



# The Water Report™

*Water Rights, Water Quality & Water Solutions in the West*

## In This Issue:

**Transboundary River  
Management ..... 1**

**Willamette Valley  
Project Litigation  
Update ..... 13**

**Ogallala Aquifer  
Depletion: Policy  
Recommendations .... 15**

**COVID & Southwest  
Water Use ..... 20**

**Water Briefs ..... 21**

**Calendar ..... 27**

## Upcoming Stories:

**Wildfires  
& Water Supply**

**Colorado River:  
Interim Management  
Guidelines**

**& More!**

## TRANSBOUNDARY RIVER MANAGEMENT

TRANSBOUNDARY MANAGEMENT OF THE LOWER SNAKE RIVER DAMS

by Jenna Mandell-Rice & Rachael Lipinski, Van Ness Feldman (Seattle, WA)

### Introduction

Decades of controversy have surrounded four dams, operated by the United States Army Corps of Engineers (Corps), on the lower Snake River in Washington (“LSR Dams”). Although the LSR Dams provide benefits in the form of navigation, hydropower, and recreational opportunities, the impacts of these four dams on threatened and endangered fish species has led to significant questions about how to manage the dams — including whether the dams should be removed entirely.

There are a large number of stakeholders who have an interest in how the dams are operated. Their interests are often competing if not conflicting. The challenge in managing the dams is exacerbated by overlapping state, federal, and international legal authorities that impose a variety of requirements and restrictions on the operation of the dams.

In response to the ongoing disagreement regarding how to operate the dams — particularly with respect to the interest in the recovery of salmonid species — Congressman Mike Simpson (R-ID) recently proposed a plan which would include breaching the LSR Dams while also trying to satisfy the interests of other stakeholders. The complexity of this plan and reactions to the plan, highlight the challenges in fashioning a solution that accommodates the interests of all stakeholders. These stakeholders include many different entities at the tribal, state, federal, and international levels, each of which have the ability to exercise control and influence over the dam operations. Although the long-term solution for managing the LSR Dams remains unclear, any solution will require a recognition that control of the dams is fundamentally a transboundary issue. Transboundary concerns effect the LSR dams achieving goals related to both fish conservation and in identifying the parties that must necessarily be willing to work together to devise a solution.

### The Lower Snake River Dams

The Snake River is the principal tributary to the Columbia River. *See* References: US Army Corps, *Lower Snake River Dams*. The Snake River drains approximately 107,000 square miles in Washington, Idaho, Oregon, Wyoming, Utah, and Nevada. The LSR Dams are part of a greater system of 14 dams and 31 hydroelectric projects in the Columbia River Basin that provides about one third of the electricity used in the Pacific Northwest. *See* Reclamation FCRPS.

Between 1962 and 1975, the federal government built the four LSR Dams on the lower Snake River: Ice Harbor (1962), Lower Monumental (1969), Little Goose (1970), and Lower Granite (1975). The Corps owns and operates the LSR Dams. The dams were constructed pursuant to Congressional authorization under the Rivers and Harbors Act of 1945, which directed the Corps to construct and operate the dams to accomplish multiple purposes. Pub. Law 79-14. The authorized uses of the dams include hydropower, irrigation, navigation, recreation, and fish/wildlife. Law 79-14. The LSR dams are not authorized for flood control.

## Lower Snake River Dams

### Widespread Impacts

### Many Stakeholders

### ESA Listings

### Impaired Access

### Listed Species

### Tribal Harvest

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## Intrastate, Interstate, and Transboundary Effects of the Dams

Although all of the LSR Dams are located in the state of Washington, their benefits and environmental impacts are felt beyond state boundaries. The dams are also affected by conditions upstream and downstream, including incoming water quality, ocean conditions, and historical environmental conditions. 85 Fed. Reg. 63,834, 63,837-63,838 (Oct. 8, 2020).

The transboundary nature of the effects of the LSR Dams means there are many stakeholders, each with separate and often competing interests in the LSR Dams. These include Northwest tribal governments; the Corps; the US Environmental Protection Agency (EPA); the Bonneville Power Administration (BPA or Bonneville) and the consumers of energy marketed by BPA; the states of Washington, Idaho, and Oregon; Canada; fishers; irrigators; recreationists; barge operators; and others.

The complexity of the effects of the dams cannot be overstated. The discussion below intends to capture, at the highest level, examples of the interests that are implicated by the existence and operation of the dams and demonstrate how those interests are not confined geographically or by political boundaries; it does not represent an exhaustive list of interests or issues.

### Fish

The construction of the LSR Dams inundated fish habitat in the lower Snake River. *See:* National Marine Fisheries Service (NMFS) 2019 at 508. Four species of federal Endangered Species Act (ESA)-listed Snake River salmonids have to navigate 900 miles from the Pacific Ocean to central Idaho, including over the four LSR Dams. *Id.* at 577. Although the LSR Dams were designed with fish ladders to assist adult fish passage, and juvenile fish passage facilities have been added along with improvements to adult passage facilities, physical aspects of the LSR Dams impair access to historical spawning areas. *Id.* at 696. The dams also contribute to conditions on the lower Snake River, and downstream, that make it less hospitable to several fish species that are listed as threatened or endangered under the ESA. Currently, the listed species that may be affected by the Federal Columbia River Power System (FCRPS) Dams include: Upper Willamette River Chinook Salmon, Upper Willamette River Steelhead, Eulachon, Lower Columbia River Chinook Salmon, Lower Columbia River Steelhead, Lower Columbia River Coho Salmon, Columbia River Chum Salmon, Middle Columbia River Steelhead, Upper Columbia River Steelhead, Snake River Fall Chinook, Snake River Sockeye Salmon, Snake River Steelhead, Snake River Spring-Summer Chinook Salmon, Green Sturgeon, and Southern Resident Killer Whale. NMFS 2019.

In addition to effecting salmonid species, the LSR Dams indirectly impact other species that rely on salmon as a source of food, including the Southern Resident Killer Whale, which consumes Chinook from many different stocks up and down the coast, including from the Snake River. *Id.* at 913. Salmon also are important for harvest by tribes (discussed below), and commercial and recreational harvest within and outside the Columbia and Snake River basins.

Since the early 1990s, when 12 species of Columbia Basin salmonids were listed as threatened or endangered under the ESA, the Corps, Reclamation, and BPA have been consulting with NMFS regarding the biological effects of the operation of the FCRPS dams (including the LSR Dams) on the listed species. *Id.* at 24-25. The biological opinions (BiOps) that have emanated from the ESA consultations have resulted in decades of litigation over NMFS's conclusions about whether the dams cause jeopardy to the species and what measures will be protective of the species. *Id.*

Over time, federal agencies including the Corps, Reclamation, NMFS, BPA and the US Fish and Wildlife Service (USFWS) have advanced operational and non-operational strategies to benefit the fish species.

#### FEDERAL FISH BENEFIT STRATEGIES HAVE INCLUDED:

- management of water and reservoir operations for both anadromous and resident fish
- seasonal spring and summer flow objectives for migrating juvenile salmon and steelhead
- funding of safety net and conservation hatchery programs that preserve and rebuild the genetic resources of ESA-listed salmon and steelhead
- predator management strategies
- estuary habitat improvements
- tributary habitat improvement actions as offsite mitigation
- fish status monitoring

*Id.* at 31, 39.

Despite these efforts, some organizations still advocate for the breaching or removal of the four LSR Dams to promote recovery of the Snake River salmon and Southern Resident Killer Whales. Breaching would involve leaving the concrete structures in place and removing the earthen portions, while removal would involve physically removing the concrete as well as earthen elements of a dam.



## Lower Snake River Dams

### Impacted Tribes

### Treaty Obligations

### “Right of Taking Fish”

#### Tribes

Five tribal nations — the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Shoshone-Bannock Tribes — are the tribes primarily impacted by the LSR Dams. *Lower Snake River Dams Stakeholder Engagement Draft* at 2 (Dec. 2019). Tribal homes, villages, and resource gathering locations and traditional fishing sites were inundated when the dams were constructed. USACE 2020, Executive Summary at 4.

The LSR Dams also impact the fishing harvest of the tribes. In 1855, the United States signed treaties with the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Confederated Tribes of the Warm Springs Reservation of Oregon. CRITFC 2014 at 2. Pursuant to these treaties, the tribes ceded to the United States large swaths of land in return for land reservations and the “right of taking fish” at all their usual and accustomed places, including the lower Snake River. Above the LSR Dams, tribal salmon are presently harvested at less than one percent of pre-contact levels. *Id.* at 9. Although the LSR Dams are considered to have a significant role in the reduction of salmon available for harvest, they are not the sole cause. *Id.*



## Lower Snake River Dams

### Water Releases

### Temperature Affects

### Total Dissolved Gas

### Irrigation & Shipping

### Cargo & Tourism

### Hydropower

### Power Benefits Debated

### Electricity Contribution

### Water Quality

The LSR Dams impact water quality in a variety of ways. For example, the dams impact water quality by discharging pollutants into the river, most of which come from other sources. Each of the dams releases water from outfalls into the Snake River. Dam outfalls release water from a variety of sources such as unwatering sumps, drainage sumps, main unit (turbine) non-contact cooling water, fish unit cooling water, spillway sumps, navigation lock sumps, or transformer cooling water. Oils, greases, and lubricants that are used on such equipment are carried in the released water.

The LSR Dams also impact the temperature of the river, which in turn affects whether the river can support fish populations. The dams individually and cumulatively impact temperature by: (1) dampening daily temperature fluctuations that would occur in a free-flowing river; (2) holding back warm water, which results in warmer temperatures in the fall than would occur without the existence of the dams; and (3) increasing the surface area compared to a free-flowing river, which results in increased temperature of the water held back. NMFS 2019 at 198. Although reservoirs and required dam operations impact temperature, upstream human activities in Idaho and Canada also contribute heat. Snake River temperatures upstream of Anatone, Washington, already exceed the temperature standards developed by Washington (20°C) to protect fish species. CLSR TMDL, App. B, Fig. 20.

In addition, spilling from the LSR Dams can cause exceedances of total dissolved gas (TDG) criteria, by plunging aerated spill water to depths where hydrostatic pressure increases the solubility of atmospheric gases. Supersaturated TDG conditions can cause gas bubble trauma in adult and juvenile salmonids, resulting in injury and death. NMFS 2019 at 199.

However, many water quality issues would exist even without the LSR Dams, due to upstream and downstream conditions, including incoming water quality, ocean conditions, and historical environmental conditions. 85 Fed. Reg. 63,837-63,838.

### Agriculture

One of the authorized purposes of the LSR Dams is irrigation. Washington farmers depend on water to irrigate crops, including grains, alfalfa, fruits and vegetables, and wine grapes. USACE 2020, Executive Summary at 4. Ice Harbor Dam (one of the LSR Dams) provides farmers with significant irrigation opportunities. In addition, the LSR Dams benefit farmers beyond Washington, by enabling large quantities of grain to be shipped by barge from Lewiston, Idaho to the mouth of the Columbia River. Barges that traverse the Lower Snake River provide a low-cost option for moving agricultural products from the interior of Idaho and Washington overseas. Simpson PPT at 5. Forty percent of the Nation's wheat transits through this system. See USACE LSR Dams.

### Navigation

As part of the FCRPS, the LSR Dams provide critical navigation, moving products to and from Lewiston, Idaho. USACE 2020, Executive Summary at 4. Between 50 and 60 million tons of cargo are transported each year on the Columbia-Snake Navigation System. *Id.* Additionally, cruise line operators also use the system for tourism, which is a growing business on the Columbia and Snake rivers. *Id.* The lower Snake River dams enable navigation from the mouth of the Columbia River to Lewiston, Idaho, 465 miles away — and make Lewiston the West Coast's farthest inland port. Leslie 2019.

Breaching of the LSR Dams would result in the Lower Snake River shallow draft navigation channel no longer being available. USACE 2020, Executive Summary at 32. This would eliminate commercial navigation to multiple port facilities on the Lower Snake River, including the Port of Lewiston, the Port of Clarkston, and the Port of Whitman County. *Id.* The Corps has determined that, as a result of the elimination of commercial navigation, the cost to transport goods to market would increase and there would be additional demands on existing road and rail infrastructure as well as at barging facilities. *Id.* at 32-33.

### Energy

As noted above, the LSR Dams are part of the FCRPS, and “provide clean, low cost, renewable hydropower that is on-demand and helps to balance the transmission system.” Simpson PPT at 5. BPA markets the power generated from the FCRPS, including the LSR Dams, and distributes power through its transmission system.

The extent of the power benefits from the dams is subject to debate. Blumm 1998, at 1004–05. The Corps and other stakeholders believe that, due to their location, size, and ability to help meet peak power loads, the LSR Dams are critical to keeping the system reliable and helping to meet its multiple uses — including supporting wind energy. Hydropower from the LSR Dams helps manage the moment-to-moment variability of these renewable generators' output, and reserves supported by the LSR Dams may help counteract high winter energy demand and the variability of the system's more intermittent wind power. Leslie 2019. The LSR Dams provide 2,000 MW of quickly responding up or down (i.e., ramping) generation capacity that can be deployed to meet fluctuations in load and generation, which is important during times of system stress, such as when generation goes offline or wind and solar generation fluctuate. 85 Fed. Reg. 63,851.

