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Come Hell or High-Water: Challenges for Adapting Pacific Northwest Water Law

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ARTICLE

Come Hell or High-Water: Challenges for Adapting Pacific Northwest Water Law

ROBERT T. CACCESE* AND LARA B. FOWLER†

The Pacific Northwest region of the United States has been recognized as a leader in crafting water laws that work to balance human needs and ecological considerations. However, this region is experiencing changing dynamics that test the strength of existing water policies and laws. Such dynamics include increasing populations, new and exempt uses, quantification of tribal treaty rights, species protection, renegotiation of the Columbia River Treaty, and the impacts of a changing climate. Together, these dynamics are stressing the legal framework, which remains vital to ensuring sustainable water supplies now and into the future. The history behind water resources management in Oregon, Washington, Idaho, and Montana provides the foundation for the laws in place today. Although all four states share regulatory features, nuances specific to each state have tremendously affected their governance structures and ability to adapt to changing dynamics. Although a challenge to meet these changing dynamics, collaborative efforts offer creative opportunities for meeting current and future needs.

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I. INTRODUCTION

Although the Pacific Northwest has a reputation of having plentiful water, this obscures the challenges of water governance in this region. The Pacific Northwest includes the more arid states of Montana and Idaho, along with the wet and dry regions of Oregon and Washington. Despite the appearance of water abundance, even the wetter parts of these states are seeing water stress. For example, in 2016, the Washington Supreme Court ruled groundwater wells exempt from permit requirements in Whatcom County, eliminating drilling opportunities because of water supply concerns, even though the county is in the wetter, western region of Washington.¹ Dynamics that greatly affect water management and allocation in these states are shifting quickly, including the need for instream flow protection, meeting tribal rights, increasing populations and new uses, and a changing climate. Despite these challenges—or perhaps because of them—these states need to adapt their water law and governance to address future needs. Cooperative and integrated approaches to managing water are providing a way forward as well.

Climatically, these states are already seeing a shift, including increasing temperatures, less snowpack, earlier runoff, less summer time stream flows, wider swings in precipitation, and both an increased magnitude and occurrence of droughts, fires, and floods.² Such events not only impact water supplies, but food production as well; for example, a major drought in 2016 forced Montana ranchers to choose whether to use water for crops or cattle.³

¹ *Whatcom Cty. v. Hirst*, 381 P.3d 1, 9–10 (Wash. 2016).

² Philip Mote et al., *Northwest*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES, 487, 487–513 (2014).

³ See Tom Lutey, *Montana Drought Drives Cattle to Market Early*, BILLINGS GAZETTE (Oct. 14, 2017), https://billingsgazette.com/news/state-and-regional/govt-and-politics/montana-drought-drives-cattle-to-market-early/article_98acf43d-933b-5f87-af11-345bb4409472.html [<https://perma.cc/X7X9-Q2GK>] (discussing the impacts of drought on cattle sales).

This Article argues that overall dynamics facing the four Pacific Northwestern states—Oregon, Washington, Idaho, and Montana—present both challenges and significant opportunities for rethinking water management in a more integrated fashion. Section III will briefly outline regional dynamics common to all four states. Section IV explores each state’s water law and policy and addresses how each state is presently dealing with the challenges detailed above. Because each state has its own permutation of the Prior Appropriation Doctrine, this Section details how each state is also working to adapt to such changing dynamics in different ways. Section V revisits the larger changing dynamics and key themes, while Section VI examines opportunities for how the legal system can, or is, adapting to such changing dynamics.

II. REGIONAL DYNAMICS IN THE PACIFIC NORTHWEST

History shaped water law and policy in the Pacific Northwest and continues to have long-lasting repercussions. Four main themes are common throughout the Pacific Northwest: the impact of pre-water code claims, Native American tribal rights to water, an overarching treaty governing the Columbia River between the United States (“U.S.”) and Canada, and the impact of the Endangered Species Act (“ESA”). This Section provides a brief historical overview, and then examines each of these themes in more detail before turning to the water law of each state.

A. Why History Still Matters for Water Management Today

Pre-colonization, numerous Indian tribes lived in this region, with a culture reliant on natural resources, including salmon, for survival and spirituality.⁴ In the mid-1700s, European fur traders were the first outsiders to enter the region.⁵ After Thomas

⁴ See Annie L. Booth & Harvey L. Jacobs, *Ties that Bind: Native American Beliefs as a Foundation for Environmental Consciousness*, 12 ENVTL. ETHICS 27, 31 (1990).

⁵ *Indians and Europeans on the Northwest Coast: Historical Context*, CTR. FOR THE STUDY OF THE PAC. NORTHWEST, U. OF WASH., <https://www.washington.edu/uwired/outreach/cspn/Website/Classroom%20Materials/Curriculum%20Packets/Indians%20&%20Europeans/II.html> [https://perma.cc/MF57-M9F5].

Jefferson finalized the Louisiana Purchase, Meriwether Lewis and William Clark embarked on their historical expedition in 1804, ultimately reaching the Pacific Ocean.⁶ After their return, settlers from the eastern U.S. began to move to the region. The resulting interactions with tribes varied from peaceful to violent.⁷

This migration also set the stage for western water law. During the early stages of gold mining in California, the original Prior Appropriation Doctrine was born: whoever could first put water to use could take advantage of using it.⁸ Water use increased for out-of-stream uses such as mining and agriculture, especially in arid areas where water supplies were scarce;⁹ thus, the reasoning became water left in-stream was considered a waste.¹⁰ Further, Congress recognized states' ability to adopt their own water laws in the Mining Act of 1866.¹¹ As settlers moved in, the U.S. government forced many tribes to sign treaties and move onto smaller, defined reservations.¹² In the "Oregon Territory," Washington Territorial Governor, Isaac Stevens, and Oregon Superintendent of Indian Affairs, Joel Palmer, signed treaties with regional tribes in 1855.¹³

As this happened, non-Indian settlers began to claim the right to use water. Before states adopted statutes to regulate water use, miners withdrew water from streams to use for mining purposes.¹⁴ In most cases, these "claims to use" depended on actually using the

⁶ Jay H. Buckley, *Lewis and Clark Expedition*, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/event/Lewis-and-Clark-Expedition> [<https://perma.cc/XY98-B97A>].

⁷ See, e.g., CHARLES F. WILKINSON, *BLOOD STRUGGLE: THE RISE OF MODERN INDIAN NATIONS* (W.W. Norton & Company, Inc. 2005); see also Lara E. Burgel, *Native American Reserved Water Rights: The Legal and Historical Development of a Modern Dilemma* (1996) (unpublished thesis, Dartmouth College) (on file with the author and Dartmouth College Library system).

⁸ Lawrence J. MacDonnell, *Prior Appropriation: A Reassessment*, 18 U. DENV. WATER L. REV. 228, 243–248 (2015).

⁹ See Reed D. Benson, *Alive but Irrelevant: The Prior Appropriation Doctrine in Today's Western Water Law*, 83 U. COLO. L. REV. 675, 676–82 (2012).

¹⁰ DAVID M. GILLILAN & THOMAS C. BROWN, *INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE* 98 (1997).

¹¹ An Act Granting the Right of Way to Ditch and Canal Owners Over the Public Lands, and for Other Purposes, § 9, 14 Stat. 251 (1866).

¹² WILKINSON, *supra* note 7, at 35–42.

¹³ William G. Robbins, *Treaties and Reservations*, OR. HIST. PROJECT (2002), <https://oregonhistoryproject.org/narratives/this-land-oregon/resettlement-and-the-new-economy/treaties-and-reservations/> [<https://perma.cc/SGY8-KCE6>].

¹⁴ See MacDonnell, *supra* note 8, at 244, 283, 291.

water, but did not require prior approval to use the water.¹⁵ Eventually, all four Pacific Northwestern states adopted a more formal permit system based on the doctrine of prior appropriation for surface water: Oregon in 1909, Washington in 1917, Idaho in 1971, and Montana in 1973.¹⁶ Because claims to water pre-dated state codes, all four states have attempted to quantify and prioritize these claims through adjudication procedures.

B. Adjudications: “Paper” Water vs. “Wet” Water

General stream adjudications are an important tool to fully establish water rights in a given region. The purpose of a general stream adjudication is to identify who has the right to use the water, how much water can be used, and what the priority date is for all claims that pre-date each states’ adoption of a comprehensive water law.¹⁷ Courts oversee adjudications, with the goal of a final decree for a basin or watershed.¹⁸ Adjudications are burdensome, costly, usually take years (or decades) to complete, and require accurate water use information from users to be successful.¹⁹ General stream adjudications are also a way to address tribal treaty rights under the 1952 McCarran Amendment (addressed further below).²⁰

¹⁵ *Id.* at 243–48.

¹⁶ See OR. WATER RES. DEP’T, WATER RIGHTS IN OREGON: AN INTRODUCTION TO OREGON’S WATER LAW 5 (2018), <https://www.oregon.gov/owrd/WRDPublications1/aquabook.pdf> [<https://perma.cc/PD6F-VS7P>] [hereinafter WATER RIGHTS IN OREGON]; see Benno Bonkowski, WASHINGTON WATER RIGHTS ADJUDICATION 3 (2012), <http://www.csgwest.org/programs/documents/Bonkowski.pdf> [<https://perma.cc/E5DB-KJGN>]; JEFFREY C. FEREDAY ET AL., IDAHO WATER LAW HANDBOOK: THE ACQUISITION, USE, TRANSFER, ADMINISTRATION, AND MANAGEMENT OF WATER RIGHTS IN IDAHO 97 (2019) [hereinafter IDAHO WATER LAW HANDBOOK]; MONT. DEP’T OF NAT. RES. & CONSERVATION ET AL., WATER RIGHTS IN MONTANA 2–3 (2014), <https://leg.mt.gov/content/Publications/Environmental/2014-water-rights-handbook.pdf> [<https://perma.cc/AJV6-88KG>] [hereinafter WATER RIGHTS IN MONTANA].

¹⁷ Andrea K. Gerlak & John E. Thorson, *General Stream Adjudications Today: An Introduction*, 122 J. CONTEMP. WATER RES. & EDUC. 1, 1 (2008).

¹⁸ John E. Thorson et al., *Dividing Western Waters: A Century of Adjudicating Rivers and Streams*, 8 U. DENV. WATER L. REV. 355, 406, 409, 411, 414 (2005).

¹⁹ Rhett Larson & Kelly Kennedy, *Bankrupt Rivers*, 4 U.C. DAVIS L. REV. 1335, 1347 (2016).

²⁰ See Thorson et al., *supra* note 18, at 359–60 (noting that the federal government and Indian Tribes became the most common parties in stream adjudications).

Three states have seen a major change in dynamics—after decades of litigation—following completion of the formal adjudication processes in Idaho’s Snake River Basin and Washington’s Yakima Basin, and near completion of the process in Oregon’s Klamath Basin. The Snake River Basin Adjudication started in 1987 and was finalized in 2014.²¹ The Yakima Basin adjudication started in the 1970s and was finalized in 2019.²² The Klamath Basin adjudication started in 1975 and a court issued an initial decree in 2013, with the final decree still pending.²³ However, significant watersheds in the Pacific Northwest remain to be adjudicated, a long and costly undertaking, leading to uncertainty about who has the right to use what water in the unadjudicated areas.²⁴

C. Tribal Treaty Rights

As discussed above, pressure to settle the Oregon Territory led to treaties with Pacific Northwest tribes in 1855, providing the

²¹ *Snake River Basin Adjudication (SRBA)*, IDAHO DEP’T OF WATER RESOURCES, <https://idwr.idaho.gov/water-rights/adjudication/SRBA/> [<https://perma.cc/5HD5-ZRRB>] [hereinafter *SRBA*].

²² Joye Redfield-Wilder, *After 40 Years, Aquavella Adjudication Is Coming to a Close*, WASH. ST. DEP’T OF ECOLOGY BLOG (Apr. 1, 2019, 8:56 AM), <https://ecology.wa.gov/Blog/Posts/April-2019/After-40-years,-Acquavella-adjudication-is-coming> [<https://perma.cc/9FSF-VPN3>]. Note that the Yakima River Basin is spelled differently from the Yakama Indian Nation.

²³ *Klamath River Basin Adjudication*, OR. WATER RESOURCES DEP’T, <https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/KlamathRiverBasinAdj/Pages/default.aspx> [<https://perma.cc/5Z5C-VVVR>]; see generally Memorandum from Dwight French, Water Right Serv. Div. Adm’r & Doug Woodcock, Field Serv. Adm’r to Water Res. Comm’n (May 9, 2013) (on file with author) (describing the history and outcome of the Klamath Basin adjudication).

²⁴ *Adjudicated Areas Within Oregon*, OR. WATER RESOURCES DEP’T, https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/Documents/Adjudicated_Areas.pdf [<https://perma.cc/VWM4-LBB5>]; *Basin Location and Adjudication Status*, MONT. DEP’T OF NAT. RESOURCES & CONSERVATION (May 1, 2019), http://dnrc.mt.gov/divisions/water/adjudication/docs/Adjudication_Status_Map_MAY_1_18.jpg [<https://perma.cc/WW8V-UWR7>]; *Status of Washington State Water Right Adjudications*, WASH. DEP’T OF ECOLOGY, <https://for-tress.wa.gov/ecy/wrdocs/WaterRights/wrwebpdf/Completedadjudicationsmap2019.pdf> [<https://perma.cc/PGA9-R8KB>] (showing adjudicated basins); see also Garrick Baxter & Carter Fritschle, *Idaho Water Adjudications - Monthly Informational Meeting*, IDAHO DEP’T OF WATER RESOURCES 2 (Aug. 20, 2019), <https://idwr.idaho.gov/files/adjudication/monthly-progress-report.pdf> [<https://perma.cc/U8GJ-3VRE>].

basis for tribal rights to water and in turn, fish habitats. Such treaty rights to water are inchoate or undefined until they are defined,²⁵ either through a general stream adjudication or a negotiation.

Furthermore, court decisions recognized tribal treaty rights. In 1908, the Supreme Court decided *Winters v. United States*,²⁶ holding that tribes have an implied water right to satisfy the purposes of their reservation.²⁷ This case laid largely dormant until 1963 when the Supreme Court, in *Arizona v. California*, allocated water both to the states within the Colorado River Basin and to tribes, with a priority date for the tribes relating back to when reservations were established.²⁸

These decisions laid the groundwork for recognition of tribal rights to water in the Pacific Northwest. Treaties signed in the Oregon Territory in 1855 have common language stating that tribes have “the right of taking fish at all usual and accustomed places.”²⁹ In 1974, in a seminal case known as the Boldt decision, the Western District of Washington held that this language meant that tribes had the right to take half the annual fish harvest.³⁰ This decision was followed by subsequent case law where courts determined that such rights include sufficient water to provide habitats for fish and that the priority date can be “time immemorial.”³¹ Because the priority date predates the states’ claims or rights to

²⁵ The federal trust relationship with Indian tribes is complicated and a detailed discussion beyond the scope of this paper. See generally Rebecca Tsosie, *Tribal Sovereignty and Intergovernmental Cooperation*, in *TRIBAL WATER RIGHTS: ESSAYS IN CONTEMPORARY LAW, POLICY, AND ECONOMICS* (John E. Thorson et al. ed., 2006).

²⁶ 207 U.S. 564 (1908).

²⁷ *Id.* at 577 (finding water rights for a tribe are implied when a reservation is created via treaty, statute, or executive order); Robert T. Anderson, *Water Rights, Water Quality, and Regulatory Jurisdiction in Indian Country*, 34 *STAN. ENVTL. L.J.* 195, 206 (2017).

²⁸ 373 U.S. 546, 590–91, 600 (1963).

²⁹ John R. Schmidhauser, *Struggles for Cultural Survival: The Fishing Rights of the Treaty Tribes of the Pacific Northwest*, 52 *NOTRE DAME L. REV.* 30, 33 (1976) (quoting *Puyallup Tribe v. Dep’t of Game of Wash.*, 391 U.S. 392, 398 (1968)); Treaty with the Flatheads, etc. art. 3, July 16, 1855, 12 Stat. 975, cited in Whitney Angell Leonard, *Habitat and Harvest: The Modern Scope of Tribal Treaty Rights to Hunt and Fish*, 3 *AM. INDIAN L.J.* 285, 295 (2014). This treaty is often called the Treaty of Hellgate.

³⁰ *United States v. Washington*, 384 F. Supp. 312, 343 (W.D. Wash. 1974).

³¹ See, e.g., *United States v. Adair*, 723 F.2d 1394, 1414–15 (9th Cir. 1983).

water, and tribal rights cannot be lost for non-use, establishment of tribal water rights has affected state water management.

Although such cases have recognized tribal rights to water, including for instream flow, quantification of such reserved rights has been a challenge.³² As noted above, general stream adjudications can include tribal rights under the 1952 Congressional McCarran Amendment, which waives federal sovereign immunity for federal reserved water rights to be addressed in state courts.³³ This Amendment requires all claims in a basin to be adjudicated at the same time.³⁴ Alternatively, tribes can choose to negotiate their water rights with states and the federal government.³⁵ Examples of both adjudications and negotiations are included in Section IV below. Finally, renegotiation of the treaty between the U.S. and Canada over the Columbia River may offer a potential way to address tribal rights as discussed next.³⁶

D. International Treaty: U.S. and Canada Treaty for the Columbia River

Another overarching dynamic facing this region is the renegotiation of the Columbia River Treaty between the U.S. and Canada. Because much has been written on this topic, this Section provides a very brief sketch.³⁷ This treaty represents a major

³² See, e.g., BONNIE COLBY ET AL., NEGOTIATING TRIBAL WATER RIGHTS: FULFILLING PROMISES IN THE ARID WEST 10–12 (2005).

³³ 43 U.S.C. § 666(a) (2018). For a general discussion of this Amendment, see *The McCarran Amendment*, U.S. DEP'T OF JUSTICE (May 12, 2015), <https://www.justice.gov/enrd/mccarran-amendment> [<https://perma.cc/6EKW-2CD5>].

³⁴ COLBY ET AL., *supra* note 32, at 10–12.

³⁵ *Id.* at 121.

³⁶ See, e.g., David A. Bell, *Columbia River Treaty Renewal and Sovereign Tribal Authority Under the Stevens Treaty "Right-to-Fish" Clause*, 36 PUB. LAND & RESOURCES L. REV. 269, 271–72 (2015).

