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Addressing the Prior Appropriation Doctrine in the Shadow of Climate Change and the Paris Climate Agreement

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Addressing the Prior Appropriation Doctrine in the Shadow of Climate Change and the Paris Climate Agreement

Kait Schilling[†]

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I. INTRODUCTION

“Water is a precondition to all life...”¹ In a global system that is adjusting to an unprecedented era of climate change, disputes are cropping up regularly regarding the uncertainty of who has the more prevalent right; is it the farmer, the municipality or the recreationalist? “General stream adjudications have become the principal forum for the clash of legal rights and values concerning water. Much is at stake; general stream adjudications reflect the importance of water to the residents of the western states. Since rainfall is unpredictable in many parts of the West, water users rely on rivers and streams, as well as the commonly interconnected groundwater with those rivers and streams.”² Much of what the water adjudications must determine comes down to a policy dispute about the future of the West and how land should be used.³

Underlying all state water law statutes in the West is the doctrine of prior appropriation. The doctrine originated from miners on federal public lands who customarily acknowledged the superior rights of those who had first used the water.⁴ Thus, the ultimate determination of who has the priority right comes from the date of appropriation. For instance, if one miner used water from a river first, then his right would be fulfilled before the miner who used the water immediately after him. The reasoning behind the prior appropriation doctrine’s priority system in the West was to provide a simple and clear way to solve disputes.⁵ In 1855, the California Supreme Court officially published the “first in time, first in right” rule, immortalizing the prior appropriation doctrine as the law for the West.⁶ The basic elements of the doctrine are: (1) intent to apply the water to beneficial use, (2) an actual diversion of water from a natural source of surface water, and (3) application of the water to a beneficial use within a reasonable time.⁷

¹ SIWI, 2013 ANNUAL REPORT SUMMARY (MARCH 2014), <http://www.siwi.org/publications/2013-annual-report/> [https://perma.cc/5TC2-3BMJ].

² John E. Thorson, Ramsey Laursool. Kropf, Dar Crammond & Andrea Gerlak, *Dividing Western Waters: A Century of Adjudicating Rivers and Streams*, 8 U. DENV. WATER L. REV. 355, 360 (2005).

³ See generally *id.*

⁴ DAVID H. GETCHES, SANDRA B. ZELLMER & ADELL L. AMOS, *WATER LAW IN A NUTSHELL* 71 (5th ed. 2015).

⁵ Lawrence J. MacDonnell, *Prior Appropriation: A Reassessment*, 18 U. DENV. WATER L. REV. 228, 280 (2015).

⁶ *Irwin v. Phillips*, 5 Cal. 140 (1855).

⁷ Getches, *supra* note 4, at 71.

The prior appropriation doctrine can be described as water rights provided by a state-administered grant that allows the use of specific quantities of water for specific purposes, but only if that “water is available free from the claims of others with earlier appropriations.”⁸ The prior appropriation doctrine is usually the chosen system for dry areas where water scarcity exists, because the rule of propriety ensures that those who obtained rights will not have their water taken away from them.⁹ In other words, “the core idea of prior appropriation is the protection of investment backed expectations from the risks of variable water years...”¹⁰

Designed in an era of unprecedented development and movement westward, the prior appropriation doctrine announced a new way to gain rights, often times in perpetuity. In conjunction with movement west, the populations of urban and rural areas were growing rapidly; by 1920, the West’s population was approximately 9 million people.¹¹ The presence of growth was of particular importance because water was the fuel for industry, mining, and agriculture.¹²

Similar to the population growth that accompanied westward expansion, today the Western United States is experiencing an increase in population that adds to the complication of climate change. The water cycle is expected to undergo “significant change” as climate change worsens.¹³ In the western United States, climate change is projected to shrink the amount of rainfall and extend the times of drought.¹⁴ As populations continue to rise, surface and groundwater availability will continue to shrink, and competition for water resources will become more prevalent.¹⁵ In a system that focuses on priority of appropriation, those with the oldest appropriations will be guaranteed their rights, while younger right holders will lose out. Because water is a precondition to life, then the priority system must change to allow the growing population to have adequate and full access to this human right.