The Northwest Power and Conservation Council (Council) estimates that the LSR Dams provide approximately 5.5% of the region's electricity supply in a typical year. NWPPC 2016. Because BPA

<b>Lower Snake River Dams</b>	<p>sells power to public utilities in the Pacific Northwest, the LSR Dams are seen as important for keeping energy costs in the Pacific Northwest low. Moreover, the energy benefits of the dams are not limited to Washington; the energy from the dams support the Western Interconnection system's western Montana-to-eastern Washington transmission lines. Leslie 2019.</p>
<b>Fossil Fuels Reliance</b>	<p>Because the dams provide a carbon-free source of electricity, some stakeholders view the LSR Dams as important to achieving state and national goals to reduce reliance on fossil fuels. With 2,500 average megawatts or more of coal capacity expected to be retired in the 2020s, a critical question about the management and potential breaching or removal of the dams is whether the energy produced by the four LSR Dams can be replaced without undermining efforts to decarbonize the regional economy. USACE 2020, Executive Summary at 4. In evaluating the potential removal of the dams, the Corps concluded the removal of the dams would result in a decline in reliability and an increase in rates. If the LSR Dams were removed, FCRPS generation would decline by roughly eight percent, and the firm power capability of the FCRPS would decrease by roughly 12 percent. 85 Fed. Reg. 63,851. The risk of a regional shortage of power would be approximately 14 percent, which amounts to or one or more blackouts in one out of every seven years. To fully replace the capability of these projects, 3,306 MW of solar, 1,144 MW of wind, and 2,515 MW of batteries (at a cost of over \$800 million a year), would be needed. 85 Fed. Reg. 63,851.</p>
<b>Power Replacement</b>	<p>On the other hand, the Northwest Energy Coalition conducted a study, which was released in 2018, regarding the power produced by the dams and the cost of replacing that power. The study suggested that a combination of solar, wind, energy efficiency, demand response, and demand storage could effectively replace the power attributes from the LSR Dams.</p>
<b>Green Power Alternatives</b>	<p>Disagreement regarding the value of the energy provided by the dams stems, in part, from differing underlying assumptions about the retirement of fossil fuel based energy sources and the ability to bring online new sources of renewable energy. EnergyGPS 2020.</p>
<b>Regulatory Layers</b>	<p style="text-align: center;"><b>Intrastate, Interstate, and International Regulatory Oversight</b></p> <p>Because of the interstate and transboundary nature of the effects of the dams, there are not only a large number of stakeholders, but also a variety of mechanisms — state, federal, and international — that either directly regulate the LSR Dams or that must be taken into consideration when evaluating how to operate the LSR Dams.</p>
<b>Multiple Federal Laws</b>	<p><b>Federal Overlay</b></p> <p>There are a multitude of federal laws that effect the operation of the LSR Dams. The Pacific Northwest Electric Power Planning and Conservation Act, Public Law 96–501, requires federal agencies to operate and maintain the FCRPS, including the LSR Dams, “to adequately protect, mitigate, and enhance fish and wildlife.” The Bonneville Project Act of 1937, Public Law 75–329, governs aspects of Bonneville’s power marketing activities. The Flood Control Act of 1944, Public Law 78–534, authorizes the sale of power from Corps dams. The LSR Dam operations are also heavily influenced by the ESA and the federal Clean Water Act (CWA). Ongoing regulatory efforts over the LSR Dams under the ESA and CWA are discussed below.</p>
<b>ESA Consultation</b>	<p style="text-align: center;"><i>ESA: Reinitiation of Consultation and Litigation Cycle</i></p> <p>Under ESA Section 7(a)(2), each federal agency must ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the species’ designated critical habitat. 16 U.S.C. § 1536(a)(2). If an action agency determines that its proposed action may affect an endangered or threatened species or its critical habitat, the ESA requires the agency to consult either formally or informally with USFWS or NMFS, depending on the species at issue. <i>Id.</i> § 1536(a)(2); 50 C.F.R. §§ 402.14, 402.13. If formal consultation is conducted, the relevant wildlife agency issues a BiOp detailing how the proposed action will affect listed species and critical habitat. 16 U.S.C. § 1536(b)(3)(A). If the BiOp concludes that the proposed action would jeopardize the species or destroy or adversely modify critical habitat, the action may not go forward unless the wildlife agency can suggest a “reasonable and prudent alternative” (RPA) that avoids jeopardy, destruction, or adverse modification. <i>Id.</i> § 1536(b)(3)(A). As such, the operations of a project are shaped through the ESA consultation process.</p>
<b>BiOp(s) &amp; Jeopardy</b>	<p>The Corps, Reclamation, and BPA have been consulting with NMFS on impacts on listed species from the FCRPS dams (including the LSR Dams)) since the early 1990s. The BiOps from the ESA consultations have resulted in decades of litigation over NMFS’s conclusions about whether the dams cause jeopardy to the species and what measures will be protective of the species. In the case of the LSR Dams, it was not merely the consultation process itself that has shaped the operations of the project, but the litigation that has ensued over those consultations. The first legal challenge to the FCRPS BiOp was based on the 1992 BiOp, which concluded that FCRPS operations would not jeopardize the listed species. <i>Pac. Nw. Generating Coop. v. Brown</i>, 822 F. Supp. 1479 (D. Or. 1993), <i>aff’d in part</i>, 38 F.3d 1058 (9th Cir. 1994). Litigation ensued, beginning a cycle of BiOp revision, reissuance, and litigation that continues to this day.</p>
<b>Litigation 1992 BiOp</b>	



## Lower Snake River Dams

### Litigation Summary

### Jurisdiction Retained

### Judge's Control

### Breaching Consideration

### Congressional Approval Required

### Litigation Continues

### NPDES Permit

### Consultations / Litigation Summaries

The following summarizes the various consultations and litigation that has occurred over the past several decades:

- 1993 BiOp; no jeopardy conclusion; BiOp invalidated in 1994. *Idaho Dept. of Fish and Game v. National Marine Fisheries Service*, 850 F.Supp. 886, 890 (D. Or. 1994).
- 1995 BiOp; likely to jeopardize conclusion, but RPA would avoid jeopardy and adverse modification; BiOp challenged and upheld. *Am. Rivers v. NMFS*, 1997 WL 33797790 (D. Or. Apr. 3, 1997).
- 2000 BiOp; likely to jeopardize conclusion, but RPA would avoid jeopardy and adverse modification; BiOp invalidated. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 254 F.Supp. 2d 1196, 1211-12, 1215-16 (D. Or. 2003).
- 2004 BiOp; no jeopardy or adverse modification of critical habitat conclusion; BiOp remanded for further consultation. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, No. CV 01-640-RE, CV 05-23-RE, 2005 WL 2488447, at \*1-3 (D. Or. Oct. 7, 2005).
- 2008 BiOp and 2010 Supplemental BiOp; BiOps found to have improperly relied on habitat mitigation measures that were not reasonably certain to occur. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 839 F.Supp.2d 1117, 1121 (D. Or. 2011).
- 2014 Supplemental BiOp; jeopardy and adverse modification conclusion, but RPA would avoid jeopardy and adverse modification; BiOp invalidated. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 184 F.Supp.3d 861 (D. Or. 2016).

The judge to which these cases were initially assigned, Judge Redden, took a uniquely hands on approach to the BiOps, not only deciding whether the documents issued by NMFS were well reasoned, but by prescribing short-term operational measures to preserve the fish while NMFS went back to the drawing board to reconsider its decisions, and retaining jurisdiction in federal court for many years.

For example, following the court's determination that the 2004 BiOp violated substantive and procedural requirements of the ESA, environmental organizations moved for a preliminary injunction. Judge Redden granted the preliminary injunction in part, ordering NMFS to provide summer water spill over specific dams to avoid irreparable harm to threatened species. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, CV 01-640-RE, 2005 WL 1398223, at \*5 (D. Or. June 10, 2005). Similarly, with respect to the 2008 BiOp and 2010 supplement, the court ordered the acting agencies to implement the 2008/2010 BiOp's alternative and ordered increased spill to mitigate irreparable harm from dam operations, while NMFS prepared a new BiOp. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 839 F.Supp.2d at 1121.

Judge Redden, both formally in opinions and informally in letters to the parties, urged the relevant consulting and action agencies to consider breaching one or more of the four LSR Dams. Judge Redden first introduced the idea that NMFS should consider breaching the dams in his decision on the 2004 BiOp, in which he remanded the 2004 BiOp to NMFS to make a jeopardy determination that complied with both the requirements of the ESA as well as Judge Redden's previous orders identifying legal flaws in the BiOps. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, No. CV 01-640-RE, CV 05-23-RE, 2005 WL 2488447, at \*5. In that decision, Judge Redden stated that "[t]his remand, like the remand of the 2000 BiOp, requires NOAA and the Action Agencies to be aware of the possibility of breaching the four dams on the lower Snake River, if all else fails." *Id.* at \*3.

However, until recently, the federal agencies focused primarily on identifying mitigation measures that would mitigate the effect on hydropower generation operations, instead of breaching the dams. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 184 F. Supp. 3d at 876. Even if NMFS issued a BiOp calling for dam breaching and restoration of natural river flows, and even if the operating agencies decided to implement NMFS's recommendations, congressional approval would be required. Blumm 1998. In the most recent ESA consultation and related NEPA analysis, the federal agencies considered breaching the dams, despite their lack of authority to do so without Congressional authorization. The federal agencies rejected this alternative, primarily on the basis that removal would cause a decline in electrical grid reliability and increase costs to ratepayers. BPA 2020 at 31.

The operation and management of the LSR Dams continues to evolve in response to the BiOp modifications and litigation. On January 19, 2021, ten environmental and fishing groups filed their eighth supplemental complaint in a lawsuit over the FCRPS, asking a federal judge to throw out the 2020 FCRPS environmental impact statement, record of decision, and BiOp.

#### *Federal Regulation under the Clean Water Act*

In 2013, Columbia Riverkeeper (Riverkeeper) initiated a lawsuit against the Corps, alleging violations of section 301(a) of the CWA for discharging oil, grease, and lubricants from the dams without National Pollutant Discharge Elimination System (NPDES) permits. Complaint, *Columbia Riverkeeper v. U.S. Army Corps of Eng'rs*, No. 2:13-md-00282-LRS (E.D. Wash. July 31, 2013). Instead of litigating Riverkeeper's citizen suit, the Corps settled with Riverkeeper, agreeing to, among other things, apply for a CWA National

<b>Lower Snake River Dams</b>	Pollutant Discharge Elimination System (NPDES) permit for each of the federal dams with respect to any discharges from powerhouse drainage sumps, un-watering sumps, spillway sumps, navigation lock sumps, wicket gate bearings, turbine blade packing/seals, and cooling water intake structures.
<b>Point Source Discharges</b>	Pursuant to the terms of the Riverkeeper settlement, the Corps submitted to EPA Region 10 NPDES permit applications for eight dams, including the LSR Dams. EPA issued draft NPDES permits for each facility on March 18, 2020. Consistent with the focus of section 301 of the CWA on discharges of pollutants from point sources, the draft NPDES permits generally concentrate on the regulation of point source discharges. EPA is in the process of finalizing the NPDES permits. The need for the NPDES permits triggered another section of the CWA, section 401, which (as discussed further below) opened up the dams to regulation by the state in which the discharges occur — Washington.
<b>State Regulation</b>	The LSR Dams are also regulated through <b>total maximum daily loads (TMDLs)</b> established for pollutants, including temperature. A TMDL specifies the maximum amount of a pollutant that a water body can receive and still meet applicable water quality standards, including water quality standards developed by a state to protect beneficial uses. A TMDL is written as the sum of the individual wasteload allocations for point sources, the load allocations for nonpoint sources, and natural background, with a margin of safety. 33 U.S.C. § 303(d)(1)(C); 40 C.F.R. § 130.2(i).
<b>TMDLs</b>	In 2020, EPA circulated for comment a TMDL for temperature on the Lower Snake and Columbia Rivers (“CLSR TMDL”). EPA accepted comments on the CLSR TMDL and may issue a revised TMDL at any time. However, the 2020 CLSR TMDL provides considerable insight into what may be included in the final temperature TMDL. <i>See CLSR TMDL.</i>
<b>Temperature</b>	The CLSR TMDL examines sources of temperature impairments on the Lower Snake River in Washington, from its confluence with the Clearwater River at the Idaho border to its confluence with the Columbia River, in addition to impairments on the Columbia River, from the Canadian border to the Pacific Ocean.
<b>Impairment Sources</b>	EPA established temperature targets based on the most protective applicable state water quality standard in each reach. CLSR TMDL at 10. For all of the LSR Dams, the most restrictive water quality standard is 20°C daily maximum from July through October. The CLSR TMDL applies to the LSR Dams in two ways. First, EPA assigns “wasteload allocations” to heat discharged from point sources, such as cooling water intake structures, transformers, and sump pumps. Wasteload allocations are expressed as heat loads. Under the CLSR TMDL, point sources were allocated a cumulative temperature increase to the mainstem of the rivers of 0.1°C (one-third of the 0.3°C allocation available for all sources). Pursuant to the CLSR TMDL, specific wasteload allocations for each point source will be incorporated into NPDES permits during implementation.
<b>Wasteload Allocations</b>	Second, the CLSR TMDL assigns “load allocations” to the dam impoundments as <i>nonpoint</i> sources of temperature pollution. CLSR TMDL at 43. Nevertheless, the CLSR TMDL acknowledges that EPA lacks authority to implement nonpoint source controls or otherwise assure reductions in nonpoint source temperature pollution. CLSR TMDL at 72. Therefore, EPA expects the states to work within their authorities to implement activities to reduce nonpoint source heat loading. CLSR TMDL at 72. As explained below, Washington Department of Ecology (Ecology) is attempting to impose those allocations as enforceable requirements on the lower Snake River dams through the CWA Section 401 certification process. In the 401 certifications, Ecology did not delineate requirements for how the federal dams must meet the load allocations or impose specific water quality discharge limits. Instead, Ecology merely indicates that the federal dams must meet the load allocations in the final temperature TMDL, once issued. In addition, the Corps must develop a water quality attainment plan, subject to review by Ecology, which sets forth a strategy for achieving compliance with Washington’s water quality standards.
<b>Nonpoint Sources</b>	Critically, in establishing the 2020 CLSR TMDL, EPA did not fully address the interstate, transboundary nature of the issues on the Lower Snake River. The TMDL did not attempt to simulate the entire Columbia River Basin, but instead truncated the Columbia and Snake rivers near the Washington state borders. Thus, the TMDL did not accurately account for all of the sources of river temperature warming throughout the basin, such as the Columbia River upstream of the Canadian border, the Snake River upstream of Anatone, Washington, and all tributaries draining into the mainstem Columbia and Snake rivers. As a result, in assigning load allocations, the CLSR TMDL appears to establish standards that may not be possible for the LSR Dams to achieve.
<b>CWA Section 401 Certification</b>	<b>State Regulation</b>
<b>TMDL Shortcomings</b>	The LSR Dams are not only subject to regulation by the Federal government, but also by the State of Washington, through the CWA. The Washington Department of Ecology has promulgated water quality standards for the waters in Washington. Ch. 173-201A WAC. Washington is now applying those water quality standards to the LSR Dams and regulating the LSR Dams through Section 401 water quality certifications.
<b>Washington Standards Applied</b>	

## Lower Snake River Dams

### Section 401 Requirements

### Conditions Imposed

### Temperature Concerns

### Conditions Appealed

### Canadian Obligations

### Salmon Harvest

### Equitable Principle

### Salmon Treaty 2019-2028

### Columbia River Treaty

As noted above, by applying for NPDES permits to discharge into the waters of the United States, the LSR Dams triggered the 401 certification requirement. Section 401 of the CWA creates a role for states and tribes to protect federally regulated waters within their borders, even when the state or tribe lacks direct permitting authority. Section 401 of the CWA requires any applicant — for a federal license or permit for an activity that may result in any discharge into the navigable waters — to obtain a Section 401 certification from the certifying authority in the state in which the discharge originates. 33 U.S.C. § 1341(a)(1). Since the point source discharges will occur in Washington state, EPA (as the agency issuing the NPDES permits) requested 401 certifications from Ecology for the LSR Dams.