³⁷ See, e.g., Barbara Cosens, *The Columbia River Treaty: An Opportunity for Modernization of Basin Governance*, 27 COLO. NAT. RESOURCES ENERGY & ENVTL. L. REV. 27, 30–31 (2016); Barbara Cosens & Alexander Premier, *Assessing System Resilience and Ecosystem Services in Large River Basins: A Case Study of the Columbia River Basin*, 51 IDAHO L. REV. 91, 101 (2014); Scott McKenzie, *A River Runs Through It: The Future of the Columbia River Treaty, Water Rights, Development, and Climate Change*, 29 GA. ST. U. L. REV. 921, 922 (2013); Matthew McKinney et al., *Managing Transboundary Natural Resources: An Assessment of the Need to Revise and Update the Columbia River Treaty*, 16 HASTINGS WEST-NORTHWEST J. ENVTL. L. & POL'Y 307, 320–21 (2010).

agreement for the joint development and management of the Columbia River, specifically for power generation and flood control.³⁸ Ratified in 1964 for a minimum term of sixty years, the Treaty resulted in Canadian and American dam construction and payments to Canada for power generation.³⁹ In addition to the benefits provided by these dams such as flood protection, power generation, and navigation, negative impacts have also resulted, including impacts to fisheries, the ecosystem, and tribal rights.⁴⁰ Varying water supply conditions due to drought, precipitation changes, and snowpack create challenges as to whether the treaty terms can be satisfied for another sixty years without serious adaptation. After analyzing the treaty conditions, both nations released reviews in 2013 indicating their recommendation to modify the treaty after its term ends in 2024.⁴¹

Along with the key topics listed above, tribal participation in these negotiations has been an issue.⁴² In 1964, both countries ratified the treaty without including tribal or environmental

³⁸ Columbia River Basin: Cooperative Development of Water Resources Treaty, Can.-U.S., Sept. 16, 1964, Proclamation, 15 U.S.T. 1555 [hereinafter Columbia River Treaty]; *Columbia River Treaty*, U.S. DEP'T OF ST., <https://www.state.gov/columbia-river-treaty/> [<https://perma.cc/897X-954J>] (noting the primary entities responsible for treaty obligations are the U.S. Bonneville Power Administration, the U.S. Army Corps of Engineers, and British Columbia Hydro).

³⁹ U.S. ARMY CORPS OF ENG'R & BONNEVILLE POWER ADMIN., COLUMBIA RIVER TREATY: HISTORY AND 2014/2024 REVIEW 1, 4–6 (2009), <https://www.bpa.gov/news/pubs/GeneralPublications/crt-Columbia-River-Treaty-History-and-2014-2024-Review.pdf> [<https://perma.cc/J2K2-U82S>],

⁴⁰ COLUMBIA BASIN TR., AN OVERVIEW: COLUMBIA RIVER TREATY 1, 4, https://thebasin.ourtrust.org/wp-content/uploads/delightful-downloads/CRT_Overview.pdf [<https://perma.cc/9Y2V-NQLL>] (discussing that valley bottoms in Canada have been flooded and lost due to dam construction, agricultural and forestry practices have been reduced due to loss of fertile soil, Native Tribes have been forced to relocate, and ecosystems have been altered).

⁴¹ U.S. ENTITY REGIONAL RECOMMENDATIONS FOR THE FUTURE OF THE COLUMBIA RIVER TREATY AFTER 2024 1 (2013), <https://www.bpa.gov/Projects/Initiatives/crt/CRT-Regional-Recommendation-eFINAL.pdf> [<https://perma.cc/XJ4G-KXJ5>] [hereinafter U.S. ENTITY REGIONAL RECOMMENDATIONS]; CONG. RESEARCH SERV., R43287, COLUMBIA RIVER TREATY REVIEW 6–7 (2019).

⁴² Matthew J. McKinney et al., *A Sacred Responsibility: Governing the Use of Water and Related Resources in the International Columbia Basin Through the Prism of Tribes and First Nations*, 37 PUB. LAND & RESOURCES L. REV. 157, 189–90 (2016).

concerns.⁴³ For the renegotiation, U.S. tribes and Canada's First Nations have requested an official presence "at the table" to ensure their needs and interests, such as tribal fisheries and burial grounds, are considered in the treaty amendments; however, this request was not granted when negotiations started in 2018.⁴⁴ In 2019, Canada reversed its decision, allowing three First Nation tribes to participate as observers.⁴⁵ To date, the U.S. has not made a similar accommodation, though a series of open town halls were held during the spring and summer of 2019 to seek general public comment.⁴⁶ How this treaty addresses stream flow for hydroelectric energy production, manages floods, and protects declining fish species throughout the Columbia River Basin remains to be seen. As noted by various commentators, this renegotiation also represents a significant opportunity for adapting to climate change, meeting tribal obligations, and rethinking water governance in the Pacific Northwest region.⁴⁷

E. The Impact of the U.S. Endangered Species Act

The Pacific Northwest is renowned for its fisheries, particularly salmon, trout, and steelhead.⁴⁸ However, many species are now listed as threatened or endangered under the U.S. ESA. These fisheries were and are fundamental to Pacific Northwest tribes, supporting significant native populations and their

⁴³ U.S. ENTITY REGIONAL RECOMMENDATIONS, *supra* note 41, at 1; *see also* CONG. RESEARCH SERV., *supra* note 41, at 1.

⁴⁴ D.R. Michel, *Columbia River Treaty Negotiations Must Include Tribes, First Nations*, SEATTLE TIMES (May 13, 2018), <https://www.seattletimes.com/opinion/columbia-river-treaty-negotiations-must-include-tribes-first-nations/> [<https://perma.cc/2TGZ-7URJ>] (asserting that tribes and First Nations must be at the table for Columbia River Treaty negotiations).

⁴⁵ Graeme Lee Rowlands, *U.S. Must Follow Canada and Invite Tribes Into Columbia River Treaty Negotiation*, SEATTLE TIMES (May 20, 2019), <https://www.seattletimes.com/opinion/u-s-must-follow-canada-and-invite-tribes-into-columbia-river-treaty-negotiation/> [<https://perma.cc/AD8W-SYWS>].

⁴⁶ *See* U.S. DEP'T OF STATE, *supra* note 38 (providing announcements for upcoming town halls).

⁴⁷ *See e.g.*, Cosens, *supra* note 37, at 33–38; Cosens & Fremier, *supra* note 37, at 101; McKenzie, *supra* note 37, at 922, 953; McKinney et al., *supra* note 37, at 334–35.

⁴⁸ *Species Search Results*, U.S. FISH & WILDLIFE SERV., <https://ecos.fws.gov/ecp0/pub/SpeciesReport.do?groups=E&listingType=L&map-status=1> [<https://perma.cc/F5EW-W3D6>].

cultures.⁴⁹ Non-tribal commercial and recreational fishing also developed throughout the Pacific Northwest's rivers and off the coast over the last 150 years, often in competition with tribal fisheries.⁵⁰ At this point, a set of factors dubbed the "4 Hs" (habitat, hydropower, hatcheries, and harvest) is attributed to the steep declines of the famed salmon and trout populations.⁵¹ Such declines led to the listing of several Pacific Northwest fish species under the ESA in the late 1990s.⁵²

Once a species is listed as threatened or endangered under the ESA, federal agencies must designate and preserve critical habitat to ensure populations can recover.⁵³ In practice, this mandate is politically sensitive because the designated habitat is often privately owned.⁵⁴ For listed fish species, designating habitat means designating stream reaches that have usually been de-watered under state water allocation systems.⁵⁵ This means that current water rights holders may have their own water rights severely diminished or completely turned off for periods of time, as federal ESA mandates could preempt state water law.⁵⁶

⁴⁹ See generally *Tribal Salmon Culture*, COLUMBIA RIVER INTERTRIBAL FISH COMMISSION, <https://www.critfc.org/salmon-culture/tribal-salmon-culture/> [https://perma.cc/UVM7-Z9NZ].

⁵⁰ See generally *Commercial Fishing*, NORTHWEST POWER & CONSERVATION COUNCIL, <https://www.nwcouncil.org/reports/columbia-river-history/commercial-fishing> [https://perma.cc/A4ZT-RQFS].

⁵¹ See, e.g., P.J. Paquet et al., *Hatcheries, Conservation, and Sustainable Fisheries—Achieving Multiple Goals: Results of the Hatchery Scientific Review Group's Columbia River Basin Review*, 36 FISHERIES 547, 548–49, 560 (2011).

⁵² E.g., *Chinook Salmon*, U.S. FISH & WILDLIFE SERV., <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E06D> [https://perma.cc/X6JP-E3PB].

⁵³ 16 U.S.C. § 1533(a)(3)(A)(i) (2018); Robert T. Caccese, *It's Not Just the Effort that Counts: Conservation Endangerment for At-Risk Species*, 22 BUFF. ENVTL. L.J. 1, 23 (2015).

⁵⁴ See, e.g., Caccese, *supra* note 53, at 29.

⁵⁵ See also Gail L. Achterman & Julia Doermann, *Oregon Coastal Coho Restoration and the Endangered Species Act*, in *THE ENDANGERED SPECIES ACT AND FEDERALISM: EFFECTIVE CONSERVATION THROUGH GREATER STATE COMMITMENT* 221, 235 (Kaush Arha & Barton H. Thompson, Jr. eds., 2011) (explaining that a designation of critical habitat would not prohibit landowners from altering streams on their property).

⁵⁶ 16 U.S.C. § 1535(f); see generally Robin Kundis Craig, *Does the Endangered Species Act Preempt State Water Law?* 62 U. KAN. L. REV. 851 (2014); see also Kate Galbraith, *Threatened Smelt Touches Off Battles in California's Endless Water Wars*, N.Y. TIMES (Feb. 14, 2015), <https://www.nytimes.com/2015/02/15/us/threatened-smelt-touches-off-battles-in-californias-endless-water-wars.html>

In addition to local impacts, listing of fish species and designation of critical habitat under the ESA can have widespread regional impacts. There is a long history of litigation over salmon in the Pacific Northwest.⁵⁷ A federal judge in Portland, Oregon has overseen management of the federal hydropower system, including ordering a series of biological opinions to determine how to modify the system to protect listed species.⁵⁸ Plenty has been written about this series of lawsuits and further discussion is beyond the scope of this Article;⁵⁹ however, dynamics from both the Columbia River Treaty negotiations and the federal management of the Columbia River Hydropower System reach into state management of water as well.

III. STATE BY STATE DYNAMICS

In addition to the dynamics playing out at a federal and regional level, there are changes pressuring each Pacific Northwestern state's water management and governance systems. While each state has adopted some form of prior appropriation for water allocation, there are different nuances and interpretations that affect how prior appropriation is implemented. Such variations offer potential avenues for adapting to the changing dynamics. This Section briefly reviews the geography of each state, its water law, and current dynamics. Section V then compares the states and offers suggestions on potentially needed changes.

A. Oregon: Hydrologic Dynamics and Water Governance

After being designated a territory in 1846 and becoming a state in 1859, Oregon adopted its water code in 1909 for surface

[<https://perma.cc/82WV-NHDL>] (noting that California courts have left water in-stream for endangered smelt instead of delivering it to state water rights holders).

⁵⁷ See, e.g., Timothy Weaver, *Litigation and Negotiation: The History of Salmon in the Columbia River Basin*, 24 *ECOLOGY L.Q.* 677, 677 (1997).

⁵⁸ *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 886 F.3d 803, 813–14 (9th Cir. 2018); see, e.g., *Federal Columbia River Power System*, U.S. DEP'T OF INTERIOR, <https://www.usbr.gov/pn/fcrps/index.html> [<https://perma.cc/4LFU-76SB>].

⁵⁹ See generally Michael Blumm & Doug Deroy, *The Fight Over Columbia Basin Salmon Spills and the Future of the Lower Snake River Dams*, 9 *WASH. J. ENVTL. L. & POL'Y* 1 (2019) (referencing a series of articles written by Prof. Michael Blumm and others documenting this legal journey).

water and in 1955 for groundwater.⁶⁰ Oregon has a diverse geography, with annual precipitation of 120 inches near the coast and less than twenty inches in the eastern two-thirds of the state.⁶¹ Precipitation occurs primarily between October and March, when water use is lower.⁶²

Shifting climatic dynamics are putting more pressure on water supplies. According to the Third Oregon Climate Assessment Report, Oregon is projected to have less snowpack, warmer temperatures, an increase in precipitation extremes, and rising sea levels on the coast.⁶³ More precipitation is expected to fall as rain instead of snow, causing a shift in seasonal stream flow patterns, increasing drought risk west of the Cascades, and increasing flood risk for basins in mixed rain-snow zones, such as Eastern Oregon's Blue Mountains.⁶⁴ In a state reliant on snow pack to effectively store water for summer months, this has significant implications for water supply, especially with 80% of all irrigation occurring in eastern Oregon during the summer.⁶⁵ Water users divert about nine million acre-feet of water annually for out-of-stream uses, which can be threatened by drought.⁶⁶ These climatic changes will put significant pressure on a governance system built to handle some variability, but not as much variability as may occur.

As a matter of law, Oregon considers its water a publicly owned resource.⁶⁷ Oregon law treats surface and groundwater

⁶⁰ WATER RIGHTS IN OREGON, *supra* note 16, at 5, 33.

⁶¹ OR. WATER RES. DEP'T, OREGON'S 2017 INTEGRATED WATER RESOURCES STRATEGY 17 fig.1-1 (2017), https://www.oregon.gov/OWRD/wrdpublications1/2017_IWRS_Final.pdf [hereinafter OR IWR STRATEGY 2017].

⁶² OR IWR STRATEGY 2017, *supra* note 61, at 17.

⁶³ MEGHAN M. DALTON ET AL., OR. CLIMATE CHANGE RES. INST., THE THIRD OREGON CLIMATE ASSESSMENT REPORT i (2017), http://www.occri.net/media/1055/ocar3_final_all_01-30-2017_compressed.pdf [<https://perma.cc/M9GC-LF73>].

⁶⁴ *Id.* at 21–23.

⁶⁵ *Oregon Water Law*, RED LODGE CLEARINGHOUSE (Oct. 15, 2010), <http://rlch.org/content/oregon-water-law> [<https://perma.cc/ZD35-2ZBL>]; OR. WATER RES. DEP'T, OREGON'S INTEGRATED WATER RESOURCES STRATEGY EXECUTIVE SUMMARY 5 (2012), https://www.oregon.gov/owrd/wrdpublications1/IWRS_Executive_Summary_Final_2012.pdf [<https://perma.cc/6MNV-XLFR>] [hereinafter OR IWR STRATEGY 2012]; OR IWR STRATEGY 2017, *supra* note 61, at 73.

⁶⁶ OR IWR STRATEGY 2012, *supra* note 65, at 2.

⁶⁷ OR. REV. STAT. § 537.110 (2019).

systems separately, but these resources are managed conjunctively where hydrological connections exist.⁶⁸ Aside from specified exemptions, an individual must apply for and receive a permit from the Oregon Water Resources Department (“OWRD”), the agency tasked with water management, to withdraw surface or groundwater in Oregon.⁶⁹ OWRD’s Director is responsible for day-to-day management and general stream adjudications, while OWRD’s Water Resources Commission sets water policy.⁷⁰ Oregon has also been a leader for protecting instream flows, with water rights for environmental purposes dating to the 1980s.⁷¹ There are several active water markets that have helped restore stream flows for endangered species, notably in the Deschutes River Basin.⁷² As discussed below, adjudication of tribal rights has occurred in some areas and is on-going in others.

1. Oregon Water Law Basics

Oregon adopted its surface water code in 1909, followed by its groundwater code in 1955.⁷³ For both surface and groundwater, the Code allows water to be appropriated for beneficial use, provided existing rights are not impaired.⁷⁴ Accepted beneficial uses requiring a permit include, but are not limited to, domestic use, municipal use, irrigation, power development, industrial, mining, recreation, fish and wildlife uses, and pollution abatement.⁷⁵ Certain uses of water are exempt from a permit, including, but not limited to, use for fire control, collection of rainwater, and stock watering.⁷⁶ Water must be beneficially used without waste and used at least once every five years; if a portion of a right is not used once every

⁶⁸ OR. ADMIN. R. 690-009-0030-0050 (2019)

⁶⁹ OR. REV. STAT. § 537.130(1).

⁷⁰ WATER RIGHTS IN OREGON, *supra* note 16, at 3.

⁷¹ *Flow Restoration in Oregon*, OR. WATER RESOURCE DEP’T, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/FlowRestoration/Pages/default.aspx> [<https://perma.cc/5BFR-FLMU>]; *see also* Janet Neuman et al., *Sometimes A Great Notion: Oregon’s Instream Flow Experiments*, 36 ENVTL. L. 1125, 1149 (2006).

⁷² *Water Quantity*, FRESHWATER TR., <https://www.thefreshwatertrust.org/services/water-quantity/> [<https://perma.cc/GDJ2-F6GC>]; *see also* *About the Deschutes River Conservancy*, DESCHUTES RIVER CONSERVANCY, <https://www.deschutesriver.org/about-us/> [<https://perma.cc/2JKF-V53Q> /].

⁷³ *See* WATER RIGHTS IN OREGON, *supra* note 16, at 5, 30, 33.

⁷⁴ *Id.* at 6.

⁷⁵ OR. ADMIN. R. 690-300-0010 (2019).

⁷⁶ OR. REV. STAT. § 537.545 (2019).

five years, a user risks forfeiture and cancellation of that unused portion.⁷⁷ Water rights may also be amended. Alterations that require OWRD approval include conveying water to a new type of use, point of diversion, or place of use.⁷⁸ The right to use water is tied to particular land; if someone buys that land, the water is transferred with the sale unless explicitly severed.⁷⁹ In times of shortage or drought, domestic and livestock watering have priority over other uses with the same priority date.⁸⁰

Oregon uses the adjudication process to determine the validity of claims to water that pre-date the 1909 surface water code or the 1955 groundwater code.⁸¹ Through the adjudication process, the state provides a claim process, also known as a registration.⁸² The date of priority for claims is the filing date of a project or when water was first used.⁸³ Oregon has completed stream adjudications in major stream systems in the eastern and southern portions of the state, including the Rogue, Owyhee, Malheur, and Deschutes rivers.⁸⁴ In addition, the Klamath Basin adjudication begun in

⁷⁷ OR. REV. STAT. §§ 540.610(1), 540.631 (detailing forfeiture procedures); WATER RIGHTS IN OREGON, *supra* note 16, at 35.

⁷⁸ OR. REV. STAT. § 540.523(1); *see, e.g.*, OR. ADMIN. R. 690-380-8000 (allowing for alterations with respect to the Deschutes River Basin). For further discussion of OWRD's process for reviewing a change of rights, *see generally Oregon Water Law, supra* note 65.

⁷⁹ OR. WATER RES. DEP'T, WATER RIGHT TRANSFERS AND REAL PROPERTY TRANSACTIONS 1 (Feb. 12, 2016), https://www.oregon.gov/owrd/WRD-FormsPDF/Transfer_Property_Transactions.pdf [<https://perma.cc/CH9W-NKCZ>].

⁸⁰ *See* OR. ADMIN. R. 690-019-0030(1)(d).

⁸¹ OR. REV. STAT. §§ 539.005–.240 (surface water); OR. REV. STAT. §§ 537.585–.610, .665–.695 (groundwater).

⁸² WATER RIGHTS IN OREGON, *supra* note 16, at 25–26; *Adjudications and Registrations*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/Pages/default.aspx> [<https://perma.cc/86E8-BKYU>].

⁸³ OR. REV. STAT. § 537.485(4).