⁸ GREGORY S. WEBER, JENNIFER L. HARDER & BENNETT L. BEARDEN, *CASES AND MATERIALS ON WATER LAW* 6 (9th ed. 2014).

⁹ *Id.*

¹⁰ Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. Rev. 881, 884 (2000).

¹¹ Thorson, *supra* note 2, at 366.

¹² *Id.*

¹³ *Water and Climate Change: How Global Warming Impacts Water*, UNION OF CONCERNED SCIENTISTS, <https://www.ucsusa.org/global-warming/science-and-impacts/impacts/water-and-climate-change.html#.WqxbBnwh3IU> [<https://perma.cc/YZ5M-MSMK>] (last visited on April 4, 2017).

¹⁴ *Climate Impacts on Water Resources*, EPA, https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-water-resources_.html [<https://perma.cc/JR4N-SZAW>] (last updated December 21, 2016).

¹⁵ *Id.*

The current status of water law in the West is incredibly fractured because water law has historically been left to the states to govern on an individual basis.¹⁶ Complicated by the fact that rivers and groundwater cross state lines and, therefore, must be shared, water law is at a pivotal point in our history. We must either engage in reform or watch the current water quantities continue to rapidly decline. The world has come to terms with the fact that climate change is a real threat that needs to be addressed. The United Nations (UN) has gone so far as to hold the 2015 Paris Conference on Climate Change to address the problems climate change poses. Concerning water, the Paris Agreement delivered Sustainable Development Goal #6 (Goal #6) that addressed issues surrounding the world's fresh water.¹⁷

In this note, I will address the historical context of the prior appropriation doctrine, its modern application, and the current state of poor water management due to the doctrine. I will explore case studies of the prior appropriation doctrine in two states: Colorado and Washington. Following these case studies, I will discuss the reality for water appropriations in a world dominated by climate change. In conjunction to climate change, I will examine the United Nations' top priorities for addressing the rise in global water scarcity. Finally, I will argue that the prior appropriation doctrine, which dominates Western water law, must be revised in the new normal of climate change. These revisions to the prior appropriation doctrine should include incorporation of Goal 6 from the Paris Agreement, decrease the quantity of existing water rights claims, and increase the amount of water storage.

II. BACKGROUND

The prior appropriation doctrine created the idea of permanent ownership through possession of a surface or ground water right. "The doctrine treated each of the following as property: priority, place of diversion, quantity, transfer rights, and the owner's status in the hierarchy of users."¹⁸ The quantity of water in a system can quickly become fully spoken for if just a few users appropriate large enough quantities. States encouraged the idea of significant water usage for economic development in times of growth.¹⁹ With the encouragement of economic growth, industries and individuals built a system of production on large quantities of water from

¹⁶ Gregory Harwood, *Forfeiture of Rights to Federal Reclamation Project Waters: A Threat to the Bureau of Reclamation*, 29 Idaho L. Rev. 153, 153 (1992-1993).

¹⁷ G.A. Res. 70/1, *Transforming Our World: the 2030 Agenda for Sustainable Development* at 18 (Sept. 25, 2015). See discussion *infra* pp. 19-20.

¹⁸ Thorson, *supra* note 2, at 379.

¹⁹ MacDonnell, *supra* note 5, at 229.

rivers and aquifers; this spike in water consumption was justified as “economically beneficial use.”²⁰

All western states have incorporated the prior appropriation doctrine into individualized management practices. These complex state statutory schemes complicate matters and fragment water law, and are the initial layer of laws that a user must meet, followed by federal laws, which are layered awkwardly on top.²¹ Generally speaking, under state laws, a water right must be recognized by a permit that specifies the type of use, the place of diversion and use, the date of seniority (which corresponds to the date of first diversion), and the quantity of water.²² Under the prior appropriation doctrine, the property where the water is used is not required to be adjacent to its source.²³

In most instances, states are responsible for regulating water. However, federal law regulates when the water is connected to a federal project, found on federal lands, or reserved for Indian tribes.²⁴ *Winters v. United States* established the federal role in water management by ensuring protection of Indian and international treaty obligations, public land management, and the environment.²⁵ The federal reclamation policy fit well with the prior appropriation doctrine because it focused on capture and storage.²⁶ By focusing on storage, western states felt that “the federal government made cultivation possible by providing the capital for construction and distribution systems, yet allowed western states to maintain control over the actual distribution of water through prior appropriation.”²⁷ Federal storage systems such as reservoirs have made it possible for multiple users to pull water from one location and apply the acquired right to beneficial use.