On May 7, 2020, Ecology issued Section 401 certifications for each of the LSR Dams, but imposed significant conditions in those Section 401 certifications, which regulate not only the discharges that are the subject of the NPDES permits, but the dams as a whole. For example, the Section 401 certifications require the dams to implement temperature control strategies and comply with the load allocations set forth in the CLSR TMDL, which addresses the temperature contribution from the impoundment of water in the reservoir. (Note that the 401 certifications do not define the contemplated temperature control strategies). This requirement is not aimed at addressing the discharges of oil and grease from the dams that triggered section 401, but water temperature concerns that result from the impoundment of water behind the dams, and has the potential to require significant modifications to the dams and their operations. The state of Washington has also assured itself a continuing role in the regulation of the LSR Dams by including conditions giving Ecology review and approval authority over several plans important to the operation of the dams.

Although the Section 401 certification conditions are the subject of an ongoing appeal, if upheld, the conditions in the 401 certifications must be incorporated by EPA into the final NPDES permits for these facilities. However, even if these conditions become effective, compliance with the conditions may be infeasible due to upstream conditions that are beyond the control of the LSR Dams, including that the temperature standard set by Idaho, upstream of the dams, is higher than the temperature standard in Washington.

### International Treaties

Treaties between the United States and Canada raise the question of whether the operation of the LSR Dams impacts the ability of the United States to meet its treaty obligations with Canada.

#### *The Pacific Salmon Treaty*

The Pacific Salmon Treaty is a bi-lateral agreement between the United States and Canada (collectively, the “Parties”), initially ratified in 1985, that establishes fishing regimes for nearly all salmon fisheries in Southeast Alaska, British Columbia, and the Pacific Northwest, including Snake River chinook. *Treaty Between the Government of Canada and the Government of the United States of America Concerning Pacific Salmon* (1985).

The Pacific Salmon Treaty defines joint management and conservation responsibilities pertaining to salmon which migrate from the United States to British Columbia as well as from British Columbia to Southeastern Alaska. Canada harvests Snake River chinook (as well as Columbia Basin chinook) that migrate north into British Columbia; the United States harvests Canadian-origin fish that migrate to Southeast Alaska.

In light of the transboundary nature of the salmon resource, the Pacific Salmon Treaty established the equitable principle that “each Party shall conduct its fisheries and its salmon enhancement programs so as to...provide for each Party to receive benefits equivalent to the production of salmon originating in its waters.” *Id.* Art. III. Thus, Canada looks to the United States to produce northward-migrating salmon to replace fish originating in Canadian waters that are harvested by Alaskans.

Certain Pacific Salmon Treaty provisions have been renegotiated over time. (In 2008 and again in 2018, the Pacific Salmon Commission recommended new ten-year agreements to the Governments of Canada and the United States for the conservation and sharing of Pacific salmon). The new fishing regimes are in force from 2019 through the 2028, with regular Pacific Salmon Commission review of stock status and regulatory effectiveness throughout that period. *See Id.*, Annex IV, Ch. 1-6. The latest Pacific Salmon Commission annual report provides that allocations are largely restricted based on the ESA consultations. Pacific Salmon Commission 2019 at 68.

#### *The Columbia River Treaty*

Efforts to modernize the Columbia River Treaty could also impact the operation of the LSR Dams. Since 1964 the Columbia River has been jointly operated under the Columbia River Treaty (CRT) by the United States and Canada. The CRT established coordinated water storage operations that provide both countries with the benefits of flood control, power generation, and economic growth.

In May 2018, the United States and Canada commenced negotiations with the goal of a modernized



## Lower Snake River Dams

### Tribal Fishery Viability

CRT. *See* U.S. Dep't of State, CRT website. The negotiations, currently underway and having completed ten rounds of negotiation, focus on modernizing the CRT's coverage of shared benefits and costs to domestic power ratepayers, flood control agreements with Canada, and other issues such as tribal consultation, as well as updating the CRT to account for ecosystem management, which includes salmon recovery efforts. If an ecosystem provision is included in the final, modernized treaty provisions, the CRT would then cover the health of salmon, which in turn, could impact the operation of the LSR Dams.

#### Tribal Treaties

As explained above, in 1855, the United States signed a series of treaties with Columbia Basin Indian tribes, under which the tribes ceded to the United States large swaths of land in return for land reservations and the "right of taking fish" at all their usual and accustomed places, including the lower Snake River.

As with the Pacific Salmon Treaty, the existence of these treaties raises the question of whether the operation of the LSR Dams impacts the ability of the United States to meet its treaty obligations with the Tribes. Some have argued that the 1855 treaties reserve to the Tribes the harvest of an economically viable fishery, and that to comply with the treaties, the federal government must govern the Columbia Basin to provide for the maintenance of the Tribes' fisheries. Wilson 2000 at 359.

#### Frameworks for Addressing the Existence and Operations of the LSR Dams

As demonstrated above, there are not only a wide variety of interests that are implicated by the operation of the dams (both positively and negatively), but there are a large number of entities that have the ability to influence the operations of the dams through the exercise of their overlapping spheres of regulatory authority. A number of diverse authorities have the power to regulate or impact the operations of the dams, through various legal channels — direct regulation, consultation, and litigation.

The independent operation of each of the regulatory entities within their own sphere of influence has not resulted in a framework that all parties agree upon, much less a solution that achieves the goals of many of regulatory entities and stakeholders. By way of example, the Corps is challenging the 401 certification conditions imposed by Washington, and litigation has been initiated over the most recent set of environmental analyses and BiOps for the dams.

Several efforts have been initiated to identify options for managing the LSR Dams in a manner that will minimize or mitigate the impacts of the dams and satisfy the interests of those parties that are negatively impacted by the existence of the dams.

First, in 2008, BPA, the Corps, and Reclamation entered into ten-year agreements with the states of Idaho and Montana, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Reservation, the Yakama Nation, the Confederated Tribes of the Colville Reservation, and the Columbia River Inter-Tribal Fish Commission. Under these agreements, BPA committed to funding up to \$933 million over the term of the 2008 BiOp for mitigation projects to be implemented by the state and tribal parties. Extensions of the agreements run through 2022 and set aside more than \$400 million for fish and wildlife mitigation and protection. Yet, litigation over the LSR Dams, the BiOps, and the need to consider breaching the dams has continued.

Second, Congressman Simpson has proposed breaching the LSR Dams as part of a multifaceted approach to uses of the River affected by the dams, while accounting for the interests that will be harmed by the breaching or removal of the dams. Congressman Simpson is proposing a broad new federal program that would significantly restructure major aspects of how the federal government asserts federal legal authority over most aspects of managing the Columbia and Snake rivers, at a cost of \$33.5 billion dollars. The key component of the proposal is the breach of the four LSR Dams and removal of the earthen berms and sediment. Congressman Simpson proposes to establish a mitigation fund for damage caused by sediment released from the breaching, and to establish a lower Snake River cultural resource protection fund.

The proposal — calling for the most sweeping changes in the operation of the Columbia River in a half-century — recognizes that breaching the dams comes with a significant cost to other stakeholders, and thus includes measures that would attempt to make those stakeholders whole. For example, the proposal recognizes the need to replace the energy that would be lost should the dams be breached and proposes a \$10 billion appropriation to build replacement clean-energy sources. The proposal would require that replacement sources be online prior to breaching. Simpson PPT at 14.

The proposal recognizes and would attempt to mitigate impacts to irrigators that would be affected by changes in irrigation intake, outflow, well or other structures related to irrigation, water delivery or discharge in the Ice Harbor Dam area or within the lower Snake River corridor. It also provides funding for farms to adjust their transportation of goods.

The proposal is meant to have a lasting impact, and includes a moratorium on litigation for 35 years, in hopes to end the cycle of litigation that has occurred over the operation of the FCRPS since the 1990s.

### Diverse Authorities

### Agencies' Ten-Year Agreements

### BPA Funding

### Simpson Breach Proposal

### Breaching Costs

### Irrigators' Mitigation

### Litigation Moratorium

## Lower Snake River Dams

### Reactions to Breach Proposal

For the proposal to have effect, it would have to be introduced as legislation and passed. Congressman Simpson is actively pursuing passage of the legislation at the time of the publication of this article, hoping to include the proposal in major federal infrastructure legislation under consideration in 2021. Breaching the dams, whether in the form of Simpson's proposal or otherwise, requires Congressional approval, not only because it would require federal funding but because it would result in the retirement of Congressionally authorized dams and a navigation channel. Blumm 1998.

The early reactions to the Simpson proposal once again demonstrate the difficulty in finding a solution to the LSR Dams. The reactions to the Simpson proposal demonstrate, that even when a proposal is introduced that attempts to account for all of the different stakeholders, a "win-win" is both elusive and extremely difficult to develop given the politics of dam breaching and removal. Conservation organizations are split significantly, with several major organizations taking positions against the 35-year litigation stay, potentially because it would prevent them from challenging the operations of the remaining FCRPS dams. Associated Press 2021. Those with transportation interests have asserted that the benefits from breaching the dams for fish will be too insignificant to justify the offsetting detriments. Governor Inslee and Senators Murray and Cantwell, as well as Republican members of Washington's congressional delegation, have also come out with significant concerns over the proposal — at least in its current form. *Id.* Efforts to bring these political forces together are ongoing.

Third, Oregon, Washington, Idaho, and Montana signed an agreement in October 2020 to work together and with others in the region, including federal partners, co-manager tribes, and interested stakeholders, to define a future collaborative framework to rebuild salmon and steelhead stocks.

#### Conclusion

Although the process for finding a long-term solution with respect to the LSR Dams is still ongoing, the various approaches to finding a solution, including the Simpson proposal, have attempted to bring a variety of stakeholders to the table in crafting a solution. In finding a solution, however, it is not only necessary to involve all of the interest groups, but to recognize the multi-jurisdictional nature of the regulation of the dams. Although Congress would ultimately have the power to call for breaching the dams, solutions that change the operations of the dams, instead of removing the dams, require buy-in from all of the entities with the authority to regulate the LSR Dams, as well as the entities with the authority to regulate upstream conditions. A consistent and comprehensive approach to regulating the LSR Dams, and the upstream conditions that act on the LSR Dams, is needed to avoid conflicting and competing regulatory requirements, or requirements that are infeasible or ineffective.

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**2021  
AWRA  
Washington  
State  
Conference**

**2021 AWRA-WA State Conference**  
American Water Resources Association – Washington Section Event  
**October 6-7, 2021 - Virtual**

On October 6 and 7, 2021 the Washington Section of the American Water Resources Association will host a virtual conference on: “Transboundary Water Resources Management and Water Marketing Trends.” This year’s Keynote address will be presented by Robert W. Sandford, the Chair in Water and Climate Security at the United Nations University Institute for Water, Environment and Health. Sessions for day one of this two day event will highlight interagency management in the Spokane, Palouse, and Walla Walla River Basins. Sessions for day two will include interstate and international considerations for the management of the Columbia River, recent proposals for managing interstate and international concerns regarding the lower Snake River dams, and trends in water marketing.

