



The Water Report™

Water Rights, Water Quality & Water Solutions in the West

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~~~~~ SAN DIEGO REGION DROUGHT-PROOFING ~~~~~

by Lisa Beutler, Stantec (Sacramento, CA)

Background

IF CLIMATE WHIPLASH WERE A THING

If climate whiplash were a thing, California would be its poster child. The state's residents are now living in a perpetual state of drought and floods. While the weather gods recently delivered a good drenching with a bomb cyclone tethered to a Category 5 "atmospheric river," drought still remains in the lead.

During most of Spring 2021, headlines throughout the American West predicted continued drought and offered alarming projections of looming water cutbacks. Well-known water wonks, like the University of California's Davis Center for Watershed Sciences co-director Jay Lund, were in demand as the press tried to help people understand what it all meant. Lund obliged, offering that 2021 was among the driest year in more than 100 years of precipitation records and that 2020 was the ninth driest. He added that the state is in worse shape than it was before the last drought, and it will be in even worse shape after the current one.

In the face of all this dismal news, on June 21, 2020, the San Diego County Water Authority (Authority) issued a press release announcing the *San Diego Region is Drought-Safe This Summer*. They then assertively proclaimed: "The region is protected from drought impacts through 2045, despite continued hot and dry conditions."

For weary drought watchers this bold proclamation was simply remarkable. How, they wondered, could San Diego, an arid, water scarce locale, be pulling this off?

Drought Preparedness

DECADES-LONG THREE-PRONGED EFFORT

According to the Authority's General Manager, Sandra Kerl, what the Authority is doing right started decades ago with on-going planning and investments in a "portfolio" of different water supplies paired with long-term conservation efforts.

For the San Diego region, failure really isn't an option. The Authority supplies from 75% to 95% of the region's water needs to 24 member agencies (*see sidebar*) that purchase water for retail distribution in their service territories. Originally created in 1944, the Authority's water resilience building efforts now sustain a \$253 billion regional economy and the quality of life for 3.3 million residents.

The Authority's success rests on a 30-plus year, three-pronged focus that ensures: 1) locally-controlled supplies; 2) augmented water storage; and 3) the aggressive pursuit of water-use efficiency. They underpin this approach with a culture of innovation and fiscal and environmental responsibility.

Locally Controlled Supplies

The idea of local control seems counterintuitive given San Diego County's dependence on imported water supplies since 1947. Today, around 70% of its water comes from the Colorado River and the rivers fed by snowpack melting off California's Sierra Nevada mountain range.

Drought Proofing

Locally Controlled

Errata

Due to my mistake, all three references to the Army Corps in Karl Mogenstern's excellent article on watershed restoration in our last issue (TWR#212) are in error. In each case the correct reference is the City of Eugene. Apologies, David Light, Editor

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To the Authority, locally-controlled supplies means “decisions are made for San Diegans by San Diegans.” Long-term contracts for high-priority Colorado River water provide low-cost, conserved supplies. Desalinated seawater, groundwater, and recycled water provide additional security.

For General Manager Kerl and the Authority's oversight Board, statewide drought conditions highlight the value of locally-controlled water supplies. Prior to the 1990s, San Diego received upwards of 95% of its water from the Los Angeles-based Metropolitan Water District (MWD). MWD controls a huge aqueduct transporting Colorado River water to Southern California. When a severe drought struck in the 1980s, MWD severely restricted the water it delivered to the San Diego region. As Kerl explained: “When there's little water available, and you are at the end of a pipeline, you are at high risk.”

While the MWD dispute was the result of underlying contractual and water rights issues dating back to the 1930s, many point to the 1980's episode as the source of a still observably rocky relationship between the two entities. Adopting a “never again” determination, the Authority launched a series of initiatives. A \$1.5 billion Emergency & Carryover Storage Project, constructed between 2000 and 2014, anchored the effort.

Designed to gain more control and diversify its water supply, the storage project includes a series of system improvements composed of reservoirs, interconnected pipelines, and pumping stations. The marquee improvement, completed in 2014, was a \$568 million effort that raised the walls of San Vicente Dam by 117 feet. That initiative resulted in the tallest dam raise of its type in the world. It also created 52,100 acre-feet of water storage capacity, plus 100,000 acre-feet of carryover storage capacity for periods of water scarcity.

According to Authority Principal Engineer Jeff Shoaf, the new capacity provides for essential emergency storage in times of drought or natural disaster. Shoaf explains, “It's not a matter of if, but really a matter of when some sort of event will occur where we're cut off from water from the north.”

Beyond infrastructure, the Authority continued to look for more ways to cut its dependence on MWD. In 2003, it struck a deal to buy Colorado River water directly from Imperial County. This action leveraged a 1922 agreement between the Colorado Basin states and federal government that prioritized or promised Colorado River water to certain areas over others. Under this arrangement, the Imperial County has more rights to the river than anyone else.

Now, through its agreement with Imperial County, the Authority gets access to that high-priority (senior) water. This move, paired with money spent in 2010 on fixing up two canals Imperial uses in exchange for the 26 billion gallons a year water that otherwise would have seeped out, has shifted the composition of the Authority's water supply. Now, about 50% of the Colorado River water that previously went to Imperial County is serving the San Diego region.

The Authority and its members concurrently invested in obtaining more local water supplies including: brackish groundwater; recycled water; and water purification. Continuing its pioneering approaches, in 2015 it launched commercial operations at the nation's largest seawater desalination plant. This facility, sited in the coastal town of Carlsbad, is a public-private partnership with Poseidon Water. Poseidon, a private, investor-owned company, develops water and wastewater infrastructure. Under the purchase agreement, Poseidon built the Desalination Plant and a 10-mile conveyance pipeline to deliver desalinated water to the Authority's aqueduct system. The agreement provides for up to 56,000 acre-feet of desalinated seawater per year. This one investment now offers enough water to meet approximately 10 percent of the region's water demand.

Expansion of the region's water recycling infrastructure — called “pure water programs” — will also be a game changer. Such programs, already in full operation in neighboring Orange County, have the potential to supply just over half of the City of San Diego's water supply by 2045.

Further, because each of the water supply projects is primarily independent of precipitation, they provide a particularly robust drought-proofing strategy. Today, according to the Authority, about 30% percent of the water used across the region comes from local supplies. That percentage is set to grow as more water purification projects come online.

In addition, a recent decision by the MWD Board — based on the Authority prevailing in a California Court of Appeal finding in a long-running dispute over water transport charges — will result in MWD paying damages and interest. These funds will help finance even more resilience projects, and perhaps more importantly, improve relationships. Water Authority Board Chair Gary Croucher called MWD's decision an “important step toward a more collaborative future” between the two agencies.

Water Storage

In addition to ensuring more local control, the region's surface water reservoirs, groundwater management, and stormwater capture initiatives enhance water reliability. System-wide, two dozen surface water reservoirs serve a variety of purposes, including storing imported water and capturing runoff from local rainfall.

Altogether, efforts to augment regional water storage capacity have resulted in a 30% local supply increase since 2003.

The Authority is understandably proud to discuss its water-use efficiency record. Since the 1980s, the Authority and its member agencies have required and supported conversions to water-efficient devices like low-flow showerheads and toilets. As a result, per capita water use in the Authority's service area has fallen from more than 200 gallons per capita/day (gpcd) to less than 130 gpcd over the past 15 years. In 2020, total regional use of potable water was about 30% less than it was in 1990, even though the regional population grew by 35%.

The Authority has also been redoubling efforts to support underserved communities. This includes developing a program that will increase installation of low-flow toilets in low-income communities. The Authority continues to look for opportunities to help the parts of the state that are suffering from extreme water shortages. One option the Authority is considering is to allow its groundwater being stored in the Central Valley to be exchanged or sold. It is also exploring potential opportunities to work with partners that may benefit from increasing water production at the Desalination Plant.

On October 16, 2021, the US Drought Monitor report showed 39% of California in exceptional drought, which increased to 46% by the end of the month. One year ago, no part of the state was in the most extreme category. Even so, up until October 19th, the Authority and its member agencies had not needed to take any extraordinary drought-related actions.

However, in late October, as the state's reservoirs remained persistently low and the drought appeared to wear on, Governor Newsom broadened his previous drought emergency declarations to cover the entire state and asked the State Water Board to ban wasteful water practices such as using potable water for washing driveways and sidewalks.



Drought Proofing

Voluntary Efforts

Usable Road Map

In addition, the Governor directed water suppliers to implement Water Shortage Contingency Plans. These plans are designed for situations in which a water agency's supplies have been reduced. San Diego County has activated WSCPs before, once in 2007 and again in 2014.

The Authority's 36-member Board of Directors voted unanimously to activate the regional drought response even though the San Diego region continues to have reliable water supplies due to decades of conservation efforts and ratepayer investments. Regardless, it was the Board's view that San Diegans should increase their conservation efforts in the face of a potential third dry year across California. The Board's Chair, Gary Croucher elaborated by saying, "San Diegans have always stepped up when duty calls. Today, our 36-member Board sends a unified message encouraging residents to conserve water, avoid water waste, and take advantage of rebates to improve water-use efficiency indoors and outdoors."

In Croucher's view the Board's action to go to a "Level 1" response sends a signal that increased voluntary conservation efforts are necessary. The Board's action gives local retail water agencies flexibility to address local conditions.

Conclusion

COSTS & MEASURES OF SUCCESS

While the Authority has much to brag about, it does come with a price tag. Regardless of cost and, "Even though it took [San Diego] a very long time, 30 years in the making in doing this," Authority Engineer Shoaf explains, "it's a wise investment and the earlier you start the better you are."

Jeffrey Mount, a peer of Davis's Jay Lund and now senior fellow with the Public Policy Institute of California's Water Policy Center, has joined others in recognizing the region's water resilience-building results. Speaking with a New York Times reporter he offered, "There are no silver bullets anywhere, but the Authority is definitely in the upper echelon of these creative approaches."

Toni Atkins, now the president pro-tem of the California Senate, previously served on the San Diego City Council. She is also happy to share how proud she is that the Authority created a road map for the other agencies now scrambling for water. However, talking with the same New York Times reporter as Mount, she acknowledged her current position requires her to look at the bigger picture — i.e., she now must make decisions that will protect the whole state. As a result, her hometown may need to share the burden as the drought continues. Atkins explained, "Although San Diego has come up with more ways to get water locally, it still gets most of its water from outside the county, including from the shrinking Colorado River. The resentments are still going to be there; as everybody wants to make sure they get the water they need." She added, "Like with wildfires and the pandemic, we're all in this together."

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San Diego County Water Authority Drought Response website: www.sdcwa.org/do-your-part-to-stay-watersmart/

Lisa Beutler specializes in helping organizations and communities reach decisions and create effective public policy. After a decade as the Associate Director of the Sacramento State University Center for Collaborative Policy she moved to Stantec, a global design and engineering firm. At Stantec she helps clients with strategic thinking, collaborative policy, communications and engagement, water resources and other planning. Earlier in her career she was a state park ranger and served in special offices of two governors. As a past president of the American Water Resources Association and current chair of the Impact Magazine Editorial Committee, her water management expertise and passion for excellence is well known. She's also a nationally recognized practitioner in large group processes and continues to explore the use of technology to improve collaboration, transparency, and decision-making. Most recently, her expertise has also led to key roles in California's implementation of the Sustainable Groundwater Management Act among other things. A popular presenter at professional conferences, her work is and has been studied extensively as far back as reviews in the *Public Productivity & Management Review* (1996). She has also been featured in a variety of publications and books including *Planning in the Face of Conflict* by John Forester. With a proven track record leading numerous complex, high profile projects ranging from water, land-use, and energy planning to off-highway vehicles, technology, substance abuse, and religious conflict resolution, she is a go-to resource for agencies with wicked problems.

Micro-Hydropower

Utility Energy Costs

Conduit Hydropower

Energy Production

Environmental Goals

Sustainability Goals

Water/Energy Nexus

MICRO-HYDROPOWER

HILLSBORO, OREGON WATER DEPARTMENT EMBRACES WATER-ENERGY INNOVATION

by Eric Hielema, P.E., Water Engineering Manager, City of Hillsboro Water Department
& Jennifer Newton, Bluehouse Consulting Group, LLC

Introduction

Sourcing, pumping, treating, and distributing clean drinking water to homes and businesses requires a lot of energy, and that's something water departments all over the country are grappling with. Electricity is a large cost for water utilities, and, unfortunately, it often relies on methods that are not sustainable — such as the burning of coal and other fossil fuels.

According to the US Environmental Protection Agency (EPA), “[A]s much as 40 percent of operating costs for drinking water systems can be for energy. By incorporating energy efficiency practices into their water and wastewater plants, municipalities and utilities can save 15 to 30 percent, saving thousands of dollars with payback periods of only a few months to a few years.”