In areas where water users pull water from a flowing stream, flows can be over appropriated to the point of depletion. “Absent non-diverting, environmental flow water rights or minimum stream flow requirements, the owners of surface water rights can divert the entire stream if the total of those rights meets or exceeds its available flow. Because almost all of the streams in the West are over-appropriated by diverting water rights, and because minimum stream flow requirements do not necessarily trump

²⁰ *Id.*

²¹ Douglas S. Kenney, *Water Allocation and Management in the Western United States: An Overview* 9 (unpublished manuscript), https://www.colorado.edu/geography/geomorph/envs_5810/kenney_04.pdf [<https://perma.cc/TFJ4-893C>].

²² *Id.* at 5.

²³ Getches, *supra* note 4, at 72.

²⁴ Kenney, *supra* note 21, at 5.

²⁵ *Id.*; *Winters v. United States*, 207 U.S. 564, 28 S. Ct. 207, 52 L. Ed. 340 (1908).

²⁶ Thorson, *supra* note 2, at 387.

²⁷ *Id.*

senior water rights, stream-drying can occur on a regular basis."²⁸ This defeats the purpose of the doctrine entirely because there is no point in protecting the priority of rights when the rights holders of a stream do not have access to their property. The idea of stream water depletion is further complicated by groundwater depletion because the pumping of groundwater effectively prevents water from flowing into the stream for which it was intended.²⁹

A. Beneficial Use

Water rights are determined, in large part, by beneficial use. Beneficial use means, "the use of such water as may be necessary for some useful and beneficial purpose in connection with the land from which it is taken...requiring actual use for some purpose that is socially accepted as beneficial."³⁰ The reason that beneficial use requirements are so important is the fact that it determines the quantity of water assigned to a water right. The only quantity of water that a user has the right to use is that which she puts to "beneficial use in a reasonable time with reasonable diligence."³¹ A right does not mean that a user has the right to the actual individual molecules of water; rather, the user has a right to the beneficial use of those molecules. Importantly, use does not necessarily mean consumption, it can also mean storage. When water is delegated for the sole purpose of storage until the right holder finds need of it, that quantity of water cannot be assigned to another water right applicant, even if she would be able to immediately put it to beneficial use.

As populations continue to grow, bodies of water in the West have become increasingly appropriated. This has led to a shift in what states consider to be a "beneficial use" of water with many becoming more explicit in their definitions or exclusions of what qualifies as a beneficial use.³² As a general rule, when not used for domestic purposes, a water user's withdrawal is beneficial when it adds some value to the land or an enterprise on that land.³³ The added value does not always have to be economical, but can be recreational or ecological in nature.³⁴ To determine the quantity of what needed to accomplish the intended use courts employ the concept of water duty.³⁵ "Water duty" is the water that is reasonably

²⁸ Burke W. Griggs, *Beyond Drought: Water Rights in the Age of Permanent Depletion*, 62 KAN. L. REV. 1263, 1297 (2014).

²⁹ *Id.* at 1298.

³⁰ Getches, *supra* note 4, at 91.

³¹ Kenney, *supra* note 21, at 5.

³² Kenney, *supra* note 21.

³³ Weber, *supra* note 8, at 10.

³⁴ *Id.* at 32.

³⁵ Getches *supra* note 4, at 113.

required to be applied to any given tract of land for such period of time as may be adequate to produce the intended benefits.³⁶ This is not a hard and fast rule, but varies according to conditions. A user's water right is not accompanied by a right to waste.³⁷ The state has a right to take any wasteful quantity that is produced.³⁸ The rule of waste does not encourage parties to improve efficiency because any water saved may be deducted from the original right through abandonment (i.e. regularly unused portions of water).³⁹

In order to determine the scope and priority of all the rights associated with a defined body of water, state courts will implement general stream adjudications.⁴⁰ Through such adjudications, courts determine the quantity of a water body that is in use, whether those uses are beneficial or wasteful, and the amount of water that is still available for appropriations.