**For More Information: [www.waawra.org/event-4406410](http://www.waawra.org/event-4406410)**

**Conference Schedule**

<b>Day 1</b>	<b>Day 2</b>
<b>Keynote Address</b> Robert W. Sandford, <i>United Nations University Institute for Water, Environment and Health</i>	<b>Current Events/2020-21 Water Year Review</b> Jeff Marti, <i>Wash. Department of Ecology</i>
<b>Interagency Management in the Spokane Basin</b> Guy Gregory, <i>Gregory Geologic</i> Terry Pickel, <i>Idaho-Wash. Aquifer Collective</i> Kara Odegard, <i>City of Spokane</i> BiJay Adams, <i>Liberty Lake Water and Sewer District</i>	<b>Columbia River Management</b> Kelly Ferron, <i>Washington Department of Ecology</i> Andy Dunau, <i>Lake Roosevelt Forum</i>
<b>Interagency Management in the Palouse Basin</b> Korey Woodley, <i>Palouse Basin Aquifer Committee</i> Robin Nimmer, <i>Alta Science and Engineering</i>	<b>Water Trends</b> Harry Seely, <i>Western Water Research</i> Kristina Ribellia, <i>Western Water Market</i> Eric Weber, <i>Landau Associates</i>
<b>AWRA Scholarship Project: Adaptive Reservoir Operation in the Transboundary Nile River</b> Hisham Eldardiry	<b>Interjurisdictional Management of the Snake River</b> Richard Agnew, <i>Van Ness Feldman</i>
<b>Interagency Management in the Walla Walla Basin</b> Chris Kowitz, <i>Oregon Water Resources Department</i> Melissa Downes, <i>Wash. Department of Ecology</i> Chris Marks, <i>Confederated Tribes of Umatilla Indian Reservation</i>	<b>AWRA Scholarship Project: Elwha River</b> Alyssa Demott
<b>Panel on Lessons Learned in Managing Water Across State Lines</b> Chris Kowitz, <i>Oregon Water</i> Korey Woodley, <i>Palouse Basin Aquifer Committee</i>	<b>Interagency Management in the Little Spokane Basin</b> Mike Hermanson, <i>Spokane County</i>
	<b>Panel on Coordinating Water Management Across Political Boundaries</b>

## Willamette Litigation

# WILLAMETTE BASIN LITIGATION UPDATE

JUDGE HERNANDEZ ISSUES SCATHING ORDER

by Richard M. Glick and Olivier Jamin, Davis Wright Tremaine (Portland, OR)

### BiOp Deadlines

### Fishery Expert Engaged

### Interim Relief

### Corps' Authority

### Discretion Recognized

### "Significant Delay"

### Ordered Measures

#### Introduction

In last month's edition of The Water Report, we provided an article on the Willamette Basin Reallocation and Litigation. Since then, Judge Hernandez issued an order in the case brought by the Northwest Environmental Defense Center (NEDC) against the US Army Corps of Engineers (Corps) over its operation of Detroit Dam, Cougar Dam, Lookout Point Dam, and Blue River Dam. As the reader may recall, NEDC had argued that the Corps had failed to meet certain deadlines under the 2008 Willamette River BiOp and thus had violated the Endangered Species Act (ESA). *Northwest Environmental Defense Center v. U.S. Army Corps of Engineers*, Case No. 3:18-cv-00437-HZ (D. Or. 2020).

Judge Hernandez had already found that the Corps had violated the ESA by failing to meet 2008 BiOp deadlines, finding that "[t]he record demonstrates that the listed salmonids are in a more precarious condition today than they were at the time NMFS issued the 2008 BiOp." *Northwest Environmental Defense Center v. U.S. Army Corps of Engineers*, Case No. 3:18-cv-00437-HZ (D. Or. 2020). He had then engaged a special fishery biology expert to develop suitable remedies. The July 2021 order provides more details about what those remedies are, with a rather aggressive approach toward the Corps.

#### Judge's Order Provides Remedies for Salmon

In the order, Judge Hernandez found that NEDC was entitled to interim injunctive measures that will improve fish passage and water quality in the Willamette Valley Project (WVP). *Northwest Environmental Defense Center v. U.S. Army Corps of Engineers*, Case No. 3:18-cv-00437-HZ, July 14, 2021 Order at \*7-8 (D. Or. 2021). Specifically, the Court rejected the Corps' argument that limited agency resources and impacts to power production, recreation, and local economies could overcome the presumption that the balance of harms and public interest factors tip in plaintiff's favor in ESA cases. *Id.* at 8. Additionally, the Court found that the Corps' interim measures did not adequately address the lack of fish passage and water quality issues.

In addressing the Corps' interim measures and other potential measures that could be implemented, the Court made important conclusions regarding the Corps' authority under the 1950 Flood Control Act (FCA) and House Document 531. The Court found that the Corps had broad discretion to conduct operational measures that preclude hydropower generation for the benefit of listed salmon, so long as that generation is not eliminated during the entirety of the power production period. Accordingly, the Court concluded that interim operations such as deep drawdowns are consistent with the Corps' authority, whereas "run-of-river" operations that eliminate power production during the entirety of the "critical power production period" would not be. *Id.* at 7. This interpretation could in turn affect the parallel lawsuit from the Public Power Council (PCC), which claimed that the Corps had violated the Administrative Procedure Act, the Flood Control Acts of 1938, 1948, and 1950, NEPA, and the Water Resources Development Act. That case is still ongoing. *Public Power Council v. U.S. Army Corps of Engineers*, Case No. 3:21-cv-00032 (D. Or. \_\_\_\_).

The Court had strong words against the Corps, noting the "significant delay in carrying out the RPA [reasonable and prudent alternatives] measures," and regretting that the Corps had "fought tooth and nail to resist implementing interim fish passage and water quality measures that it was supposed to begin implementing a decade ago." *Id.* at 12. The Court concluded that it had "no patience for further delay or obfuscation in this matter and expects nothing short of timely implementation of the injunctive measures." *Id.* Accordingly, the Court ordered a staggering 20 measures to be implemented.

THE ORDERED MEASURES INCLUDE THE FOLLOWING:

- The Corps must complete the reinitiated ESA-consultation and issue a new BiOp by December 31, 2024;
- Technical experts for the parties must submit in August 2021 a proposed order fleshing out the parameters of the interim measures discussed in the interim injunction;
- The Corps must provide biannual status reports detailing their progress and compliance with the interim measures;
- The Corps must follow its established maintenance outage schedules and emergency protocols;
- The Corps must begin outplanting adult UWR Chinook salmon above Green Peter Dam within one year of the order and then carry out juvenile downstream passage measures at Green Peter Dam;

## Willamette Litigation

### Resounding Defeat v. Big Win

- Beginning fall 2021, the Corps must conduct a deep drawdown at Cougar Dam, and conduct spring passage measures at Cougar Dam beginning in 2022; and
- Beginning 2022, the Corps must conduct spring spill operations at Lookout Point Dam and Dexter Dam.

#### Conclusion

The content and tone of the decision constitute a resounding defeat for the Corps and a big win for salmon advocates. The Corps will no doubt be under intense scrutiny to actually implement the interim measures while the new BiOp is developed. Operation of the WVP will undoubtedly be affected by this implementation, but it's hard to predict just how much impact those changes will have on power generation, recreation, and the local economies of Marion and Linn County.

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**Olivier Jamin** is an associate in the Portland office of David Wright Tremaine LLP, where he practices environmental law with a focus on water quality and quantity, land use, and energy law. Olivier advises sellers and purchasers of farmland, and especially vineyards, and provides guidance in dealing with contaminated sites and environmental due diligence in small and large transactions in Oregon, Washington, and California. Olivier also assists clients with regulatory compliance, waste management, land use permitting, and water quality certifications. Olivier has a strong background in wildlife trade, especially dealing with implementation and enforcement of the Convention on International Trade of Endangered Species (CITES).



## Ogallala Depletion

# OGALLALA AQUIFER DEPLETION

CURRENT GOVERNMENT INCENTIVES PROMOTE DEPLETION / NEW POLICIES PROPOSED

by Matthew A. Sanderson, Burke W. Griggs, and Jacob A. Miller (Kansas State University)

Your authors have expanded and updated an article originally published by The Conversation US, November 9, 2020, for publication in *The Water Report* (see <https://theconversation.com/farmers-are-depleting-the-ogallala-aquifer-because-the-government-pays-them-to-do-it-145501>).

### Introduction

A slow-moving crisis threatens the US Central Plains, which grow a quarter of the nation's crops. (National Protection 2015). Underground, the region's lifeblood — water — is disappearing, placing one of the world's major food-producing regions at risk.

The Ogallala-High Plains Aquifer is one of the world's largest groundwater sources, extending from South Dakota down through the Texas Panhandle across portions of eight states. (Sanderson 2015). Its water supports US\$35 billion in crop production each year. (Basso 2013).

Most of the aquifer's supplies are effectively non-renewable. Farmers are pumping water out of the Ogallala faster than rain and snow can ever recharge it. Between 1900 and 2008, irrigators drained some 89 trillion gallons from the aquifer. This amount — 273 million acre-feet of water — is equivalent to two-thirds of the water in Lake Erie. (Konikow 2013). Groundwater depletion is threatening drinking water supplies and undermining local communities already struggling with the COVID-19 pandemic, the opioid crisis, hospital closures, soaring farm losses, and rising suicide rates.

In Kansas, "Day Zero" — the day wells run dry — has arrived for about 30% of the aquifer. Within 50 years, the entire aquifer is expected be 70% depleted. (Steward 2013). Some observers blame this situation on periodic drought. (Malewitz 2013). Others point to the individual choices made by farmers, since irrigation accounts for 90% of Ogallala groundwater withdrawals. (McGuire 2011).

Our research, which focuses largely on the social and legal aspects of water use in agricultural communities, shows that farmers are draining the Ogallala as a result of state and federal policies which encourage them to do so.

### A Production Treadmill

At first glance, farmers on the High Plains appear to be doing well. Crop production increased in 2020. Corn, the largest crop in the US, had a near-record year. Farm incomes increased by 5.7% over 2019.

However, those figures hide massive government payments to farmers. Federal subsidies increased by a remarkable 65% in 2020, totaling \$37.2 billion. (Jibben 2020). This sum includes money for lost exports from escalating trade wars, as well as COVID-19-related relief payments. Corn prices were too low to cover the cost of growing it in 2020, so federal subsidies made up the difference.

Our research finds that subsidies put farmers on a treadmill, working ever harder to produce greater yields, yet all the while draining the groundwater resource that supports their livelihood. (Sanderson 2019). Government payments create a vicious cycle of overproduction that intensifies water use. Subsidies encourage farmers to expand and to purchase expensive equipment to irrigate larger areas.

With low market prices for many crops, production does not cover expenses on most farms. To stay afloat, many farmers buy or lease more acres. Growing larger amounts floods the market, further reducing crop prices and farm incomes. Subsidies support this cycle.

Few farmers benefit. Those with small and mid-sized operations are especially vulnerable. In a 2019 study of the region's 234 counties from 1980 to 2010, we found that larger irrigated acreage failed to increase incomes or improve education or health outcomes for residents. (Lauer 2019).

Four decades of federal, state, and local conservation efforts have mainly targeted individual farmers. Government programs provided ways for farmers to voluntarily reduce water use or adopt more water-efficient technologies. (EQIP-USDA Program). While these initiatives are important, they have not stemmed the aquifer's decline.

### Focus on Policy, Not Farmers

In our view, what the Ogallala Aquifer region really needs is policy change.

A lot can be done at the federal level, but the first principle should be to "do no harm." Whenever federal agencies have tried to regulate groundwater, the backlash has been swift and intense, with farm states' congressional representatives repudiating federal jurisdiction over groundwater.

## Aquifer Mining

## "Day Zero"

## Policies' Impact

## Federal Subsidies

## Overproduction

## Vulnerable Operations

## Policy Change Needed

## Ogallala Depletion Initiatives' Potential

### Conservation Reserve

### Use-Reduction Credit Incentives

### Rewarding Excessive Use

### Depreciation Incentives

### Aquifer Depletion

### Waste

### Beneficial Use

### Reasonable Regulations

Nor should Congress propose to eliminate agricultural subsidies, as some environmental organizations and free-market advocates have proposed. Given the thin profit margins of farming and longstanding political realities, federal support is simply part of modern production agriculture.

With these cautions in mind, three federal initiatives could help ease pressure on farmers to keep expanding production.

#### USDA Conservation Reserve Program

The US Department of Agriculture's (USDA's) Conservation Reserve Program, which pays farmers to remove environmentally sensitive farmland from production for at least 10 years, should be enhanced to address groundwater depletion. With new provisions, the program could reduce unsustainable water use by prohibiting expansion of irrigated acreage, permanently retiring marginal lands from irrigation, and linking subsidies to the cultivation of less water-intensive crops such as grain sorghum, industrial hemp, and wheat.

These initiatives could be implemented through the federal farm bill, which also sets funding levels for nonfarm subsidies such as the USDA's Supplemental Nutrition Assistance Program (SNAP). SNAP payments — which increase needy families' food budgets — are an important tool for addressing poverty, including rural poverty. Increasing these payments and adding financial assistance to local communities could offset lower tax revenues that result from farming less irrigated acreage.

#### Federal Farm Credits & Credit Rates

Changes in federal farm credit and federal farm credit rates could also slow the treadmill. Generous terms promote borrowing for irrigation-related farm equipment; that debt in turn motivates irrigators to intensify irrigation on existing acres and increase irrigated acreage, further depleting the aquifer. By offering cheaper debt and more flexible borrowing rates for equipment that reduces water use and withholding similar terms for standard, wasteful equipment, federal farm credit programs could nudge irrigators toward conservation.

#### Federal Internal Revenue Code

The last federal initiative concerns perhaps the most powerful policy tool of all — the Internal Revenue Code. Two depreciation provisions in the federal tax code reward excessive irrigation. One allows farmers to take depreciation deductions for declining groundwater levels (IRS 2020); this perk should be replaced with a tax credit for irrigators who can stabilize them. A second tax provision allows farmers to exploit generous, accelerated depreciation schedules on farm equipment. These depreciation schedules can and should be modified to reward the purchase of equipment that reduces excessive and unnecessary irrigation — such as: soil moisture monitoring systems; cover crop-related equipment; and strip and dragline irrigation equipment. Allowing depreciation for wasteful irrigation equipment should be denied.

#### “Cost Depletion for Ground Water in Ogallala Formation”

“Farmers who extract ground water from the Ogallala Formation for irrigation are allowed cost depletion. Cost depletion is allowed when it can be demonstrated the ground water is being depleted and the rate of recharge is so low that, once extracted, the water would be lost to the taxpayer and immediately succeeding generations.”

