the Washington State Department of Transportation (WSDOT) is working to remove over 800 fish passage barriers at state highways by replacing existing culverts that act as barriers to fish passage with new crossings that restore access to habitat to aid in the protection and restoration of fish populations. The fish passage removal program is one of WSDOT's highest priorities.

This technical session will provide an overview of the program, including examples of fish barrier removal projects to illustrate design processes and methodology and delivery methods. It will describe the multi-disciplinary, interagency approach used to design stream bed and structure openings that allow fish passage and improve habitat. It will also present how the hydraulic design process addresses constraints, opportunities, and risks associated with flood risk, potential channel aggradation or degradation, stream restoration, channel complexity, infrastructure safety, and climate resilience. It will also include challenges and opportunities in permitting and construction.



CODE: TPS9

TITLE: Research to Application

The Research to Application topical session is a place for speakers to focus on concepts, techniques, and efforts that have moved out of the research phase and are ready to become applied mainstream tools for day-to-day operations or management of water related projects. This forum gives individuals or groups an opportunity to share their work and ideas with the larger water resources community and, just as important, provide that same community a chance to expand their knowledge, skills and abilities to meet the challenges of water resources management.



CODE: TPS10

TITLE: Streamflow Restoration Planning in Washington – Opportunities Seized or Missed?

Washington State is seeing more frequent summer drought conditions and unprecedented heat waves. Recent controversies over “exempt wells” – small homeowner wells that don’t require a water right – resulted in legislation that called for watershed plans to be developed in many key basins. Yet confusion and disagreement over the intent and language of the legislation resulted in a watershed planning process that was often fraught with discord and failed to reach consensus in multiple basins. Differing viewpoints clashed in the process. This panel will discuss the planning process from multiple perspectives: Tribal, local government, fish agency, water utility. What worked and what didn’t? Were opportunities for better planning seized, or missed?



CODE: TPS11

TITLE: What are you doing to improve D or E or I or J?

The American Water Resources Association (AWRA) aims to build a more inclusive culture that reflects disciplinary, human, and geographic diversity. With this in mind, we would like to propose a panel discussion on the topic of diversity (D), equality (E), inclusion (I), and justice (J). This panel aims to spark meaningful conversation on challenges and barriers some groups face in the water resources management discipline and discuss ways employers, organizations, and individuals can remove those barriers to ensure an equitable workplace, academia, and water resources allocations and management. Furthermore, we will discuss the role of DEIJ advocates and the specific ways advocates can advocate for change.



CODE: TPS12

TITLE: Nation-to-Nation Engagement on Water Resources

This panel will provide the platform for tribal leaders and members across the country and others knowledgeable on this topic to discuss the views and concerns of tribal communities regarding water resources management and showcase some of the successful projects in these communities. This conversation will bring awareness of water resources issues tribal nations experience to the 2022 AWRA Annual Conference attendees that in turn may provide information to help them to perform their water resources duties in a way that is in alignment with:

- White House Fact Sheet: Building A New Era of Nation-to-Nation Engagement: Nation to Nation: <https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/15/fact-sheet-building-a-new-era-of-nation-to-nation-engagement/>
- Executive Order 14008: *Tackling the Climate Crisis at Home and Abroad*. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>
- Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government <https://www.federalregister.gov/d/2021-01753>
- Executive Order 14049: White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Native Americans and Strengthening Tribal Colleges and Universities <https://www.federalregister.gov/d/2021-22588>



CODE: TPS13

TITLE: Community-engagement and Citizen Science in Water Resources Projects

Community-engagement in water resources problem solving can be a powerful approach in integrated water resource management. It recognizes that communities face diverse and complex issues, and that they may already possess a variety of assets to implement solutions or identify problems. Citizen science is one way to engage communities with water resource projects, but other ways are being developed in partnerships with communities in the form of co-production of knowledge by combining local or ecological knowledges with scientific understandings. This session seeks examples of community engagement in water resources project, invites discussion on the role of community engagement in such projects, and broader benefits to society.