B. Current Employment of the Prior Appropriation Doctrine

Currently, much of the West operates in a state of over-appropriation, as even areas with significant rainfall each year are experiencing a lack of availability for new rights applicants.⁴¹ Over-appropriation makes clear that the doctrine's implementation did not account for population growth or climate change.

The decline in water availability is linked to the failures of the doctrine and states' poor water management systems. State authorities tasked with making water determinations currently struggle to address the quantity of new applicants in an already overburdened system. One former Secretary of the Interior, Bruce Babbitt, claims that there is enough water in the West, and the bulk of the unavailability problem stems from poor water policies and the unwillingness of state governments to require more efficient conservation measures, particularly in the area of agriculture.⁴²

³⁶ *Id.* at 115.

³⁷ *Id.* at 73. See also Rebecca Abeln, *Instream Flows, Recreation as Beneficial Use, and the Public Interest in Colorado Water Law*, 8 U. DENV. WATER L. REV. 517, 532 (2005) (waste occurs when water leaving its course is not applied to a beneficial use).

³⁸ WASH. REV. CODE § 90.03.010A (1917) (note on "waste, beneficial use" stating that use of a water source must be economical in consideration of present and future demands). See *State Dept. of Ecology v. Grimes* 121 Wash. 2d 459, 852 P.2d 1044 (1993) ("[the] referee could grant quantity and flow of water less than requested based on wastefulness of appropriators' system; and, reductions did not constitute taking without compensation.").

³⁹ Weber, *supra* note 8.

⁴⁰ Michael Toll, *Reimagining Western Water Law: Time-Limited Water Right Permits Based on a Comprehensive Beneficial Use Doctrine*, 82 U. COLO. L. REV. 595, 602 (2011). Also, note that some states have implemented specialized water courts that focus solely on issues of water law.

⁴¹ Thorson, *supra* note 2, at 360.

⁴² Amanda Zamora, Abraham Lustgarten & Lauren Kirchner, *California's Drought is Part of a Much Bigger Water Crisis. Here's What You Need to Know*, PROPUBLICA (Jun. 25, 2015, 12:30 PM),

States generally have identified one major flaw in the prior appropriation frame work—senior rights are placed in front of junior rights, regardless of who is using the water more sustainably or beneficially.⁴³ To that end, some states have implemented a system whereby junior users may submit a mitigation plan in the case that their right begins infringing on a senior right holder's use.⁴⁴ At the same time, many states tend to ignore the opportunity to change water laws in favor of conservation because of the entrenched nature of the prior appropriation, which promotes the idea of rights in perpetuity.⁴⁵

The role of state agencies in water law is to make the doctrine work in modern times.⁴⁶ Dan Tarlock, a contemporary water law expert, asserts that the modern water law system does not enforce the priority rule as the doctrine allows, but instead, encourages water users to cooperate in such a way that minimizes the doctrine's importance.⁴⁷ While encouraging water rights users to cooperate with each other to avoid the enforcement of the doctrine is optimistic, it has not been successful in changing a system that effectuates depletion. "The problem of depletion and the failure to address it by regulation have exposed the shortcoming of a legal regime largely beholden to the inherited assumption that the water supply is annually variable but nonetheless permanent."⁴⁸ Regardless of Tarlock's assertion, the doctrine remains the bedrock of water law as new water rights continue to be assessed based on this archaic system. However, it is Tarlock's optimistic idea of water users working together that must be incorporated into the doctrine moving forward.

III. CASE STUDIES

Colorado and Washington provide interesting case studies in western water law and the prior appropriation doctrine. Both Colorado and Washington are facing water shortages and grappling with how to deal with the effects.⁴⁹ Additionally, these western states have pockets of dense populations and vast expanses of land dedicated to agriculture, which are complicating the strain on water resources. The two states, one arid and one wet, show how different climates are facing over-appropriation of waters

<https://www.propublica.org/article/california-drought-colorado-river-water-crisis-explained>
[<https://perma.cc/R7YU-UB4B>].