From: Internal Revenue Service Publication 225 (2020), Cost Depletion  
See: [www.irs.gov/publications/p225#en\\_US\\_2020\\_publink1000218297](http://www.irs.gov/publications/p225#en_US_2020_publink1000218297)

#### Amending State Water Laws

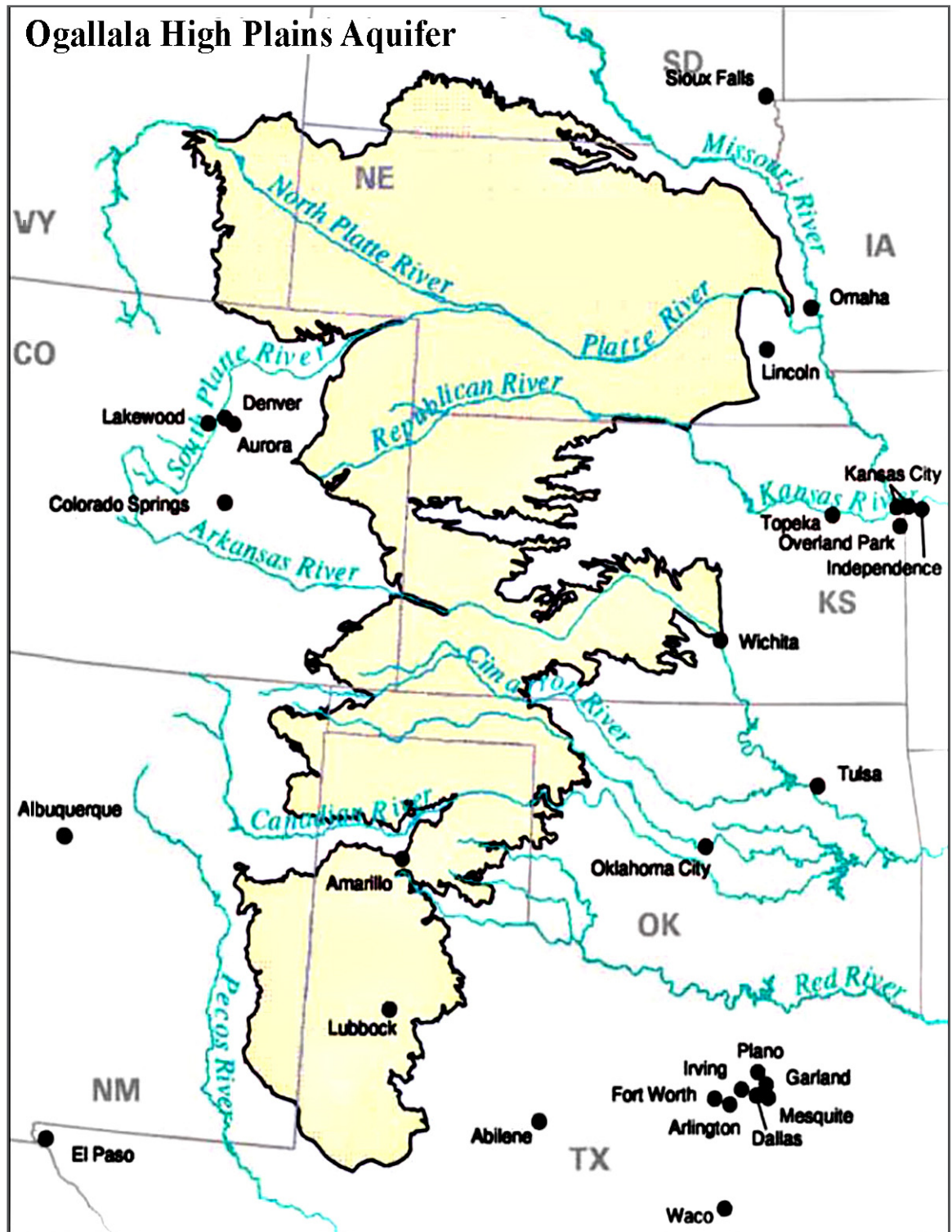
Reforming state water policy is also crucial, because water rights are mostly determined by state law. Water rights are use rights; their owners put water to beneficial use. But as every reader of *The Water Report* knows, waste is not beneficial use; owning water rights does not grant the legal right to waste water. See *Schodde v. Twin Falls Land & Water Co.*, 224 U.S. 107 (1912). Courts have endorsed this logic for over a century, upholding state restrictions on waste, with rulings that allow for adaptation by modifying the definitions of “beneficial use” and “waste” over time. See *Tulare Irrigation District et al. v. Lindsay-Strathmore Irrigation District*, Supreme Court of California in Bank, 3 Cal. 2d 489; 45 P.2d 972 (1935). Courts have also long emphasized that what we deem to be “reasonable” changes over time. With these longstanding rules as a guide, state water agencies can adopt regulations defining certain irrigation practices (such as pre-watering and the use of “end guns” on irrigation sprinklers) and certain especially thirsty crops (such as alfalfa, rice, cotton, and corn) as wasteful in certain regions. Reasonable regulations preventing unreasonable water use are not unconstitutional, nor do they qualify as regulatory takings. See *Stanford Vina Ranch Irrigation Co. v. State of Cal.*, No. C085762 (3rd Dist., June 18, 2020).

## Ogallala Depletion

### Flexibility of Usage Rates

Next, in exchange for less pumping, irrigators should be allowed greater flexibility in their water use over the long term. Most western water rights are quantified at the level of annual use, which can tempt irrigators to over-water acreage. However, if farmers can irrigate less (or even not at all) in years with abundant precipitation and low commodity prices, they should be allowed to irrigate more in years with less rain and higher prices — provided they reduce their long-term usage. Granted, it is easier to recommend a policy change than to predict the weather, changes in commodity prices, or the contract and hedging strategies of irrigators. But in the zero-sum game of most of the Ogallala, many irrigators are willing to exchange lower annual yields for a longer aquifer life.

## Ogallala High Plains Aquifer





Ogallala  
DepletionProof of  
Irrigation“Insurance  
Farming”

## Zero-Sum Game

Structural  
Depletion

## Crop Insurance Modification

Finally, the private insurance industry could modify its practices. Crop insurance is a common tool across the High Plains, whose semi-arid climate requires irrigation for corn and soybeans, which are generally more profitable than dryland crops such as wheat and grain sorghum. Yet crop insurance can create moral hazards on either side of the policy. Where an irrigated crop has failed, many insurers still require farmers to prove that they have fully watered it through irrigation season — forcing farmers to waste water by sprinkling it on ruined fields. Farmers can abuse the insurance system through the practice of “insurance farming.” As Lucas Bessire explains in *Running Out: In Search of Water on the High Plains*, the practice occurs when farmers plant irrigated crops that they suspect or know will fail, but do so anyway to collect insurance payments. Insurance companies prefer to insure irrigated crops over dryland crops because they make a higher profit on the former; federal subsidies offset farmers’ higher premiums. Insurance payments are typically calculated based on the average of farmers’ harvests over the past ten years and not on current conditions. Thus, if an irrigator’s water supply and/or pumping rate declines significantly over that period, he or she can be over-compensated — paid for yields that are no longer possible given the decline in the aquifer. As Bessire concludes, under certain conditions a failed irrigated crop can be worth more than a successful irrigated one.

## Conclusion

“Day Zero” looms across the Ogallala because groundwater pumping in much of the region is a zero-sum game: every acre-foot pumped this year is an acre-foot gone forever. As our research has shown, the vast majority of farmers in the region want to save groundwater. (Lauer 2019). However, they will need help from policymakers to do it. Forty years is long enough to learn that the Ogallala Aquifer’s decline is not driven by weather or by individual farmers’ preferences. Depletion is a structural problem embedded in agricultural policies. Groundwater depletion across the Ogallala is a policy choice made by federal, state and local officials.

## FOR ADDITIONAL INFORMATION:

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**Dr. Sanderson** is Randall C. Hill Distinguished Professor of Sociology, Anthropology, and Social Work and Professor of Geography and Geospatial Sciences at Kansas State University. His research empirically examines population and environment as aspects of development in the context of globalization. Most of his work is international in scope, and longitudinal and comparative in design. On the population side, he is investigating international migration as both a cause and consequence of development dynamics in an increasingly inter-connected world. On the environment side, he is exploring social drivers of natural resource use. This work concentrates especially on agricultural production and water consumption in the High Plains (Ogallala) Aquifer region of the United States. He leads courses on international development and social change, environment and society, international migration, rural development, and principles of sociology.

**Burke Griggs** joined the Washburn law faculty in 2016. He teaches property law and natural resources. His research agenda follows three interwoven lines of inquiry: the history of property rights regimes in natural resources; the geophysical aspects of natural resources and how they respond to different forms of ownership, exploitation, and regulation; and the diverse political cultures of the owners and communities which compete for and contest the use of these resources. Prior to joining the faculty, Professor Griggs practiced water law in both the public and private sectors. As an assistant attorney general, he represented the State of Kansas in federal and interstate water matters, most prominently *Kansas v. Nebraska*, an original action to enforce the Republican River Compact against the State of Nebraska. Professor Griggs also served as lead counsel for Kansas in the negotiations over the Kickapoo Tribe reserved water rights settlement. Outside of the litigation arena, Professor Griggs has advised Kansas' natural resources agencies on matters of natural resources law and policy. During the 2013–2014 academic year, Professor Griggs served as a Consulting Professor at the Bill Lane Center for the American West at Stanford University. He was subsequently named a Nonresident Fellow of the Woods Institute for the Environment, also at Stanford, and an affiliated scholar at the Lane Center, where he contributes to their joint Water in the West Project. Professor Griggs is Associate Director of the Oil and Gas Law Center. He also participates in the Agricultural Law Program and the Rural Law Practice Initiative.

**Jacob A. Miller** is currently a PhD student under the advisement of Dr. Matthew Sanderson on an NSF-funded R3 NRT traineeship. Jacob has worked on several publications during his studies and has presented 30 competitively-selected and conference presentations from 2015–2020 and made three podcast appearances. Jacob has won two departmental research awards (2018 & 2019); was Managing Editor, Agriculture and Human Values; Bi-National Oratorical Champion, Speech and Debate All-American; and Student Body President.

## COVID & Water Use

### Remote Work

#### Soaring Water Use

### Conservation Urged

#### Migration Impacts

### Residential Use

### Colorado River Rights

#### Voluntary Reduction

### Consumption Habits

## COVID & SOUTHWEST WATER

WHY REMOTE WORK MIGHT WORSEN SOUTHWEST WATER WOES

by Keyonna Summers, University of Nevada, Las Vegas

Editors' Note: This article is a product of the University of Nevada, Las Vegas News Center and is used with their appreciated permission.

As concerns flare over record-low water levels at Lake Mead, a new University of Nevada, Las Vegas (UNLV) study shows that COVID-19 pandemic stay-at-home orders — and a subsequent societal shift to remote work — may be exacerbating the problem.

The study, recently published in the *Journal of Environmental Economics and Management*, found that Las Vegas Valley residential water use soared during the pandemic, outpacing even combined pre-pandemic usage across Southern Nevada's three main property types (residential, commercial, and schools). That may not seem surprising, considering the intense focus on precautionary public health measures such as sheltering in place and frequent hand washing during the pandemic. But given drought conditions brought on by the already-meager water levels within Lake Mead and its Colorado River tributary, a team of UNLV economists says the data has potentially dire implications.

As more companies and institutions opt for business and educational learning models that embrace the pandemic's reliance on virtual connections, researchers say the increase in hybrid or completely remote work and school environments might strengthen the strain on the region's water resources. They called on government leaders to implement better infrastructure or water conservation processes to accommodate the prospect of people spending even more time at home.

"While intuitive, these results are important as it highlights the potential effects of a permanent shift toward remote working, even post-COVID-19, that may potentially strain water resources in areas already facing scarcity," the authors wrote. "Such a strain on water resources, especially in the Western United States, will likely pose additional challenges as people begin to relocate away from the coasts to the interior of the country."

The study, jointly authored by UNLV Lee Business School economics professors Nicholas Irwin, Ian McDonough, and Shawn McCoy, is the first publication that convincingly estimates the impact of the COVID-19 pandemic on water usage across property types. The team examined residential, commercial, and school customer bills from the Henderson Water District — the Las Vegas Valley's second-largest municipality and a microcosm of the larger multi-state region that draws water from the Colorado River — from 2017 through September 30, 2020. Residential users comprise 98% of Henderson's total user base. Aggregated across all users, the Silver State's stay-at-home order led to an increase in net water usage between 32 to 59 million gallons over the first 30 days, findings show. Five months after the lockdown, these aggregate effects increased to approximately 491 million gallons of extra water consumed each month.

Nearly 90% of the Las Vegas Valley's water is drawn from Nevada's portion of Colorado River water rights, which entitles the state to 300,000 acre-feet (97.76 billion gallons) per year. This water allocation was assigned in 1922, when Nevada's population was just about 80,000 — less than 3% of its current population of 3.1 million residents.

Census estimates show that Idaho, Arizona, Nevada, and Utah are the top four Western states with the largest population increases from 2019 to 2020. Except for Idaho, all of them source water from the Colorado River — along with New Mexico, Wyoming, California, and Colorado.

The strain on water resources is multifold. For example, California Gov. Gavin Newsom recently asked all state residents — including those who operate industrial commercial and agricultural businesses — to voluntarily reduce their water usage by 15%, and the Southern Nevada Water Authority has been lobbying state lawmakers to enact water conservation measures such as the prohibition of water-intensive decorative turf within medians, along roads, and in business parks.

"Given the condition of Lake Mead and the observation that many are still continuing to work from home, we think there are significant and broader implications for policymakers on regional and national scales," researchers said. "Policymakers in states facing such shortages must be cognizant of the effects from more and more corporations allowing workers to permanently shift towards remote work and increases in population from residential mobility, all of which may require renewed efforts to encourage water conservation," they said. "Without adjusting their water consumption habits or preferences in moving from water-rich to water-poor parts of the United States — i.e. installing low-flow and/or highly efficient home appliances or converting landscaping to drought-tolerant species — the added pressures of this increased population may serve as a tipping point into severe water restrictions if not mitigated."

**FOR ADDITIONAL INFORMATION:**

The Study: *Water in the Time of Corona (Virus): The Effect of Stay-at-Home Orders on Water Demand in the Desert* is available from: [www.sciencedirect.com/science/article/pii/S009506962100067X#fig1](http://www.sciencedirect.com/science/article/pii/S009506962100067X#fig1)



## WATER BRIEFS

## COASTAL WATER WA/BC

EPA / CLIMATE CHANGE CANADA RELEASE SALISH SEA REPORT

The US Environmental Protection Agency (EPA) and Environment and Climate Change Canada have released their joint “*The Health of the Salish Sea Report*” analyzing 10 indicators of the health of the Salish Sea, the shared estuary that includes the Strait of Juan De Fuca, Puget Sound, and Georgia Basin. The agencies have also signed a new four-year “Action Plan” as the US and Canada renew their Joint Statement of Cooperation which commits both countries to work to achieve shared goals.