At the Hillsboro Water Department in Hillsboro, Oregon, energy efficiency practices are key to helping Hillsboro meet its environmental stewardship goals and reduce reliance on fossil fuels. The project described in this article also presented a new opportunity. Hillsboro not only embraced the use of renewable energy sources, but become an energy producer. The project uses water infrastructure to generate environmentally-friendly in-pipe (or conduit) hydropower.

The Hillsboro In-pipe Hydroelectric Project was commissioned in September 2020. The project features the first installation of the In-PRV®, a new micro-hydropower system from Portland-based InPipe Energy. The system transforms excess water transmission pressure into clean energy, while also performing essential pressure reduction for water delivery to homes and businesses.

The system has been operating successfully for over a year. It has exceeded its energy generation goals by producing 203,000 kWh of electricity in its first year. It's expected to continue generating at least 200,000 kWh of electricity per year (enough to power 20 homes), generating about a million dollars' worth of electricity over the life of the system. The In-PRV was designed to last for 30 years with regular maintenance.

Delivering on Hillsboro's Commitment to Sustainability: Water/Energy Nexus

With a population of 100,000 residents, the City of Hillsboro, is a suburb of Portland, Oregon. It serves as both the county seat for Washington County and, more colloquially, as the hub of Oregon's “Silicon Forest.” The City is home to Intel and hundreds of other related high-tech, bio-tech, clean-tech, and advanced manufacturing companies — as well as retail centers and fast-growing suburbs all served by Portland Metro's MAX light rail system.

The City has a longstanding reputation as a forward-thinking community, committed to planning, sustainability, and investment in critical infrastructure to support the ever-growing industry and population. As part of its 2035 Community Plan, the City established this Hillsboro 2035 Environmental Stewardship Goal Statement:

Hillsboro is an environmentally sustainable community that takes proactive steps to protect natural assets, minimize greenhouse gas emissions, and recover, recycle, and renew resources. Residents, businesses, and community institutions understand the link between economic prosperity and environmental health and work collaboratively to maintain a thriving city for future generations.

The City has made significant investments to reach sustainability goals such as:

- Energy Efficiencies: a 60% reduction in per square foot energy usage
- Electric Vehicles: Elimination of fossil-fuel passenger vehicles (now starting to replace many non-passenger vehicles with electric)
- Carbon Credit: 100% offset of City facility power through the purchase of renewable energy

Efficient use of water and energy are two of the most critical factors in meeting sustainability goals. For water agencies, maintaining and repairing aging infrastructure is critical in reducing the risk of water loss. At a time when budgets are lean and rate hikes are a hard-sell with customers still reeling from the losses of the pandemic, water utilities across the country are getting hit with a water-energy double whammy. Old, leaking pipelines are in dire need of repair or replacement and leaks continually add to the burden of energy required, as water is pumped and treated only to be released back into the ground — pushing the need for additional treatment and distribution capacity.

Micro-Hydropower**Pressure Management (PRVs)****Untapped Energy****Traditional Hydropower****Micr-Hydro System****Turnkey Solution****Hillsboro System**

Finding ways to lower operational costs is paramount. Two ways to accomplish this are reducing water loss and reducing energy use.

Concerning water loss, one can apply the well-worn phrase “an ounce of prevention is worth a pound of cure.” While old pipelines can’t be made new again without invasive and expensive investment, precise pressure management in existing pipelines is key to reducing wear and preventing or minimizing leaks. This is why Hillsboro, like most other water agencies, have traditionally used **pressure reducing valves** (PRV) to manage pressure in pipelines.

Widespread PRV use is why the concept of harnessing excess pressure to generate renewable energy is such an elegant solution for water agencies. This strategy helps mitigate two problems at once, and does so in a way that is practical and doesn’t change how the system is operated.

There is an additional benefit that is becoming more and more relevant — i.e., the need to find more creative solutions to address climate change. Like Hillsboro, cities and water agencies across the US are being called upon to address climate action goals. Water agencies have within their own infrastructure the means to be a greater part of climate change solutions. By using this untapped source of energy — the excess pressure in pipelines — utilities can benefit from the opportunity to minimize risk for rate-payers while also making a huge impact on the reduction of carbon for the good of the planet.

Taking In-Pipe Hydropower to the Next Level

In the Pacific Northwest, while there is access to energy produced by traditional hydropower dams, fossil fuels are still used to meet energy needs. Hydropower, in general, provides a lower cost of energy than other renewables, but traditional dams come with a host of other environmental concerns, such as protecting salmon and wildlife habitat.

Finding new ways to tap into the economic benefits of hydropower without damaging the environment holds a great deal of promise, yet few companies have been able to deliver at a scale that makes it both practical and affordable for city governments and water agencies. A few years ago the City of Portland, installed a large-scale in-pipe hydropower system from Lucid Energy, which *The Water Report* covered in 2013 and 2015 (see Newton, *TWRs* #112 and #132).

While Portland’s pilot project generated a lot of interest in the concept of using water infrastructure to generate electricity, the system itself proved too large, expensive, and complicated to be widely used. That’s why a new, smaller, turnkey micro-hydro system was developed through research conducted at Oregon State University. This system has been commercialized by InPipe Energy, which was founded by former Lucid Energy CEO Gregg Semler. Semler and his team spent years learning from water agencies exactly what it would take to create a viable, cost-effective, in-pipe hydropower solution that would be practical, easy to install and maintain, and that would deliver both energy and pressure management in a way that doesn’t challenge existing water operations.

The City of Hillsboro has an extensive history as well as Council-sponsored initiatives to maximize sustainability programs. In-PRV presented an attractive and practical addition to further the City’s sustainability goals. The City has additional opportunities for deployment throughout the Hillsboro water system. Furthermore, in the many places where a flow based pressure system is currently being used to reduce pressure, this system presents a practical, cost-effective, opportunity for most water systems.

Water system operators are by nature cautious and conservative regarding anything that might impact or pose a risk to operations — be that water quality, system downtime, operational changes, or added maintenance. InPipe Energy delivers a turnkey solution that serves the traditional function of a control valve, with the added benefit of energy generation.

The Hillsboro Water Department became the first installation of the In-PRV because of its renewable energy generation. Many sustainability-oriented funding programs are available in Oregon, which helped make this project attractive (the funding opportunities are discussed later in this article).

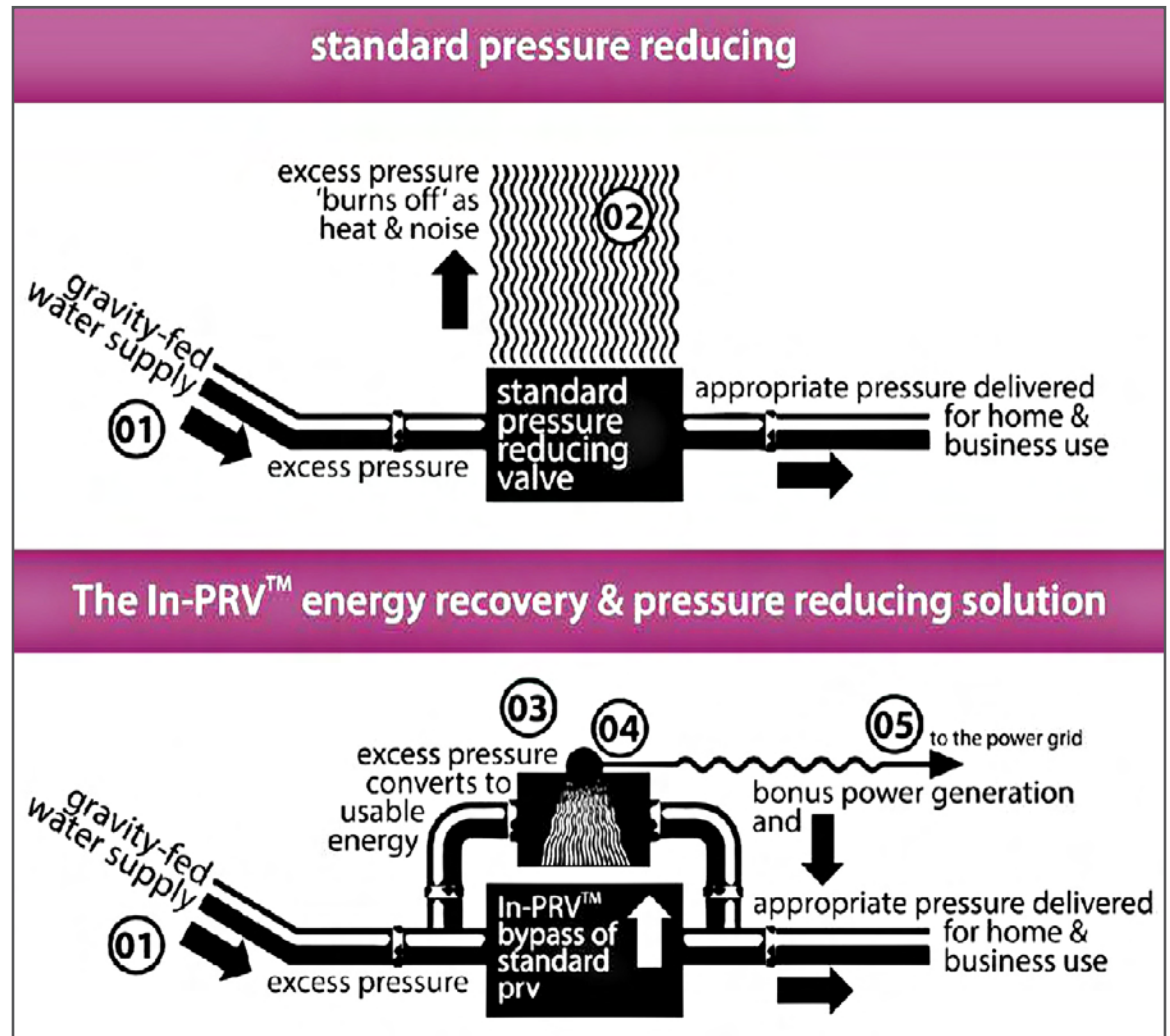
Turning Pressure Into Energy

The City of Hillsboro receives a majority of its water from the Joint Water Commission (JWC) for which the City is the Managing Agency. The JWC owns a conventional water treatment plant next to Forest Grove, Oregon as well as many miles of large transmission mains. Water is pumped from the nearby Tualatin River to the treatment plant and then to a higher elevation reservoir, where it is then gravity fed via large transmission mains to each of the JWC partners and wholesale customers. The transmission mains have system pressures of approximately 130 **p**ounds per square inch (psi).