⁴³ MacDonnell, *supra* note 5, at 281-82.

⁴⁴ *Id.* at 285.

⁴⁵ *Id.* at 229.

⁴⁶ Tarlock, *supra* note 10, at 881.

⁴⁷ *Id.* at 883.

⁴⁸ Griggs, *supra* note 28, at 1266.

⁴⁹ Larry Meyers, *To Have Our Water and Use It Too: Why Colorado Water Law Needs a Public Interest Standard*, 87 U. COLO. L. REV. 1041, 1043 (2016).

due to population growth, climate change, and the doctrine of western water law.

A. Colorado

Colorado is a non-permitting state under the prior appropriation doctrine, which directly contrasts with the rest of western states who have some form of permitting. Instead, Colorado depends on special water courts to determine water allocations and matters.⁵⁰ This simply means that the proof of intent remains incredibly relevant.⁵¹ Colorado, like most other states, also gives domestic preference to water rights—in times of shortages, domestic uses have priority over all others.⁵² In the case of new water rights applications, the Colorado Division of Water Resources holds the applicant's priority as that of the date of application in order to account for time associated with planning, permitting, engineering, and financing.⁵³ While waiting for the final application ruling, Colorado allows applicants to apply for conditional water, if available, to use in the interim.⁵⁴

An example of the state of water over-appropriation in Colorado (and largely in western states) is the Colorado River basin. Water in the Colorado River basin has been over-appropriated since the drafting of the Colorado River compact of 1922 because of overestimation of the river's flow.⁵⁵ The effects of climate change, with lower than average snowfall and faster snow melt, effects of climate change, are causing less water to be held in storage to be drawn on in later months.⁵⁶ As a result, Colorado residents can clearly see the impacts of water scarcity.

Exacerbating the water scarcity problem further, "...many conditional water right decrees awarded in Colorado were in excess of the amount necessary for the petitioner's true beneficial use. Old decrees may have allowed for diversion amounts not actually available under natural conditions, or they did not take into account the fact that senior water rights were already diverting and using all the available water."⁵⁷

The Colorado Department of Natural Resources, Division of Water Resources is in charge of distributing new water rights and permits and

⁵⁰ *Id.* at 1048.

⁵¹ COLO. REV. STAT. § 37-92-302(1)(a) (2016).

⁵² GREGORY J. HOBBS, JR., *CITIZEN'S GUIDE TO COLORADO WATER LAW* 7 (Karla A Brown, 3rd ed. 2009).

⁵³ *Id.* at 13.

⁵⁴ *Id.*

⁵⁵ David E. Lindgren, *Water: The Colorado River: Slow Progress and New Approaches*, 46 *ROCKY MTN. MIN. L. INST* 25 (2000).

⁵⁶ Hobbs, Jr., *supra* note 52, at 15.

⁵⁷ *Id.*

monitors stream flow and water use.⁵⁸ The Division of Water Resources, through divisional offices, is empowered to issue shut-down orders, collect water data, and enforce the decrees and water laws of Colorado.⁵⁹ One clear example of the sheer magnitude of this job is the number of well permit applications that are submitted to the Division of Water Resources annually. More than 10,000 permits are submitted, requiring the divisional office staff to make findings as to the quantity of water available and any potential impact to existing users.⁶⁰ The number of new permit applications demonstrates the effect that population growth in the Colorado River Basin can have on an already overburdened water source.

Colorado is experiencing and anticipating further detrimental effects of climate change to its water resources. With substantial warming on the horizon (a projected 4 degrees warming by 2050 in Colorado) the Colorado Water Conservation Board determined ten prominent effects of higher temperatures including lower soil moisture, warmer lake and stream temperatures, water quality issues, and decreased groundwater recharge.⁶¹ Higher temperatures will lead to an increase in evapotranspiration, decreased runoff, and a shift in the runoff periods.⁶² “Slight shifts in timing and volume...can make a significant difference in the water to which Coloradans have access.”⁶³ As such, Colorado needs to reassess how it regulates water in an era of climate change.