The Report released draws from publicly available monitoring, research, and other information for the time period of 2017 through 2020.

**The Report finds:**

**Freshwater Quality – Neutral:** Of the 20 rivers assessed since 2010, two showed decreasing water quality. In particular, the Fraser River score declined from “Good” to “Fair/Marginal.” Though another 10 of the rivers occasionally exceeded water quality guidelines, improving water quality scores were observed in three rivers (Cedar, Elwha, and Snohomish).

**Marine Water Quality – Declining:** Marine dissolved oxygen levels continued to display a declining trend in the waters of Puget Sound and the Strait of Georgia from 2010 to 2019. Increased nutrient loads are impacting water quality and habitats in many inlets and bays where forage fish and juvenile salmon spawn and rear, and where adult salmon gather before moving into watersheds to spawn.

**Stream Flow – Declining:** Since 1975, eight of the 17 rivers monitored and studied by programs in both countries showed significant decreasing summer flow trends. Another eight of the remaining nine rivers showed only minor increases or decreases in flow, with only one gaining flow likely due to increasing snowmelt from a warming climate.

**Shellfish Harvesting – Improving:** Despite increasing population across the region, between 2007 and 2019 over 6,400 acres of previously closed shellfish beds in Puget Sound have been upgraded or re-opened for harvesting due to improvements in water quality. However, in the Georgia Basin between 2007 and 2019, there was an increase in closed shellfish beds.

**Swimming Beaches – Neutral:** Between 2004 and 2018, nearly three-quarters of all swimming beaches consistently met water quality guidelines over each season.

**Air Quality (Fine Particulates) – Neutral:** Air quality has been generally improving over time due to new regulatory actions that control sources of air pollution. Increasing severity of summer wildfires with widespread and persistent smoke events threatens to offset the beneficial impacts of those air pollution control actions.

**Marine Species at Risk – Declining:** Between 2011 and 2015, 17 new marine species were designated as either at-risk or candidates for a threatened or endangered status assessment. During this same time, 14 marine species previously designated as at-risk or candidates for a status assessment were determined to be no longer at-risk. Despite these improvements, the total number of marine species at risk doubled from 2002 to 2015.

**Chinook Salmon – Declining:** Chinook salmon are the primary food source of the endangered Southern Resident Killer Whales. Salish Sea Chinook salmon populations are down 60 percent since the Pacific Salmon Commission began tracking salmon abundance in 1984. Over the last few years, there has been a modest increase in catch and a modest decrease in fish returning to spawn.

**Southern Resident Killer Whales – Declining:** Since 2006, the population has generally declined and has not shown signs of recovery, with only 74 individuals counted as of December 2020.

**Toxics in the Food Web – Neutral:** Concentrations of harmful legacy metals and persistent organic pollutants such as PCBs and PBDEs have been decreasing. However, their persistence in some habitats and species, such as English Sole and the Southern Resident Killer Whales, remains concerning. Plastics, especially microplastics, are an emerging threat due to their prevalence, persistence, and ability to transport and release other pollutants.

**For info:** Report at: [www.epa.gov/salish-sea](http://www.epa.gov/salish-sea)



## WATER BRIEFS

## IPCC SIXTH ASSESSMENT REPORT - THE PHYSICAL SCIENCE BASIS

The Working Group I contribution to the *Sixth Assessment Report, Climate Change 2021: The Physical Science Basis (Report)* was approved by 195 member governments of the Intergovernmental Panel on Climate Change (IPCC). The *Report* addresses the latest physical understanding of the climate system and climate change, bringing together advances in climate science, and combining multiple lines of evidence from paleoclimate, observations, process understanding, and global and regional climate simulations.

Scientists are observing changes in Earth's climate in every region and across the whole climate system, according to the latest IPCC *Report*, released August 9th. Many of the changes observed in the climate are unprecedented in thousands, if not hundreds of thousands of years. Some of the changes already set in motion — such as sea level rise — are irreversible over hundreds to thousands of years. However, strong and sustained reductions in emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases would limit climate change. While benefits for air quality would come quickly, it could take 20-30 years to see global temperatures stabilize.

**Faster Warming - "Reality Check"**

The *Report* provides new estimates of the chances of crossing the global warming level of 1.5°C in the next decades. It finds that unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach. The *Report* shows that emissions of greenhouse gases from human activities are responsible for approximately 1.1°C of warming since 1850-1900. Averaged over the next 20 years, global temperature is expected to reach or exceed 1.5°C of warming. This assessment is based on improved observational datasets to assess historical warming and progress in understanding climate system response to human-caused greenhouse gas emissions. "This report is a reality check," said IPCC Working Group I Co-Chair Valérie Masson-Delmotte. "We now have a much clearer picture of the past, present and future climate, which is essential for understanding where we are headed, what can be done, and how we can prepare."

**Every Region Facing Increasing Changes**

Many characteristics of climate change directly depend on the level of global warming, but what people experience is often very different to the global average. For example, warming over land is larger than the global average, and it is more than twice as high in the Arctic. The *Report* projects that in the coming decades climate changes will increase in all regions. For 1.5°C of global warming, there will be increasing heat waves, longer warm seasons, and shorter cold seasons. At 2°C of global warming, heat extremes would more often reach critical tolerance thresholds for agriculture and health.

It is not just about temperature. Climate change is bringing multiple different changes in different regions, including changes to wetness and dryness, to winds, snow and ice, coastal areas and oceans. For example:

- Climate change is intensifying the water cycle, with more intense rainfall and associated flooding, as well as more intense drought in many regions.
- Climate change is affecting rainfall patterns. In high latitudes, precipitation is likely to increase, while projected to decrease over large parts of the subtropics. Changes to monsoon precipitation are expected, varying by region.
- Coastal areas will see continued sea level rise throughout the 21st century, contributing to more frequent and severe coastal flooding in low-lying areas and coastal erosion. Extreme sea level events that previously occurred once in 100 years could happen every year by the end of this century.
- Further warming will amplify permafrost thawing, and the loss of seasonal snow cover, melting of glaciers and ice sheets, and loss of summer Arctic sea ice.
- Changes to the ocean, including warming, more frequent marine heat waves, ocean acidification, and reduced oxygen levels have been clearly linked to human influence. These changes affect ocean ecosystems and the people that rely on them, and will continue throughout at least the rest of this century.
- For cities, some aspects of climate change may be amplified, including heat (since urban areas are usually warmer than their surroundings), flooding from heavy precipitation events, and sea level rise in coastal cities.

For the first time, the *Report* provides a more detailed regional assessment of climate change, including a focus on useful information that can inform risk assessment, adaptation, and other decision-making, and a new framework that helps translate physical changes in the climate — heat, cold, rain, drought, snow, wind, coastal flooding and more — into what they mean for society and ecosystems. This regional information can be explored in detail in the newly developed Interactive Atlas ([interactive-atlas.ipcc.ch](https://interactive-atlas.ipcc.ch)) as well as regional fact sheets, the technical summary, and underlying report.

**Human Influence on the Past and Future Climate**

The new *Report* also reflects major advances in the science of attribution — understanding the role of climate change in intensifying specific weather and climate events such as extreme heat waves and heavy rainfall events.

The *Report* does show that human actions still have the potential to determine the future course of climate. The evidence is clear that carbon dioxide (CO<sub>2</sub>) is the main driver of climate change, even as other greenhouse gases and air pollutants also affect the climate.

"Stabilizing the climate will require strong, rapid, and sustained reductions in greenhouse gas emissions, and reaching net zero CO<sub>2</sub> emissions. Limiting other greenhouse gases and air pollutants, especially methane, could have benefits both for health and the climate," said Zhai.

**For info:** *Report* available at: [www.ipcc.ch/assessment-report/ar6/](https://www.ipcc.ch/assessment-report/ar6/)



## WATER BRIEFS

## WOTUS

US

EPA & ARMY CORPS NEXT STEPS  
AUGUST MEETINGS

The EPA and US Department of the Army have announced plans for upcoming community engagements to inform their efforts to revise the definition of “waters of the United States” (WOTUS). Upon review of the Navigable Waters Protection Rule, the agencies have determined that the current rule is significantly reducing clean water protections.

The agencies intend to revise the definition of WOTUS following a process that includes two rulemakings. A forthcoming foundational rule would restore the regulations defining WOTUS that were in place for decades until 2015, with updates to be consistent with relevant Supreme Court decisions. A separate, second rulemaking process would refine this regulatory foundation with a durable definition of WOTUS.

To help insure diverse perspectives, future engagement activities will be developed in coordination with the US Dept. of Agriculture. The agencies are also initiating regional and Tribal consultations. Dialogues with state and Tribal co-regulators will occur this fall.

Previous rulemaking efforts have highlighted the regional variability of water resources and the importance of close engagement with stakeholders to understand the specifics of how they experience regulation under varying definitions of WOTUS. The agencies plan to convene ten regionally focused and inclusive roundtables during the upcoming fall and winter. The roundtables will provide opportunities to discuss geographic similarities and differences, particular water resources that are characteristic of or unique to each region, and site-specific feedback about implementation.

**August Meetings:**

EPA and the Army are hosting five virtual public meetings on August 18, 2021 from 3-5pm eastern daylight time (EDT), August 23, 2021 from 1-3pm EDT, August 25, 2021 from 3-5pm EDT, August 26, 2021 from 6-8pm EDT, and August 31, 2021 from 3-5pm EDT. Agencies will provide an overview of their intended process, which includes two rulemakings, and participants will have the opportunity to provide their recommendations.

**For info:** EPA website: [www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities](http://www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities).

## DRINKING WATER REGS

US

## EPA: CONTAMINANTS FOR REGULATION

EPA has announced a Draft Contaminant Candidate List 5 (CCL 5), which provides the latest list of drinking water contaminants that are known or anticipated to occur in public water systems and are not currently subject to EPA drinking water regulations. As directed by the Safe Drinking Water Act, EPA's CCL 5 identifies priority contaminants to consider for potential regulation to ensure that public health is protected.

The Draft CCL 5 includes 66 individual chemicals, 12 microbes, and three chemical groups: per- and polyfluoroalkyl substances (PFAS); cyanotoxins; and disinfection byproducts (DBPs) — all identified as contaminants of concern for drinking water. PFAS are proposed as a group, with the exception of PFOA and PFOS because EPA is moving forward with national primary drinking water standards for these two contaminants.

CCL 5 was developed under an improved process that includes: new approaches to rapidly screen a significantly larger number of contaminants; prioritizing data most relevant to drinking water exposure and the potential for the greatest public health concern; and better consideration for sensitive populations and children. EPA continues to collect data and to encourage further research.

EPA plans to consult with the Science Advisory Board (SAB) on the Draft CCL 5 in the fall of 2021. The agency will consider public comments and SAB feedback in developing the Final CCL 5, which is expected to be published in July 2022. After a final CCL is published, EPA will undertake a separate regulatory determination process to determine whether or not to regulate contaminants from the CCL. **For info:** EPA website: [epa.gov/ccl/contaminant-candidate-list-5-ccl-5](http://epa.gov/ccl/contaminant-candidate-list-5-ccl-5).

## TSCA CHEMICALS

US

## EPA RISK EVALUATION CHANGES

EPA announced important policy changes surrounding risk evaluations issued under the Toxic Substances Control Act (TSCA) by the previous administration and the path forward for the first 10 chemicals to undergo risk evaluation. After agency review to ensure these risk evaluations follow science and the law, EPA announced actions to ensure these chemicals are

used safely and all communities are protected. This review was done in accordance with the Biden-Harris Administration's Executive Orders and other directives, including those on environmental justice, scientific integrity, and regulatory review.

Under the previous administration, the first ten risk evaluations did not assess air, water or disposal exposures to the general population because these exposure pathways were already regulated, or could be regulated, under other EPA-administered statutes such as the Clean Air Act, Safe Drinking Water Act, or Clean Water Act. The approach to exclude certain exposure pathways also resulted in a failure to consistently and comprehensively address potential exposures to potentially exposed or susceptible subpopulations, including fenceline communities (i.e., communities near industrial facilities).

In the original risk evaluation for 1,4-dioxane EPA did not evaluate certain exposure pathways or populations that could be considered potentially exposed or susceptible subpopulations. EPA intends to re-open and update the 1,4-dioxane risk evaluation to consider whether to include additional exposure pathways, like drinking water and ambient air, and conditions of use where 1,4-dioxane is generated as a byproduct that were excluded from the supplemental and final risk evaluations. EPA will take public comment on any potential revisions to the 1,4-dioxane risk evaluation before finalizing them.

For six of the first ten chemicals, EPA plans to further examine whether the policy decision to exclude certain exposure pathways from the risk evaluations will lead to a failure to identify and protect fenceline communities. These six chemicals are: methylene chloride; trichloroethylene; carbon tetrachloride; perchloroethylene; NMP; and 1-bromopropane.

To determine if these six chemicals do present unreasonable risks to these communities, EPA is developing a screening-level approach to conduct ambient air and surface water fenceline assessments. This approach will use existing data and information to determine if there is the potential for unreasonable risk to fenceline communities associated with air and water exposures.

If the agency finds through the application of the screening-level approach that there may be unreasonable



## WATER BRIEFS

risk to these communities that cannot be addressed without supplementing the risk evaluation or through the risk management approaches the agency is already considering, EPA will conduct a more comprehensive exposure assessment of fence-line communities and supplement the risk evaluation for that chemical with the new information.

Later this calendar year, EPA plans to make these screening approaches and methods, and their application to one or more chemicals, available for public comment and have them peer reviewed by the Scientific Advisory Committee on Chemicals.

EPA has reviewed the risk evaluations issued for HBCD, PV29, and asbestos (part 1: chrysotile asbestos). EPA currently believes the risk evaluations are likely sufficient to inform the risk management approaches being considered and these approaches will be protective. Moving forward, EPA intends to reissue the risk determinations that amend the approach to PPE and include a whole chemical risk determination for these three chemicals. The agency is also working expeditiously on risk management, and believes the proposed rules for these three chemicals will likely be the first of the ten to be ready for release.