⁸⁴ *Adjudications and Registrations*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/Pages/default.aspx> [<https://perma.cc/9GU2-7L8R>]; OR. WATER RES. DEP'T, ADJUDICATED AREAS WITHIN OREGON (2003), https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/Documents/Adjudicated_Areas.pdf [<https://perma.cc/7LMM-FFS6>]; *see also Decrees*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/Decrees/Pages/default.aspx>

1975 and continues to this day.⁸⁵ Although an initial decree was filed in 2013, a state court is reviewing the final order issued by OWRD for disputes; the court will ultimately issue a final decree affirming or modifying the final order by OWRD.⁸⁶

The 1909 Oregon Water Code created a permit system to allocate water.⁸⁷ Under this system, any user wishing to withdraw surface water must obtain a permit from OWRD.⁸⁸ As part of this review, Oregon explicitly considers the “public interest” in permit decisions, including consulting with the Oregon Department of Fish and Wildlife to assess impacts to at-risk species.⁸⁹ An individual first applies to receive a permit to develop a water right.⁹⁰ If the permit conditions are met, the permit may be certified as a water right and a certificate is issued.⁹¹ However, this process may take years to complete.⁹² The priority date of a water right is the date of application once a right has been reviewed and a certificate issued.⁹³

Oregon enacted its Groundwater Act in 1955, requiring a permit from OWRD to acquire a new right or to enlarge existing groundwater withdrawals.⁹⁴ OWRD may only issue groundwater permits if the water is beneficially used without waste within the capacity of available sources.⁹⁵ Exceptions to the permit

[<https://perma.cc/9YUT-VZLW>] (describing decrees issued for completed stream adjudications).

⁸⁵ *Klamath River Basin Adjudication*, *supra* note 23.

⁸⁶ *Id.* Note that S.B. 206, 78th Gen. Assemb., Reg. Sess. (Or. 2015) allows determined water claims in the basin to be temporarily transferred or put to in-stream use for a period no longer than five years. *See also* Lyle Ahrens, *Klamath Basin Water Status Remains Unclear*, KOB15.COM (Jan. 3, 2018), <https://kobi5.com/news/regional-news/klamath-basin-water-status-remains-unclear-68676/> [<https://perma.cc/49E5-WGV7>].

⁸⁷ *Applying for a Water Use Permit*, OR. WATER RESOURCES DEP’T, <https://www.oregon.gov/OWRD/programs/WaterRights/Permits/Pages/Obtain.aspx> [<https://perma.cc/V9U8-U9GU>].

⁸⁸ WATER RIGHTS IN OREGON, *supra* note 16 at 5.

⁸⁹ *See* OR. ADMIN. R. 690-310-0110 to 0140 (2019) (detailing that the Department may consult and communicate with both state and federal agencies); *see also* WATER RIGHTS IN OREGON, *supra* note 16, at 18.

⁹⁰ WATER RIGHTS IN OREGON, *supra* note 16, at 15.

⁹¹ *Id.*

⁹² *Id.* at 17–20

⁹³ *Id.* at 19.

⁹⁴ *See* OR. ADMIN. R. 537.615(1); *see also* OR. REV. STAT. § 537.505 (2019)

⁹⁵ OR. REV. STAT. at § 537.525(3).

requirement exist for stock watering, domestic use up to 15,000 gallons per day, lawn watering up to a half acre, and commercial use up to 5,000 gallons per day.⁹⁶ Oregon manages both surface water and groundwater systems conjunctively to protect water resources, the public interest, and existing water rights when a hydrological connection is shown and a substantial interference exists between users of both sources.⁹⁷

If groundwater pumping exceeds natural recharge rates, OWRD can declare a “critical groundwater area” (“CGWA”) and restrict use.⁹⁸ OWRD may also declare a CGWA if interference develops between wells and senior surface rights users or water quality deteriorates.⁹⁹ Once a CGWA is declared, OWRD may refuse to issue any new permits for the area until water levels stabilize.¹⁰⁰ Similar to CGWAs, the Commission has established “groundwater classified areas” or “limited areas.”¹⁰¹ These areas allow for new exempt permit uses, but restrict new uses requiring a permit to withdraw groundwater.¹⁰² According to Oregon’s 2012 Integrated Water Resource Strategy, very little data exists regarding groundwater quantity or quality needed to sustain groundwater dependent ecosystems.¹⁰³ However, the 2017 updated strategy notes significant investments in this area.¹⁰⁴ Measuring water use has helped OWRD monitor the state’s reserves and aid in developing water resource strategies for the future.¹⁰⁵ However, more measurement is desirable. Groundwater development in the state has occurred in areas where surface water is not easily accessible or available.¹⁰⁶ Moreover, groundwater quality has become a significant issue in some areas due to nitrate contamination.¹⁰⁷ To help

⁹⁶ *Id.* § 537.545(a)–(g).

⁹⁷ *Oregon Water Law*, *supra* note 65 (outlining the requirements for a permittee to develop their rights and achieve a certified water right).

⁹⁸ OR. REV. STAT. § 537.730.

⁹⁹ *Id.* §§ 537.730(1)(a)–(c).

¹⁰⁰ *See id.* § 537.735(3)(a).

¹⁰¹ WATER RIGHTS IN OREGON, *supra* note 16, at 12.

¹⁰² *Id.*

¹⁰³ OR IWR STRATEGY 2012, *supra* note 65, at 3.

¹⁰⁴ OR IWR STRATEGY 2017, *supra* note 61, at 11–12.

¹⁰⁵ *See id.* at 23–25.

¹⁰⁶ *Id.* at 20.

¹⁰⁷ *S. Deschutes and N. Klamath Groundwater Protection Project*, OR. DEP’T OF ENVTL. QUALITY, <https://www.oregon.gov/deq/wq/programs/Pages/Deschutes-Klamath-Groundwater-Protection.aspx> [<https://perma.cc/NC7U-WUPS>].

protect water quality for groundwater supplies, Oregon enacted a groundwater quality monitoring program to assist in future management decisions.¹⁰⁸ Such integration of both water quantity and quality is a significant development.

2. Instream Flows and Water Markets

Along with allocating water for out-of-stream uses, Oregon has multiple methods for protecting and restoring instream flows. Because establishment of instream flow rights post-dates allocation of most streams, Oregon has developed laws that actively promote restoration of instream flows through leases, an innovative water conservation statute, and active water markets.

Oregon has provided instream flow protection since 1987.¹⁰⁹ Oregon allows the Oregon Departments of Fish and Wildlife, Environmental Quality, and Parks and Recreation to apply for instream rights for wildlife/fisheries habitat, water quality, or recreation.¹¹⁰ OWRD sets flow levels for certain stream segments, measured through gauges at key locations.¹¹¹ OWRD holds instream rights in trust to benefit the public; each right has an associated priority date and lasts in perpetuity.¹¹² In addition, minimum flows may be mandated by the ESA or through adjudication of tribal treaty rights.¹¹³ Determining acceptable flow levels is based on habitat studies for particular species.¹¹⁴

¹⁰⁸ See *Groundwater Protection in Oregon*, OR. DEP'T OF ENVTL. QUALITY, <https://www.oregon.gov/deq/wq/programs/Pages/GWP.aspx> [<https://perma.cc/8YUB-4HHV>].

¹⁰⁹ OR. REV. STAT. § 537.334(2) (2019); *Flow Restoration in Oregon*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/FlowRestoration/Pages/default.aspx> [<https://perma.cc/VN8A-FKWW>] [hereinafter *Flow Restoration in Oregon*]. For an overall discussion of Oregon's instream flow restoration work, see Neuman et al., *supra* note 71.

¹¹⁰ OR. REV. STAT. §§ 537.336.

¹¹¹ OR IWR STRATEGY 2017, *supra* note 61, at 25.

¹¹² Neuman et al., *supra* note 71, at 1149–50.

¹¹³ Reed Benson, *Giving Suckers (and Salmon) an Even Break: Klamath Basin Water and the Endangered Species Act*, 15 TUL. ENVTL. L.J. 197, 210, 212 (2002).

¹¹⁴ John E. Navarro et al., *Instream Flow Incremental Methodology (IFIM) for Modelling Fish Habitat*, 2 COMPUTATIONAL HYDRAULICS INT. J. OF WATER MGMT. MODELING 1, 1–2 (1994).

Oregon also has an active instream leasing program. Stemming from the 1987 Instream Water Rights Act, the program allows eligible water rights to be leased for instream use without risk of loss for non-use for up to five years.¹¹⁵ Court-decreed rights for surface water and water in reservoirs are eligible, provided no harm occurs to other existing rights.¹¹⁶ Applications are submitted through OWRD and users can split water use among seasons: some water may be conserved in one part of the year and used during irrigation season.¹¹⁷ According to the 2012 Integrated Water Resources Strategy, nineteen million acre-feet of surface water is protected through more than 1,400 instream leases; this was the same in the 2017 update.¹¹⁸

Finally, Oregon has an innovative statute that allows some conserved water to be used on expanded acreage. Depending on the funding source for the water conservation practice, up to 75% of the conserved water can be used on additional acreage; the other 25% must be returned to the stream.¹¹⁹ If public funding is used for the conservation practices, the amount of water returned instream must match the amount of public funding (up to 75%).¹²⁰ As technological advances improve in agriculture, any water saved or not used must be returned to streams by water users to promote

¹¹⁵ *Flow Restoration in Oregon*, *supra* note 109.

¹¹⁶ *Eligible Water Rights*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/IL/Pages/Eligible-Water-Rights.aspx> [<https://perma.cc/4ENR-U7WN>].

¹¹⁷ OR. REV. STAT. § 537.348(3) (2019); *see also Split Season Instream Leasing*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/IL/Pages/SplitSeasonIL.aspx> [<https://perma.cc/H87E-HYT2>].

¹¹⁸ OR IWR STRATEGY 2012, *supra* note 65, at 3; OR IWR STRATEGY 2017, *supra* note 61, at 53. Instream flow leases are temporary (1–5 years – with the term not to exceed five years) and can be revoked. OR. REV. STAT. §§ 537.348(2), (6); *see also Instream Lease*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/IL/Pages/default.aspx> [<https://perma.cc/WAG6-KAQJ>]. Instream flow rights are permanent water rights and cannot be revoked.

¹¹⁹ OR. REV. STAT. § 537.470(3); *Allocation of Conserved Water*, OR. WATER RESOURCES DEP'T, <https://www.oregon.gov/OWRD/programs/WaterRights/Conservation/Pages/AOCW.aspx> [<https://perma.cc/V3PJ-28QK>]; *see also* Leila C. Behnampour, *Reforming A Western Institution: How Expanding the Productivity of Water Rights Could Lessen Our Water Woes*, 41 ENVTL. L. 201, 217–18 (2011).

¹²⁰ OR. REV. STAT. § 537.470(3).

instream flows, unless authorization to use the water is given by OWRD in a separate permit.¹²¹

Because leasing or conserving water can be challenging, there are two primary non-governmental organizations in Oregon to help facilitate transactions of water rights between willing buyers and sellers in a water market: The Freshwater Trust and Deschutes River Conservancy. The Freshwater Trust has been in operation for over 30 years and focuses on both water quantity and quality issues.¹²² The Freshwater Trust works statewide with landowners to keep water instream through leases and/or purchases; the Trust also helps develop projects to meet regulatory requirements for infrastructure near waterbodies.¹²³ The Deschutes River Conservancy works to increase flows in the Deschutes River through a variety of methods, including incentives for landowners to conserve water and operation of the Deschutes Water Alliance Water Bank.¹²⁴ The bank allows water rights held by irrigation districts to be reallocated to streamflow, cities, or new lands.¹²⁵

3. Tribal Water Rights in Oregon

There are nine federally recognized Native American tribes in Oregon, all with federally reserved rights to water.¹²⁶ However, there is a mix of whether such “inchoate” rights have been adjudicated or negotiated. Legislation passed in 1987 appoints the OWRD Director to negotiate on behalf of the state for potential settlements for water rights claims exercised by tribes.¹²⁷

¹²¹ *Id.* § 537.465.

¹²² *About Us*, THE FRESHWATER TR., <https://www.thefreshwater-trust.org/about-us> [<https://perma.cc/7272-LG7N>]. For an overview about the early years of the Oregon Water Trust (now The Freshwater Trust), see Janet C. Neuman, *The Good, the Bad, and the Ugly: The First Ten Years of the Oregon Water Trust*, 83 NEB. L. REV. 432 (2004).

¹²³ *See What We Do*, FRESHWATER TR., <https://www.thefreshwater-trust.org/services/> [<https://perma.cc/D438-ESAA>].

¹²⁴ *About the Deschutes River Conservancy*, *supra* note 72; DESCHUTES WATER ALL. WATER BANK, BALANCING WATER DEMAND IN THE DESCHUTES BASIN, <https://www.deschutesriver.org/DWA-Water-Bank.pdf> [<https://perma.cc/SL5E-6JHA>] [hereinafter BALANCING WATER DEMAND IN THE DESCHUTES BASIN].

¹²⁵ BALANCING WATER DEMAND IN THE DESCHUTES BASIN, *supra* note 124.

¹²⁶ *Introduction to Oregon's Indian Tribes*, SOS.OREGON.GOV, <https://sos.oregon.gov/blue-book/Pages/national-tribes-intro.aspx> [<https://perma.cc/YM7E-2H4H>].

¹²⁷ OR. REV. STAT. § 539.310 (2019).

Two sets of Oregon tribes have negotiated or are negotiating settlements to their water rights. In Central Oregon, the Confederated Tribes of the Warm Springs Reservation negotiated their water rights with the State of Oregon, finalizing a settlement in 1997.¹²⁸ Management has been relatively smooth for all water users in this area because much of the irrigation water from farms returns to the river after being recharged underground.¹²⁹ In eastern Oregon, the Confederated Tribes of the Umatilla Indian Reservation are now negotiating their water rights, though this process has been delayed due to lack of budget for the OWRD representatives to participate.¹³⁰

In contrast, adjudication is being used to settle tribal claims in the Klamath Basin. As discussed above, the Klamath Basin adjudication entered a new stage in 2013 when findings were entered into court. This adjudication quantified Klamath Tribal water rights with a priority date senior to other users.¹³¹ In 2013, the Klamath Tribes made a “call” on the river to ensure their instream rights were left instream; this significantly affected irrigation and raised questions about meeting multiple competing demands, including irrigation, hydropower, endangered species, and federal

¹²⁸ Confederated Tribes of the Warm Springs Reservation Water Rights Settlement Agreement, Nov. 17, 1997, <https://digitalrepository.unm.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1074&context=nawrs> [<https://perma.cc/MAW2-WAC2>]; see also Rebecca C. Guiao, *How Tribal Water Rights are Won in the West: Three Case Studies from the Northwest*, 37 AM. INDIAN L. REV. 283, 283 (2013).

¹²⁹ Dylan J. Darling, *No Water Drama for Deschutes*, BULLETIN (June 23, 2013), <https://www.bendbulletin.com/csp/mediapool/sites/BendBulletin/News/story.csp?cid=1366502&sid=497&fid=151> [<https://perma.cc/6CHN-24FA>].

¹³⁰ CHARLES V. STERN, CONG. RESEARCH SERV., NO. RL44148, INDIAN WATER RIGHTS SETTLEMENTS 9–10 (Apr. 16, 2019); see also Letter from Gary Burke, Chairman, Confederated Tribes of the Umatilla Indian Reservation, to Senator Kathleen Taylor and Representative Jeff Reardon, Co-Chairs of the Ways and Means Subcommittee on Natural Resources (Mar. 4, 2019).

¹³¹ See Robin Kundis Craig, *Trickster Law: Promoting Resilience and Adaptive Governance by Allowing Other Perspectives on Natural Resource Management*, 9 ARIZ. J. ENVTL. L. & POL'Y REV. 140, 151 (2019); see generally *Klamath Tribes' Water Rights Confirmed in the Klamath Basin Water Rights Adjudication*, NATIVE AM. RTS. FUND (Jan. 5, 2012), <https://www.narf.org/klamath-tribes-water-rights-confirmed-in-the-klamath-basin-water-rights-adjudication/> [<https://perma.cc/7F5E-F86H>] (describing the Klamath Tribes' adjudication regarding the recognition of their water rights).

wildlife refuge needs.¹³² The many lawsuits, both settled and underway, in this basin are beyond the scope of this Article, but this basin epitomizes the challenge of too many demands and not enough water, a challenge compounded by increasing uncertainty about climatic impacts.

4. Challenges for Managing Oregon's Water Resources

Oregon is facing a number of challenges in managing its water. First, determining pre-1909 water rights claims is a priority for OWRD.¹³³ While much of Oregon is adjudicated, key basins like the Willamette River remain unadjudicated, leaving numerous claims in a system already near its capacity for water use.¹³⁴ Exempt wells exacerbate this issue. For someone to have an exempt well, they must still file documentation with OWRD, pay a fee, and provide a map showing the well location.¹³⁵ However, a newspaper investigation found that groundwater impacts are a significant issue: well owners have no obligation to disclose actual water consumption; pumping in eastern Oregon routinely tops natural recharge rates; and lack of reliable aquifer data prevents agency personnel from adequately studying hydrological connections between underground sources and stressed surface streams.¹³⁶ This is especially important for waterbodies with endangered steelhead and salmon species where lack of water can change spawning behavior in fish.¹³⁷ Following this investigative series, the Oregon Legislature

¹³² *Water Rights Settlements in Oregon's Klamath Basin Facing Uncertain Future*, MARTEN L. (Feb. 22, 2016), [<https://perma.cc/UK2C-KNXW>]; see also Kunds Craig, *supra* note 131, at 140. For more background on this issue, see Holly Doremus & Dan A. Tarlock, *Fish, Farms, and the Clash of Cultures in the Klamath Basin*, 30 *ECOLOGY L.Q.* 279, 285–86 (2003) (avoiding issues only makes them more challenging).

¹³³ See OR IWR STRATEGY 2017, *supra* note 61, at 51.

¹³⁴ *Id.* (providing a map detailing the status of surface water adjudications throughout Oregon).

¹³⁵ OR. WATER RES. DEPT., RECORDING FEES FOR EXEMPT USE WELLS, https://www.oregon.gov/OWRD/programs/GWWL/WCC/EXWL/Documents/FAQ_ExemptUseRecordingFees.pdf [<https://perma.cc/98RJ-BC7N>].

¹³⁶ Kelly House & Mark Graves, *Draining Oregon*, OREGONIAN (Aug. 26, 2016), https://www.oregonlive.com/environment/page/draining_oregon_day_1.html [<https://perma.cc/PB7D-6YF2>].

¹³⁷ See *id.*

praised the potential increase in funding for OWRD to continue groundwater studies statewide; however, actual funding bills have stalled in the Legislature.¹³⁸

At the same time, changes in the type and timing of precipitation has led to calls for more potable reuse of water. As precipitation falls more as rain instead of snow, supplies and streamflow patterns will be altered in ways that negatively impact humans and ecosystems, including increased risk of flood and drought.¹³⁹ To help offset impact on water supplies, Oregon is increasingly focused on the use of treated municipal wastewater or reclaimed water to be used for irrigation or other beneficial uses, as discussed in its 2017 Integrated Water Resources Strategy.

Finally, Oregon has recognized that managing water in an integrated fashion is imperative going forward. Oregon adopted its first ever Integrated Water Resources Management Plan in 2012 and updated it in 2017.¹⁴⁰ In addition to calling out four cross cutting issues—groundwater management, climate change and extreme events, investment, and collaborative solutions—the 2017 Plan also creates an action plan for Oregon to follow.¹⁴¹

B. Washington State

The evolution of water law in Washington State is similar to Oregon; however, some details differ. Carved out of the Oregon Territory, Washington became a state in 1889.¹⁴² Based on the 2010 U.S. Census, over 6.7 million people live in the state; 2017 estimates put the number over 7.3 million.¹⁴³ In addition, there are

¹³⁸ Andrew Theen, *Draining Oregon: Water Bills Dry up in Legislature*, OREGONIAN (June 29, 2017), https://www.oregonlive.com/environment/2017/06/draining_oregon_water_bills_dr_1.html [https://perma.cc/9UZB-KMRP].