Micro-Hydropower	<p>Like a rock on the precipice of a hill, the water pressure present due to the elevation of the reservoir can be thought of as potential energy. However, in this case this pressure is far too high for direct delivery and safe usage by regular customers. Consequently, on its way down to the City, the water passes through Pressure Reducing Valves (PRV) to decrease the pressure to a level safer for consumer fixtures and appliances (80 psi or less).</p>
Reservoir Elevation & Pressure Reducing Valves	<p>The control valves traditionally used simply bleed off pressure using friction — while the potential energy is wasted. Essentially, it becomes an uncollected byproduct of water transmission and distribution. This common circumstance is why every water agency that's currently reducing pressure with valves has an opportunity to harness otherwise untapped energy.</p>
Benefits	<p>The In-PRV provides the same pressure reduction function as a traditional PRV, but converts the pressure drop into electricity that is fed back to Portland General Electric's power grid. The installation site is in a small vault situated under a garden at the Gordon Faber Recreation Complex in Hillsboro. The only above-ground elements are in the colorful electrical control box that marks the project site.</p>
	<p>The In-PRV solution combines smart control software with integrated micro-hydro and control technologies that precisely control water pressure while producing renewable energy and providing critical operational data. The In-PRV is connected to a Supervisory Control and Data Acquisition (SCADA) control system and the hydroelectric generator is connected to an electrical panel and fed to the grid using the same standards established by the solar industry.</p>
	<p>The power generated benefits the City and it's rate-payers in several ways:</p>
	<p>Providing Electricity for Use: The electricity (generated 24/7) is either used by the stadium complex or sold back to Portland General Electric. On site, it helps to power the lights, concessions, and Electric Vehicle (EV) charging stations at the sports complex (home to the Hillsboro Hops Minor League baseball team).</p>
Renewable Energy	<p>Offsetting Operational Costs for Energy: Because the City is a government agency, the value of any electricity sold to Portland General Electric is credited back to the Water Department. This helps offset operational costs for things like the pumping of water.</p>
	<p>Meeting Climate and Sustainability Goals: The production of clean, carbon-free electricity is helping the City meet its sustainability and climate action goals. The system is eliminating approximately 162,000 pounds of carbon annually and approximately 6.3 million pounds of carbon over the life of the system (30 years). The nature of this unique form of renewable energy — and its vast potential for water agencies across the country — is also what helped garner significant grant funding for the project.</p>
Pipeline Life	<p>Extending the Useful Life of Pipelines: By precisely managing the water pressure and avoiding pressure spikes, the useful life of pipelines can be extended. This is especially true with older systems, that might not have full integrity like a new pipe, such as pipelines impacted by corrosion. As noted earlier, precise pressure management is essential in helping to prevent system wear and water loss.</p>
	<p>Providing Redundancy: Because the In-PRV is part of an existing PRV in a bypass configuration, the old PRV provides redundancy, enabling the system to be shutoff if needed without impacting water operations. This was important for the pilot project. In the future, if sized properly, In-PRVs could potentially be used in place of traditional control valves. The In-PRV is now a regular component of the City's water system and has performed flawlessly for over a year with no maintenance needed.</p>
Flow Rate & Pressure Drop	<p>In-PRV Applicability: The In-PRV can be installed wherever water systems use control valves to reduce pressure in 8 inch to 60 inch pipelines. However, the volumetric flow rate and the pressure drop need to be analyzed to validate that performance goals and capital costs provide a net benefit to the utility. In the Hillsboro installation there is up to 4.3 cubic feet per second (~1800 gallon per minute) of flow with a 30 psi pressure drop. Typically it is co-located in a bypass where there is a control valve, making it easy to integrate into existing or new pipelines with minimal impact on water operations. Sensors continuously monitor flow and pressure.</p>
	<p>As water flow is diverted through the In-PRV, a micro-turbine and generator combined with a sophisticated control valve to reduce pressure to the precise level is required. The excess pressure is converted into electricity that can be used on-site or fed to the grid for net-metering. Grid connection and net metering requirements are similar to solar energy systems.</p>
Pressure Management	<p>The system's precision pressure management eliminates chatter, vibration, and pressure pulses that can lead to leaks and water loss, helping extend the life of infrastructure. It provides redundancy for existing valves and gives water operators more precise control over the pressure in the pipeline during both high and low-flows — something older control valves aren't able to provide with as much resolution. The controls dashboard provides real-time, continuous data on flow, upstream/downstream pressures, and energy production which can be integrated directly with most SCADA systems. The data can also be used for public education by presenting live data wherever desired, such as a webpage or physical reader board.</p>

Micro-Hydropower

The diagram below was developed for the Hillsboro installation. It's now part of an informational kiosk that's posted at the stadium complex, just across from the EV charging stations where school groups and sports fans can learn about this innovative form of renewable energy.



- 01:** Gravity is used to rapidly push Hillsboro's drinking water through large pipes from the treatment plant in Forest Grove to Hillsboro. That high pressure must then be reduced to make it appropriate for smaller water pipes in homes and businesses.
- 02:** Normally, Hillsboro Water Department (HWD) uses pressure-reducing valves that simply "burn off" the pressure as heat that dissipates into the air.
- 03:** The In-PRV pressure recovery valve is a micro-hydro turbine combined with pressure control that instead converts excess pressure into electricity that is fed to the power grid.
- 04:** Sensors and software allow the HWD to monitor pressure, flow, and electricity production 24/7. Precise pressure management helps save water and extend the life of the pipeline.
- 05:** This In-PRV system will generate up to 200,000 kWh of electricity per year or more to help power lights, concessions, and EV charging stations at the stadium.

Developing a Renewable Energy Solution for Water Agencies

The Hillsboro Water Department and the City of Hillsboro were excited to pioneer this new system, not only for the aforementioned benefits, but to serve as an example for other water agencies to follow.

Water operators almost always need to know that a technology is tried-and-true before they invest time or resources. They need assurance that any new technology will only enhance — not disrupt — water operations. Some of the data that helped with this decision came from trusted institutions.

Micro-Hydro Turbine

Technology Testing

Micro-Hydropower**Development Process****Low-Cost Strategy****Energy Recapture****Subsidized Costs****Energy Trust Expertise****Smaller Diameter Pipelines**

InPipe Energy spent four years following a nine-step product development process prescribed by the US Department of Energy and Isle Utilities, working with Oregon State University's Mechanical, Industrial, and Manufacturing Engineering department to develop, prototype, and validate the In-PRV. With the Hillsboro project, the In-PRV went from technology readiness level 6 (TRL 6) to TRL 8, the last and final step before full commercialization. (TRL of the US Department of Energy (DOE)).

Isle Utilities completed a technology readiness assessment of the In-PRV and concluded, "InPipe's system is a straightforward approach to renewable energy from an untapped resource. It utilizes proven technologies such as hydroelectric turbines and induction type generators. At a time where conserving and generating clean energy are high priorities around the globe, InPipe Energy has introduced a simple and low-cost strategy to achieve both objectives."

During a recent presentation of this project to a group of engineers, one astute observer asked: why the City wouldn't just optimize pumping to minimize energy usage and not have to recapture the wasted energy at a net loss? The answer: water transmission and distribution often requires a specific hydraulic grade line to meet service needs. This may be due to meeting pressure at the endpoint such as filling a reservoir or to meet service requirements. This introduces necessary inefficiencies into optimizing pumping needs. But it does open the door for recapturing some of the wasted energy.

Funding for Installations and Expansion

Because of the attractive economics and renewable energy potential for micro-hydropower generation, significant funding from Portland General Electric and The Energy Trust of Oregon was available to subsidize the project costs. The Hillsboro project received almost 80% of the capital cost from these sources.

A joint press release with all three organizations announced the project in October 2020:

"The City of Hillsboro's innovative new project is a great example of how we can support on-demand, cost-effective renewable energy generation right here in our community," said Maria Pope, president and CEO of Portland General Electric. "From the In-Pipe Hydroelectric Project to sourcing their power from 100% clean wind, Hillsboro is a leader in sustainability. Thanks to PGE's Green Future customers' support for local renewable energy projects, we were able to help fund this work, along with Energy Trust and InPipe Energy. Only by working together will we build a clean energy future."

"The City of Hillsboro is tapping into a new, local source of renewable energy that communities across the region can deploy, and we support these projects through funding to offset costs," said Dave Moldal, senior program manager at Energy Trust of Oregon. "The relationships that Hillsboro, PGE, Energy Trust and InPipe Energy have developed provide a successful model for how we can come together to implement new, innovative sources of clean energy for Oregon."

One thing to note, most states have organizations with a similar charter to The Energy Trust of Oregon. The Energy Trust should not be looked at solely as a potential source of funding. The Energy Trust has subject matter experts in every arena of power usage. The Energy Trust can assist with validating a pro forma for a proposed project as well as lead efforts to assist with energy projects. If any readers in Oregon are considering pursuing an energy project, the Energy Trust of Oregon should be one of the first stops.

Since the completion of the installation in Hillsboro, InPipe Energy has completed a second successful installation at Skagit PUD in Washington State, which came online in June 2021. InPipe has several projects in the planning stage.

InPipe Energy recently secured "Series A" funding from FullCycle Climate Partners. With this infusion of resources, InPipe Energy is expanding its plans and developing new investment resources to help water agencies fund their projects. By making it more cost-effective up front, water agencies can immediately start reaping the benefits of renewable energy generation to help them offset their operational costs and meet their climate and sustainability goals. Alternative funding sources make it easy for decision-makers because of the decreased direct impacts on rate-payers.

"I've said this before and I'll say it again: energy and water are the two most important resources on the planet, and helping water agencies become more sustainable is critical in our battle against climate change," said Gregg Semler, President and CEO of InPipe Energy. "That's why we designed our product as a turnkey solution, so that it can be installed quickly, easily, and cost-effectively throughout water systems with smaller-diameter pipelines and wherever pressure must be reduced. And the In-PRV can also be used in other types of pressurized pipelines, such as in industrial and agriculture applications, providing a way to harvest even more electricity from moving water and building resilience."

Micro-Hydropower

Widespread Opportunities

Cost-Effective Infrastructure

Conclusion

AN ENORMOUS OPPORTUNITY FOR WATER AGENCIES TO IMPROVE RESILIENCY

The opportunity for this technology is immense. According to a Climate Impact Report by Boundless Impact Research and Analytics, a 100 kW In-PRV can save 550 tons of CO₂ per year and has a three- to four-times higher return on carbon offset compared to solar or small wind systems (InPipe Energy Impact Profile, *Boundless Impact Research and Analytics*, January 2021). Considering full deployment of InPipe Energy's In-PRV technology at the global scale, Boundless Impact estimates that 1.75 giga tonnes of CO₂ equivalent could be saved per year — that's equivalent to 4,300 billion driven miles in an average passenger car.

There are more than two million traditional control valves in use across the US alone. And embedded in that pressure reduction is a significant, untapped opportunity for water agencies to capture this excess pressure and produce renewable energy to improve resilience. InPipe Energy estimates that \$230 billion in new revenue would be available for US water agencies to improve aging infrastructure, offset energy costs and benefit ratepayers over the next 30 years by adding this technology to their pressure management systems.

As a water utility, infrastructure must be cost-effective for rate-payers. This means sustainable, long-term investments must look forward 50 years instead of 20 years. The City of Hillsboro has plans for additional InPipe installations in the City's water system.

Hopefully this "easy win" will be utilized by water utilities across the country.

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Reference Hyperlinks

US EPA: www.epa.gov/sustainable-water-infrastructure/energy-efficiency-water-utilities

InPipe Energy: <https://inpipeenergy.com/>

Isle Utilities: www.isleutilities.com/

Press Release (Hillsboro): <https://www.businesswire.com/news/home/20201014005290/en/City-of-Hillsboro-Begins-Generating-Renewable-Energy-from-an-Underground-Water-Pipeline/>

Skagit PUD: www.prweb.com/releases/new_energy_recovery_system_produces_renewable_energy_from_municipal_water_pipeline_at_skagit_public_utility_district_in_washington/prweb18027065.htm

Eric Hielema is the Engineering Manager for the Hillsboro, Oregon Water Department. Hillsboro manages the production, transmission, and distribution of potable water to a population of approximately 430,000 people. Prior to joining the City of Hillsboro, Eric worked as a Senior Project Manager for Mortenson Construction, the Senior Wastewater Engineer for the LOTT Cleanwater Alliance in Olympia, Washington, and the Water Resources Engineer for the City of Lacey, Washington. Eric has been managing the design and construction of water, wastewater, stormwater, energy, and architectural projects for over 25 years.

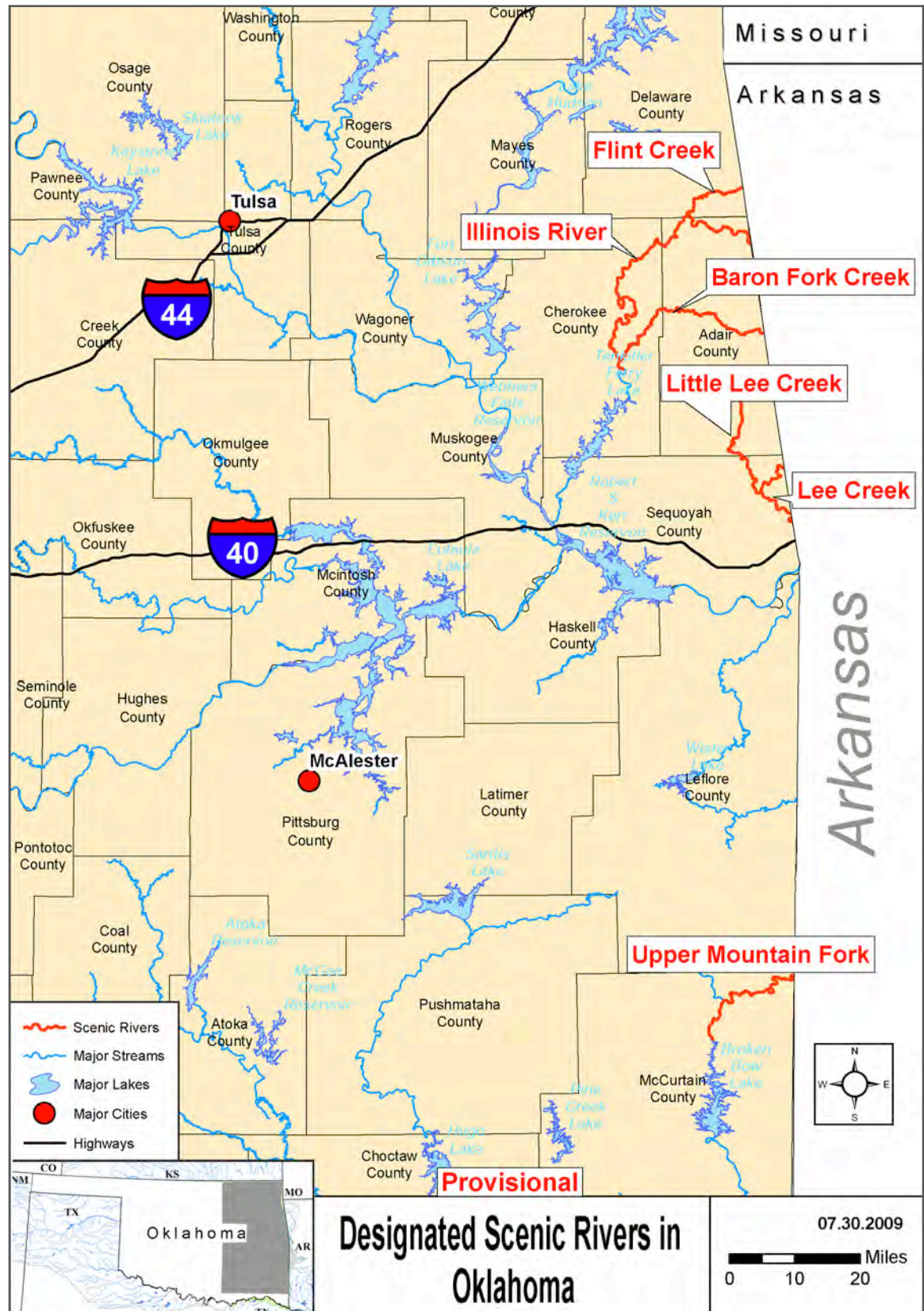
Jennifer Allen Newton, president of Bluehouse Consulting Group, Inc., is a consultant and writer working with companies and organizations in the environmental, clean technology, and industrial sectors. She can be reached at: 503/ 805-7540 or jennifer@bluehousecg.com.