B. Washington

Washington began a system of state-managed water law in 1917 when it developed the Water Code. This Code, using the prior appropriation doctrine as its foundation, declares (1) unclaimed waters belong to the public; (2) the appropriation doctrine is the exclusive way to obtain a right; (3) centralized the formation of water right administration; and, (4) established an adjudication system through the courts.⁶⁴ Originally the Water Code was only relevant to surface water uses; however, in 1945, the State

⁵⁸ COLO. DIV. OF WATER RES., GUIDE TO COLORADO WELL PERMITS, WATER RIGHTS, AND WATER ADMINISTRATION, 1 (2012).

⁵⁹ *Id.*

⁶⁰ *Id.* at 2.

⁶¹ JEFF LUKAS ET AL., COLO. WATER CONSERVATION BD., CLIMATE CHANGE IN COLORADO: A SYNTHESIS TO SUPPORT WATER RESOURCES MANAGEMENT AND ADAPTATION 84 (2nd ed. 2014) (the runoff period is anticipated to shift forward two weeks causing late summer flows to be reduced. “Earlier runoff may complicate prior appropriation systems and interstate water compacts, affecting which rights holders receive water and operations plans for reservoirs”).

⁶² *Id.* at 65.

⁶³ Meyers, *supra* note 49, at 1072.

⁶⁴ WASH. ST. DEP’T OF ECOLOGY, PUB. NO. WR 98-152, WASH. ST. WATER LAW: A PRIMER, 3 (2006). The Water Code requires permits from Ecology for the assignment of water rights. *See* WASH. REV. CODE § 90.03.250 (2018).

declared that both the code and its permitting process would extend to groundwater.⁶⁵ For both surface and groundwater, the elements of prior appropriation still apply, and no junior right may negatively impair a senior right.⁶⁶

The Washington Water Code, as with any evolving system, must ensure documentation of those holding rights. Unfortunately, in the case of water rights, formal documentation was not deemed necessary at the turn of the 20th century, so there were many water rights that, while legal and in use, were never registered with the State.⁶⁷ Although unregistered, these users still have the ability to legally defend their rights.⁶⁸ The obvious issue has been the unknown over-appropriation of water bodies to the detriment to senior rights. In order to deal with this issue, Washington implemented the Water Right Claims Registration Act, which authorized the State, through the Water Resources Department, to register water rights claims of users that began before the Water Code of 1917.⁶⁹

Further, Washington has added a layer of complexity to the regulation of water rights via the Water Resources Act of 1971 (WRA) and the “instream flow rule”. Instream flows determine target flow levels for a stream or river at multiple locations along its course.⁷⁰ The goal behind such rules is to promote environmental protections while also achieving maximum benefit to the water users.⁷¹ “Maximum benefits” is defined by RCW §90.54.020(2) and considers the totality of the benefits minus the costs including lost opportunities.⁷² Along with the instream flow rule, the WRA established that water used for “recreation, fish and wildlife, and environmental protection” meets the beneficial use requirement of the prior appropriation doctrine.⁷³ With the implementation of the WRA, Washington addressed the need to protect aquatic species and habitats. This means that a minimum amount of water must remain in the stream and is, therefore, not available for appropriation. While the WRA has provided interesting contours to Washington water law, it does not affect or

⁶⁵ *Id.* at 4.

⁶⁶ See *Water: A Public Resource*, WASH. DEP’T OF ECOLOGY, <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-rights> [<https://perma.cc/MSX5-2Q5U>] (last visited April 13, 2018).

⁶⁷ *100 Years of Washington Water Law: Pre-Water Code Era*, WASH. DEP’T. OF ECOLOGY, <https://waecy.maps.arcgis.com/apps/Cascade/index.html?appid=88bf3b9812ff4a8b9394576cfc8b2241> (last visited April 26, 2018).

⁶⁸ Griggs, *supra* note 28, at 1286.

⁶⁹ Wash. St. Dep’t of Ecology, *supra* note 64, at 6.

⁷⁰ Haylee J. Hurst, *Changing Course: Revisiting Instream Flow Rulemaking in Washington State Following Swinomish v. Ecology*, 90 WASH. L. REV. 901, 1905 (2015).