¹³⁹ See DALTON ET AL., *supra* note 63, at 18, 23.

¹⁴⁰ OR IWR STRATEGY 2012, *supra* note 65; OR IWR STRATEGY 2017, *supra* note 61.

¹⁴¹ OR IWR STRATEGY 2017, *supra* note 61, at 12–13.

¹⁴² Junius Rochester, *Washington Territory and Washington State, Founding of*, HISTORYLINK.ORG (Feb. 26, 2004), <https://www.historylink.org/File/5661> [https://perma.cc/E39M-8N5Q].

¹⁴³ *Washington*, U.S. CENSUS BUREAU, [https://factfinder.census.gov/faces/nav/jsf/pages/community_facts](https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk).

(2010 population); *Total Population and Percent Change*, OFF. OF FIN. MGMT., <https://www.ofm.wa.gov/washington-data-research/statewide-data/washington-trends/population-changes/total-population->

twenty-nine federally-recognized Indian Tribes.¹⁴⁴ Irrigation and public supply account for the two biggest uses of water statewide.¹⁴⁵ Like Oregon, Washington receives more precipitation west of the Cascade mountains, with the eastern two-thirds of the state relatively dry.¹⁴⁶ Going forward, climate predictions anticipate warmer air temperatures, drier summers, reduced snowfall, and more frequent and severe weather, including both flood and drought.¹⁴⁷ Like Oregon, these changes are presently impacting and will continue to impact Washington's water allocation system, adopted in 1917.¹⁴⁸ Today, Washington is challenged by conjunctively managing both surface and groundwater, unadjudicated claims, tribal treaty rights, instream flow protection, and more.

1. Washington Water Law Basics

Washington enacted its first extensive water legislation in 1917 with the Surface Water Code, which adopted the prior appropriation doctrine, defined beneficial uses, created a permit system, and delineated how adjudications should be conducted.¹⁴⁹ "Beneficial use" is broadly defined and includes irrigation, domestic,

and-percent-change [<https://perma.cc/BHU7-A73J>] (2017 population). 2019 estimates are over 7.5 million. *Id.*

¹⁴⁴ *About Washington Tribes*, WASH. TRIBES, <https://www.washingtontribes.org/> [<https://perma.cc/B7AE-SWGK>]; see also *Federal and State Recognized Tribes*, NAT'L CONF. OF ST. LEGISLATURE, <http://www.ncsl.org/research/state-tribal-institute/list-of-federal-and-state-recognized-tribes.aspx#wa> [<https://perma.cc/P6NG-J42F>] (listing the twenty-nine federally recognized Tribes).

¹⁴⁵ U.S. DEP'T OF THE INTERIOR, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2010 10–14 (2014), <https://pubs.usgs.gov/circ/1405/pdf/circ1405.pdf> [<https://perma.cc/46CX-RYP3>] [hereinafter ESTIMATED USE OF WATER 2010]; see also U.S. DEP'T OF THE INTERIOR, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2015 10–11, 14–17 (2018), <https://pubs.usgs.gov/circ/1441/circ1441.pdf> [<https://perma.cc/8EP9-M7V6>] [hereinafter ESTIMATED USE OF WATER 2015].

¹⁴⁶ See generally *Washington*, WORLD ATLAS, <https://www.worldatlas.com/webimage/countrys/america/usstates/waland.htm> [<https://perma.cc/3A2B-7555>].

¹⁴⁷ WASH DEP'T OF ECOLOGY, NO. 12-01-004, PREPARING FOR A CHANGING CLIMATE: WASHINGTON STATE'S INTEGRATED CLIMATE RESPONSE STRATEGY 35–44 (2012) [hereinafter WASHINGTON'S CLIMATE RESPONSE].

¹⁴⁸ WASH. OFFICE OF ATTORNEY GEN., AN INTRODUCTION TO WASHINGTON WATER LAW 4 (2000), <https://fortress.wa.gov/ecy/publications/documents/0011012.pdf> [<https://perma.cc/6J2U-ZH5S>] [hereinafter INTRODUCTION TO WASHINGTON WATER LAW].

¹⁴⁹ See generally WASH. REV. CODE §§ 90.03.005–.675 (2019).

hydropower production, mining, fish and wildlife, and aesthetic purposes.¹⁵⁰

Acquiring a permit to use water is a multi-step process. An entity (person or corporation) wishing to divert surface water must obtain permission from the Washington Department of Ecology (“Ecology”) by applying for a permit.¹⁵¹ To grant a water right, Ecology must determine that: (1) water is available for appropriation, (2) the appropriation will not impair existing user rights (quantity and quality), (3) the public welfare will not be harmed, and (4) the water will be put to a beneficial use.¹⁵² Thus, expressing an intent to use water and putting the water to a beneficial use are mandatory steps to receive a certified water right.¹⁵³ Like other western states, Washington water rights are managed by priority dates, which relate back to the original application date.¹⁵⁴ For new permits issued since 2002, Ecology has required many water right permit holders to have a measuring gauge.¹⁵⁵

For claims that pre-date the 1917 water code, Washington uses an adjudication process.¹⁵⁶ Adjudication determines “whether a water right is valid, how much water can be used, and its priority during shortages in a defined [river] basin.”¹⁵⁷ At least eighty-three water basins have been adjudicated;¹⁵⁸ however, sixty-six pending requests remain.¹⁵⁹ A long adjudication process can provide considerable uncertainty about water allocation in the region. For example, the Yakima River Basin surface water adjudication, which

¹⁵⁰ *Id.* §§ 90.14.031(2), .54.020(1).

¹⁵¹ INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 8.

¹⁵² *Id.* at 9.

¹⁵³ *Id.*

¹⁵⁴ WASH. REV. CODE § 90.03.340.

¹⁵⁵ *Measuring Water Use*, WASH. DEP’T. OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights/Metering-water-use> [<https://perma.cc/68F2-WCWL>].

¹⁵⁶ *E.g.*, *In re the Water Rights of Marshall Lake & Marshall Creek Drainage Basin*, 852 P.2d 1044, 1048 (Wash. 1993).

¹⁵⁷ *Water Rights Adjudications*, WASH. DEP’T. OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights/Adjudications> [<https://perma.cc/ZQ49-C82J>].

¹⁵⁸ WASH. STATE DEP’T OF ECOLOGY, COMPLETED ADJUDICATIONS IN WASHINGTON (2019), <https://fortress.wa.gov/ecy/publications/documents/1911073.pdf> [<https://perma.cc/33ZT-4Z5G>].

¹⁵⁹ *See* WASH. STATE DEP’T OF ECOLOGY, PETITIONED ADJUDICATIONS IN WASHINGTON STATE (2020), <https://apps.wa.gov/docs/Water-Rights/wrwebpdf/PetitionedAdjudications.pdf> [<https://perma.cc/JG5T-6VJT>].

began in the 1970s, was just completed in May 2019 after forty years.¹⁶⁰

Management of groundwater has undergone a similar evolution as surface water management. Washington originally used common law principles of “reasonable use” and “correlative rights” to regulate use of groundwater and manage conflicts between competing landowners.¹⁶¹ As exceptions arose on a case-by-case basis through court decisions, the need for a formalized code for groundwater sources became apparent. Washington adopted its Groundwater Code in 1945 and now uses the same permit process for both groundwater and surface water.¹⁶² Recognizing the connection between surface and groundwater, Washington manages both concurrently for purposes of priority date; thus, if separate groundwater and surface rights apply to a shared source, the earliest priority date controls.¹⁶³ Ecology also has statutory authority to designate ground water areas and sub-areas to preserve groundwater resources for present and future users by promoting efficient pumping practices.¹⁶⁴

Existing rights may also be changed or lost. For example, an existing right may be amended after a review process by Ecology, provided no harm occurs to existing rights holders, the public welfare, or the environment.¹⁶⁵ Ecology may consider changes to an existing water right for place of use, point of diversion, or purpose of use.¹⁶⁶ Increasing the instantaneous withdrawal rate or annual quantity is prohibited.¹⁶⁷ Finally, water rights in Washington may be lost through abandonment or forfeiture. A right is deemed forfeited if it has not been used for five consecutive years without good

¹⁶⁰ *Ecology v Acquavella*, WASH. STATE DEP’T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights/Adjudications/Ecology-v-Acquavella> [<https://perma.cc/MX7A-992P>]; see generally Sidney P. Ottem, *The General Adjudication of the Yakima River: Tributaries for the Twenty-First Century and a Changing Climate*, 23 J. ENVTL. L. & LITIG. 275 (2008).

¹⁶¹ See INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 10 (discussing the development of the groundwater code).

¹⁶² See WASH. REV. CODE § 90.44.020 (2019).

¹⁶³ INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 13–14.

¹⁶⁴ WASH. REV. CODE § 90.44.400(1).

¹⁶⁵ See INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 16–17.

¹⁶⁶ WASH. REV. CODE § 90.03.380.

¹⁶⁷ WASH. STATE DEP’T OF ECOLOGY, No. 98-1802-WR, CHANGING OR TRANSFERRING AN EXISTING WATER RIGHT (2008).

cause, while abandonment requires a user to intentionally relinquish or elect not to use their water right.¹⁶⁸

2. Washington Instream Flows and Water Markets

Like in Oregon, Washington heavily allocated its surface water before legally protecting the flow of water instream. Today, Washington has a strong instream flow program meant to ensure there is enough water in streams for sustainable fisheries habitat.¹⁶⁹ Instream flow thresholds are mandated by law. Ecology sets varying flow levels annually and seasonally for a stream primarily based on the fisheries (i.e., salmon and steelhead) present in a waterway and the habitat needed for them to survive.¹⁷⁰ In addition to fisheries, instream flows benefit groundwater levels and wetland areas. Because of the priority dates under state law, existing water rights senior to designated instream flow rights are not impacted, but water rights established after targeted flow thresholds may be.¹⁷¹ However, federally listed species under the ESA, such as salmon and steelhead, can be granted priority to instream flows in times of shortage.¹⁷²

As an alternative to the prior appropriation doctrine, Washington has experimented with a new way to manage water through

¹⁶⁸ WASH. REV. CODE §§ 90.14.160-.180; INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 14–15; *see generally* Okanogan Wilderness League v. Town of Twisp, 947 P.2d 732 (Wash. 1997).

¹⁶⁹ *See* WASH. REV. CODE § 90.22.10. Whether this program is sufficient may be a subject of argument, however. *See, e.g.*, Haylee J. Hurst, Comment, *Changing Course: Revisiting Instream Flow Rulemaking in Washington State Following Swinomish v. Ecology*, 90 WASH. L. REV. 1901 (2015).

¹⁷⁰ *See* WASH. STATE DEP'T OF ECOLOGY, FREQUENTLY ASKED QUESTIONS ON IFIM 1–2 (2010), <https://fortress.wa.gov/ecy/publications/documents/qwr95104.pdf> [<https://perma.cc/LVA9-VUY7>]; *see generally* HAL BEECHER, ET AL., WASH. STATE DEP'T OF FISH & WILDLIFE, WASH. STATE DEP'T OF ECOLOGY, INSTREAM FLOW STUDY GUIDELINES 3 (2016), <https://fortress.wa.gov/ecy/publications/documents/0411007.pdf> [<https://perma.cc/MP5Z-GRQF>]. In addition to the IFIM method, toe-width, wetted width, and the Hatfield and Bruce methods are used nationwide for setting particular flows.

¹⁷¹ *See Instream Flow & Water Management Rule Implementation*, WASH. STATE DEP'T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Protecting-stream-flows/Instream-flow-implementation> [<https://perma.cc/2NLA-YAHZ>].

¹⁷² *See Conservation Plan for Washington Coast*, WILD SALMON CTR. (Oct. 15, 2013), <https://www.wildsalmoncenter.org/2013/10/15/washington-coast/> [<https://perma.cc/Z5PD-RBPU>] (discussing the Washington coast conversation plan for preventing future listing of salmon and steelhead under the ESA).

a pilot program in effect since 2009 in the Walla Walla River Basin.¹⁷³ To both save dwindling fish populations and manage the local economy, residents pushed for a new program to manage water locally and more flexibly within the watershed. This pilot—authorized by the Washington State Legislature—works to balance existing rights with instream flow needs, including tribal rights, through banking and leasing.¹⁷⁴ Although not yet successful in meeting all the Walla Walla River Basin’s needs, the program has been extended; workshops were held in October 2019 to plan for the next stage.¹⁷⁵

Washington has an active water market system managed by Ecology.¹⁷⁶ Under its general water acquisition program, Ecology has two mechanisms for returning water instream through the Trust Water Rights Program and water banks.¹⁷⁷ The Trust Water Rights Program allows users to legally hold their water rights for environmental or future human uses without risk of loss due to non-use.¹⁷⁸ The water banks are a market mechanism allowing water to be bought or sold and used where the most need exists.¹⁷⁹

¹⁷³ *Backstory*, WALLA WALLA WATERSHED MGMT. P'SHIP, <https://www.walla-wallawatershed.org/backstory/> [<https://perma.cc/KTM4-ZEZB>]; see WALLA WALLA WATERSHED MGMT. P'SHIP, INTERIM PROGRESS REPORT TO THE LEGISLATURE FOR 2013-2015 9 (2015), <https://static1.squarespace.com/static/53763f93e4b02899e9210935/t/569ecf3c7086d70664b3fd31/1453248320743/WWWMP+2015+Report+FINAL.pdf> [<https://perma.cc/X3FB-3QCQ>].

¹⁷⁴ *Backstory*, *supra* note 173

¹⁷⁵ Ryan Lancaster, *Looking Upriver: What's Next for the Walla Walla Watershed?*, WASH. ST. DEP'T OF ECOLOGY BLOG (Sept. 13, 2019, 12:04 PM), <http://ecology.wa.blogspot.com/2019/09/looking-upriver-whats-next-for-walla.html> [<https://perma.cc/KKT2-PGLA>].

¹⁷⁶ See *Water Rights*, WASH. ST. DEP'T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights> [<https://perma.cc/LJ9F-TF67>].

¹⁷⁷ WASH. REV. CODE §§ 90.42.040 (trust water rights program), 90.42.100 (water banking) (2019). For a general review of water acquisitions in Washington, see WASH. STATE DEP'T OF ECOLOGY, WASH. STATE DEP'T OF FISH & WILDLIFE, NO. 01-11-005, WASHINGTON WATER ACQUISITION PROGRAM (2003), <http://www.whatcomcounty.us/DocumentCenter/View/4760/Exhibit-9-PDF?bidId=> [<https://perma.cc/59KQ-4ANE>] [hereinafter WASHINGTON WATER ACQUISITION PROGRAM].

¹⁷⁸ *Trust Water Rights Program*, WASH. ST. DEP'T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights/Trust-water-rights> [<https://perma.cc/QWA3-QUMW>]. See generally WASH. REV. CODE §§ 90.42.040-.080 (describing the water rights program).

¹⁷⁹ *Washington Water Banks*, WASH. ST. DEP'T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights/Trust-water->

Through these programs, Ecology increases flows in critical basins that contain salmon and trout populations by buying more senior rights.¹⁸⁰ In addition to managing these programs and reviewing any water rights transactions, Ecology works with non-profit parties like the Washington Water Trust or Trout Unlimited's Western Water Project to help facilitate transactions between willing sellers and buyers or implement projects for stream restoration.¹⁸¹

3. Tribal Rights in Washington State

Potential tribal rights are an important dynamic in Washington State. As of 2020, there are twenty-nine federally recognized tribes in the state.¹⁸² Tribes have worked together to exercise their right to water in federal courts, often in support of ensuring sufficient stream flow for fish habitat.¹⁸³ Because treaty rights are tied to the date of the treaty or "time immemorial," quantification of such rights can upend the allocation under state law.¹⁸⁴ The finalization of the Yakima River Basin adjudication¹⁸⁵ means the Yakama Nation's water rights have been settled, providing them with both instream flows for fish and irrigation rights.¹⁸⁶

As discussed above in the overview, the right to fish and hunt "at usual and accustomed places" has led courts to decide that there must be fish to take, including habitat to support fish.¹⁸⁷ This logic led to a recent Ninth Circuit decision with massive

rights/Water-banks [<https://perma.cc/EH95-678V>]; *see also* WASH. REV. CODE §§ 90.42.100–.130.

¹⁸⁰ WASHINGTON WATER ACQUISITION PROGRAM, *supra* note 177, at 1–2, 66–67.

¹⁸¹ *See What We Do*, WASH. WATER TR., <http://www.washingtonwater-trust.org/what-we> [<https://perma.cc/VM83-3F6A>]; *see* Jason Hatch, *Roaring Creek Flow Restoration Project*, TROUT UNLIMITED, <https://www.tu.org/tu-projects/roaring-creek-flow-restoration-project> [<https://perma.cc/KHX9-BQFW>] (describing a flow restoration project involving several partner agencies).

¹⁸² *See Federal and State Recognized Tribes*, *supra* note 144.

¹⁸³ *See, e.g.*, *United States v. Washington*, 384 F. Supp. 312, 340 (W.D. Wash. 1974); *see also* *United States v. State of Washington*, 864 F.3d 1017, 1020–21, 1023 (9th Cir. 2017); *see generally In re The Determination of the Rights to the Use of the Surface Waters of the Yakima River Drainage Basin*, 850 P.2d 1306 (Wash. 1993).

¹⁸⁴ *See* Schmidhauser, *supra* note 29, at 36–37; *see also* Robin Kundis Craig, *supra* note 131, 150–51.

¹⁸⁵ *See supra* Part II(B) and accompanying text.

¹⁸⁶ Redfield-Wilder, *supra* note 22.

¹⁸⁷ *See* Kundis Craig, *supra* note 131, at 150–51.

implications in Washington State.¹⁸⁸ In *Washington v. United States*, twenty-one tribes sued the State of Washington, arguing the state's lack of maintenance of roadside culverts prevented salmonid species from reaching tribal fishing and reservation grounds; the Ninth Circuit eventually agreed.¹⁸⁹ In June 2018, the United States Supreme Court affirmed this judgment through an equally divided court.¹⁹⁰ As a result, Washington state and local governments must replace culverts to improve passage for fish to reach tribal grounds, with estimated costs amounting to billions of dollars.¹⁹¹ This will not be the last case; the power of treaty rights will continue to shape habitat restoration and water allocation in the future.¹⁹²

4. Challenges for Managing Washington's Water Resources

Washington has a number of current and future challenges to manage. Current challenges include the impact of hydropower production on fisheries, managing return flows, the potential for aquifer recharge, promoting reclaimed water, and managing exempt groundwater uses.¹⁹³ Future challenges include managing the changes wrought by climate change and impacts to water demand and supply in areas of the state often considered to have plentiful water.¹⁹⁴

¹⁸⁸ For the history of this case, see generally Ryan Hickey, *Highway Culverts, Salmon Runs, and the Stevens Treaties: A Century of Litigating Pacific Northwest Tribal Fishing Rights*, 39 PUB. LAND & RESOURCES L. REV. 253 (2018) (describing litigation in Washington regarding state interference with Tribal fishing rights).