<div data-bbox="152 180 306 258">Instream Flows</div> <div data-bbox="159 300 300 327">Definition</div> <div data-bbox="131 581 329 644">Appropriation Determination</div> <div data-bbox="152 756 308 819">Workgroup Review</div> <div data-bbox="131 966 329 1029">Appropriation System</div> <div data-bbox="152 1245 308 1308">Availability Factors</div> <div data-bbox="159 1524 300 1587">Indirect Protection</div> <div data-bbox="136 1698 323 1726">Domestic Use</div>	<div data-bbox="380 144 527 180" style="text-align: center;">~~~~~</div> <div data-bbox="651 144 1268 180" style="text-align: center;">INSTREAM FLOWS IN OKLAHOMA</div> <div data-bbox="1382 144 1529 180" style="text-align: center;">~~~~~</div> <div data-bbox="412 216 1497 243">by Owen Mills, Director of Water Planning - Oklahoma Water Resources Board (Oklahoma City, OK)</div> <div data-bbox="464 279 1445 365"> <p>Instream Flow: a quantity of water to be set aside in a stream or river to ensure downstream environmental, social, and economic benefits are met.</p> <p>2012 OCWP Executive Report, Glossary p. 140 – Oklahoma Water Resources Board (2012)</p> </div> <div data-bbox="881 401 1026 428" style="text-align: center;">Introduction</div> <div data-bbox="380 434 1523 588"> <p>The summary set out above was adapted from the <i>Technical Memorandum: Instream Flow in Oklahoma and the West</i>, a 2009 initiative of the 2012 Oklahoma Comprehensive Water Plan (OCWP) process. That <i>Technical Memorandum</i>, current Rules, fact sheets and other reports are all available on the Oklahoma Water Resources Board website at www.owrb.ok.gov. <i>2012 OCWP Instream Flow in Oklahoma and the West, Technical Memorandum</i> – Oklahoma Water Resources Board (2009).</p> </div> <div data-bbox="380 592 1505 714"> <p>Oklahoma's current appropriation system does not contemplate the issuance of water rights for instream/environmental flows, nor does it specifically consider ecological and/or recreational needs when determining water available for appropriation. <i>2012 OCWP Executive Report</i>, p. 12 – Oklahoma Water Resources Board (2012).</p> </div> <div data-bbox="380 718 1523 873"> <p>The recognition of nonconsumptive uses, or Instream Flow (ISF), as part of the state's water allocation calculation, was identified by the public as a topic for review via the OCWP engagement process. To address this, the Oklahoma Water Resources Board (OWRB) formed a multidisciplinary ISF Workgroup to develop technical memorandums and recommendations for future initiatives. This article presents a brief summary of Oklahoma rules and regulations relevant to ISF and associated investigative efforts to date.</p> </div> <div data-bbox="743 909 1162 936" style="text-align: center;">Water Rights and ISFs in Oklahoma</div> <div data-bbox="380 940 1526 1062"> <p>Appropriative rights are the foundation of Oklahoma's stream water rights system. Riparian landowners, however, are afforded domestic uses of water (which do not require a permit). Water rights are administered by the OWRB, with some exceptions, and appropriated by permit for the beneficial uses of water.</p> </div> <div data-bbox="380 1066 1484 1159"> <p>There remain substantial legal questions as to whether the OWRB has the statutory authority to consider nonconsumptive uses when appropriating water rights, except in waters designated as a Scenic River (described below).</p> </div> <div data-bbox="784 1192 1120 1222" style="text-align: center;">Appropriative Rights System</div> <div data-bbox="380 1226 1518 1444"> <p>Determination of available surface water in Oklahoma is based strictly on the average runoff from years 1951-1980. At any point on a stream or river, average annual flow is calculated based on stream gauge data, interpolated to the location of interest using customized Geographic Information System (GIS) tools. Water calculated by the GIS tool as <i>available for appropriation</i> is then estimated by subtracting existing permitted use, reservoir yield, and domestic use for the watershed above and below the proposed diversion point to the next major tributary. <i>2012 OCWP Instream Flow Issues and Recommendations, Technical Memorandum</i>, Oklahoma Water Resources Board (2011).</p> </div> <div data-bbox="813 1480 1091 1507" style="text-align: center;">Indirect ISF Protections</div> <div data-bbox="380 1514 1518 1638"> <p>Although ISFs are not directly recognized in Oklahoma's water use laws, ISFs are indirectly protected in Oklahoma's current water use programs and policies in the ways described below. These indirect protections are all mechanisms within the Oklahoma appropriation system that — while difficult to quantify — likely account for substantial flows at certain times and places across the State.</p> </div> <div data-bbox="380 1640 659 1667" style="text-align: center;">Domestic Use Protection</div> <div data-bbox="380 1673 1521 1986"> <p>Oklahoma state rules (Section 785:20-1-2) describe domestic use as the use of water by a household for household purposes, and for farm and domestic animals, provided that the amount of stream water used for any such purposes does not exceed five acre-feet per year (AFY). Some streamflow is protected by prohibiting appropriative permits that would interfere with domestic use. This water is left in the stream and is available to freely flow through the assumed riparian properties for their domestic diversion and use. To the degree that such domestic diversion and use actually occurs, the ISF benefit will be reduced. Potential maximum ISF flows associated with domestic flow protection calculated for Oklahoma's 82 basins range from 2,500 AFY in the dry and smaller southwest basins to over 87,000 AFY in the southeast corner of the state. <i>2012 OCWP Instream Flow in Oklahoma and the West, Technical Memorandum</i> – OWRB (2009) (Technical Memo).</p> </div>
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Instream Flows

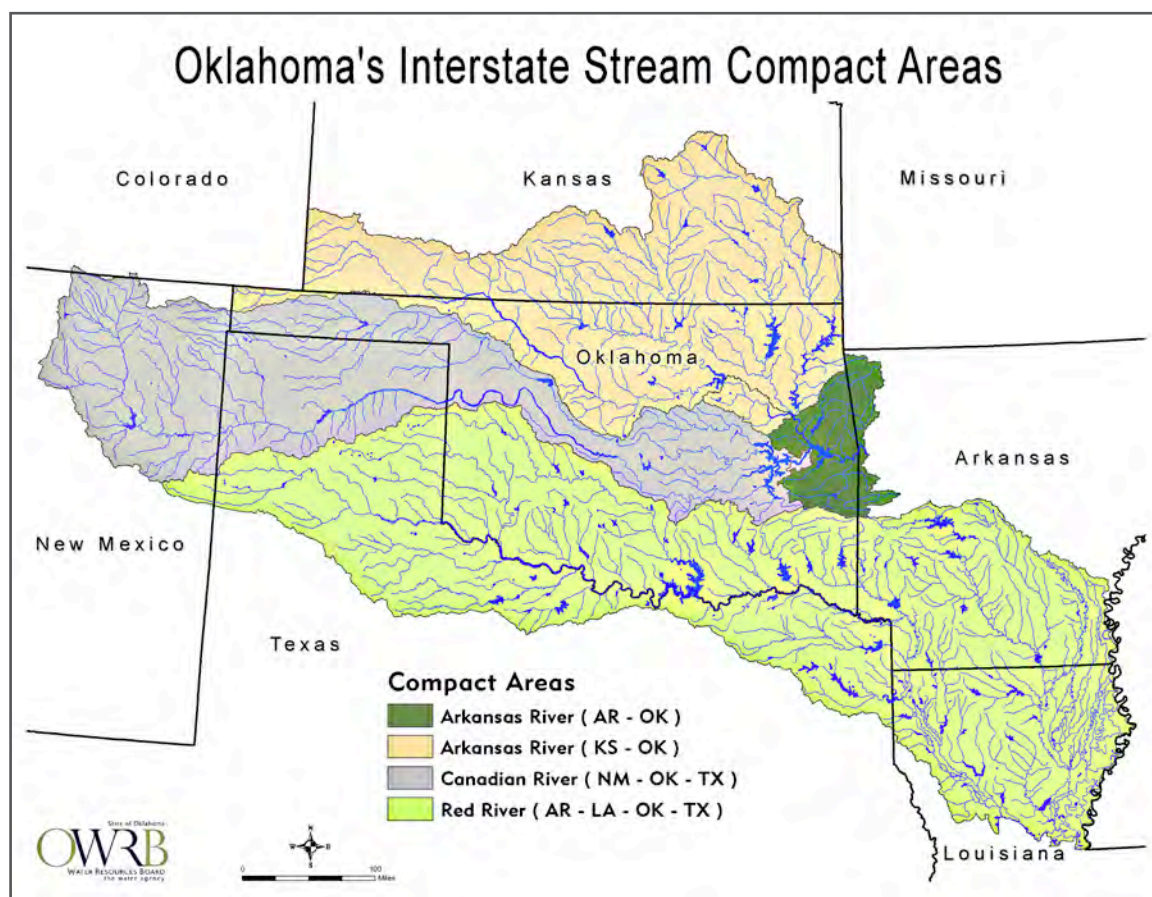
Scenic Rivers Act and Outstanding Resource Waters

The Oklahoma Scenic Rivers Act (Act) (82 O.S. Sections 1451-1471) contains provisions concerning the maintenance of the “free-flowing” condition of scenic rivers. The Act describes scenic streams and rivers as those that “possess...unique natural scenic beauty, water conservation, fish, wildlife, and outdoor recreation values of present and future benefit to the people of Oklahoma.” There are currently six rivers with this designation.