CODE: TPS14

TITLE: Thermoelectric Water Use

Humans impact water availability for a myriad of uses. Thermoelectric power plants are the largest users of water among water-use sectors due to the amount needed to cool and condensate steam used to generate electricity. Quantifying the amount of water use at spatial and temporal scales relevant for water-use managers is necessary for protecting the resource. Federal- and state-reported thermoelectric water-use data have differed historically. Additionally, USGS has provided 5-year snapshots of average annual thermoelectric water use at the county level, scales not conducive to water-resource management or availability studies. USGS has recently developed physics-based models that provide consistent methods to estimate thermoelectric water use across generation and cooling-system technologies at the plant level and monthly time scale. Furthermore, USGS is developing machine-learning techniques to estimate near-real time and forecasted thermoelectric water use. This session will present updated methods and estimates of thermoelectric water use across the United States.



CODE: TPS15

TITLE: Yakima Basin Integrated Plan: Integrating the Integrated Plan with Innovative Science and Adaptive Management

The Yakima Basin Integrated Plan (YBIP) is designed to provide a resilient and healthy aquatic ecosystem and reliable agricultural/municipal water supply for the future of the basin. Water and fisheries resources are directly connected to 96,000 jobs, \$13 billion in annual economic output, and the Yakama Nation's spiritual and cultural identity from time immemorial. Innovative science and integrated thinking about how and where water is most needed to support in-stream and out-of-stream uses have proven to be effective strategies to achieve the goals of the Integrated Plan. YBIP partners are renovating extensive irrigation infrastructure to recharge groundwater, adding surface storage for instream flow and irrigation, and augmenting tributary streamflow during low flow periods while improving irrigation system performance to conserve water and better serve agricultural customers. Strong partnerships make these innovations possible. This session will present some of the innovative and integrated strategies led by YBIP partners.



CODE: TPS16

TITLE: Complex, High-Risk, Climate-Resilient Floodplain Restoration – A Case Study

The dire prospects for many salmonid and lamprey species combined with the increasing need for climate resilient infrastructure necessitates increasing the scale and magnitude of floodplain restoration; however, these larger, more impactful projects inherently have greater social and technical risks and complexities. The Steigerwald Reconnection Project is a \$31M effort spanning nine years and 1,000 acres of Columbia River floodplain that successfully navigated those complexities. The project involved eleven real estate acquisitions, one state highway, two federally regulated setback levees, and 1.7M cubic yards of earthwork. The purpose of this session is for the project team to not only share keys to the project's success, but also how we optimized levee design to source all embankment material from within the site, enhanced the project to be resilient in the face of climate change, and sequestered 100% of project emissions (including those associated with burning more than 400,000 gallons of fuel).



CODE: TPS17

TITLE: New Water Storage in Washington Hedges against Climate Change Pressures

New water storage in Washington state continues to be an adaptive management tool to hedge against the hydrologic pressures of climate change. As warmer temperatures, higher spring runoff, and more frequent droughts create late season water challenges, water utilities in Washington are advancing storage projects to combat lost water supply. Storage projects being pursued in Washington are diverse, and are being planned for agricultural reliability, municipal use, and instream flow enhancement. Aspect Consulting and guests will lead a technical discussion and/or panel around a variety of new surface storage projects being developed in Washington State and discuss lessons learned, including:

- **Switzler Reservoir:** A new 40,000+ acre-foot surface reservoir in south central Washington to meet agricultural reliability, agricultural expansion, and municipal water supply needs.
- **Kennewick Irrigation District Reservoir:** A new 12,000+ acre-foot reservoir in south central Washington to reduce drought risk from the district's current one-in-five year interruption of prime crop land.
- **Icicle Basin Strategy Storage:** A 10,000+ acre-foot storage project in North Central Washington. Storage reconstruction and automation projects planned on 5 existing irrigation reservoirs located in the Alpine Lakes Wilderness to improve agricultural reliability, instream flow, and domestic water use needs.
- **Walla Walla Basin Storage:** Up to 100,000 acre-feet of storage in the Walla Walla basin to benefit instream flows and senior water right holders.

These projects are in various stages of planning, design, and environmental review. Showcasing each project's vision will help identify how Washington water users are using storage to continue to provide reliable water supply to its users.