¹⁸⁹ *United States v. Washington*, 853 F.3d 946, 954 (9th Cir. 2017) *aff'd per curiam*, 138 S. Ct. 1832 (2018).

¹⁹⁰ *Washington*, 138 S. Ct. at 1833.

¹⁹¹ Jill Dvorkin, *The Culverts Case: An Overview and Potential Implications for Local Governments*, MRSC (June 20, 2018), <http://mrsc.org/Culverts-Case-Implications-Local-Governments.aspx> [<https://perma.cc/MXX3-N297>].

¹⁹² See generally Shelby Culver, *Implications Beyond Culverts: The Challenges Tribes Will Face Extending United States v. Washington to Other Habitat-Depleting Policies*, 46 ECOLOGY L.Q. 591 (2019).

¹⁹³ See generally Jean O. Melious, *The Controversy Over Permit-Exempt Wells in Washington*, 8 SEATTLE J. ENVTL. L. 144 (2018).

¹⁹⁴ WASHINGTON'S CLIMATE RESPONSE, *supra* note 147, at 110–20; Evan Bush, *Low Snowpack, Hot Spring Lead to Drought Declaration for Nearly Half of Washington State*, SEATTLE TIMES (May 20, 2019), <https://www.seattletimes.com/seattle-news/gov-inslee-declares-drought-for-about-half-of-washington-state/> [<https://perma.cc/K8A3-8YZH>].

Hydropower production has greatly impacted water management and fisheries in Washington despite its frequent designation as a renewable energy source. As of June 2019, there are 1,233 dams in Washington; Ecology regularly inspects 1,088 for safety purposes.¹⁹⁵ Most are privately owned, licensed, and used for power generation, flood control, or irrigation storage.¹⁹⁶ As licenses expire for dams across the state, relicensing efforts have included new provisions for operators, such as targeted instream flows for fish and tribal interests. When the benefits have not outweighed the new costs, some operators have elected to remove the dams.¹⁹⁷ Beginning in 2011 and ending in 2014, the Glines Canyon and Elwha Dams were dismantled on the Elwha River in one of the largest dam removal projects in the world.¹⁹⁸ Similarly, the Condit Dam on the White Salmon River was removed in 2011, leading to recovery of fish habitat.¹⁹⁹

A second challenge currently posed is addressing return flows. Return flow is water that is returned to the natural system after use, such as irrigation, and is not consumed.²⁰⁰ Washington law

¹⁹⁵ WASH. STATE DEP'T OF ECOLOGY, NO. 94-16, INVENTORY OF DAMS REPORT FOR SELECTED WASHINGTON COUNTIES AND SELECTED DAM HAZARD CATEGORIES 1–2 (2018).

¹⁹⁶ *Id.* at 3.

¹⁹⁷ See generally Brian C. Chaffin & Hannah Gosnell, *Beyond Mandatory Fishways: Federal Hydropower Relicensing as a Window of Opportunity for Dam Removal and Adaptive Governance of Riverine Landscapes in the United States*, 10 WATER ALTERNATIVES 819 (2017).

¹⁹⁸ Michelle Nijhuis, *World's Largest Dam Removal Unleashes U.S. River After Century of Electric Production*, NAT'L GEOGRAPHIC (Aug. 27, 2014), <https://www.nationalgeographic.com/news/2014/8/140826-elwha-river-dam-removal-salmon-science-olympic/> [<https://perma.cc/Q8JD-AJ9Y>]. The removal resulted after the Elwha Klallam tribe was granted tribal fishing rights (half the salmon catch in the state) by the U.S. Supreme Court. Once the dam was removed, salmon quickly returned to the river after almost a century; other marine creatures are thriving in the system. See generally Phillip M. Bender, *Restoring the Elwha, White Salmon, and Rogue Rivers: A Comparison of Dam Removal Proposals in the Pacific Northwest*, 17 J. LAND RES. & ENVTL. L. 189, 219–30 (1997).

¹⁹⁹ Dameon Pesanti, *Condit Dam: Life After the Breach*, COLUMBIAN (Oct. 23, 2016), <https://www.columbian.com/news/2016/oct/23/condit-dam-life-five-years-after-breach-white-salmon-river/> [<https://perma.cc/HH22-FU5L>].

²⁰⁰ *Dictionary of Water Terms*, U.S. GEOLOGICAL SURVEY, https://www.usgs.gov/special-topic/water-science-school/science/dictionary-water-terms?qt-science_center_objects=0#R [<https://perma.cc/4UQD-K98R>]; see also Leila C. Behnampour, *Reforming A Western Institution: How Expanding the Productivity of Water Rights Could Lessen Our Water Woes*, 41 ENVTL. L. 201, 211 (2011).

does not quantify return flow, but “the prior appropriation system has relied upon seepage, return flows, and surface runoff to fulfill the claims of downstream users.”²⁰¹ Although return flows constitute a major supply for junior users, an appropriator may collect water after use, before it reaches a public waterbody, and still legally have the right to use it.²⁰² If the water reaches a public waterbody, then it reverts back to state control.²⁰³ Failure of a junior water right holder to take available water can be considered non-use.²⁰⁴ Another opportunity is artificial recharge. “Artificially stored groundwater,” or water made available in underground storage artificially incidental to irrigation, requires a user to apply for a permit to use water in particular groundwater areas.²⁰⁵ Rather than water seeping back into the natural system for junior users, it can be protected by the original appropriator and not be deemed public water even if it comingles with naturally occurring groundwater.²⁰⁶ This creates an opportunity for artificial recharge of groundwater aquifers.

Likewise, reclaimed water has emerged as a tool of conservation and innovative water management. Reclaimed water is “water derived in any part from wastewater with a domestic wastewater component that has been adequately and reliably treated, so that it can be used for beneficial purposes. Reclaimed water is not considered a wastewater.”²⁰⁷ Along with the Washington Department of Health, Ecology manages reclaimed water to supplement surface and groundwater supplies, meet future state water needs, and provide water for non-potable use such as irrigation.²⁰⁸ Permits are required to use reclaimed water for a given purpose. Recharging wetlands and augmenting stream flows have benefited from reclaimed water use.²⁰⁹

²⁰¹ WASH. STATE DEP’T OF ECOLOGY, NO. 09-11-027 WATER RIGHTS IMPAIRMENT STANDARDS FOR RECLAIMED WATER: STAKEHOLDER VIEWS AND ECOLOGY RECOMMENDATIONS 47 (2009).

²⁰² INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 17–18.

²⁰³ *See Ottem, supra* note 160, at 324.

²⁰⁴ *See* David E. Filippi, *The Impact of the Endangered Species Act on Water Rights and Water Use*, 48 PROC. ROCKY MOUNTAIN MIN. L. INST. § 22.02(1) (2002).

²⁰⁵ WASH. REV. CODE §§ 90.44.035(5), .44.130 (2019).

²⁰⁶ *See Jensen v. Dep’t of Ecology*, 685 P.2d 1068, 1072 (Wash. 1984).

²⁰⁷ WASH. REV. CODE § 90.46.010(15).

²⁰⁸ INTRODUCTION TO WASHINGTON WATER LAW, *supra* note 148, at 27.

²⁰⁹ *Id.* at 27–29; *see also* WASH. REV. CODE § 90.46.030.

In addition to these challenges affecting primarily surface flows, exempt uses for groundwater are critical in shaping state water policy, management directives, and permit decisions. Several uses of groundwater are exempt from permit requirements including: any amount of water for livestock,²¹⁰ watering of a lawn or non-commercial garden not exceeding half an acre, single or domestic uses not exceeding 5,000 gallons per day, and industrial uses not exceeding 5,000 gallons per day.²¹¹ These uses are subject to beneficial use requirements.²¹² Although Washington does not possess quantifiable data concerning these uses, estimates indicate that in some areas, the amount of water taken for exempt uses dwarves the amount permitted for use.²¹³ The only limit on exempt wells arises if there is a complete limit on all water development in an area. In *Whatcom County v. Hirst*, the Washington Supreme Court completely halted further development in Whatcom County, including exempt permit wells, to comply with previously adopted instream flow rules.²¹⁴ In 2018, the Washington Legislature enacted Senate Bill 6091 to reconcile the Court's decision and allow for development by ensuring adequate water supplies.²¹⁵ To comply with the new statute, Ecology developed a new program to implement the requirements of the legislation through pilot programs, new rulemaking procedures, an updated grant program, and planning committees for watersheds impacted by the *Hirst* decision.²¹⁶

The changing climatic dynamics, including decreasing snowpack and increasing variability in precipitation and flows, will

²¹⁰ *Five Corners Family Farmers v. State*, 268 P.3d 892, 901 (Wash. 2011). Also known as the Easterday Ranch decision, the Washington Supreme Court held there is no quantitative limit for groundwater withdrawals for stock-watering use. *Id.*

²¹¹ *See id.* at 901–02; *see also* WASH. REV. CODE § 90.44.050; Robert N. Caldwell, *Six-Packs for Subdivisions: The Cumulative Effects of Washington's Domestic Well Exemption*, 28 ENVTL. L. 1099, 1108 (1998).

²¹² WASH. REV. CODE § 90.44.050.

²¹³ WATER RES. PROGRAM, WASH. STATE DEP'T OF ECOLOGY, NO. 15-11-006, PERMIT-EXEMPT DOMESTIC WELL USE IN WASHINGTON STATE 10 (2015).

²¹⁴ 381 P.3d 1, 7–8, 18 (Wash. 2016).

²¹⁵ S.B. 6091, 65th Leg., Reg. Sess. (Wash. 2018).

²¹⁶ Press Release, Assoc. of Wash. Cities, Ecology Releases Water Resources Guidance (July 20, 2018), <https://wacities.org/news/2018/07/20/ecology-releases-water-resources-guidance> [<https://perma.cc/ZT5M-GMKJ>]; *see also* WASH. STATE DEP'T OF ECOLOGY, STREAMFLOW RESTORATION POLICY AND INTERPRETATIVE STATEMENT (2019), <https://fortress.wa.gov/ecy/wrdocs/WaterRights/wrwebpdf/pol-2094.pdf> [<https://perma.cc/K3KA-NGYC>].

make handling any or all of these water management challenges more difficult. How to address these concerns going forward is critical, though the efforts to find creative and cooperative solutions in basins like the Walla Walla may offer a path forward.

C. Idaho

Idaho faces similar challenges—a growing population, competing needs for water, and not enough water to meet all needs. Unlike the other three states in the Pacific Northwest, however, the majority of Idaho has been adjudicated. The 2010 U.S. Census indicates just over 1.5 million people live in Idaho.²¹⁷ Like in Washington and Oregon, irrigation dominates water withdrawals and use in Idaho.²¹⁸ Admitted to the U.S. in 1890, Idaho has significant variation in its precipitation, ranging from forty inches per year in some areas to a low of ten inches elsewhere; most precipitation has historically fallen as snow.²¹⁹ Idaho is already seeing climatic changes, including heavier spring rainfall, more extreme storms, warmer temperatures, and declining spring snowpack.²²⁰

1. Idaho Water Law Basics

Idaho adheres to the prior appropriation doctrine for water allocation. Prior to the creation of a permit system, an individual could simply divert water and put it to some beneficial use.²²¹ Challenges in water management resulted in the creation of a permit system for new appropriations from public surface waters in

²¹⁷ *Population of Idaho: Census 2010 and 2000 Interactive Map, Demographics, Statistics, Quick Facts*, CENSUS VIEWER, <http://censusviewer.com/state/ID> [<https://perma.cc/BE8D-GVCX>].

²¹⁸ ESTIMATED USE OF WATER 2010, *supra* note 145, at 11–13, 15.

²¹⁹ JENNIFER RUNKLE ET AL., NOAA NAT'L CTRS. FOR ENVTL. INFO., IDAHO STATE SUMMARY 2 (2017), <https://statesummaries.ncics.org/downloads/ID-print-2016.pdf> [<https://perma.cc/TN2B-T8E3>].

²²⁰ See generally P. Zion Klos, et al., *Indicators of Climate Change in Idaho: An Assessment Framework for Coupling Biophysical Change and Social Perception*, 7 AM. METEOROLOGICAL SOC'Y 238, 248 (2015).

²²¹ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 97, 101. This constitutional method did not quantify water nor allow a way to secure a water right until a proposed project diverting water was completed. *Id.* at 101–02.

1971.²²² Notably, surface water and groundwater were managed as separate sources initially but are now administered conjunctively.²²³ Any individual seeking to divert public waters for a beneficial use must first receive authorization from the Idaho Department of Water Resources²²⁴ (“IDWR”), the agency tasked with water management.²²⁵ Idaho has been split into over fifty administrative basins for water management with a number of basins in larger designated regions.²²⁶

Similar to Washington and Oregon, an individual submits an application to IDWR to withdraw water. Once the IDWR receives an application for a diversion, it determines whether water is available to be allocated.²²⁷ If water is available, a permit can be issued only if water is put to beneficial use, no injury will occur to existing rights holders, the use aligns with conservation goals of the state, and the local public interest is served, among other things.²²⁸ Idaho broadly defines “beneficial use” as agriculture, domestic use, manufacturing, mining, and hydropower, but is not limited to these uses.²²⁹ Certain uses of water do not require application for a permit, including fighting wildfires and collecting stormwater from waste treatment plants for land application.²³⁰ Likewise, instream watering of livestock is exempt.²³¹

Under Idaho law, changes to a water right may be performed to points of diversion, type of use, places of use, or period of use,

²²² *Id.* at 97; *see generally* IDAHO CODE §§ 42-101 to -311 (2019) (explaining in § 42-103 that the use of unappropriated waters within the state shall only be approved through a permit system).

²²³ IDAHO ADMIN. CODE r. 37.03.11.010.03 (2019).

²²⁴ *See generally* IDAHO DEPT OF WATER RESOURCES, <https://idwr.idaho.gov/> [<https://perma.cc/UKA9-PMSU>]. IDWR is active in issuing water use permits, collecting surface and groundwater data, a dam safety program, and designating groundwater management areas.

²²⁵ *Id.*

²²⁶ *Administrative Basins*, IDAHO DEPT OF WATER RESOURCES, <https://idwr.idaho.gov/water-rights/administrative-basins.html> [<https://perma.cc/F3NB-5RG8>].

²²⁷ IDAHO ADMIN. CODE r. 37.03.08.025.

²²⁸ IDAHO CODE § 42-203A(5) (2019); IDAHO WATER LAW HANDBOOK, *supra* note 16, at 171.

²²⁹ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 28–29; *see also* IDAHO CONST. art. XV, § 3 (1889).

²³⁰ IDAHO CODE §§ 42-201(3)(a)–(b); *see also* IDAHO WATER LAW HANDBOOK, *supra* note 16, at 38.

²³¹ IDAHO CODE § 42-113(1).

contingent on approval by IDWR.²³² No injury may result to other rights holders as a result of such a change, including instream uses; in addition, no right may be enlarged as a result of a transfer or change.²³³ IDWR may place conditions on transfers by limiting the amount of water transferred, requiring measuring devices to record return flows (for irrigation transfers), and requiring water releases at specified times to guarantee water availability at a junior right holder's point of diversion.²³⁴

Like other Pacific Northwest states, Idaho now manages its groundwater through an allocation permit system. The Ground Water Act of 1951 established a system for appropriation, administration, protection, and validation of pre-existing rights.²³⁵ Permit mandates for new appropriations did not come into effect until 1963, and procedures for groundwater applications are now identical to those for surface water.²³⁶ Further, a permit is required before a well can be drilled, thus requiring a licensed driller to complete a well.²³⁷

IDWR has taken steps to protect groundwater development. The 1953 Ground Water Act amendments gave power to IDWR to regulate withdrawals from aquifers vulnerable to depletion from excessive pumping.²³⁸ Under this law, certain areas may be designated as Groundwater Management Areas ("GWMAs") or Critical Groundwater Areas ("CGWAs") if there is not "sufficient groundwater to provide a reasonably-safe supply for irrigation or other uses at the current or projected rates of withdrawal."²³⁹ In addition, landowners with irrigation rights in designated areas of Idaho may be organized into Ground Water Districts.²⁴⁰ For designated areas, IDWR may require measurement and reporting of existing withdrawals, limit or prohibit new appropriations, or reduce diversions

²³² *Id.* § 42-222(1).

²³³ *Id.*

²³⁴ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 166.

²³⁵ IDAHO CODE §§ 42-226–229; IDAHO WATER LAW HANDBOOK, *supra* note 16, at 49.

²³⁶ *See* IDAHO CODE §§ 42-229, 42-203A(1).

²³⁷ *Id.* §§ 42-238(2)–(4).

²³⁸ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 51.

²³⁹ IDAHO CODE §§ 42-233a–233b; *Critical Ground Water Areas: Overview*, IDAHO DEP'T OF WATER RESOURCES, <https://idwr.idaho.gov/water-rights/critical-groundwater-areas/> [<https://perma.cc/KT8W-PNM3>].

²⁴⁰ *See* IDAHO CODE § 42-5201.

in order of priority to bring withdrawals into balance with natural recharge within the basin.²⁴¹

Like other states, Idaho exempts certain groundwater withdrawals from permit requirements, specifically for domestic wells.²⁴² The Legislature allowed groundwater diversions without a permit for “domestic” uses, meaning residential culinary uses and stock watering as long as the diversion does not exceed 13,000 gallons per day and any irrigation use is less than a half of acre.²⁴³

The majority of Idaho water rights have now been adjudicated through the Snake River Basin Adjudication (“SRBA”).²⁴⁴ This adjudication began in 1987 and effectively ended in August 2014 with a final unified decree.²⁴⁵ Domestic and stock wells exempt from permit requirements were not quantified or included in the overall SRBA.²⁴⁶ Any claim with a priority date prior to November 1987 had to be adjudicated or would no longer be recognized.²⁴⁷ The conclusion of this very long and expensive adjudication is a major change in water allocation in Idaho, rendering it more clear who has the right to take what water, including tribal rights.

The remainder of Idaho is being adjudicated through the North Idaho Adjudications (“NIA”), which includes three Idaho river basins: the Coeur d’Alene-Spokane River Basin Adjudication, the Palouse River Basin Adjudication, and the Clark Fork-Pend Oreille River Basins Adjudication.²⁴⁸ In 2008, an Idaho district court authorized the first phase of the Coeur d’Alene-Spokane River Basin adjudication, including the U.S., Tribes, State, local governments, and private property owners as parties to the

²⁴¹ See *id.* §§ 42-233a–233b, 42-237a.

²⁴² *Id.* § 42-227.

²⁴³ *Id.* § 42-111(1)(a); IDAHO WATER LAW HANDBOOK, *supra* note 16, at 56.

²⁴⁴ See *SRBA*, *supra* note 21 (providing a database on Snake River Basin Adjudication).

²⁴⁵ See *generally In re SRBA*, Final Unified Decree (Idaho Fifth Jud. Dist., Aug. 26, 2014).

²⁴⁶ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 386.

²⁴⁷ *Id.* at 385–86.

²⁴⁸ *Northern Idaho Adjudications (NIA)*, IDAHO DEP’T OF WATER RESOURCES, <https://idwr.idaho.gov/water-rights/adjudication/NIA/> [https://perma.cc/CYM6-VGP4].

adjudication.²⁴⁹ This case is on-going and will also provide certainty to water users in that region once concluded.