Instream Flows	<p>The Act requires that these “scenic river areas” be preserved in their free-flowing condition and prohibits any local, state, or federal agency from constructing, operating, or maintaining any dam on any of these rivers unless specifically authorized by the legislature. Exceptions are allowed for municipal and domestic use as long as these structures “will not significantly interfere with the preservation of the stream as a scenic free-flowing stream.”</p>
Scenic Stream Factors	<p>Rule 785.20-5-5(e), “Additional Factors to be Determined for Scenic Rivers and Outstanding Resource Waters,” lists the factors for consideration when determining water available for appropriation:</p> <ul style="list-style-type: none"> • Quantity of water requested in comparison to the amount of water available for appropriation based on mean annual precipitation run-off produced with the drainage area of the watershed above the proposed point of diversion; • Quantity of flow needed in cubic feet per second (cfs) for recreational purposes, including sustaining existing fish species in the stream; • Existing water quality in the stream and the potential of the diversion to alter the water quality or physical characteristics of the stream; and • Other information as deemed relevant by the OWRB.
Low-Flow Protection	<p><i>See Technical Memo</i>, page 12.</p> <p>Referencing these factors, the OWRB has added specific low-flow protections for one reach of a Scenic River to date after a water provider made a request to increase their direct diversion appropriation amount. In an effort to satisfy water needs while complying with the Scenic Rivers Act, OWRB conducted a 1995 study with Oklahoma State University to quantify local ISF requirements. The study resulted in language in Rule 785.20-5-5(e)(2), specific to that one reach of Barren Fork Creek:</p> <p>(2) Quantity of flow needed in cubic feet per second (cfs) for recreational purposes, including sustaining existing fish species in the stream, spawning periods for such species, etc., provided that for sustaining existing fish species in the Barren Fork Creek, and unless information to the contrary is shown, a flow restriction of 50 cfs will be considered as needed... .</p>
Ecological Health	<p>The existing permit on that reach to date, however, has a more stringent limit of 75 cfs as read from a specific gage.</p>
Temporary Demonstration	<p>Reservoir Releases</p> <p>ISFs can also refer to any flows that are designated for release from a reservoir to maintain the ecological health of the river. An example of a state-led incremental effort that contributes to improving stream conditions in the State of Oklahoma is the ISF demonstration project on a designated Scenic River. The demonstration project was a multi-organization initiative where Sequoyah Fuels, working with the Oklahoma Department of Wildlife and the US Army Corps of Engineers (Army Corps) with input from the OWRB, donated storage and associated water in Lake Tenkiller to improve the lower Illinois (Scenic) River. With appropriate Congressional support, this initiative allowed the Army Corps to make temporary sustained flow releases that improved conditions for the downstream cool water fishery. This demonstration project was not permanent and such releases have ceased. However, other such releases currently are being made from some reservoirs where there is a need and unclaimed storage is available.</p>
Interstate Rivers	<p>Interstate River Compacts</p> <p>An interstate river compact is a formal written agreement between two or more states to divide or share the waters of a river that flows in each of the states. Oklahoma has entered into four such interstate river compacts with neighboring states, with two compacts on the Arkansas River — one with Kansas and one with Arkansas. It also is a signatory state with New Mexico and Texas on the Canadian River Compact. Oklahoma also has entered into a compact with Texas, Arkansas, and Louisiana on the Red River. <i>See Compacts Map</i>, next page.</p>
Minimum Flows Required	<p>An interstate river compact imposes obligations on each state as to how water may be diverted and stored for use in the state while allowing remaining flows to pass downstream to other signatory states. From an ISF perspective, interstate compacts provide some certainty as to the minimum quantity of flow that must flow into Oklahoma from upstream compact states, and the minimum quantity of flow that must flow out of Oklahoma to downstream compact states. Each compact is unique in terms of its requirements for minimum flows, allowable storage capacity and quantities in storage, and sharing of shortages between states during periods of low flow. Together, these conditions make it difficult to quantify the specific ISF benefits associated with interstate compact obligations. However, interstate compact obligations, with states both upstream and downstream of Oklahoma, clearly do provide for significant flows that contribute to ISFs in some of the state’s major river systems and their tributaries.</p>

Instream Flows



2009 ISF Workgroup

Workgroup Recommendations

In the 2009 ISF Workgroup, one elusive question puzzling members on all sides of the issue was, how much flow do these indirect ISF protections provide? Another question that eluded agreement was, how much flow is definitively needed on a given stream for a desired set of nonconsumptive use(s)? From these and other considerations the ISF Workgroup recommended in 2011 to:

- Continue the ISF Workgroup
- Study other ISF mechanisms in use elsewhere to develop a draft ISF methodology
- Review OWRB policy and legal authority questions
- Conduct an ISF economic impact and ISF pilot study on an Oklahoma Scenic River

The Instream Flow Incremental Methodology (IFIM) pilot study was completed by 2019 with mixed results and without consensus.

Other State Funded ISF Work in Oklahoma

In 1981, the Oklahoma Cooperative Fishery Research Unit evaluated the “Montana (Tenant) Method” for recommending flows in Oklahoma streams. The research concluded that the Tenant Method could be useful for preliminary ISF assessments in the state.

In 1999, a document was produced by the OWRB that assessed minimum ISFs and the potential for application to Scenic Rivers and their tributaries. This document compared three widely used quantification methodologies: the Tenant Method; Wetted Perimeter; and the Instream Flow Incremental Methodology (IFIM). The document concluded that IFIM is a valid method to set flows that protect fish species and associated recreational uses. That low flow could then be set as a threshold for future appropriations from Scenic Rivers.

In 2008 a joint effort of Oklahoma State University and the United States Geological Survey applied the Hydroecological Integrity Assessment Process (HIP). The HIP method found that streams grouped similarly by ecoregions with similar characteristics will be helpful for developing environmental flow quantifications that are stream and organism specific.

In 2017 as part of an IFIM process, the OCWP ISF Workgroup completed its Physical Habitat Simulation Model (PHABSIM) on three reaches designated as Scenic Rivers. The Pilot report expressed desired ranges of flow by season for several recreational fish species.

Flow Assessments

Scenic Rivers

**Instream
Flows****Economic
Impacts****Cost/Benefit
Analysis****Failed
Legislation****Online
Dashboard**

In 2019, continuing the IFIM process, the ISF Workgroup used the 2017 PHABSIM data to develop alternative methods of implementation of nonconsumptive use protections in the stream and vetted results with local stakeholders. It was largely determined that information on resulting economic impacts was necessary to make firm determinations. A draft Alternatives Analysis report is online; however, it remains in “draft” status because conclusions and recommendations remain in draft form. The OWRB expects to finalize the report during the current OCWP Process and use the Process to help determine how best to proceed.

In 2021, on an unrelated project (independent of the ISF Workgroup) the Oklahoma Secretary of Energy and Environment funded an economic cost/benefit analysis of implementing theoretical nonconsumptive use set asides within Oklahoma’s Blue River watershed. Once completed, state agencies and other stakeholders will evaluate to determine next steps.

CONCLUSION**NEXT STEPS**



In the 2019 legislative session, several bills were introduced in both Houses to set up an instream flow program. They did not pass. Likewise, the input received from the ISF Workgroup regarding the 2019 draft IFIM Alternative Analysis report continued as before without much agreement or some middle ground with which to propose an ISF program for Oklahoma.

Recommended actions from the 2012 OCWP included local economic studies in Scenic River watersheds as well as a deeper dive into quantifying actual protections from domestic use set asides and interstate compacts. Additionally, during discussions with stakeholders in the Blue River watershed mentioned above, OWRB proffered development of an online dashboard organized by watershed that would house a collection of: relevant flow and wildlife studies; gage data; current permits; current demand data; future economic studies; and etc. — all with the intent of providing local citizens, decision-makers, businesses, and legislators, the science they all will need to make informed decisions about nonconsumptive use and future demands in their watershed. This year, as OWRB enters its 2025 OCWP multi-year process, these ideas and others will be considered along with other potential OCWP initiatives where funding and prioritization will play their roles to determine the form those next steps will take.

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OWRB Instream Flow webpage: www.owrb.ok.gov/supply/ocwp/instreamflow.php

Owen Mills has served as the Oklahoma Water Resources Board’s (OWRB) Director of Water Planning since 2015, focusing on OWRB’s water policy initiatives pertaining to the Oklahoma Comprehensive Water Plan (OCWP). Some of his recent and current initiatives include planning and coordination of various work groups, tribal / State planning initiatives, and the multi-disciplinary Produced Water Working Group. Owen began at OWRB in 1994 and served in several capacities including Water Quality Standards, Lakes studies, as Environmental Section Manager within the Financial Assistance Program and with the development of the State’s 2012 Water Plan. Prior to coming to the OWRB, Owen worked as an Agro-Forestry volunteer for the US Peace Corps in Senegal, West Africa and seasonally for the US Forest Service in Alaska and Idaho. Owen holds a Bachelor of Science in Agriculture – Natural Resources from Oklahoma State University.

WOTUS	 REDEFINING WOTUS REDEFINING “WATERS OF THE UNITED STATES” 
	<p>Editors’ Note: What follows are edited and abridged excerpts from <i>What’s Next for WOTUS: Recent Litigation and Next Steps in Redefining “Waters of the United States”</i> — a legal sidebar authored by Kate R. Bowers and Laura Gatz, and released by the Congressional Research Service on October 7, 2021.</p>
Navigable Waters Protection Rule	<p style="text-align: center;">Background</p> <p>On September 3, 2021, the US Army Corps of Engineers (Army Corps) and the US Environmental Protection Agency (EPA) announced that they had halted implementation of the Navigable Waters Protection Rule, which defined “waters of the United States” (WOTUS) for purposes of establishing the scope of federal Clean Water Act (CWA) jurisdiction. The announcement followed a federal district court decision on August 30 in <i>Pasqua Yaqui Tribe v. EPA</i>, in which the court remanded and vacated the rule. Although the agencies had requested that the court allow implementation of the rule while they developed a new definition of WOTUS through the rulemaking process, the court instead agreed with parties challenging the rule who argued that it should be vacated immediately. The court’s vacatur of the Trump-era Navigable Waters Protection Rule requires the Army Corps and EPA revert to an older regulatory definition while the Biden Administration undertakes its rulemaking process to redefine WOTUS.</p>
Vacatur	
Narrowed CWA Scope	<p>On February 28, 2017, President Trump issued an executive order (E.O. 13778) directing the Army Corps and EPA to review and rescind or revise the 2015 Clean Water Rule. On April 21, 2020, the agencies issued the Navigable Waters Protection Rule. Overall, the Navigable Waters Protection Rule narrowed the definition of WOTUS, and thus the scope of waters and wetlands under federal jurisdiction. Among other changes, the rule 1) eliminated the category of waters whose jurisdictional status would be determined on a case-by-case basis, and the classification of all waters as either categorically included or categorically excluded; 2) excluded ephemeral features (i.e., those that flow or pool only in direct response to precipitation), including ephemeral tributaries, and features that did not provide surface water flow in a “typical year” to jurisdictional waters; 3) more narrowly defined “tributaries” and “adjacent wetlands,” both of which continued to be considered jurisdictional; and 4) removed interstate waters as a separate category of jurisdictional waters.</p>
Trump Order Revoked	<p>Shortly after taking office, President Biden issued an executive order revoking the Trump Administration’s E.O. 13778, and instructing the heads of agencies to review all actions taken by the Trump Administration that “are or may be inconsistent with, or present obstacles to” the new administration’s scientific and environmental policy objectives.</p>
Definition Revision	<p>On June 9, 2021, the Army Corps and EPA announced that they intended to revise the definition of WOTUS, first by a rule to “[restore] the protections in place prior to the 2015 WOTUS implementation,” and then by developing a new regulatory definition. Concurrent with that announcement, the United States began filing motions to remand the Navigable Waters Protection Rule back to the Army Corps and EPA. The United States requested remand without vacatur, which meant that a court granting the United States’ motion would dismiss the suit and allow the Navigable Waters Protection Rule to remain in effect while the Corps and EPA went through rulemaking.</p>
District Court Actions	<p style="text-align: center;">WOTUS Rulings & Agencies’ Response</p> <p>To date [10/7/21], courts have granted all or part of the United States’ motion in eight cases. Of those, six have remanded the Navigable Waters Protection Rule without vacatur or without deciding the vacatur question. The first court to act was the District Court for the District of South Carolina, which remanded the Navigable Waters Protection Rule without vacatur.</p>
Request to Vacate	<p>By contrast, two courts have remanded and vacated the rule. On August 30, 2021, the U.S. District Court for the District of Arizona entered an order in <i>Pasqua Yaqui Tribe v. EPA</i> granting the United States’ motion for voluntary remand, but also granting the plaintiffs’ request to vacate the Navigable Waters Protection Rule. The court held that remanding the rule was consistent with courts’ typical practice of granting voluntary requests for remand unless “the agency’s request is frivolous or made in bad faith.” The court explained that, in the Ninth Circuit, remand without vacatur was an “atypical remedy” to be ordered only in limited circumstances, such as where vacatur would risk environmental harm or where an agency could adopt the same rule on remand by offering better reasoning or complying with procedural requirements. The court further found that remand with vacatur could be appropriate “even in the absence of a merits adjudication.” Accordingly, the court evaluated whether to vacate the rule by considering “how serious the [agencies’] errors are and the disruptive consequences of an interim change that may itself be changed.”</p>
Vacatur Concerns	<p>Applying that test, the court concluded that the concerns identified by the plaintiffs in their opposition to the United States’ remand motion, and by the United States in the declarations filed along with the motion, “are not mere procedural errors or problems.” Rather, they “involve fundamental, substantive</p>