#### Whole Chemical Approach

Under the previous administration, EPA made separate unreasonable risk determinations for every condition of use of a chemical. For the first ten chemicals under TSCA and for any similar chemical that presents significant risks across many uses, EPA will continue to assess and analyze each condition of use, but then the agency plans to make the determination of unreasonable risk just once for the whole chemical when it is clear the majority of the conditions of use warrant one determination. EPA intends to withdraw the previously issued orders for those conditions of use for which no unreasonable risk was found for all the first ten risk evaluations. The agency then intends to issue revised unreasonable risk determinations for these chemicals as a “whole substance” and seek public comment on this approach.

**For info:** EPA website: [www.epa.gov/assessing-and-managing-chemicals-under-tsc/chemicals-undergoing-risk-evaluation-under-tsc](http://www.epa.gov/assessing-and-managing-chemicals-under-tsc/chemicals-undergoing-risk-evaluation-under-tsc).

## TOXICS REPORTING

### PRELIMINARY 2020 DATA

#### FIRST EVER PFAS REPORTING

On August 2<sup>nd</sup> EPA published preliminary Toxics Release Inventory (TRI) data about chemical releases, chemical waste management, and pollution prevention activities that took place during 2020 at nearly 21,000 federal and industrial facilities across the country. The preliminary data released today includes the first-ever reporting on per- and polyfluoroalkyl substances (PFAS) added to the TRI by the 2020 National Defense Authorization Act (NDAA).

The 2020 preliminary data are for substances included on the TRI list of chemicals. These data were reported by facilities in certain industry sectors, including federal facilities, that manufactured, processed, or otherwise used the TRI-listed chemicals above certain quantities during 2020. The data include quantities of such chemicals that were released into the environment or otherwise managed as waste. The data also include the pollution prevention activities initiated by individual facilities during 2020.

This latest dataset is raw data and does not contain any summary or trend analysis. While the preliminary data have not yet been through the complete TRI data quality process, the software facilities used to submit these data include many automated quality checks that help prevent facilities from making common mistakes. EPA is now conducting additional quality checks on the preliminary data. The 2020 preliminary data will be updated periodically to reflect revisions to previously submitted data and late submissions of TRI reporting forms.

The public can use the preliminary data to identify facilities that report to TRI (for example, to locate facilities in a given ZIP code) and learn which chemicals that facilities manage and in what quantities.

EPA plans to publish the updated TRI dataset this fall, which will be used to develop the 2020 TRI National Analysis. EPA expects to publish the 2020 TRI National Analysis in early 2022.

#### PFAS 2020 Preliminary Data

The data related to the PFAS include a total of 89 TRI reporting forms for 44 discrete PFAS chemicals filed by 38 individual facilities. The preliminary data indicate facilities managed over

700,000 pounds of production-related waste of PFAS during 2020.

EPA will examine: the types of facilities that reported and that did not report; the specific PFAS that were reported and not reported; the information reported; by whom; and the communities in which PFAS are being released or otherwise managed as waste. EPA will seek to learn to what extent the current TRI reporting requirements regarding PFAS were followed and are adequate in providing the public with important information on the waste management practices of PFAS.

In analyzing the PFAS reporting, EPA will also include a focused and more rapid effort to provide insights regarding the seemingly limited scope of the reporting, including the types and number of facilities reporting and PFAS reported. Depending upon its findings, EPA will take action as appropriate. This could include: compliance assistance; enforcement; or proposing modifications to the TRI reporting requirements for PFAS.

EPA will include a section in the 2020 TRI National Analysis (to be published in early 2022) that will include discussion on the quantities of the PFAS that were released to the environment, recycled, burned for energy recovery or treated; source reduction activities implemented on PFAS; the facilities and sectors that disclosed this information; and the communities with these activities.

EPA will continue to add PFAS to the TRI per the requirements of the NDAA. For TRI Reporting Year 2021 (reporting forms due by July 1, 2022), the NDAA automatically added three PFAS to the TRI list because they are now subject to a significant new use rule under the Toxic Substances Control Act.

**For info:** EPA website: [www.epa.gov/toxics-release-inventory-tri-program/2020-tri-preliminary-dataset](http://www.epa.gov/toxics-release-inventory-tri-program/2020-tri-preliminary-dataset)

## CLEAN WATER ACT ORDER

### “MAUI” NPDES PERMIT

On July 15, US District Court Judge Susan Oki Mollway ordered Maui County to obtain an NPDES permit under the Clean Water Act (CWA) for its injection wells at the Lahaina Wastewater Reclamation Facility in West Maui — which are polluting local reefs with treated sewage — consistent with the US Supreme Court’s April 2020 ruling. *See* Robb, *TWR* #189 and *TWR* #196.

## WATER BRIEFS

The ruling holds national importance as the first instance in which a court has applied the Supreme Court's test for when pollutant discharges that reach surface waters via groundwater require a Clean Water Act (CWA) permit, which the Supreme Court announced last year in an earlier phase of this case. Future legal battles over water contamination from pollution sources such as leaking pipelines, feedlot manure lagoons, and coal ash ponds could be impacted by yesterday's victory for clean water advocates in Hawai'i Federal Court, according to Earthjustice (which represented the plaintiffs (clean water advocates) in the nine-year legal battle.

If Maui County does not appeal, settlement terms negotiated in 2015 will go into effect, which mandate that Maui County invest at least \$2.5 million in infrastructure to reuse treated wastewater from the Lahaina facility for irrigation in arid West Maui. Maui County will also be required to obtain and comply with a CWA permit for the Lahaina facility, which will ensure that any continued use of the injection wells will not harm water quality or reefs.

**For info:** Liz Trotter, 305/ 332-5395 or [ltrotter@earthjustice.org](mailto:ltrotter@earthjustice.org)

## EMERGENCY CURTAILING CA ACUTE WATER SHORTAGES

With climate change-induced drought reducing water levels in the Sacramento-San Joaquin Delta (Delta) to alarming lows, the California State Water Resources Control Board (SWRCB) approved an emergency curtailment regulation on August 3rd to preserve stored water to protect drinking water supplies, prevent salinity intrusion, and minimize impacts to fisheries and the environment. The emergency regulation must be approved by the Office of Administrative Law and filed with the Secretary of State before it becomes effective.

Of the 6,600 water right holders in the Delta watershed, approximately 5,700 could be ordered to curtail diversions as early as this month. The remainder, who hold older water rights or riparian rights, could be subject to curtailment if conditions worsen. Without this action, the drinking water supply for 25 million Californians and the irrigation supply for over three million acres of farmland could be at significant risk should drought continue into next year.

The emergency curtailment regulation was prompted to preserve critical water storage for future health and human safety and to mitigate the increasingly harmful environmental and economic impacts drought is causing in the Delta. The 1,153 square-mile watershed provides two-thirds of Californians with drinking water, supports 80% of the state's commercial salmon fisheries and is an important habitat for more than 750 animal and plant species, including waterfowl, birds of prey and threatened or endangered fish such as the Delta smelt, Chinook salmon and steelhead.

Without curtailments, and if water diversions continue at their current pace, the following impacts are expected:

- **Excessive salinity:** Releases from upstream reservoirs are needed to repel saltwater intrusion from the San Francisco Bay during dry months. If stored water supplies are insufficient for releases, high salinity renders water in the Delta unusable for humans and harms the environment.
- **Drinking water and farmland impacts:** Upstream reservoirs are drained below critical levels, endangering the drinking water supplies for 25 million Californians and the irrigation supplies for nearly 3 million acres of farmland should drought continue into a third year.
- **Harm to fish and wildlife:** Low water levels can result in habitat loss, an increase in invasive species, stress on endangered species and even extinction. Delta smelt nearly disappeared during the last drought in 2016. Warm water temperatures caused winter-run Chinook Salmon, another endangered species, to lose 95% to egg mortality in 2014-15.
- **Increase in harmful algal blooms:** Severe shortages contribute to harmful algal blooms in water that can be fatal to animals and young children. Consuming fish caught during a heavy bloom can also pose a health risk.

**For info:** Ailene Voisin, SWRCB, [Ailene.Voisin@waterboards.ca.gov](mailto:Ailene.Voisin@waterboards.ca.gov) or Drought Webpage at: [www.waterboards.ca.gov/drought/](http://www.waterboards.ca.gov/drought/)

## DAMS REMOVAL CA/OR KLAMATH: OWNERSHIP TRANSFER

On July 15, the five-member California Public Utilities Commission (CPUC) unanimously approved Pacific Power's request to transfer ownership

of four hydroelectric dams, known as the Lower Klamath Project, to the Klamath River Renewal Corporation (KRRC). The KRRC is a nonprofit organized to oversee demolition of the four dams. The Klamath River is California's second largest river and the \$450 million project will open hundreds of miles of habitat previously closed to salmon and steelhead trout for the last 100 years.

CPUC's decision is part of the implementation of the Klamath Hydroelectric Settlement Agreement between 48 parties including PacifiCorp, the states of Oregon and California, several Native American tribes, and many other groups and organizations. The settlement agreement provides a framework to decommission the four hydroelectric developments comprising the Lower Klamath Project and sets requirements related to their operation and removal. When completed, the dam removal project will address declines in fish populations, improve river health, and renew Tribal communities and cultures, according to the CPUC.

In 2016, KRRC was established as the Dam Removal Entity. PacifiCorp, the parent company of Pacific Power, negotiated a Property Transfer Agreement between itself and KRRC, to provide for the transfer of the Lower Klamath Project to KRRC upon the completion of conditions necessary to prepare for the transfer. Those conditions include, but are not limited to, Federal Energy Regulatory Commission approval of the license transfer, which it provided on June 17, 2021. The CPUC previously determined that the removal of the Lower Klamath Project was in the best interest of PacifiCorp customers and its July 15th approval reaffirmed its belief that it continues to be in the best interest of those customers.

**For info:** Approved Proposal available at: <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M392/K632/392632390.PDF>

## ADDRESSING DROUGHT WEST DROUGHT PORTAL

On July 29, the Bureau of Reclamation launched a new web portal that provides real-time drought-related information and details of drought actions taken in collaboration with stakeholders and partners. The "Addressing Drought Across the West" Portal is an interactive real-time



## WATER BRIEFS

platform that highlights Reclamation's efforts and investments to mitigate drought impacts, increase drought resiliency, reduce reliance on declining water sources, and increase the efficiency of water deliveries.

The Department of the Interior is helping lead the Drought Relief Interagency Working Group, which is marshaling existing resources and working in partnership with state, local, and Tribal governments to address the needs of communities suffering from drought-related impacts. The Working Group is actively working to identify and disburse immediate financial and technical assistance for impacted irrigators and Tribes. It is also developing longer-term measures to respond to climate change, including building more resilient communities and protecting the natural environment.

**For info:** Robert Manning, Reclamation, 202/ 513-0554 or [rmanning@usbr.gov](mailto:rmanning@usbr.gov); web portal is available at [www.usbr.gov/addressing-drought/](http://www.usbr.gov/addressing-drought/).

## WATER METERING OK LOAN FROM OWRB

The Oklahoma City Water Utilities Trust (Trust) received approval for a \$55,000,000 loan Tuesday from the Oklahoma Water Resources Board (OWRB) to improve the Trust's water metering infrastructure. The Oklahoma Clean Water State Revolving Fund (CWSRF) will finance upgrades to the system. The Trust will utilize the proceeds to acquire and install approximately 240,000 Automatic Meter Reading (AMR) water meters. This project helps to meet Oklahoma's Water for 2060 goals by focusing on water conservation and efficiency and reducing unintended flows to the wastewater treatment plant.

Joe Freeman, chief of OWRB's Financial Assistance Division, acknowledged a key benefit for the Trust is that they can lock into low interest rates and draw the money as needed for planning flexibility. The CWSRF loan will be secured with a lien on the revenues of the Trust's water, sewer, and sanitation systems.

The CWSRF program is administered by the OWRB with partial funding from the US Environmental Protection Agency (EPA). The CWSRF program has provided approximately

\$1.9 billion in water quality loans to provide communities the resources necessary to maintain and improve the infrastructure that protects our valuable water resources statewide.

**For info:** Joe Freeman, OWRB, 405/ 200-8312, [Joe.Freeman@owrb.ok.gov](mailto:Joe.Freeman@owrb.ok.gov) or [www.owrb.ok.gov/financing/index.php](http://www.owrb.ok.gov/financing/index.php)

## RESTORING STREAMFLOW WA OFFSET GW WITHDRAWAL

Washington State's streamflow restoration law (RCW 90.94), enacted in 2018, directed 15 local planning groups to develop new watershed plans or update existing plans to help offset groundwater withdrawal impacts on rivers and streams. The statute required specific milestones to be met by June 30, 2021. Those milestones were met, resulting in plans being adopted in ten watersheds and plans moving to the next phase in the remaining five watersheds. Read about the Streamflow Restoration Program Status (published July 2021) at: <https://apps.ecology.wa.gov/publications/SummaryPages/2111016.html>.

The Washington Department of Ecology will now prepare final draft plans pursuant to RCW 90.94.030 in five watersheds: 1) WRIA 7 – Snohomish; 2) WRIA 8 – Cedar-Sammamish; 3) WRIA 13 – Deschutes; 4) WRIA 14 – Kennedy-Goldsborough; and 5) WRIA 15 – Kitsap.

**For info:** Ecology website at: <https://ecology.wa.gov/Water-Shorelines/Water-supply/Streamflow-restoration>

## DROUGHT PREPAREDNESS AZ ANNUAL REPORT RESOURCE

The *Arizona Drought Preparedness Annual Report* is published each year by the Arizona Department of Water Resources in collaboration with the Drought Monitoring Technical Committee, the Drought Interagency Coordinating Group, and the Local Drought Impact Groups. Released on July 16th, this virtual Farmers Almanac of drought data has been published annually since 2006. The Annual Report summarizes Arizona's short and long-term drought status for the most recent water-year and projects an outlook for the next water-year. It also provides: drought designation information; Drought Index Well

Level data; water supply information; the findings of Arizona's Drought Monitoring Technical Committee and the Drought Interagency Coordinating Group; and much more.