2. Minimum Flow Standards and Federal Reserved Water Rights

Like Washington and Oregon, realization of the need to protect flows instream came well after the systems for allocating water from streams or groundwater in Idaho. In 1978, the Idaho Legislature passed the Minimum Stream Flow Act, recognizing the need for adequate surface flows for fish and wildlife purposes.²⁵⁰ The Act states that water use for quality, aesthetic, and recreation purposes are considered beneficial uses.²⁵¹ To create such a prioritized right, only the Idaho Water Resources Board can apply to IDWR for a permit establishing a minimum stream flow or lake level.²⁵² In addition, citizens may petition the Board to apply for a flow right for a particular waterbody.²⁵³ The minimum level must be the necessary amount of water to support wildlife and a healthy aquatic ecosystem, not a desired level of water.²⁵⁴ The Idaho State Parks and Recreation Board can also appropriate water for scenic and recreational purposes in designated unappropriated springs and streams.²⁵⁵ Unlike Oregon and Washington, Idaho has not attempted to transfer consumptive water use to instream purposes.²⁵⁶ At this point, minimum flow rules have been set for a number of waterbodies.²⁵⁷

²⁴⁹ *Coeur D'Alene-Spokane River Basin Adjudication (CSRBA)*, IDAHO DEPT OF WATER RESOURCES, <https://idwr.idaho.gov/water-rights/adjudication/NIA/CSRBA.html> [<https://perma.cc/P2Z6-CFTV>].

²⁵⁰ IDAHO CODE §§ 42-1501, -1503, -1505, -1507 (2019). Importantly, minimum flows may be set only on unappropriated waters throughout the state. *Id.* However, non-consumptive uses such as instream flow rights may be set for streams fully allocated for consumptive uses, provided no injury to downstream senior users is incurred. *Id.*

²⁵¹ *Id.* § 42-1501.

²⁵² *Id.* § 42-1503.

²⁵³ *Id.* § 42-1504.

²⁵⁴ See IDAHO WATER LAW HANDBOOK, *supra* note 16, at 283–85.

²⁵⁵ *Id.* at 285.

²⁵⁶ *Id.* at 286. Legislation to do so was attempted in the early 1990s but failed. *Id.*

²⁵⁷ *Minimum Streamflows*, IDAHO DEPT OF WATER RESOURCES, <https://idwr.idaho.gov/IWRB/water-planning/minimum-stream-flows/> [<https://perma.cc/W9TB-NBT7>].

In Idaho, federal reserved rights—beyond tribal rights—were also a big challenge in the SRBA. In 1998, the Idaho Supreme Court ruled that an Executive Order issued in 1926 by President Calvin Coolidge reserving the rights to springs and watering holes on federal lands did not actually expressly reserve water.²⁵⁸ In addition, the Idaho Supreme Court held that federally designated wilderness lands also did not have express or implied reserved rights to water.²⁵⁹ Elsewhere, the Court found that the Hells Canyon National Recreation Area did have reserved rights; quantification of such rights was eventually negotiated.²⁶⁰ In contrast, the Court determined that the federal government did not have expressly designated reservation of water rights in the Sawtooth National Recreation Area.²⁶¹

Water markets have emerged as a tool to reallocate water within Idaho. The Idaho State Water Supply Bank, created in 1979 by the Idaho Legislature, operates as the dominant water market mechanism within Idaho.²⁶² The Bank is administered by the Board under rules created by IDWR. Both natural flow rights (surface and ground) and storage rights can be sold or leased for a period of up to five years.²⁶³ Presently, 427,000 acre-feet per year is available to the U.S. for rental for potential salmon recovery programs.²⁶⁴

3. Tribal Water Rights in Idaho

There are five federally recognized Indian tribes in Idaho;²⁶⁵ of these, three have adjudicated their water rights through the SRBA, one is currently in litigation, and one has not yet started.

²⁵⁸ *United States v. Idaho*, 959 P.2d 449, 451, 453 (Idaho 1998).

²⁵⁹ *Potlatch Corp. v. United States*, 12 P.3d 1260, 1263 (Idaho 2000); *see also* IDAHO WATER LAW HANDBOOK, *supra* note 16, at 410–11; Ann Y. Vonde et al., *Understanding the Snake River Basin Adjudication*, 52 IDAHO L. REV. 53, 181 (2019).

²⁶⁰ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 412.

²⁶¹ *Idaho v. United States*, 12 P.3d 1284, 1287 (Idaho 2000).

²⁶² IDAHO CODE §§ 42-1761–1762 (2019); IDAHO WATER LAW HANDBOOK, *supra* note 16, at 340.

²⁶³ *See generally* IDAHO ADMIN. CODE r. 37.02.03 (2019).

²⁶⁴ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 343.

²⁶⁵ Abelardo Rodriguez, *Indian Tribes in Idaho: Opportunities and Challenges In the Times of Self-Determination* U. OF IDAHO EXTENSION (2011), <https://docplayer.net/36333734-Indian-tribes-in-idaho-opportunities-and-challenges-in-the-times-of-self-determination.html> [<https://perma.cc/8S5G-493U>].

Settlements for the Nez Perce, Shoshone-Bannock, and Shoshone-Paiute Tribes are included in the SRBA's final decree.²⁶⁶ For the Nez Perce, the Idaho District Court ruled that the Tribe was not entitled to off-reservation instream flow reserved water rights to protect Snake River salmon when they signed their treaty with the U.S.²⁶⁷ The Nez Perce appealed this decision to the Idaho Supreme Court, but ultimately the parties settled.²⁶⁸ The Shoshone-Bannock tribal claims stem from an 1868 treaty and provided them with over one million acre-feet of water in natural flow, storage, and groundwater.²⁶⁹ The adjudication of the Snake River Basin allowed both Tribes and non-Indian water users to better understand how much water was in the basin and who was entitled to it.

The remaining two Idaho tribal rights are not yet adjudicated, though one is in process through the Northern Idaho adjudication: the Coeur d'Alene Tribe's allocation of water in the Coeur d'Alene-Spokane River Basin.²⁷⁰ The Kootenai Tribe's (Idaho) water rights remain to be adjudicated and the Kootenai Basin was removed from the Northern Idaho Adjudication in 2008.²⁷¹

4. Challenges for Managing Idaho's Water Resources

Idaho shares some challenges in common with other Pacific Northwest States, but changes in use also represent a substantial

²⁶⁶ Jeanette Wolfley, *Biagaweit: Securing Water from the Mighty River in the Snake River Basin Adjudication*, 52 IDAHO L. REV. 313, 314 (2016); see generally Vonde et al., *supra* note 259 (describing the adjudication of water rights in the Snake River Basin).

²⁶⁷ See Alexander V. Hays, Comment, *The Nez Perce Water Rights Settlement and the Revolution in Indian Country*, 36 LEWIS & CLARK ENVTL. L. REV. 869, 878–79 (2006).

²⁶⁸ *Minimum Stream Flows and the 2004 Snake River Water Rights Agreement (Nez Perce Agreement)*, IDAHO DEP'T OF WATER RESOURCES, <https://idwr.idaho.gov/IWRB/water-planning/minimum-stream-flows/nez-perce-agreement.html> [<https://perma.cc/ENH4-UGAP>].

²⁶⁹ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 415.

²⁷⁰ *Northern Idaho Adjudications (NIA)*, *supra* note 248; see also Matthew Blanksma, *Coeur d'Alene Tribal Water: All Rights Reserved?* MACOMBER L. REAL PROP. & WATER (June 12, 2017), <http://macomberlaw.com/2017/06/12/coeur-da-lene-tribal-water-rights-reserved/> [<https://perma.cc/83PM-93BJ>].

²⁷¹ See IDAHO DEP'T OF WATER RES., ADJUDICATION AND THE KOOTENAI RIVER BASIN 5 (2019), <https://idwr.idaho.gov/files/adjudication/20190909-CFPRBA-Pre-Commencement-MeetingKootenai.pdf> [<https://perma.cc/EE3Z-H53T>].

challenge. Agricultural expansion across Idaho's Magic Valley has increased significantly within the last thirty years, notably with an increased number of Concentrated Animal Feeding Operations ("CAFOs").²⁷² Expansion of agricultural operations are one factor out of many that may provide additional stresses on the finite water resources in the state.

Like in Washington, return flow is another significant issue. Junior water rights holders rely heavily on return flow, although Idaho law allows recapture of this water by an appropriator.²⁷³ An irrigator may employ efficiency improvements to structures capturing or delivering water.²⁷⁴ The saved water may be used for purposes incident to the land only, and no enlargement of the water right based on the recaptured water may occur.²⁷⁵ Once the saved water reaches a natural stream or aquifer, it becomes public property and part of the natural water system.²⁷⁶

The same recapture theory applies for municipal wastewater. A municipality may recapture and reuse effluent from a sewage treatment plant before releasing it into a public waterbody.²⁷⁷ In contrast to the requirement by irrigators to apply the recaptured water to the same land, municipalities may use the saved water on more land as the municipal area increases over time.²⁷⁸ Further, saved water can be put to different uses subject to change over time.²⁷⁹ As long as the water does not reach a public waterbody, a municipality may recapture and use it beneficially.²⁸⁰

For non-municipal rights, failure to use a right, or even part of one, can result in it being permanently lost.²⁸¹ If a water right is not put to beneficial use for a period of five years, then the right is

²⁷² See Scott Weaver, *Cow Country: The Rise of the CAFO in Idaho*, BOISE WKLY. (Sept. 1, 2010), <https://www.boiseweekly.com/boise/cow-country-the-rise-of-the-cafo-in-idaho/Content?oid=1755457> [<https://perma.cc/9M2E-HQUJ>].

²⁷³ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 191 (noting that the right of recapture is considered part of the original water right in Idaho).

²⁷⁴ *Id.* at 187–88.

²⁷⁵ *Id.* at 191–92; see also IDAHO CODE § 42-222(1) (2019).

²⁷⁶ See IDAHO WATER LAW HANDBOOK, *supra* note 16, at 190.

²⁷⁷ *Id.* at 193.

²⁷⁸ *Id.*

²⁷⁹ *Id.*

²⁸⁰ *Id.*

²⁸¹ *Id.* at 39–40

considered forfeited and reverts back to the state.²⁸² Good faith exceptions exist if non-use by a holder is out of their control.²⁸³

Like other states, exempt wells remain a challenge for Idaho regulators. Individually, a single well may not have a discernible impact on the water resources within the immediate vicinity. Collectively, their impact is significant because they may be developed in closed aquifer basins for new permit appropriations.²⁸⁴ IDWR possesses very little data about exempt wells because they are usually located in remote areas.²⁸⁵

Together, the entire system (legally and physically) is fragile, as demonstrated by these examples. CAFOs provide an example of expanding industry and economic gains but stress the physical system and legal structure in place, even though the SRBA clarified who could divert what water. Likewise, return flows and wastewater recapture represent important factors the entire water system relies on for physically available water or to maintain status quo supplies. Any small change to water use, whether by regulation enactments addressing how to manage “return flows or wastewater,” affects the overall system.

D. Montana

Montana has similar dynamics with the other Pacific Northwest states, but also some differences in managing its water, particularly through its water court system. As of 2018, the U.S. Census Bureau indicated just over one million people reside in Montana.²⁸⁶ There are seven federally recognized tribes in Montana,²⁸⁷ with six compacts related to water in place and one awaiting Congressional approval.²⁸⁸ Admitted as a state in 1889, Montana has a diverse geography with rivers flowing west in the Columbia River system and east into the Missouri and Yellowstone

²⁸² IDAHO CODE § 42-222(2) (2019).

²⁸³ *See id.* § 42-223(6).

²⁸⁴ IDAHO WATER LAW HANDBOOK, *supra* note 16, at 60.

²⁸⁵ *Id.* at 61.

²⁸⁶ *QuickFacts Montana*, U.S. CENSUS BUREAU, <https://www.census.gov/quickfacts/MT> [<https://perma.cc/2HEB-QBE7>].

²⁸⁷ *Tribal Nations*, MONT. GOVERNOR'S OFF. OF INDIAN AFF., <https://tribalnations.mt.gov/tribalnations> [<https://perma.cc/6MJZ-RATC>].

²⁸⁸ *See Approved Compacts*, MONT. DEP'T OF NAT. RESOURCES & CONSERVATION, <http://dnrc.mt.gov/divisions/reserved-water-rights-compact-commission/approved-compacts> [<https://perma.cc/FY97-7H3P>].

Rivers.²⁸⁹ According to the 2015 State Water Plan, Montana uses about eighty-four million acre-feet of water annually.²⁹⁰ Of this, seventy-two million acre-feet/year (86%) is used for hydropower production.²⁹¹ Agricultural diversion accounts for another 10.4 million acre-feet per year; the combined use from municipal, domestic, and industrial accounts for approximately 200,000 acre-feet annually.²⁹² For management purposes, Montana is split into four major river basins: the Clark Fork/Kootenai River Basins, Upper Missouri River Basin, Lower Missouri River Basin, and Yellowstone River Basin.²⁹³ Each basin developed a water management strategy identifying issues as part of an overall state water plan.²⁹⁴

1. Montana Water Law Basics

Montana is both similar and slightly different from the other states. Like the other states, water in Montana is owned by the public under the 1972 Constitution.²⁹⁵ The 1972 Constitution revamped water management and recordkeeping through the Montana Water Use Act.²⁹⁶ The Constitution confirmed existing water rights (not claims) for beneficial use before the Act passed; however, it did not mention Native American or federally reserved water rights.²⁹⁷ The Act established a permit system for obtaining water rights, authorized a procedure for changing water rights, created a centralized records system, and created a system for in-stream flows.²⁹⁸

²⁸⁹ *Montana*, BRITANNICA, <https://www.britannica.com/place/Montana-state> [<https://perma.cc/5AB8-C33Z>].

²⁹⁰ MONT. DEP'T OF NAT. RES. & CONSERVATION, MONTANA STATE WATER PLAN EXECUTIVE SUMMARY 3 (2015), http://dnrc.mt.gov/divisions/water/management/docs/state-water-plan/2015_water_plan_executive_summary.pdf [<https://perma.cc/2UF4-PS3U>] [hereinafter MONTANA STATE WATER PLAN].

²⁹¹ *Id.*

²⁹² *Id.*

²⁹³ See *Regional River Basin Information*, MONT. DEP'T OF NAT. RESOURCES & CONSERVATION, <http://dnrc.mt.gov/divisions/water/management/regional-river-basin-information> [<https://perma.cc/37PD-78KB>].

²⁹⁴ See MONTANA STATE WATER PLAN, *supra* note 290, at 1. The state water plan incorporates the recommendations of members of each region's basin advisory council to address water issues on a statewide basis.

²⁹⁵ MONT. CONST. art. IX, § 3(3) (1972).

²⁹⁶ See MONT. CODE ANN. §§ 85-1-101(2019).

²⁹⁷ MONT. CONST. art. IX, § 3(1).

²⁹⁸ See *generally* WATER RIGHTS IN MONTANA, *supra* note 16.

Various entities within Montana have a role in water management: the Department of Natural Resources and Conservation (“DNRC”),²⁹⁹ the Montana Water Court (“Water Court”),³⁰⁰ the Reserved Water Rights Compact Commission (“Compact Commission”), and two legislative committees. Of these, the DNRC, the Water Court, District Courts, and the Compact Commission play the most prominent roles. Unlike the other three states where adjudications are handled by general courts, Montana’s Water Court is a specialized court that adjudicates pre-1973 claims to water and it is currently working on determining more than 218,000 claims statewide.³⁰¹ Montana also has a specific Reserved Water Rights Compact Commission, which is responsible for negotiating water allocation settlements between federal agencies and Indian tribes for federal reserved water rights.³⁰²

To use water in Montana, an individual must apply for a permit from DNRC before diverting surface water or commencing a water project.³⁰³ Once a user puts water to a beneficial use, the DNRC, after review, may issue a certificate for a water right.³⁰⁴ Permits for a new appropriation are subject to a final order from the Water Court.³⁰⁵ In areas of over-allocation (closed basins), a user may be required to mitigate water use if the proposed use will deplete surface water or adversely affect other users.³⁰⁶

Exceptions to a permit requirement include small livestock pits or reservoirs located on non-perennial flowing streams.³⁰⁷ Water must be available for allocation and put to beneficial use, while not injuring existing users.³⁰⁸ Beneficial uses in Montana include domestic, stock, irrigation, lawn and garden, mining, municipal,

²⁹⁹ *Water Resources*, MONT. DEPT OF NAT. RESOURCES & CONSERVATION, <http://dnrc.mt.gov/divisions/water> [<https://perma.cc/9UB3-T6MH>]; LAND USE & NAT. RES. CLINIC, UNIV. OF MONT. SCHOOL OF LAW, WATER RIGHTS IN MONTANA 8 (2014), https://courts.mt.gov/Portals/189/Water/UM_WaterRightsStudy.pdf [<https://perma.cc/EQ8R-H8EC>].

³⁰⁰ See WATER RIGHTS IN MONTANA, *supra* note 16, at 6–7.

³⁰¹ *Id.* at 5; LAND USE & NAT. RES. CLINIC, *supra* note 299, at 6.

³⁰² See WATER RIGHTS IN MONTANA, *supra* note 16, at 15–16.

³⁰³ *Id.* at 22; see also MONT. CODE ANN. § 85-2-301 (2019).

³⁰⁴ WATER RIGHTS IN MONTANA, *supra* note 16, at 22, 24, 32.

³⁰⁵ See *id.* at 3–4.

³⁰⁶ *Id.* at 27.

³⁰⁷ MONT. CODE ANN. § 85-2-306(6).

³⁰⁸ *Id.* §§ 85-2-311(1)(a)–(d).

industrial, commercial, agricultural spraying, fisheries, wildlife, and recreation.³⁰⁹

Changes to water rights require approval by DNRC if a user intends to modify the point of diversion, place of use, place of storage, or purpose of use.³¹⁰ A key aspect when changing a right is determining if other existing users will be injured. Water Court adjudications determine specific allocation through 1973 historical use data, not present-day use.³¹¹

Like surface sources, groundwater constitutes an important component of Montana's water economy. Groundwater is managed conjunctively with surface water as a result of a 2007 court case, *Montana Trout Unlimited v. Montana Department of Natural Resources and Conservation*, which recognized the hydrological connection between surface water and groundwater.³¹² Any person wishing to use more than thirty-five gallons per minute or ten acre-feet per year of groundwater is required to obtain a permit to appropriate water.³¹³ For certain uses, a groundwater permit is not required.³¹⁴ Once the agency reviews and approves the application, a Certificate of Water Right is issued to the owner for the specified use.³¹⁵

In certain basins, water allocation has exceeded the true availability of water, both for surface and groundwater supplies. DNRC has closed these basins to further appropriation as a result of water availability problems or concerns for existing rights.³¹⁶

³⁰⁹ *Id.* § 85-2-102(5).

³¹⁰ *Id.* § 85-2-402(12).

³¹¹ See WATER RIGHTS IN MONTANA, *supra* note 36, at 4–5.

³¹² 133 P.3d 224, 232 (Mont. 2006) (noting that any hydrological connection that can be discerned requires the agency to take both resources into account when issuing a permit); see also Laura S. Ziemer et al., *Ground Water Management in Montana: On the Road from Beleaguered Law to Science-Based Policy*, 27 PUB. LAND & RESOURCES L. REV. 75, 79 (2006).