<div data-bbox="152 176 305 212" data-label="Section-Header">WOTUS</div> <div data-bbox="157 254 303 321" data-label="Section-Header">Court Reasoning</div> <div data-bbox="139 392 319 462" data-label="Section-Header">Nation-Wide Application</div> <div data-bbox="126 567 332 602" data-label="Section-Header">Mixed Rulings</div> <div data-bbox="131 1127 329 1197" data-label="Section-Header">Vacatur Order Appeal</div> <div data-bbox="123 1266 336 1302" data-label="Section-Header">Impact on Rule</div> <div data-bbox="144 1442 315 1512" data-label="Section-Header">2019 Repeal Rule</div> <div data-bbox="134 1688 323 1755" data-label="Section-Header">Jurisdictional Confusion</div> <div data-bbox="154 1929 305 1965" data-label="Section-Header">New Rule?</div>	<p>flaws that cannot be cured without revising or replacing the [Navigable Waters Protection Rule's] definition of 'waters of the United States.'" Additionally, the court found that vacatur would not result in possible environmental harm, and that remand without vacatur instead "would risk serious environmental harm" in light of the reduction in waters subject to federal jurisdiction under the Rule. The court further found that the consequences of an interim change in regulatory regime did not support remand without vacatur, because the pre-2015 framework was already familiar to the agencies and regulated parties, and because the Army Corps and EPA had already indicated their intent to return to the pre-2015 framework while working to develop a new definition of "waters of the United States."</p> <p>The Arizona district court's order did not specify whether the vacatur would apply nationwide, or only in Arizona. Nevertheless, on September 3, 2021, the Corps and EPA announced that they "have halted implementation of the Navigable Waters Protection Rule" in light of the Arizona district court's order. Accordingly, the Navigable Waters Protection Rule is not currently in effect.</p> <p>Following the Arizona court's ruling, other courts have granted the Army Corps and EPA's motion for voluntary remand without vacatur. In <i>Conservation Law Foundation v. EPA</i>, the U.S. District Court for the District of Massachusetts acknowledged the Arizona district court's order and declined to grant the plaintiffs' request for vacatur. Additionally, the U.S. District Court for the Northern District of New York remanded the rule without vacating it. (See Order, <i>Murray v. Regan</i>, No. 1:19-cv-01498, Doc. No. 46 (N.D.N.Y. Sept. 7, 2021).) In that case, however, all parties had consented to remand without vacatur.</p> <p>In three separate cases, two courts — the Northern District of California (in <i>Waterkeeper Alliance v. Regan</i> and <i>California v. Regan</i>) and the District of New Mexico (<i>Pueblo of Laguna v. Regan</i>) — have concluded that the Arizona district court's order mooted the question of whether vacatur was appropriate. In the two California cases, however, the court indicated that it "would not be inclined to impose vacatur" had the Arizona district court not mooted the question because there had been "no evaluation of the merits — or concession by defendants — that would support a finding that the rule should be vacated."</p> <p>Finally, one other district court to date has remanded and vacated the Navigable Waters Protection Rule following the Arizona district court's decision. On September 27, the U.S. District Court for the District of New Mexico remanded and vacated the rule in <i>Navajo Nation v. Regan</i>. Although the District of New Mexico is within the Tenth Circuit and therefore bound by different precedent, the court applied the same test and adopted the same reasoning as the Arizona district court.</p> <div data-bbox="889 1035 1018 1060" data-label="Section-Header">Conclusion</div> <div data-bbox="643 1068 1261 1089" data-label="Section-Header">NEXT STEPS: THE LITIGATION AND THE REGULATORY PROCESS</div> <p>Industry stakeholders that intervened in the Arizona litigation in support of the Navigable Waters Protection Rule have indicated that they intend to appeal the vacatur order to the Ninth Circuit, and other intervenors are still considering an appeal. An order staying the Arizona court's decision pending appeal, or reversing the vacatur in its entirety, could result in the Navigable Waters Protection Rule going back into effect until the Biden Administration completes the regulatory process for rescinding the rule. If the Ninth Circuit limits the scope of the vacatur to Arizona, the rule would go back into effect elsewhere unless another court or courts vacate it. Unless the Ninth Circuit were to grant emergency relief, the agencies' decision to halt implementation of the Navigable Waters Protection Rule would remain in effect while any such appeal is pending.</p> <p>The plaintiffs before the Arizona district court have also challenged the 2019 Repeal Rule, which repealed the 2015 Clean Water Rule and reinstated the pre-2015 regulatory regime pending the promulgation of the Navigable Waters Protection Rule. The court has not yet ruled on the merits of the 2019 Repeal Rule, but has directed the parties to submit proposals for briefing regarding the 2019 Repeal Rule. Further proceedings could thus potentially result in a ruling that the repeal of the 2015 Clean Water Rule was unlawful.</p> <p>In the meantime, in light of the Corps and EPA's September 3 announcement that they had reverted to the pre-2015 regulatory framework, the Navigable Waters Protection Rule is not currently in effect.</p> <p>It is not apparent what regulatory framework would apply to activities that are currently underway in water bodies that were not jurisdictional under the Navigable Waters Protection Rule, but would fall within CWA jurisdiction under the pre-2015 framework. Nor is it clear what will happen to CWA permit applications that have already been submitted or approved based on jurisdictional determinations (AJDs) made under the Navigable Waters Protection Rule. AJDs are Army Corps documents that state whether waters of the United States are present or absent on a parcel, and that identify the limits of any such waters. EPA has indicated that, "[a]s a general matter, the agencies' actions are governed by the rule in effect at the time the Corps completes an AJD, not by the date of the request for an AJD." Accordingly, AJDs completed prior to the <i>Pasqua Yaqui</i> decision [on August 30th] will remain valid until their expiration, unless they meet one or more criteria for revision or the recipient requests a new AJD pursuant to the pre-2015 regulatory framework.</p> <p>The agencies have begun public outreach and stakeholder engagement activities but have not identified a schedule for proposing or finalizing any new rule.</p>
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WOTUS

FOR ADDITIONAL WOTUS INFORMATION:

CRS SIDEBAR *What's Next for WOTUS* (10/7/21) available at: <https://crsreports.congress.gov/product/pdf/LSB/LSB10646>

A companion 37-page CRS Report — *“Redefining Waters of the United States (WOTUS): Recent Developments”* (9/30/21) — provides more in-depth discussion of the actions taken by the Obama, Trump, and Biden Administrations to define WOTUS, along with discussion and citations to related legislation and case law. Available at: <https://crsreports.congress.gov/product/pdf/R/R46927>

WATER BRIEFS

RECLAMATION/WESTLANDS WATER CONTRACT INVALIDATED CA

TRIBE CELEBRATES

On October 27, Fresno County Superior Court Judge D. Tyler Tharpe invalidated a water contract between the federal Bureau of Reclamation (Reclamation) and Westlands Water District (Westlands), which was made between Reclamation and Westlands during the Trump Administration. Westlands is the public entity that distributes water for irrigation in California’s San Joaquin Valley, as part of the Central Valley Project. The massive water contract awarded to Westlands, that would have given Westlands permanent access to 1.15 million acre-feet of water from the Trinity River, sparked significant controversy with a coalition of fishing and conservation groups, and the Hoopa Valley Tribe. The contract was negotiated with Reclamation while David Bernhardt, a former Westland Water District lobbyist, was serving as secretary of the Interior at the time.

The Trinity River Division of the Central Valley Project is comprised of Trinity Dam (storage reservoir), Lewiston Dam, and Clear Creek Tunnel, which transports water from Lewiston Dam into Whiskeytown Lake in the Sacramento River Basin.

Federal law requires state courts to ensure public review of contracts between water districts and the Bureau of Reclamation. Without a decree from the Fresno court, the contract could not bind Reclamation to its terms. In the 1992 Central Valley Project Improvement Act (CVPIA), Congress made environmental restoration a CVP purpose and payment for restoration a cost of doing business for the contractors.

Westlands filed a document with the Fresno court it said was the contract dated October 2019. But the “contract” had no signatures and was missing essential financial terms. Among the missing terms is repayment of \$400 million in costs, including those contractors owe for environmental restoration of the damage caused by 80 years of Central Valley Project water and power use, according to a press release from the Hoopa Valley Tribe (Tribe or Hoopa).

Another version of the contract was signed by Westlands and Reclamation four months later, in February 2020. However, that was too late for the Fresno court because Westlands had not given the public notice required by California Law of the second document or an opportunity for public review. Neither version of the contract required payment of Westlands’ share of the \$400 million CVPIA environmental restoration obligation.

Judge Tharpe found that by using an incomplete contract, Westlands, and by implication other Central Valley water contractors, and the federal Bureau of Reclamation, had withheld key financial terms from public review. “The Hoopa Valley Tribe’s Trinity River fishery is one of the CVP’s victims,” said Hoopa Valley Tribal Chairman Joe Davis. “But the contractors never wanted to pay the costs of restoration that Congress made a condition of future water delivers in the CVPIA.” Hoopa Fisheries Director Michael Orcutt added that, “Westlands led the charge against paying and has opposed Trinity restoration for decades.”

In Hoopa’s press release, Vice-Chairman, Everett Colegrove Jr. noted that Westlands wouldn’t exist without Trinity River water being taken from the Hoopa Valley Tribe’s fishery. “And that transfer of wealth has generated billions for Westlands and other CVP contractors, with devastating impacts to Hoopa’s economy, culture, and community.” For more than ten years, Hoopa tried to get Reclamation to charge the contractors for Trinity Restoration costs. “It’s no secret that the Westlands Water Corporation sells the Trinity River water for hefty profits. Yet, we could never get a straight answer on the accounting from Reclamation,” said Orcutt. “But we knew that these CVP contracts were going to be permanent, and it was our last chance to make sure Reclamation collected the money.”

“It turns out that the missing Trinity River fishery restoration collections were the tip of the financial iceberg,” said Chairman Davis. “The Bureau wasn’t charging any contractor for the full cost of restoration throughout the entire CVP service area.” As these contracts were being negotiated, Reclamation made clear to Hoopa that it would ignore the financial accounting Hoopa sought and the law required. “Hoopa decided that it had no choice but to sue its federal trustee, the Federal Interior Department,” said Orcutt. The Tribe has been in federal court since August 2020.

Hoopa highlighted its contacts with the new Administration in its press release. “Hoopa has documented the Trump Administration’s financial misconduct and submitted its evidence to Secretary Haaland, the Biden Administration’s Office of Management and Budget, and Congress,” said Colegrove. “In August, I met with Secretary Haaland and explained what Reclamation had done and how it was destroying Hoopa’s fishery, which the government holds in trust for us,” said Davis. “The Secretary instructed her staff to work with us to settle our case. I am confident that Secretary Haaland will fulfill her commitment to environmental justice and our rights by requiring amendment of these contracts now that the court has given her the opportunity to do so.”

For info: Hoopa website at: www.hoopa-nsn.gov; Westlands website at: <https://wwd.ca.gov>

WATER BRIEFS

PFAS ROADMAP

US

EPA PFAS STRATEGY DOCUMENT

On October 18th, the Biden Administration announced accelerated efforts to protect Americans from per- and polyfluoroalkyl substances (PFAS), which can cause severe health problems and persist in the environment once released. *See: Light, TWR #177; Kray & Wightman, TWR #182; and McKnight, TWR #195.* As part of this government-wide approach, EPA released “*PFAS Strategic Roadmap: EPA’s Commitment to Action 2021-2024*” — which outlines steps to control PFAS at its sources, hold polluters accountable, ensure science-based decision making, and address the impacts on disadvantaged communities. Specific strategies are set for EPA’s Offices of: Chemical Safety and Pollution Prevention; Land and Emergency Management; Air and Radiation; Research and Development; as well as EPA’s Office of Water.

Office of Water Strategies include: Nationwide Monitoring for PFAS in Drinking Water

Final Rule Expected Fall 2021

Under the Safe Drinking Water Act (SDWA), EPA requires water systems to conduct sampling for unregulated contaminants every five years. EPA published the proposed Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) in March 2021. As proposed, UCMR 5 would provide new data that is critically needed to improve EPA’s understanding of the frequency that 29 PFAS are found in the nation’s drinking water systems and at what levels. The proposed UCMR 5 would significantly expand the number of drinking water systems participating in the program. If funds are appropriated by Congress, all public water systems serving 3,300 or more people and 800 representative public water systems serving fewer than 3,300 would collect samples during a 12-month period from January 2023 through December 2025. EPA is considering comments and preparing a final UCMR 5 rule.

EPA will continue to prioritize additional PFAS for inclusion in UCMR 6 and beyond, as techniques to measure these additional substances in drinking water are developed and validated.

National PFOA / PFOS Drinking Water Regulation

Proposed Rule Expected Fall 2022

Final Rule Expected Fall 2023

Under the SDWA, EPA has the authority to set enforceable National Primary Drinking Water Regulations (NPDWRs) for drinking water contaminants and require monitoring of public water supplies. To date, EPA has regulated more than 90 drinking water contaminants but has not established national drinking water regulations for any PFAS. In March 2021, EPA published the Fourth Regulatory Determinations, including a final determination to regulate Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS) in drinking water. The Agency is now developing a proposed NPDWR for these chemicals.