CODE: TPS18

TITLE: Water Flows Downhill: Investigating the Role of Forest Management in Upland Hydrology and Streamflow

Upland watershed processes affect water storage and usage on the landscape and influence the timing and magnitude of streamflow. Given the overlap between critical summer water shortages and projected future amplification of drought, natural resource managers are looking beyond the river corridor to the upper watershed for strategies to address current water quality and quantity impairments, and to buffer climate change effects on summer streamflows and temperatures. The forested upper portions of many watersheds reflect a legacy of land management and disturbance, including timber harvest, fire suppression, wildfire, and insect outbreak. Restoration of more natural forest conditions for the benefit of terrestrial habitat complexity and wildfire fuels reduction are becoming widespread alongside continued timber harvest. Practitioners, researchers, and stakeholders in the Pacific Northwest are using observations and modeling exist to quantify the effects of these management actions on upland hydrology and downstream streamflow in order to test potential strategies to improve current conditions and adapt to climate warming.



CODE: TPS19

TITLE: The Walla Walla River Basin: Characterizing the Integrated Groundwater and Surface Water System and Impacts of Water Use

Groundwater levels in the Walla Walla River Basin (WWRB) have been declining since the 1940s (Newcomb, 1965). The largest demand on groundwater is from irrigated agriculture. Surface water is over appropriated, and groundwater declines reduce summer streamflow required for fish populations, including several listed as threatened under the Endangered Species Act (ESA). The WWRB spans the state boundary of Oregon and Washington, adding to the challenge of managing the basin's water resources. The U.S. Geological Survey in Oregon and Washington, in cooperation with the Oregon Water Resources Department (OWRD) and the Washington Department of Ecology (DOE), are currently conducting a comprehensive transboundary study to characterize and quantify the groundwater-flow system that will inform water resource management plans in the basin.



CODE: TPS20

TITLE: Water Reuse in the PNW

Known for its ample rainfall, there is an impression that water is an abundant resource in Western Washington. However, climate change and population growth impacts are increasingly putting stress on our waterways and water resources. One potential tool to combat water shortages while meeting water demand is the use of recycled water (also known as reclaimed water). In WA State, recycled water is used to manage and improve water resources via streamflow augmentation, managed aquifer recharge, and source switch opportunities. It provides a sustainable and climate resilient water management option, yet is arguably underutilized in WA State when compared to states such as California. This panel session will cover how the use of recycled water for water resource projects is progressing in WA State, and how it could expand in the future.



AMERICAN
WATER RESOURCES
ASSOCIATION

ANNUAL WATER RESOURCES CONFERENCE TOPICAL SESSION DESCRIPTIONS

CODE: TPS21

TITLE: TBD from AWRA Policy Committee

TBD



CODE: TPS22

TITLE: Catalyzing Community-Driven Utility Consolidations and Partnerships

This panel will review the key findings of the US Water Alliance February 2022 report “Catalyzing Community-Driven Utility Consolidations and Partnerships.” Part of the Alliance’s Recovering Stronger initiative, this report captures progress and insights from a diverse, California-based workgroup on better harnessing utility cooperation models to fulfill the Human Right to Water, legislated in California in 2012. The workgroup included many people in government, non-profit and community groups, academia, and in the private sector. As the report shares: “In this moment, no single organization or sector can solve our complex water challenges alone.”

The moderated panel will include members of the California workgroup and the paper authors to share the collaborative process of developing the report, and its key findings. A robust Q&A session will be included in the session, welcoming audience engagement.



CODE: TPS23

TITLE: Introducing the USGS 3D Hydrography Program

Brief Description: The U.S. Geological Survey (USGS) has developed a vision for the 3D National Topography Model (3DNTM), which will integrate USGS elevation and hydrography datasets to model the Nation's topography in 3D. The 3D Hydrography Program (3DHP) is the hydrography component of the 3DNTM and the next generation of national hydrography mapping that will include deriving a stream network from elevation data and building an information infrastructure to share water data within the context of the stream network. 3DHP will provide critical data for applications like flooding, contaminant spills, water quality and quantity, drought, climate change, and other, emerging applications. The presentations in this session will provide an overview of 3DHP plans including scope and timelines for the emerging program.