³¹³ MONT. CODE ANN. § 85-2-306(3)(a)(iii).

³¹⁴ *Id.* § 85-2-306(3)(a); Michele Peterson-Cook, Note, *Water's For Fightin', Whiskey's For Drinkin': How Water Law Affects Growth in Montana*, 28 J. ENVTL. L. & LITIG. 79, 87–89 (2013). Exempt wells have been a point of contention because they may be created in controlled groundwater areas and closed basins, where the aggregate appropriation may deplete an aquifer significantly.

³¹⁵ WATER RIGHTS IN MONTANA, *supra* note 16, at 23–24.

³¹⁶ MONT. DEP'T. OF NAT. RES. & CONSERVATION, MONTANA'S BASIN CLOSURES AND CONTROLLED GROUNDWATER AREAS 4–5 (2016), <http://dnrc.mt.gov/divisions/water/water-rights/docs/new-appropriations/montana-basin-closures-and-controlled-groundwater-areas-2016.pdf> [<https://perma.cc/JY3T-DAS9>].

Basins may be closed legislatively, by administrative action, or through the adoption of a compact.³¹⁷ In addition, a “controlled groundwater area” may be designated to protect water quantity or quality and existing rights where a permit is required for any amount of water withdrawals.³¹⁸ Controlled groundwater areas may be temporarily designated until water levels balance or permanently designated if aquifer recharge is not sustaining depletion rates.³¹⁹

Like in other Pacific Northwestern states, Montana is currently adjudicating water rights in various parts of the state.³²⁰ Within the four larger regional water management basins, there are eighty-five individual basins for adjudication purposes; of these, thirty have yet to be adjudicated.³²¹ Montana has developed a tight timeframe for reviewing claims and adjudicating these rights, which is handled through the Montana Water Court system discussed above.³²²

2. Montana’s Instream Flow Rights and Water Banking

Montana has created three ways to protect water instream for fish and wildlife. First, the Montana Fish and Game Commission designated “Murphy’s Rights” on twelve blue ribbon streams that set aside any unappropriated water for fish and wildlife habitat.³²³ Second, Montana’s water reservation process was used to create post-1973 instream flow rights.³²⁴ Like the other states, Montana

³¹⁷ *Id.*; MONT. CODE ANN. §§ 85-2-319(1)–(2).

³¹⁸ MONT. CODE ANN. § 85-2-506; WATER RIGHTS IN MONTANA, *supra* note 16, at 44–45.

³¹⁹ See MONT. CODE ANN. § 85-2-506; see also Peterson-Cook, *supra* note 314, at 85–86. For more discussion on legal challenges and outcomes to Montana’s groundwater laws, see John B. Carter, *Montana Groundwater Law in the Twenty-First Century*, 70 MONT. L. REV. 221 (2009).

³²⁰ See *Water Adjudication*, MONT. DEP’T. OF NAT. RESOURCES & CONSERVATION, <http://dnrc.mt.gov/divisions/water/adjudication> [https://perma.cc/AG3P-8TDM].

³²¹ *Id.*

³²² *Id.*

³²³ WATER RIGHTS IN MONTANA, *supra* note 16, at 15.

³²⁴ *Id.* at 42–43.

has the ability to lease water for instream flow restoration.³²⁵ There are three ways to temporarily lease a consumptive use for instream purposes: (1) leasing all or part of their water to the state; (2) leasing all or part of their water to another person for fisheries purposes; or (3) converting a water right to a permanent instream use.³²⁶ While an official statewide water market does not exist in Montana, groups like Trout Unlimited, Montana Water Project, or the Clark Fork Coalition have worked to restore streamflow.³²⁷ Finally, the Legislature also allows existing rights holders the ability to lease or change their water right for aquifer recharge or mitigation.³²⁸ The Gallatin Valley near Bozeman has been studied for the possibility of creating a groundwater bank as the population continues to grow and water demand rises.³²⁹

3. Montana Tribal Water Rights

Montana has seven federally recognized Indian tribes that are active in water negotiations or that have completed compacts providing water³³⁰ As mentioned above, the Montana Reserved Water Rights Compact Commission is authorized to negotiate settlements with federal agencies and Indian tribes.³³¹ The most recent compact to be negotiated, which includes surface and ground water, is between the Confederated Salish and Kootenai Tribes. The Montana Legislature approved this Compact in 2015 while approval by the Tribes, the Montana Water Court, and

³²⁵ John J. Ferguson et al., *Keeping Fish Wet in Montana: Private Water Leasing: Working Within the Prior Appropriation System to Restore Streamflows*, 27 PUB. LAND & RESOURCES L. REV. 1, 5–6 (2006).

³²⁶ WATER RIGHTS IN MONTANA, *supra* note 16, at 44; *see generally* MONT. CODE ANN. §§ 85-2-402 to -403, -407 to -408 (2019).

³²⁷ NAT'L FISH & WILDLIFE FOUND. ET AL., COLUMBIA BASIN WATER TRANSACTION PROGRAM 2018 ANNUAL REPORT 17 (2018) [hereinafter COLUMBIA BASIN WATER TRANSACTION PROGRAM].

³²⁸ MONT. CODE ANN. § 85-2-420(1).

³²⁹ *See About Us*, GALLATIN VALLEY WATER EXCHANGE, <https://montana-groundwater.weebly.com/about.html> [<https://perma.cc/LH83-79E4>].

³³⁰ WATER RIGHTS IN MONTANA, *supra* note 16, at 16–19; *see generally* MONT. CODE ANN. § 85-2-701.

³³¹ WATER RIGHTS IN MONTANA, *supra* note 16, at 15.

Congress remains pending.³³² Approval of this compact remains controversial.³³³

4. Challenges for Managing Montana Water Resources

Although water law in Montana is robust, a number of dynamics challenge the stability of this framework. As in other western states, Montana relies on return flow to supply downstream and junior users for utilization of their water rights.³³⁴ Within Montana, water users who collect return flow through efficiency improvements or methods retains the right to keep such saved water as long as the water is put to a beneficial use incident to the land or permit.³³⁵ Montana also shares rivers with other states where return flows have become an issue. In 2011, Montana unsuccessfully sued Wyoming in the U.S. Supreme Court over violations of the Yellowstone River Compact based on reduced return flow coming from Wyoming through improved irrigation techniques by Wyoming farmers.³³⁶

IV. REGIONAL DYNAMICS REVISITED: WHAT DO

³³² See *Confederated Salish and Kootenai Tribes Compact*, MONT. DEP'T. OF NAT. RESOURCES & CONSERVATION, <http://dnrc.mt.gov/divisions/reserved-water-rights-compact-commission/confederated-salish-and-kootenai-tribes-compact> [<https://perma.cc/ND3K-SVAK>].

³³³ See Bernie Azure, *Water Compact Heads to Congress*, CHAR-KOOSTA NEWS (Dec. 19, 2019), http://www.charkoosta.com/news/water-compact-heads-to-congress/article_7b5f2636-2288-11ea-884e-afe28849199b.html [<https://perma.cc/K3EV-FCM3>]; David Passieri, *Montana Sovereignty Threatened by Water Rights Act*, INDEP. REC. (Feb. 3, 2020), https://helenair.com/opinion/letters/montana-sovereignty-threatened-by-water-rights-act/article_f097fc73-d1b0-5587-8e78-73ef65b40ada.html [<https://perma.cc/JSN4-69ST>]; K.C. Smith, *CSKT Water Compact Likely to be Tied up in Court*, MISSOULIAN (Jan. 28, 2020), https://missoulian.com/opinion/letters/cskt-water-compact-likely-to-be-tied-up-in-court/article_908d339e-10c8-574d-a033-ad75b387f6b4.html [<https://perma.cc/GE6B-6FG6>].

³³⁴ MONT. CODE ANN. § 85-2-419; see also Jeff Kray, *U.S. Supreme Court Wades Into Western Water Law, Sets Precedent for Return Flows*, MARTEN L. (June 2, 2011), <https://www.martenlaw.com/newsletter/20110602-return-water-flows-precedent-set> [<https://perma.cc/628F-UJZD>] (discussing how a recent U.S. Supreme Court case dealt with return flows between states).

³³⁵ MONT. CODE ANN. § 85-2-419.

³³⁶ *Montana v. Wyoming*, 563 U.S. 368, 371–72 (2011).

ALL THE CHANGES LOOK LIKE TOGETHER?

Historically, water law governance has relied on predictable hydrologic patterns and a clear allocation of water based on priority dates—whoever has the earliest priority date has the right to take water, even to dry up a stream, regardless of the impact on other users or the fish or wildlife in the stream itself. However, this system of allocation is being thoroughly challenged by the global, national, regional, and state dynamics discussed above. There are three major sets of themes flowing through all four states: (1) the need to reallocate flows instream, particularly to meet ESA requirements and to provide for tribal rights; (2) growing populations, exempt wells, and changing uses; and (3) the impact of climate change on the hydrographs or pattern of water runoff. This Section summarizes these themes, while the final section offers some potential paths forward.

A. Reallocation of Water for Fisheries, Instream Flows, and Tribal Rights

One key set of factors affecting all four states is the need to legally protect water instream or legally put water back in streams and rivers for fisheries, instream flows, and tribal rights. Under the doctrine of prior appropriation, each state allocated water for “beneficial” uses, usually out-of-stream uses like agriculture or industrial use that could legally dry up streams.³³⁷ Although instream flow protection now exists in each state, most protections were created in the 1970s, well after most streams were fully or over-allocated. Thus, addressing this issue is a challenge.

Restoring water for instream flows today depends on a complex intertwining of several dynamics. One of these is baseline state laws protecting streams from further withdrawals such as the Murphy’s Rights in Montana³³⁸ or the minimum instream flows in Oregon and Washington.³³⁹ In addition, increasing legal

³³⁷ MacDonnell, *supra* note 8, at 242.

³³⁸ WATER RIGHTS IN MONTANA, *supra* note 16, at 15.

³³⁹ *Instream Flow and Water Management Implementation*, WASH. DEP’T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Protecting-stream-flows/Instream-flow-implementation> [<https://perma.cc/BG88-647G>]; *Flow Restoration in Oregon*, OR. WATER RESOURCES DEP’T, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/FlowRestoration/Pages/default.aspx> [<https://perma.cc/6N9G-YVYE>].

recognition of the interconnected nature of surface and groundwater means that further development of groundwater wells, including exempt wells in some regions, is being scrutinized.³⁴⁰ In addition, both the ESA and tribal rights can—separately or in combination—necessitate reallocation of water supplies to protect instream flows.³⁴¹ Further, the economic impact of instream flows is being recognized.³⁴² Finally, water markets and banks are a tool to reallocate water supplies; both states and the Columbia Basin Water Transactions Program have provided significant funds to restore stream flows.³⁴³

As noted above, the ESA is one mechanism forcing massive changes in water management, although not without challenges in meshing federal mandates and state laws. For example, a consortium of environmental groups threatened three irrigation districts (one in Oregon and two in Washington) with a lawsuit under the ESA for their water withdrawals in the Walla Walla River Basin in 2000.³⁴⁴ Although the districts settled and agreed to leave a portion of their senior water rights instream, downstream junior users within the State of Washington were able to take the water (or risk forfeiture).³⁴⁵ In Oregon's Deschutes River Basin, management of Wickiup Reservoir, used to store winter flows for summer irrigation, has been challenged under the ESA due to impact of listed spotted frogs. Again, a settlement has been worked out to change reservoir management to be more protective of the frogs.³⁴⁶ This in turn has affected the water available to the North Unit Irrigation District, which relies on the reservoir for its

³⁴⁰ MacDonnell, *supra* note 8, at 307–08.

³⁴¹ Kundis Craig, *supra* note 131, at 151.

³⁴² See Eloise Kendy et al., *Water Transactions for Streamflow Restoration, Water Supply Reliability, and Rural Economic Vitality in the Western United States*, 54 J. AM. WATER RESOURCES ASS'N 487, 489 (2018).

³⁴³ See COLUMBIA BASIN WATER TRANSACTION PROGRAM, *supra* note 327, at 11, 17.

³⁴⁴ See Filippi, *supra* note 204, at § 22.03(6).

³⁴⁵ *Id.*

³⁴⁶ See Amanda Peacher, *Frogs, Fish and Farmers Feel Out Compromise on Deschutes River*, OR. PUB. BROADCASTING (Dec. 13, 2017), <https://www.opb.org/news/article/deschutes-river-oregon-farmers-frogs-fish/> [<https://perma.cc/9FNK-X3KK>].

summer irrigation supplies.³⁴⁷ Finally, management of the Columbia River hydropower system itself remains under the close supervision of a federal judge in Portland.³⁴⁸

Tribal treaty rights are another way water management is being changed in all four Pacific Northwestern States. As noted above, once quantified, tribal water rights date to the time of treaty or time immemorial, giving tribes the most seniority.³⁴⁹ However, all four states allocated water through their state systems without regard to tribal rights.³⁵⁰ The need to address tribal rights—both for on reservation use and for instream flow protection—is a factor driving both negotiated settlements and general stream adjudications in a number of areas. In some cases, such as the Confederated Tribes of the Warm Springs in Oregon, negotiations created constructive working relationships among Tribes, local governments, and non-Indian citizens.³⁵¹ In other instances, such as the Klamath Basin Adjudication, tensions have run high as water is redistributed for tribal rights.³⁵² In Idaho, the SRBA also quantified three sets of tribal rights, thus leading to new water marketing opportunities.³⁵³ Tribal rights have also forced consideration of impacts on critical habitat through cases such as the recently decided culvert case in Washington State.³⁵⁴

³⁴⁷ Stephen Hamway, *Wickiup Reservoir at Lowest Level Since Early 1990s*, BULLETIN (Sept. 6, 2018), <https://www.bendbulletin.com/home/6501908-151/wickiup-reservoir-at-lowest-level-since-early-1990s> [<https://perma.cc/BKF2-632D>].

³⁴⁸ See Carl Segerstrom, *Courts Can't Keep Columbia and Snake River Salmon from the Edge of Extinction*, HIGH COUNTRY NEWS (Sept. 26, 2019), <https://www.hcn.org/issues/51.17/endangered-species-courts-cant-keep-columbia-and-snake-river-salmon-from-the-edge-of-extinction> [<https://perma.cc/4KF6-7QFL>].

³⁴⁹ See generally *Winters v. United States*, 207 U.S. 564 (1908).

³⁵⁰ See *supra* Section III.C.

³⁵¹ See Guiao, *supra* note 128, at 291–99.

³⁵² Ryan Sabalow & Dale Kasler, *Can an Uneasy Truce Hold Off Another Water Rebellion on California's Northern Border?*, SACRAMENTO BEE (May 11, 2018), <https://www.sacbee.com/news/california/water-and-drought/article210634429.html>.

³⁵³ See, e.g., Hays, *supra* note 267, at 870–71 (discussing the Nez Perce claims).

³⁵⁴ See *United States v. Washington*, 853 F.3d 946, 965–66 (9th Cir. 2017) *aff'd per curiam*, 138 S. Ct. 1832 (2018) (holding that Washington violated Native American treaties by constructing culverts under state-owned roads, thus blocking passage of salmon from migrating to historical spawning grounds where Tribes can harvest the fish). Additionally, the District Court's order that the state remediate culverts to allow fish passage was upheld. *Id.*

Negotiations, settlements, and adjudications that include tribal rights remain ongoing, although there are tribes which have not yet addressed their rights. In Montana, the proposed compact for the Salish Kooteni Tribes has been ratified by the state legislature, with approval by Congress in limbo since 2014.³⁵⁵ Tribal water rights are also an important component in settling water allocation in the ongoing North Idaho Adjudication. In September 2019, the Idaho Supreme Court issued a decision that largely recognized tribal claims.³⁵⁶ Yet, all four states have tribes with non-quantified rights, leading to uncertainty about existing water allocations.³⁵⁷

Finally, water markets have emerged as successful mechanisms in areas of Washington, such as the Walla Walla, Dungeness, and Yakima River Basins.³⁵⁸ Similar success stories have occurred in Oregon.³⁵⁹ More importantly, tribes have recently begun to market their water rights to other users, acting as an additional water and revenue source for a number of parties. In Idaho, the Shoshone-Bannock Tribe and Idaho Ground Water Appropriators (“IGWA”) entered into a multi-year water lease agreement to allow the tribe to lease part of its water rights to aid the IGWA in meeting a 50,000 acre-feet mitigation plan requirement.³⁶⁰ The allowance of an “off-reservation” use was written into the 1990 settlement of the Tribe’s water right through creation of a Tribal Water Bank.³⁶¹ Lease rates vary among tribes and are dependent on location, supply availability, lease term, and other factors.³⁶²

³⁵⁵ *Confederated Salish and Kootenai Tribes Compact*, *supra* note 332.

³⁵⁶ See Press Pool, *The Coeur d’Alene Tribe Prevails in Water Rights Appeal Before Idaho Supreme Court*, INDIAN COUNTRY TODAY (Sept. 5, 2019), <https://news-maven.io/indiancountrytoday/the-press-pool/the-coeur-d-alene-tribe-prevails-in-water-rights-appeal-before-idaho-supreme-court-NVa8V6o0mkme1grrimJb0Q/> [<https://perma.cc/7AE3-UDA2>].

³⁵⁷ See Bonkowski, *supra* note 16, at 3.

³⁵⁸ See *Tracking Water Banks*, WASH. DEP’T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights/Trust-water-rights/Water-banks/Tracking-water-banks> [<https://perma.cc/JS88-M4FH>].

³⁵⁹ See *supra* Part III(A)(2) and accompanying notes.

³⁶⁰ Brett Bovee et al., *Tribal Water Marketing: An Emerging Voice in Western Water Management*, 2016 WATER REP. 1, 1.

³⁶¹ *Id.* at 3.

³⁶² *Id.* at 5.

About fourteen tribal governments in the western U.S. have initiated the process of leasing part of their water rights.³⁶³ The seniority of such rights makes them attractive for users looking to supplement water use with guaranteed water.³⁶⁴ Great potential exists to reduce system demand through tribal water marketing, although questions may exist because water constitutes spiritual and religious beliefs in many cultures.³⁶⁵

B. Growing Populations, Exempt Uses, and Changing Water Demands

There is also pressure to provide adequate water for a growing population, factor in the impact of exempt uses, and manage the impact of changing water demands. The Pacific Northwest is one of the fastest growing regions in the U.S.³⁶⁶ The natural beauty and recreation opportunities make it an attractive location for people looking for high-quality lifestyles. However, an increased population requires more water for domestic, municipal, and agriculture purposes too. In 2015, Washington's population topped seven million people;³⁶⁷ Seattle ranks in the top five for growth among the U.S. largest cities.³⁶⁸ With the increased number of people, housing prices have skyrocketed,³⁶⁹ and water availability continues to be a challenge to accommodate human needs.

³⁶³ *Id.* at 4.

³⁶⁴ *See id.* at 5.

³⁶⁵ *See, e.g.,* June-Ann Greely, *Water in Native American Spirituality: Liquid Life—Blood of the Earth and Life of the Community*, 2 GREEN HUMAN. 156, 156 (2017).

³⁶⁶ Anna Boiko-Weyrauch, *Census Data Highlights Northwest Population Growth*, NW. NEWS NETWORK (Dec. 27, 2017), <https://www.nwnewsnetwork.org/post/census-data-highlights-pacific-northwest-population-growth> [<https://perma.cc/8VGK-8AEG>].