Toxicity Assessment for GenX and Five Additional PFAS

Expected Fall 2021 and Ongoing

EPA plans to publish the toxicity assessments for two PFAS, hexafluoropropylene oxide dimer acid and its ammonium salt. These two chemicals are known as “GenX chemicals.” GenX chemicals have been found in surface water, groundwater, drinking water, rainwater, and air emissions. GenX chemicals are known to impact human health and ecosystems. EPA’s Office of Research and Development is also currently developing toxicity assessments for five other PFAS—PFBA, PFHxA, PFHxS, PFNA, and PFDA.

Publish Health Advisories for GenX and PFBS

Expected Spring 2022

SDWA authorizes EPA to develop non-enforceable and non-regulatory drinking water health advisories to help Tribes, states, and local governments inform the public and determine whether local actions are needed to address public health impacts in these communities.

Restrict Industrial PFAS Discharges

Expected 2022 and Ongoing

Effluent Limitations Guidelines (ELGs) establish national technology-based regulatory limits on the level of specified pollutants in wastewater discharged into surface waters and into

municipal sewage treatment facilities. EPA plans to make significant progress in its ELG regulatory work by the end of 2024. EPA has established timelines for action on the nine industrial categories in the proposed PFAS Action Act of 2021, as well as other industrial categories such as landfills.

EPA’s approach entails:

Rulemaking to restrict PFAS discharges from industrial categories where EPA has the data to do so — including the guidelines for organic chemicals, plastics and synthetic fibers (OCPSF), metal finishing, and electroplating. Proposed rule is expected in Summer 2023 for OCPSF and Summer 2024 for metal finishing and electroplating.

Detailed studies on facilities including electrical and electronic component production, textile mills, and landfills. EPA expects these studies to be complete by Fall 2022 to inform decision-making about a future rulemaking by the end of 2022.

Initiate data reviews for industrial categories for which there is little known information on PFAS discharges, including leather tanning and finishing, plastics molding and forming, and paint formulating. EPA expects to complete these data reviews by Winter 2023 to inform whether there are sufficient data to initiate a potential rulemaking.

Monitor industrial categories where the phaseout of PFAS is projected by 2024, including pulp, paper, paperboard, and airports. The results of this monitoring, and whether future regulatory action is needed, will be addressed in the Final ELG Plan 15 in Fall 2022.

Leverage NPDES Permitting to Reduce PFAS Discharges

Expected Winter 2022

EPA will use existing National Pollutant Discharge Elimination System (NPDES) authorities to reduce discharges of PFAS at the source and obtain more comprehensive information through monitoring on the sources of PFAS and quantity of PFAS discharged by these sources. EPA will use the effluent monitoring data to inform which industrial categories EPA should study for future ELGs actions to restrict PFAS in wastewater discharges.

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EPA will propose, as appropriate, that NPDES permits: 1) contain conditions based on product elimination and substitution when a reasonable alternative to using PFAS is available in the industrial process; 2) require best management practices to address PFAS-containing firefighting foams for stormwater permits; 3) require enhanced public notification and engagement with downstream communities and public water systems; and 4) require pretreatment programs to include source control and best management practices to protect wastewater treatment plant discharges and biosolid applications.

EPA will issue new guidance recommending that state-issued permits that do not already include monitoring requirements for PFAS use EPA's recently published analytical method 1633, which covers 40 unique PFAS, at facilities where PFAS is expected or suspected to be present in wastewater and stormwater discharges. The new guidance will recommend the full suite of permitting approaches that EPA will use in federally-issued permits.

Multi-Laboratory Validated Analytical Method for 40 PFAS Expected Fall 2022

In September 2021, EPA (in collaboration with the Department of Defense) published a single-laboratory validated method to detect and measure up to 40 specific PFAS compounds in eight environmental matrices (including wastewater, surface water and biosolids). It has numerous applications, including NPDES compliance monitoring. EPA and the Department of Defense are continuing this collaboration to complete a multi-laboratory validation of the method.

Update PFAS Analytical Methods for Drinking Water Expected Fall 2024

Under SDWA requirements, will update and validate analytical methods to monitor additional PFAS. First, EPA will review reports of PFAS of concern and seek to procure certified reference standards that are essential for accurate and selective quantitation of emerging PFAS of concern in drinking water samples. EPA will evaluate analytical methods previously published for

monitoring PFAS in drinking water (EPA Methods 533 and 537.1) to determine the efficacy of expanding the established target PFAS analyte list to include any emerging PFAS. Upon conclusion of this evaluation, EPA will complete multi-laboratory validation studies and peer review and publish updated EPA PFAS analytical methods for drinking water, making them available to support future drinking water monitoring programs.

Ambient Water Quality Criteria for PFAS

Expected Winter 2022 and Fall 2024

EPA will develop national recommended ambient water quality criteria for PFAS to protect aquatic life and human health. Tribes and states use EPA-recommended water quality criteria to develop water quality standards to protect and restore waters, issue permits to control PFAS discharges, and assess the cumulative impact of PFAS pollution on local communities. EPA will publish recommended aquatic life criteria for PFOA and PFOS and benchmarks for other PFAS that do not have sufficient data to define a recommended aquatic life criteria value. EPA will first develop human health criteria for PFOA and PFOS, taking into account drinking water and fish consumption. Additionally, EPA will support Tribes in developing water quality standards that will protect waters under Tribal jurisdiction under the same framework as waters in adjacent states. Aquatic life criteria are expected in Winter 2022, and human health criteria are expected Fall 2024.

Monitor Fish Tissue for PFAS

Expected Summer 2022

States and Tribes have highlighted fish tissue data in lakes as a critical information need. Food and water consumption are important pathways of PFAS exposure, and PFAS can accumulate in fish tissue. EPA monitoring to date shows the presence of PFAS, at varying levels, in approximately 100 percent of fish tested in the Great Lakes and large rivers. In Summer 2022, EPA will collect fish tissue in the National Lakes Assessment for the first national

study of PFAS in fish tissue in US lakes. EPA's preliminary analysis on whether concentrations of certain PFAS compounds in human blood could be associated with eating fish found a positive correlation.

List PFAS for use in Fish Advisory Programs

Expected Spring 2023

EPA will publish a list of PFAS for state and Tribal fish advisory programs that are either known or thought to be in samples of edible freshwater fish in high occurrence nationwide. This list will serve as guidance to state and Tribal fish tissue monitoring and advisory programs so that they know which PFAS to monitor and how to set fish advisories for PFAS that have human health impacts via fish consumption. PFAS / fish tissue monitoring results appears on EPA's publicly accessible Water Quality Portal (www.epa.gov/waterdata/water-quality-data).

Risk Assessment for PFOA and PFOS in Biosolids

Expected Winter 2024

Biosolids, or sewage sludge, from wastewater treatment facilities can sometimes contain PFAS. When spread on agricultural fields, the PFAS can contaminate crops and livestock. The CWA authorizes EPA to set pollutant limits and monitoring and reporting requirements for contaminants in biosolids if sufficient scientific evidence shows that there is potential harm to human health or the environment. EPA will complete the risk assessment for PFOA and PFOS in biosolids by Winter 2024. The risk assessment will serve as the basis for determining whether regulation of PFOA and PFOS in biosolids is appropriate. If EPA determines that a regulation is appropriate, biosolids standards would improve the protection of public health and wildlife health from health effects resulting from exposure to biosolids containing PFOA and PFOS.

For info:

EPA's "*PFAS Strategic Roadmap: EPA's Commitment to Action 2021-2024*" available at: www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf

WATER BRIEFS

**RECYCLED WATER CA/AZ
JOINT PROJECT**

Building on increased collaboration on the Colorado River, water agencies in Southern California and Arizona have forged a new partnership to advance development of one of the largest water recycling plants in the country — a project that would help restore balance to the over-stressed river. Through an agreement approved October 12th by Metropolitan Water District's Board of Directors, the Central Arizona Project (CAP) and Arizona Department of Water Resources (ADWR) will contribute up to \$6 million to environmental planning of the Regional Recycled Water Program, a project to purify treated wastewater to produce a new, drought-proof water supply for Southern California. Southern Nevada Water Authority signed a similar agreement with Metropolitan earlier this year. If fully developed, the \$3.4 billion project would produce up to 150 million gallons daily, enough to serve more than 500,000 homes.

"This project could help the entire Southwest. We know that eliminating the supply-demand imbalance that threatens the Colorado River will take both reducing demand, through conservation, and adding new supplies, like recycled water," Metropolitan General Manager Adel Hagekhalil said. "That's why our partners in the Lower Basin are interested in helping us develop the project."

The initial investment from Arizona could lead to a long-term agreement with the agencies to help fund the project's construction and operation — helping offset the project's significant cost for Metropolitan — in exchange for Colorado River water, Hagekhalil said. But more research and planning must be conducted before such a long-term partnership could be developed, he added.

Environmental planning work on the project began last year and will take approximately three years, at a cost of about \$30 million. The work, including a Program Environmental Impact Report and engineering and technical studies, will help determine the value and feasibility of developing the full-scale

project. Under the new agreement, CAP will contribute \$5 million and ADWR will contribute \$1 million to this planning work.

The latest agreement reinforces the long-standing commitment between California and Arizona to work together to develop solutions on the Colorado River, including supply augmentation, conservation, and storage. This partnership, together with Metropolitan's collaboration with Nevada, will be critical as the Colorado River Basin states begin to create new operating guidelines for the river. The current guidelines are set to expire in 2025. "Increasing the reuse of recycled water is critical to augmenting water supplies and creating a more resilient Colorado River," said ADWR Director Tom Buschatzke. Expanding the value of the Regional Recycled Water Program to the entire Southwest could also help earn federal financial support for the project.

For info: Agreement available at: <https://mwdh2o.legistar.com/View.ashx?M=F&ID=9869947&GUID=2A617A3F-8669-45D9-A3AF-42AEB48F01AF>

**STREAMFLOW WA
RESTORATION GRANTS AVAILABLE**

The Washington Department of Ecology announced that it plans to award up to \$40 million during this round of competitive grants. Streamflow Restoration competitive grants opened on November 2 and closes at 5 p.m. on February 1, 2022. Ecology is seeking applications for projects that will improve streamflows and aquatic resources. Eligible applicants include Tribal governments, public entities, and nonprofit organizations within Washington.

To learn more about this funding opportunity, please visit the grants webpage. The webpage includes resources for potential applicants, such as, the grant guidance and a recording of the applicant workshop webinar.

For info: Chris Anderson, Ecology, Cell at: 360 890-5471 or Streamflow Restoration webpage at: <https://ecology.wa.gov/Water-Shorelines/Water-supply/Streamflow-restoration>

**WATER INFRASTRUCTURE US
NEW PROVISIONS**

Secretary of the Interior Deb Haaland applauded the passage of the Bipartisan Infrastructure Deal (BID), a once-in-a-generation investment that will help communities tackle the climate crisis while creating good-paying union jobs, advancing environmental justice, and boosting local economies. The legislation is the largest investment in the resilience of physical and natural systems in American history.

The BID contains several provisions that fund Interior Department initiatives. The legislation makes historic investments in bolstering climate resiliency, including:

- **\$8.3 Billion Investment in Water and Drought Resilience.** There is an urgent need to minimize the impacts of drought and develop a long-term plan to facilitate conservation and economic growth. Our shared priority is to build resilient communities and protect our water supplies for people and the natural environment. The BID's investments will fund water efficiency and recycling programs, rural water projects, WaterSMART grants, and dam safety to ensure that irrigators, Tribes, and adjoining communities receive adequate assistance and support.
- **\$1.5 Billion Investment in Wildfire Resilience.** Climate change is driving the devastating intersection of extreme heat, drought, and wildland fire danger across the US, creating wildfires that move with a speed and intensity previously unseen. The BID will help better prepare communities and ecosystems against the threat of wildland fire by making historic investments in forest restoration, hazardous fuels management, and post-wildfire restoration activities across America's national parks, forests and grasslands, as well as investing in federal firefighters.
- **\$1.4 Billion Investment in Ecosystem Restoration and Resilience.** Climate change is impacting natural ecosystems in ways never seen before. Changing temperatures are affecting water supplies, altering wildlife habitat and migration

WATER BRIEFS

patterns, introducing new pests and diseases, and causing devastation from wildland fire. The BID makes a critical investment in the resilience and restoration of America's lands, including funding for stewardship contracts, ecosystems restoration projects, invasive species detection and prevention, and native vegetation restoration efforts.