**For info:** *Annual Report 2020* available at: [https://new.azwater.gov/sites/default/files/media/2020\\_AZDroughtPrepAnnualReport.pdf](https://new.azwater.gov/sites/default/files/media/2020_AZDroughtPrepAnnualReport.pdf)

## WATER RIGHTS DATA WEST SEARCHABLE DATABASE

The Center for Law, Energy & the Environment (CLEE) at UC Berkeley released a report on July 15, *Piloting a Water Rights Information System for California*, concerning its effort to develop a searchable database for water rights data.

California's complex water management challenges are growing and intensifying. Systemic stressors like the more frequent and severe droughts and floods driven by climate change are only making it harder to respond. Accordingly, California needs to dramatically improve the ability of local, regional, and State entities to make agile and effective water management decisions. Doing so will require enhanced understanding of our water resources and how they align with the needs of agencies and stakeholders. Water rights data provide a crucial opportunity for advancing this understanding.

Through a multi-year process of research and engagement, CLEE developed analytical background on how water rights data plays into water management, combined with legal and institutional analysis of the role of data in California and other states. CLEE then designed and built the foundation of a water rights documents database, scanning, digitizing, and assigning metadata to over 130,000 pages of water rights documents from the Mono Basin. The resulting pilot provides a concrete proof of concept for a searchable digital database of legal records.

Ultimately, CLEE found that a modernized water rights database is feasible, affordable, and can increase clarity for better decision making. Their report — *Piloting a Water Rights Information System for California* — offers a vision and roadmap for making it a reality.

**For info:** Report available at: [www.law.berkeley.edu/research/clee/research/wheeler/water-data/wris/](http://www.law.berkeley.edu/research/clee/research/wheeler/water-data/wris/)



**August 16-17 ID**

**2021 Water Law & Resource Issues Seminar, Sun Valley.** The Sun Valley Resort. Presented by the Idaho Water Users Association. For info: [www.iwua.org/2021-water-law-seminar/](http://www.iwua.org/2021-water-law-seminar/)

**August 18 WEB**

**Revising the Definition of "Waters of the United States" (WOTUS), EPA & Army Virtual Public Meeting,** 3:00 - 5:00 pm Eastern Daylight Time. RE: Overview of Intended Process & Opportunity to Provide Recommendations. *See Brief, this TWR.* For info: [www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities](http://www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities)

**August 18-19 WEB**

**National Environmental Justice Advisory Council (NEJAC) Public Meeting,** 3:00 - 7:00 pm Each Day. Presented by EPA - Registration Required at: [https://usepa.zoomgov.com/webinar/register/WN\\_g1xjk0cbSBCw7hKZurpMCA](https://usepa.zoomgov.com/webinar/register/WN_g1xjk0cbSBCw7hKZurpMCA). For info: Fred Jenkins, EPA, 703/ 308-7049, [nejac@epa.gov](mailto:nejac@epa.gov) or <https://www.epa.gov/environmentaljustice/national-environmental-justice-advisory-council>

**August 19-20 WEB**

**Project Management for Water & Wastewater Utilities Course,** Presented by EUCI. For info: EUCI, 303/ 770-8800 or [www.euci.com/](http://www.euci.com/)

**August 23 WEB**

**Revising the Definition of "Waters of the United States" (WOTUS), EPA & Army Virtual Public Meeting,** 1:00 - 3:00 pm Eastern Daylight Time. RE: Overview of Intended Process & Opportunity to Provide Recommendations. *See Brief, this TWR.* For info: [www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities](http://www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities)

**August 24-25 WEB**

**2021 Symposium on the Settlement of Indian Reserved Water Rights Claims,** Virtual Symposium; Advance Registration Required - Questions, Contact Julie Groat at [jgroat@wswc.utah.gov](mailto:jgroat@wswc.utah.gov). Presented by the Western States Water Council & the Native American Rights Fund. For info: <https://westernstateswater.org/events/2021-symposium-on-the-settlement-of-indian-reserved-water-rights-claims/>

**August 25 WA/WEB**

**Contaminated Properties in the Northwest: Navigating the Redevelopment Process - Live Webcast & In-Person, Seattle.** Washington Athletic Club, 1225 6th Avenue. For info: The Seminar Group, 800/ 574-4852, [info@theseminargroup.net](mailto:info@theseminargroup.net) or [www.theseminargroup.net](http://www.theseminargroup.net)

**August 25 WEB**

**Revising the Definition of "Waters of the United States" (WOTUS), EPA & Army Virtual Public Meeting,** 3:00 - 5:00 pm Eastern Daylight Time. RE: Overview of Intended Process & Opportunity to Provide Recommendations. *See Brief, this TWR.* For info: [www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities](http://www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities)

**August 25-26 ND**

**Bakken Oil & Gas: Shale Water Management 2021 - Cost-Effective Water Strategies for North Dakota, Bismarck.** TBA. For info: [www.bakken.shale-water-management.com/?join=VR](http://www.bakken.shale-water-management.com/?join=VR)

**August 25-26 FL**

**The Water Expo, Miami.** Miami Airport Convention Center. Serving the US & Latin America. For info: [www.thewaterexpo.com/](http://www.thewaterexpo.com/)

**August 26 WEB**

**Revising the Definition of "Waters of the United States" (WOTUS), EPA & Army Virtual Public Meeting,** 6:00 - 8:00 pm Eastern Daylight Time. RE: Overview of Intended Process & Opportunity to Provide Recommendations. *See Brief, this TWR.* For info: [www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities](http://www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities)

**August 26-27 WEB**

**Electric Power in the Southwest Conference Online,** Interactive Broadcast Live. For info: Law Seminars International, 206/ 567-4490, [registrar@lawseminars.com](mailto:registrar@lawseminars.com) or [www.lawseminars.com](http://www.lawseminars.com)

**August 26-27 AZ/WEB**

**Arizona Water Law Conference: Water Shortages, Replacement Supplies & Emerging Policies, Scottsdale.** DoubleTree Paradise Valley. For info: CLE International, 800/ 873-7130 or [www.cle.com](http://www.cle.com)

**August 26-27 WA/WEB**

**Fourth Annual Water Law in Central Washington Conference: Live Webcast & In-Person, Ellensburg.** Red Lion Hotel and Conference Center. For info: The Seminar Group, 800/ 574-4852, [info@theseminargroup.net](mailto:info@theseminargroup.net) or [www.theseminargroup.net](http://www.theseminargroup.net)

**August 29-Sept. 1 MO**

**American Public Works Association Public Works Expo, St. Louis.** Americas Center. For info: <https://pwx.apwa.net>

**August 31 WEB**

**Revising the Definition of "Waters of the United States" (WOTUS), EPA & Army Virtual Public Meeting,** 3:00 - 5:00 pm Eastern Daylight Time. RE: Overview of Intended Process & Opportunity to Provide Recommendations. *See Brief, this TWR.* For info: [www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities](http://www.epa.gov/wotus/public-outreach-and-stakeholder-engagement-activities)

**August 31-Sept. 2 TX**

**10th Annual Texas Groundwater Summit, San Antonio.** Hyatt Regency Hill Country Resort. Texas Alliance of Groundwater Districts Event. For info: <https://texasgroundwater.org/news-events/events/texas-groundwater-summit/>

**September 8 WEB**

**Portland Harbor Collaborative Meeting Online,** Problems Joining Online - Contact Lucila Gambino at 786-246-0637. 5:00 - 7:00 pm Pacific Time; Optional Breakout Rooms from 7:00 - 8:00 pm. For info: <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Stayup&id=1002155#Oppor>

**September 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); CELP Workshop from 4:00 - 5:00 pm; Celebrate Waters from 5:30 - 7:30 pm Pacific Time. For info: Kayla Magers, [development@celp.org](mailto:development@celp.org) or [www.celp.org](http://www.celp.org)

**September 13-15 TX**

**2021 Public-Private Partnership Conference & Expo, Dallas.** Sheraton Hotel. Presented by the P3 Conference. For info: [https://thep3conference.com/?oly\\_enc\\_id=4091F5399367C4Y](https://thep3conference.com/?oly_enc_id=4091F5399367C4Y)

**September 14 TX**

**Texas Rainmaker Award Dinner, Austin.** Bullock Texas State History Museum. Presented by the Texas Water Foundation. For info: Sarah, TWF, [sarah@texaswater.org](mailto:sarah@texaswater.org) or [www.texaswater.org](http://www.texaswater.org)

**September 14 WY/WEB**

**Wyoming Water Forum: Factors Influencing Agricultural Production & Natural Hydrologic Regime in the West, Cheyenne.** In-Person & Virtual: Wyoming Water Development Commission, 6920 Yellowtail Road or Google Meet at: [meet.google.com/csp-tsgc-yxa](https://meet.google.com/csp-tsgc-yxa); 10 am - 12 pm Mountain Time. Presented by State Engineer's Office of Wyoming: Speaker David Ketchum. For info: Mel Fegler, 307/ 777-7803 or [mel.fegler@wyo.gov](mailto:mel.fegler@wyo.gov)

**September 14-16 SD**

**Western States Water Council Fall 2021 (197th) Meetings, Deadwood.** Holiday Inn Express & Suites. For info: <https://westernstateswater.org/events/wswc-fall-2021-197th-meetings/>

**September 16 WEB**

**Pollution Prevention Waste Management Virtual Workshop,** Presented by Texas Commission on Environmental Quality, US EPA & the University of Texas Arlington. For info: TCEQ, 512/ 239-0010, [P2@tceq.texas.gov](mailto:P2@tceq.texas.gov) or [www.P2workshop.com](http://www.P2workshop.com)

**September 16-17 WEB**

**Tribal Consultations Conference,** Interactive Broadcast Live. For info: Law Seminars International, 206/ 567-4490, [registrar@lawseminars.com](mailto:registrar@lawseminars.com) or [www.lawseminars.com](http://www.lawseminars.com)

**September 21 CO**

**RiverBank 2021 Anniversary Bash, Denver.** Denver Botanic Gardens. Fundraising Event for Colorado Water Trust. For info: [www.coloradowatertrust.org](http://www.coloradowatertrust.org)

**September 24 PA/WEB**

**Wild & Scenic Film Festival - 13th Annual, West Chester.** Hybrid Format; Brandywine Red Clay Alliance's Myrick Conservation Center Amphitheatre. Benefit for Stroud Water Research Center, The Land Conservancy for Southern Chester County & Brandywine Red Clay Alliance. For info: <https://stroudcenter.org/event/film-festival/>

**September 27-29 TX**

**Water for Texas 2021 Conference: Clear Vision for the Future, Austin.** TBA: Hoping to Gather in Person. Hosted by the Texas Water Development Board. For info: <https://waterfortexas.twdb.texas.gov/2021/>

**September 28-29 MT/WEB**

**21st Annual Montana Water Law Conference - Live Webcast & In-Person, Helena.** Great Northern Hotel. For info: The Seminar Group, 800/ 574-4852, [info@theseminargroup.net](mailto:info@theseminargroup.net) or [www.theseminargroup.net](http://www.theseminargroup.net)



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## CALENDAR

(continued from previous page)

### **September 30-Oct. 1 MT/WEB**

**6th Annual Buying and Selling Ranches in Montana Seminar, Helena.** Delta Hotels Helena Colonial - Live Webcast & In-Person. For info: The Seminar Group, 800/ 574-4852, [info@theseminargroup.net](mailto:info@theseminargroup.net) or [www.theseminargroup.net](http://www.theseminargroup.net)

### **October 5-7 CO**

**2021 Sustaining Colorado Watersheds Conference: Together Like Never Before, Avon.** Westin Riverfront Resort & WEB. Hybrid Format Event. For info: <https://www.watereducationcolorado.org/>

### **October 6-7 WEB**

**2021 AWRA-WA State Conference (Virtual Event), Transboundary Water Resources Management & Water Marketing Trends,** Presented by the American Water Resources Association - Washington Section. For info: [www.waawra.org/event-4406410](http://www.waawra.org/event-4406410)

### **October 6-8 UT**

**2021 Annual Conference American Water Works Association Intermountain Section, Midway.** Zermatt Resort. For info: [www.ims-awwa.org/page/Conferences](http://www.ims-awwa.org/page/Conferences)

### **October 6-7 NV**

**13th Annual WaterSMART Innovations Conference and Exposition, Las Vegas.** South Point Hotel & Conference Center. Showcasing New Water-Efficiency Technology, Interdisciplinary Relationships; and Innovative Water Efficiency. For info: <https://www.watersmartinnovations.com>

### **October 12-14 PA**

**Interstate Council on Water Policy's 62nd Annual Meeting, Philadelphia.** Wyndham Historic District Hotel. In-Person Fall Annual Meeting: Field Trip on Tuesday; Informative Panels on Wednesday & Annual ICWP Membership Meeting and 1/2 day of panels on Thursday; Remote Option Available. For info: Sue Lowry, ICWP, 307/ 630-5804 or [www.icwp.org](http://www.icwp.org)

### **October 14-15 WEB**

**Environmental Justice in Oregon Conference,** Interactive Broadcast Live. For info: Law Seminars International, 206/ 567-4490, [registrar@lawseminars.com](mailto:registrar@lawseminars.com) or [www.lawseminars.com](http://www.lawseminars.com)

### **October 19 DC/WEB**

**2021 Environmental Achievement Award Ceremony, Washington.** Omni Shoreham Hotel. In-Person & Live Webcast. For info: [www.eli.org/award-dinner](http://www.eli.org/award-dinner)

### 2021 AWRA Washington Annual State Conference

October 6-7, 2021 (Virtual Webinar)

## Transboundary Water Management And Water Market Trends



**American  
Water  
Resources  
Association**  
Washington Section



Libby Dam and Lake Koocanusa   Hite Marina, Lake Powell   Steelhead (Columbia River)

Lake Mead 2021  
Photos by Tom Ring and Jason McCormick

Details and Registration at: [www.waawra.org](http://www.waawra.org)