³⁶⁷ Associated Press, *More People Moving to Washington: Population Tops 7 Million*, SEATTLE TIMES (June 25, 2015), <https://www.seattletimes.com/seattle-news/more-people-moving-to-washington-population-tops-7-million/> [<https://perma.cc/2TA3-Z7E9>].

³⁶⁸ Gene Balk, *U.S. Census: Seattle Now Fourth for Growth Among 50 Biggest U.S. Cities*, SEATTLE TIMES (May 19, 2016), <http://www.seattletimes.com/seattle-news/data/us-census-seattle-now-fourth-among-50-biggest-us-cities/> [<https://perma.cc/KRP7-Q2JT>].

³⁶⁹ Mike Rosenberg, *Home Prices Rising Faster in Washington than in Any Other State*, SEATTLE TIMES (June 22, 2016), <https://www.seattletimes.com/seattle-news/data/us-census-seattle-now-fourth-among-50-biggest-us-cities/> [<https://perma.cc/956Z-A7VB>].

The pressure on housing has in part led to more pressure on exempt wells. As noted above, each state allows certain uses of water to be exempt from a permit for water use and withdrawals if they are below a particular pumping capacity or daily total. Domestic water wells present the most common use of water in this context, but livestock watering purposes may be utilized without a permit as well.³⁷⁰ For example, Washington's Easterday Ranch decision determined that the livestock exemption covers any number of livestock.³⁷¹ Limitations on exempt uses have impacted not only water governance, but state governance as well. For example, legislative challenges to Washington State's *Hirst* decision resulted in a freeze on the state's operating budget until an agreement could be worked out.³⁷² This is not just a challenge for Washington; the Oregonian's analysis found Oregon's groundwater management woefully lacking.³⁷³ Individually, each exempt use may not be a large impact on water supplies, but collectively, exempt uses can present challenges for current and future water governance,³⁷⁴ a challenge compounded by limited data and information available.

There are also shifting demands for water. As noted above, in-stream flows are one critical shift. Changing uses are another. A notable example is the expansion of CAFOs in Idaho. While the number of farms in Idaho has decreased, the size of farms has increased.³⁷⁵ Larger farms with more livestock increases the stress on local water systems if recharge rates cannot be maintained. Excessive groundwater pumping in parts of Idaho has been problematic, although steps have been made to restore aquifers.³⁷⁶

³⁷⁰ See *supra* Part IV (discussion on groundwater exemptions).

³⁷¹ *Five Corners Family Farmers v. State*, 268 P.3d 892, 895 (Wash. 2011).

³⁷² Phuong Le, *Washington State Construction Budget Held up in Dispute over Water Rights*, SEATTLE TIMES (July 6, 2017), <https://www.seattletimes.com/seattle-news/politics/construction-budget-held-up-in-dispute-over-water-rights/> [<https://perma.cc/4A35-EC8W>].

³⁷³ House & Graves, *supra* note 136.

³⁷⁴ Caldwell, *supra* note 211, at 1108.

³⁷⁵ Weaver, *supra* note 272.

³⁷⁶ See Roger Chase, *Depleted Idaho Aquifers a Major Concern*, IDAHO STATESMAN (Feb. 2, 2016), <http://www.idahostatesman.com/opinion/readers-opinion/article58029408.html> [<https://perma.cc/8E3A-FJG6>].

C. Climate Triggers

Changing weather patterns and uncertainty about longer-term climatic trends are already playing a key role in how well Pacific Northwest water law adapts for user demand, environmental needs, and economic opportunities.

However, warming conditions are affecting regional variability and longer-term climate trends. Since the late 1800s, the region has warmed about 1.3 degrees Fahrenheit on average.³⁷⁷ By 2070 to 2099, the projected temperature increases range widely from 3.3 to 9.7 degrees Fahrenheit.³⁷⁸ Researchers have already observed a 20% decrease in average early-April snowpack in the Cascades since the 1950s, earlier spring snowmelt, and a decrease in most summer flows compared to the percentage of annual flow.³⁷⁹ In most years, snow is melting earlier, as is spring runoff, resulting in lower summer flows during critical irrigation months.

Temperature increases mean more precipitation falls as rain instead of snow during the winter.³⁸⁰ This results in less snowpack to melt, providing less water during spring and summer months. Such a change in the hydrograph tends to impact more junior water right holders, forcing them to find other water sources (through a water market or bank, or to drill a well if they can get a permit) if their rights are turned off to satisfy senior users.³⁸¹

Precipitation extremes, including drought and flood, have always posed a challenge for water management, so increasing the variability of such events makes this more of a challenge. All of the states' systems were tested when severe drought impacted the Pacific Northwest from 2013-15, leading to shortages in winter snowpack.³⁸² This in turn affected the winter ski industry, limited water

³⁷⁷ Mote et al, *supra* note 2, at 489.

³⁷⁸ *Id.*

³⁷⁹ *Id.*

³⁸⁰ *See id.* at 489–90.

³⁸¹ *See, e.g.,* DOUGLAS KENNEY ET AL., THE IMPACT OF EARLIER SPRING SNOWMELT ON WATER RIGHTS AND ADMINISTRATION: A PRELIMINARY OVERVIEW OF ISSUES AND CIRCUMSTANCES IN THE WESTERN STATES 12 (2008); *see also* Amy L. Steimke et al., *Climate Change and Curtailment: Evaluating Water Management Practices in the Context of Changing Runoff Regimes in a Snowmelt-Dominated Basin*, 10 WATER 1, 3–4 (2018).

³⁸² USDA NW. CLIMATE HUB & U.S. FOREST SERV., POTENTIAL DROUGHT IMPACTS IN THE PACIFIC NORTHWEST 2 (2018),

for irrigation, and resulted in low stream flows that caused loss of salmon fry.³⁸³ At the same time, hydropower production dropped due to decreased water flows even as demand for electricity increased across the grid.³⁸⁴ This experience led these states to re-evaluate their drought protocols. Going forward, alternative approaches to drought, such as Texas' approach to quantifying water use during drought to ensure water conservation and drought contingency plans for specific cities and water suppliers, may be a useful template.³⁸⁵

At the same time, the four Pacific Northwest states are impacted by floods. After a number of years of reduced snowpack, the winter of 2016 set records in most of the Pacific Northwest for precipitation.³⁸⁶ In Western Washington, the Puget Sound area has experienced sixteen federally declared flood disasters since the 1990s, and Interstate 5 has closed several times due to flooding from severe rain events.³⁸⁷ Moreover, severe flooding in 2015 caused thousands of dollars of damage in Portland and threatened wastewater systems used for treatment.³⁸⁸ While each state has

<https://www.fs.usda.gov/ccrc/sites/default/files/documents/files/r6-droughtfact-sheet.pdf> [<https://perma.cc/53ZG-RXFJ>].

³⁸³ See Hal Bernton, *Snowpack Drought Has Salmon Dying in Overheated Rivers*, SEATTLE TIMES (July 25, 2015), <https://www.seattletimes.com/seattle-news/environment/snowpack-drought-has-salmon-dying-in-overheated-rivers/> [<https://perma.cc/DQ3U-9FNJ>] (discussing the impact on the salmon population); Andrea Thompson, *Pacific Northwest's 'Wet Drought' Possible Sign of Future*, CLIMATE CENT. (Apr. 28, 2015), <https://www.climatecentral.org/news/northwest-wet-drought-climate-future-18910> [<https://perma.cc/83CC-F8C7>].

³⁸⁴ *Quantifying the Effects of Drought on the Electric*, PAC. NW. NAT'L LABORATORY (Jan. 2017), <https://www.pnnl.gov/science/highlights/highlight.asp?id=4651> [<https://perma.cc/P6K5-AD7N>].

³⁸⁵ See generally *Drought Contingency Plans*, TEXAS COMMISSION ON ENVTL. QUALITY, https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/contingency.html [<https://perma.cc/Y9NF-5C95>].

³⁸⁶ Phuong Le & Gillian Flaccus, *Seattle Crushes Rain Record, While Rival Portland Wet Too*, U.S. NEWS & WORLD REP. (Apr. 25, 2017), <https://www.usnews.com/news/us/articles/2017-04-25/soggy-seattle-lives-up-to-name-breaks-another-rain-record> [<https://perma.cc/BTP7-V9S5>]; see also Jon Erdman, *Portland, Oregon May Be America's Most Winter-Fatigued City in 2016-17*, WEATHER CHANNEL (Feb. 1, 2017), <https://weather.com/storms/winter/news/portland-oregon-worst-winter-city-2016-2017> [<https://perma.cc/D8G6-PDES>].

³⁸⁷ WASHINGTON'S CLIMATE RESPONSE, *supra* note 147, at 44.

³⁸⁸ *Northwest Flooding: State of Emergency Declared in Oregon; Tornado Confirmed in Washington*, WEATHER CHANNEL (Dec. 11, 2015), <https://weather.com/storms/severe/news/pacific-northwest-storm-impacts> [<https://perma.cc/8TZ4-J497>].

laws requiring zoning to protect against building in floodplains to decrease flood impacts, this is another area where the ESA affects local management.³⁸⁹ Several lawsuits have been brought in the Pacific Northwest with regard to the National Flood Insurance Program, floodplain management, and the impacts on housing prices.³⁹⁰

V. RECOMMENDATIONS GOING FORWARD: WHAT CAN BE DONE TO ADDRESS ALL THE CHANGE?

The complexity of managing water in these four states and as a region is clear, particularly given the interstate and international dynamics. Less clear is how to address the many layers of change in a coherent way: the need to meet instream flows and obligations under the ESA; the legal requirement to address tribal reserved rights; the need to address growing populations, exempt uses, and changing water demands; the legal obligations to manage energy supplies, agriculture, and water; and finally, the need to address a changing hydrograph and increasingly unpredictable water supplies given climate change. What can be done?

First, coordinated collection of information is critical, particularly of groundwater. Acquiring up-to-date groundwater data for supply, recharge rates, and interactions with surface water is critical to developing coherent policy with lasting impacts. In many parts of the Pacific Northwest, comprehensive information regarding aquifers is lacking, hampering management from quantity and quality standpoints. Furthermore, lack of current information about groundwater movement and influence on nearby surface

³⁸⁹ See *National Flood Insurance Program & the Endangered Species Act*, FED. EMERGENCY MGMT. AGENCY, <https://www.fema.gov/national-flood-insurance-program-endangered-species-act> [<https://perma.cc/TBR2-VXM9>]; see also Jon Parton, *Judge Rules FEMA Must Reconsider Floodplains Plan*, COURTHOUSE NEWS SERV. (May 15, 2019), <https://www.courthousenews.com/judge-rules-fema-must-reconsider-floodplains-plan/> [<https://perma.cc/TT3C-3R27>].

³⁹⁰ See generally *Nat'l Wildlife Fed'n v. Fed. Emergency Mgmt. Agency*, 345 F. Supp. 2d 1151 (W.D. Wash. 2004); *Audubon Society of Portland v. Fed. Emergency Mgmt. Agency*, No. 3:09-c-729-HA (D. Or. July 7, 2010) (Settlement Agreement and Proposed Order). For more recent efforts to find a path forward, see FED. EMERGENCY MGMT. AGENCY, *FEMA'S NFIP ESA CONSULTATION IN OREGON* (2019), https://www.oregon.gov/LCD/NH/Documents/biop_fema_nfip_esa_consultation_or.pdf [<https://perma.cc/9QBH-JU3E>].

sources makes it difficult to discern whether water is available in basins to be allocated for water rights. Adequately funding agencies for groundwater research is paramount to developing credible laws based on the best and most current science. The initial decision by the Oregon Legislature to increase funding for groundwater research by OWRD is an example of public dollars being distributed for important research; however, the politics of passing such legislation makes this effort cumbersome.³⁹¹

In addition to more information about groundwater, better understanding and managing exempt uses is important. Given the wide range of exempt uses in both the urban and rural environments, better understanding their impact on the overall system is critical. Although mandating gauges and measuring devices on exempt uses is fraught, building incentives to do so is important. The impact of exempt uses is a theme in all four states, with decisions like Washington's *Hirst*³⁹² having impacts far beyond just water allocation.

Third, drivers like the ESA or the need to quantify tribal water rights may lead to unusual solutions. For example, irrigators in the Deschutes River Basin are looking to develop water sharing mechanisms to share water after restrictions to protect the spotted frog have been implemented.³⁹³ Similarly, quantification of their water rights in Idaho may allow the Nez Perce tribe to temporarily lease water to others, providing them with a cash flow while they develop their own use for water longer-term. Even incentives not yet discussed like the expensive cost to meet new requirements for a hydroelectric license can lead to change. For example, on the Elwha River in Washington, this ultimately led to removal of a dam and resulted in significant recovery of endangered fish species.³⁹⁴ As one commentator notes, recovery implementation plans developed in a collaborative way may provide an avenue for constructively

³⁹¹ Theen, *supra* note 138.

³⁹² See generally *Whatcom County v. Hirst*, 381 P.3d 1 (Wash. 2016).

³⁹³ Jess Burns, *Agreement Reached to Help Oregon's Spotted Frog*, OR. PUB. BROADCASTING (Oct. 28, 2016), <https://www.opb.org/news/article/agreement-will-increase-water-flows-on-deschutes-to-help-threatened-spotted-frog/> [<https://perma.cc/HF32-HZ2K>].

³⁹⁴ Brain Clark Howard, *River Revives After Largest Dam Removal in U.S. History*, NAT'L GEOGRAPHIC (June 2, 2016), <https://www.nationalgeographic.com/news/2016/06/largest-dam-removal-elwha-river-restoration-environment/> [<https://perma.cc/9ANW-QVY2>].

working through a tangled set of issues.³⁹⁵ In areas where both surface and groundwater supplies are limited and drivers like the ESA impact water allocation, local stakeholders have been working together to develop novel water management mechanisms to comprehensively manage water supplies. Examples include the Walla Walla River Basin (Oregon and Washington) and the Deschutes River Basin (Oregon).³⁹⁶

Fourth, further developing innovative water markets or banks to expedite voluntary reallocation is critical, while also being mindful that changing how or where water is used can affect others. Established water markets and banks in each of these states offer avenues to restore instream flows and increasingly allow water users a way to access additional water if they do not have enough.³⁹⁷ Creative approaches like Oregon's split season lease allow some use of water but allow someone to leave water instream late in the season without loss for non-use.³⁹⁸

Fifth, there is tremendous opportunity for much more "integrated water resources management."³⁹⁹ Rather than treating water allocation separately, managing water allocation, drinking water, wastewater and reuse, and flooding and stormwater management together can be important. Oregon has taken a critical step with this by finalizing a statewide integrated water resources assessment in 2017.⁴⁰⁰ Likewise, Montana's state water plan is an important step.⁴⁰¹ Given the likelihood of increased climate variability, taking advantage of water when it is in the system is critical. For example, California has flooded vineyards and agricultural fields when water is available to build up soil

³⁹⁵ See generally Reed D. Benson, *Avoiding Jeopardy, Without the Questions: Recovery Implementation Programs for Endangered Species in Western River Basins*, 2 MICH. J. ENVTL. & ADMIN. L. 473 (2013).

³⁹⁶ See generally *About, WALLA WALLA WATERSHED MGMT. P'SHIP*, *supra* note 173; see also *DESCHUTES WATER ALLIANCE WATER BANK*, *supra* note 125.

³⁹⁷ See generally Kendy et al., *supra* note 342.

³⁹⁸ See *Split Season Instream Leasing*, OREGON.GOV, <https://www.oregon.gov/OWRD/programs/WaterRights/IS/IL/Pages/SplitSeasonIL.aspx> [<https://perma.cc/7PFZ-6BPC>].

³⁹⁹ *Integrated Water Resource Management*, AM. PLAN. ASS'N, <https://www.planning.org/knowledgebase/watermanagement/> [<https://perma.cc/693F-PCVM>].

⁴⁰⁰ See generally *ORIWR STRATEGY 2017*, *supra* note 61.

⁴⁰¹ See generally *MONTANA STATE WATER PLAN*, *supra* note 290.

moisture, recharge aquifers, and ensure base flow for salmon fry.⁴⁰² Finding ways to think about not only water, but also energy and agriculture together can be an important step forward in rethinking water supplies.

Finally, working together to solve what may seem like intractable challenges can lead to creative solutions. The work of Oregon's Freshwater Trust—on both water quantity and water quality issues—highlights innovative ways of bundling challenges to find solutions. In response to flooding in Washington's Chehalis River Basin, stakeholders are finding ways to manage flood impacts while also addressing low flow impacts on fisheries, municipal water supply, agriculture, and tribal rights.⁴⁰³ As demand for water resources increase, collaboration among users becomes an important factor to cope with the limited power of existing water laws and regulations.

Going forward, water governance in the Pacific Northwest must account for a number of changing dynamics. The challenge of climate change and increased uncertainty in water supplies may in fact be an opportunity to rethink how this region governs its water supplies, even as other regions in the U.S. are starting to do the same.⁴⁰⁴ Historically, the prior appropriation doctrine is reliant on a stable water supply system to function properly; this assumption is no longer working as water supplies vary widely from one year to the next.⁴⁰⁵ Furthermore, tribal water rights and endangered species considerations represent important dynamics for appropriately balancing water resources in this region. Washington, Oregon, Idaho, and Montana have responded to these challenges

⁴⁰² Dan Charles, *As Rains Soak California, Farmers Test How to Store Water Underground*, NAT'L PUB. RADIO (Jan. 12, 2017), <https://www.npr.org/sections/thesalt/2017/01/12/509179190/as-rains-soak-california-farmers-test-how-to-store-water-underground> [<https://perma.cc/ZJW5-6F5J>]; Jacob V.E. Katz et al., *Floodplain Farm Fields Provide Novel Rearing Habitat for Chinook Salmon*, 12 PLOS ONE 1, 2–3 (2017).

⁴⁰³ See *The Strategy*, CHEHALIS BASIN STRATEGY, <http://chehalisbasinstrategy.com/current-actions/> [<https://perma.cc/A7QB-V72N>] (providing a broad overview of the Chehalis Basin Strategy).

⁴⁰⁴ See generally Harrison C. Dunning, *Confronting the Environmental Legacy of Irrigated Agriculture in the West: The Case of the Central Valley Project*, 23 ENVTL. L. 943 (1993); Michael Hanemann, *The Central Arizona Project* (Univ. of Cal., Berkeley and Giannini Foundation, Working Paper No. 937, 2002).

⁴⁰⁵ P.C.D. Milly et al., *Stationarity is Dead: Whither Water Management?*, 319 SCI. 573, 573 (2008).

in a number of ways, but room exists for adapting the current governance structure to the changing times. The water law in each state is well developed for water allocation, instream flows, and water quality monitoring. However, limitations on management strategies as a result of court decisions, and lack of data surrounding the impact of exempt permit uses have made it difficult for lawmakers to develop lasting policy without a comprehensive picture of the water supply and use landscape.

As appropriate, amendments to laws and regulations may be necessary—from local to regional scales—to accomplish coherent water governance. Ideas tried at local levels may provide pilots while state-wide mandates for integrated water resource management may be needed. Balancing a top-down and bottom-up approach keeps government oversight in place while granting individuals at the local level, where impacts are often felt the most, the opportunity to be active in deciding the future of their water resources.