- **\$466 Million Investment in Tribal Climate Resilience and Infrastructure.** As the effects of climate change continue to intensify, Indigenous communities are facing unique climate-related challenges. Flooding, erosion, permafrost subsidence, sea level rise, and storm surges are presenting existential threats to communities' economies, infrastructure, livelihoods, and health. The BID's investments will support community-led transitions for the most vulnerable Tribal communities, including climate adaptation planning, ocean and coastal management planning, capacity building, and relocation, managed retreat, and protect-in-place planning for climate risks. It will also help fund construction, repair, improvement, and maintenance of irrigation and power systems, safety of dams, water sanitation, and other facilities in Tribal communities.

The legislation also invests in supporting and protecting communities by funding:

- **\$16 Billion Investment in Legacy Pollution Clean-Up.** The Department is committed to helping working families, often in rural and Tribal communities, who face hazardous pollution, toxic water levels, and land subsidence both during mining and long after coal companies have moved on. The BID makes historic investments to plug orphan wells and reclaim abandoned mine lands, which will help communities eliminate dangerous conditions and pollution caused by past coal mining. These funds support vitally needed jobs for coal communities by funding projects that close dangerous mine shafts, reclaim unstable slopes, improve water quality by treating acid mine drainage, and restore water supplies damaged by mining.

- **\$2.5 Billion Investment in Indian Water Rights Settlements.** Water is a sacred resource, and water rights are crucial to ensuring the health, safety and empowerment of Tribal communities. The Department is committed to upholding our trust responsibilities and delivering long-promised water resources to Tribes, certainty to all their non-Indian neighbors, and a solid foundation for future economic development for entire communities dependent on common water resources. The BID's historic investments will help the Department fulfill settlements of Indian water rights claims.

For info: Interior_Press@ios.doi.gov

PECOS RIVER STUDY NM SUPPLY/DEMAND GAPS

The Pecos River Basin in New Mexico is likely to experience growing water shortages as temperatures continue to rise through the next 100 years. These gaps between water supply and demand were identified in a new study funded through the Bureau of Reclamation's WaterSMART Basin Study Program that was released on October 12th.

The basin study shows that although precipitation trends are uncertain, snowpack and the water supply that it provides will likely continue to decrease due to the increasing temperatures. However, the irrigation districts and governments within the basin identified water efficiency improvements to irrigation methods, infrastructure, and technology to better match water deliveries to documented needs.

The study evaluated how changes in temperature, precipitation, evaporation, and irrigation demands may affect the basin hydrology and developed and modeled potential adaptations that irrigation districts could undertake in response to the projected gaps between water supply and agricultural demand.

The Pecos River Basin is an arid basin in eastern New Mexico and western Texas with a limited and highly variable water supply. The basin is primarily rural, and the largest water use is irrigated agriculture. In this study, Reclamation modeled impacts of changing hydrology and climate on the three largest irrigation districts in the

basin: Fort Sumner Irrigation District and Carlsbad Irrigation District, which mostly depend on surface water from the Pecos River, and the Pecos Valley Artesian Conservancy District, which uses groundwater from the Roswell Artesian Basin.

Reclamation's Albuquerque Area Office and the New Mexico Interstate Stream Commission performed the Pecos River-New Mexico Basin Study. **For info:** Full basin study at: www.usbr.gov/watersmart/bsp

ILLEGAL WATER USE WA LARGE PENALTY

The irrigation of farmland in Washington state without a water right during a historic drought has resulted in the issuance of a \$304,000 fine to Frank Tiegs LLC. The Washington Department of Ecology (Ecology) issued the \$304,000 penalty to Frank Tiegs LLC for illegally irrigating 250 acres of crops in 2021.

As part of its investigation, Ecology found Frank Tiegs LLC (Tiegs) tilled the unfarmed land and planted a crop in early 2021 and began irrigating from McNary Pool in March. McNary Pool is part of the Snake River where it meets the main stem of the Columbia River.

During the summer of 2021, Ecology inquired about the water use. Tiegs' representatives acknowledged the irrigation error and have committed to find a legal water supply for the 2022 irrigation season. The illegal water use threatened streamflows on the Columbia and Snake rivers — critical rivers for salmon and steelhead. This year was one of the driest and warmest on record for Washington with streamflows and fish passage already compromised.

Since 1993, the Columbia River has been managed under a rule that requires mitigation for new surface water withdrawals. The mitigation must replace or offset the water used under a new right. Ecology has spent significant time and money to develop programs to make water available to offset new water use for cities, industries and irrigated farms.

Frank Tiegs LLC has 30 days to appeal the decision to the Pollution Control Hearings Board.

For info: Jimmy Norris, Ecology, 360/480-5722 or jimmy.norris@ecy.wa.gov

November 15-16 SC

Fall Strategic Leadership Meeting, Charleston. Francis Marion Hotel. Presented by National Assoc. of Clean Water Agencies. For info: www.nacwa.org/conferences-events/event-at-a-glance/2021/11/15/nacwa-endorsed-events/fall-strategic-leadership-meeting

November 15-17 WEB

Climate Resilience and Integrated Regional Water Management: Building Successful Partnerships: Virtual Summit, Free Webinar Series: 8:30-11:30 am Pacific Time. Presented by California Dept. of Water Resources, California Water Boards, Local Government Commission, IRWM & More. For info: https://us06web.zoom.us/webinar/register/WN_vOn8k4RIQxqYh0qYgXQtWA

November 16 TX

What Does Water Mean to You? Water, Texas Film Festival, Austin. AFS Cinema, 6pm Reception, 6:30pm Program. Presented by the Texas Water Foundation. For info: www.watertexasfilms.org/

November 16 OR

Wild & Scenic Film Festival, Eugene. Virtual Event: 7 pm Pacific Time. Benefit for the Upper Willamette Stewardship Network. For info: www.longtom.org/upperwillamette/

November 16 WEB

Small Community Drinking Water Financing Workshop - Virtual Event, 1-4 pm Eastern Daylight Time. Presented by the Environmental Law Institute; Free & Open to the Public - Must Register by Nov. 14th. For info: www.eli.org

November 16-18 WEB

Performance Criteria for Source Water Protection Webinar, American Water Works Association (AWWA) Event. For info: www.awwa.org/Events-Education/Events-Calendar

November 16-18 WEB

EPA Water Laboratory Alliance (WLA) 3-Day Security Summit, Virtual Event. State of the Art Discussions of the Challenges Presented by Climate Change and Cybersecurity. For info: www.epa.gov/waterlabnetwork/water-laboratory-alliance-learning-center

November 16-18 WEB

Reclaiming the World's Water - Virtual Education Conference, Virtual Event - Session 2. Presented by Newterra. For info: www.newterra.com/zzvt-2021-virtual-education-conference/

November 16-20 WEB

WEFTEC Online 2021 Conference, OnLine Nov. 16-18. For info: www.weftec.org/attend/for-attendees/for-attendees/

November 17-18 WEB

One River, Ethics Matter 2021 Conference - Virtual Event, Focus on Treaty Renewal, Restoring Salmon & the River, Youth and Climate Change. Facilitated by the Ethics & Treaty Project; Co-hosted by the Okanagan Nation Alliance and the University of British Columbia Okanagan Campus. For info: events.ok.ubc.ca/event/one-river-ethics-matter-conference/2021-11-18/

November 17-18 KS

10th Annual Governor's Conference on the Future of Water in Kansas, Manhattan. Hilton Garden Inn. Latest Policy & Research, Kansas Water Plan. For info: <https://kwo.ksgov/news-events/calendar>

November 17-19 SC

National Clean Water Law & Enforcement Seminar, Charleston. Francis Marion Hotel. Presented by National Assoc. of Clean Water Agencies. For info: www.nacwa.org/conferences-events/event-at-a-glance/2021/11/17/nacwa-events/national-clean-water-law-enforcement-seminar

November 30 WEB

Governor's Water Augmentation, Innovation, and Conservation Council, Virtual Event. Presented by Governor of Arizona's Office: 10am-Noon Mountain Time. For info: <https://new.azwater.gov/gwaicc/meeting/governors-water-augmentation-innovation-and-conservation-council-meeting-2>

November 30-Dec. 2 CA

Association of California Water Agencies (ACWA) 2021 Fall Conference & Exhibition, Pasadena. Pasadena Convention Center. For info: www.acwa.com/events/2021-fall-conference-exhibition/

December 1-2 WEB

41st Oklahoma Governor's Water Conference - Virtual Event, Conference draws Scientists, Policymakers, Agency Staff, Consultants & Interested Citizens. Presented by the Oklahoma Governor's Office; Including the Student Research Water Poster Competition. For info: www.owrb.ok.gov/GWC/index.php

December 2 WEB

Building a Network for Drought Monitoring in Arizona - Online Event, 9am-11am Pacific Standard Time. Presented by the Arizona Drought Monitoring Technical Committee. For info: www.eventbrite.com/e/building-a-network-for-drought-monitoring-in-arizona-tickets-181421194677

December 7 WEB

Less Is More: A New Mantra of Water Efficiency Webinar, 10am-11:30am Pacific Standard Time. Presented by Oregon Environmental Council. For info: <https://oeonline.org/event/2021-business-environment-forum/>

December 7-9 TX

North American Water Loss 2021 Conference & Exposition, Austin. The Renaissance Austin. American Water Works Assoc. Event. Approaches to Reduce Non-Revenue Water, Regulatory Developments, and a Platform to Share Processes, Methods and Techniques. For info: www.awwa.org/Events-Education/Events-Calendar/mid/11357/OccuranceId/541?ctl=ViewEvent

December 9 WA

Celebrate Water - In Person Reception & Pre-Reception Workshop: "How the Misuse of Municipal Water Law is Impairing Instream Flows", Seattle. Ivar's Salmon House. Presented by The Center for Environmental Law & Policy (CELP); CLE Workshop from 4:00 - 5:00 pm; Celebrate Waters from 5:30 - 7:30 pm Pacific Time. For info: Kayla Magers, development@celp.org or www.celp.org

December 9-10 CA

CEQA-LIVE! Conference, San Francisco. Hilton Union Square. For info: CLE International, 800/ 873-7130 or www.cle.com

December 9-10 CA

Western Governors' Association 2021 Winter Meeting, Coronado. For info: <https://westgov.org/meetings>



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CALENDAR

(continued from previous page)

December 13-14 **WEB**

Water Desalination Plant Design and Management Webinar, RE: Reverse Osmosis (RO) Desalination Plants. For info: www.euci.com/events/

December 13-15 **FL**

Water Utility Resilience Forum, Miami. Hyatt Regency Miami. Presented by National Assoc. of Clean Water Agencies. For info: www.nacwa.org/conferences-events/event-at-a-glance/2021/12/13/nacwa-events/water-utility-resilience-forum

December 13-15 **NV**

Colorado River Water Users Association 2021 Conference, Las Vegas. For info: www.crwua.org/future-conferences.html

January 20-21 **WA**

29th Annual Endangered Species Act Conference, Seattle. On-site Location TBD; Available In Person, Live Webcast or On Demand. For info: The Seminar Group, 800/ 574-4852, info@theseminargroup.net or www.theseminargroup.net

January 20-21 **TX**

Texas Wetlands Conference, Houston. JW Marriott by the Galleria. For info: CLE International, 800/ 873-7130 or www.cle.com

January 27-28 **CO**

MBTA & BGEPA-LIVE! Conference, Denver. Embassy Suites. For info: CLE International, 800/ 873-7130 or www.cle.com

February 10-11 **AZ**

Water Security on the Path to Resiliency: 10th Annual Tribal Water Law Conference, Scottsdale. We-Ko-Pa Casino Resort. For info: CLE International, 800/ 873-7130 or www.cle.com

March 1-3 **AZ**

Growing Water Smart Workshop, Phoenix. TBA / Virtual Backup. Presented by Arizona Growing Water Smart Communities. For info: <http://resilientwest.org/growing-water-smart/arizona/>

March 5-9 **TX**

37th Annual WaterReuse Symposium, San Antonio. Marriott San Antonio Rivercenter. For info: <https://watereuse.org/news-events/conferences/>

March 7-8 **WEB**

Asset Management for Water Utilities, Intro Course. For info: www.euci.com

March 14-16 **TBD**

P3C's Public-Private Partnership Conference & Expo - 10th Annual Conference, TBA. For info: <https://thep3conference.com/>

March 18-19 **OR**

Pacific Northwest Ground Water Exposition, Portland. Red Lion Hotel. Pacific Northwest Ground Water Association Event. For info: <https://pnwgwa.org>

March 22 **TX**

Texas Environmental Excellence Awards (TEEA), Austin. TBA. Awards by the Office of the Governor & TCEQ Commissioners. For info: www.tceq.texas.gov/p2/events/teea/about-teea