⁷¹ *Id.* at 1911-12.

⁷² WASH. REV. CODE § 90.54.020(2) (2007).

⁷³ Hurst, *supra* note 70, at 1910-11.

correct any of the water rights which predate the act.⁷⁴ The WRA will only apply to new junior users and does not apply retroactively.

One of the main problems facing Washington is Ecology's inability to enforce the Act due to lack of staffing.⁷⁵ Washington presents an interesting case study because it spans both arid and water heavy regions.

1. Central Washington/ Eastern Washington

Major irrigation projects occur in the fertile lands of Central and Eastern Washington using large quantities of water to accomplish their goal; for instance, seventy percent of the nation's apples are produced in the Columbia and Yakima River basins.⁷⁶ Central Washington is an arid region, receiving most of its moisture in the winter months when water withdrawals are at their lowest. Currently, "surface and groundwater availability is...very limited throughout the [Moses-Coulee] basin..."⁷⁷ Similarly, the Middle Spokane Watershed in Eastern Washington is currently open to new appropriation even though Ecology considers the watershed to be over-appropriated; "...[t]herefore any new rights would be seasonal (interruptible), or the impacts of the water use would need to be fully mitigated."⁷⁸

As a result of Washington's recent limited water availability, the State created a water trust program where the state acquires existing rights via "transfer, donation, purchase or lease."⁷⁹ Water rights held in trust retain their date of priority and may be used in the future without the right being relinquished from non-use by the original right holder.⁸⁰ Water banking is also becoming increasingly popular in Western Washington as a way to mitigate the issues created by over-appropriations and rights that are no longer in use or are temporarily out of use. The idea behind water banks in Eastern and Central Washington is to pool water rights from sellers to serve the broader market, and create a quicker method for acquiring rights through a broker, rather than going through Ecology's

⁷⁴ *Id.* at 1913.

⁷⁵ Karen Russell, *Symposium on Northwest Water Law: Wasting Water in the Northwest: Eliminating Waste as a way of Restoring Streamflows*, 27 ENVTL. L. 151, 183 (1997).

⁷⁶ *Agriculture: A Cornerstone of Washington's Economy*, WASH. STATE DEPT. OF AGRIC., <https://agr.wa.gov/aginwa/> [<https://perma.cc/57UB-MGNQ>] (Last updated March 29, 2018).

⁷⁷ *Id.* at 2.

⁷⁸ WASH. DEP'T. OF ECOLOGY, PUB. NO. 11-11-061, FOCUS ON WATER AVAILABILITY: MIDDLE SPOKANE WATERSHED, WRIA 57, 3 (Jan. 2017).

⁷⁹ Hurst, *supra* note 70, at 1913.

⁸⁰ WASH. DEP'T. OF ECOLOGY, FOCUS ON TRUST WATER RIGHTS PROGRAM, 2 (Dec. 2012); *see also* WASH. REV. CODE § 90.38.040 (2001), § 90.42.040 (2009).

lengthy application process.⁸¹ Often, this manifests as a broker, drawing rights from the state's water trust program.

2. Western Washington

In contrast to Central and Eastern Washington's issues, Western Washington is facing a massive boom in population growth that is causing the strain on the water supplies.⁸² Examining one of the watersheds that is experiencing population growth helps put the strain in perspective.⁸³ The Stillaguamish watershed of Northwestern Washington receives significantly more rainfall each year compared to Eastern and Central Washington. Yet, "most of the basin is closed to new withdrawals of both surface and groundwater due to the potential adverse impacts on protected streams and rivers."⁸⁴ Similar to the Spokane River, a large portion of the water in the Stillaguamish watershed is already appropriated.⁸⁵ "Increasing demands for water from ongoing population growth, declining groundwater levels in some areas, and the impacts of climate change have put Washington's water supplies at risk."⁸⁶ Consequently, Northwestern Washington more often lacks water when and where it needs it.⁸⁷

IV. CLIMATE CHANGE

"The United States is currently in one of the most severe, multi-state, multi-year, droughts in decades."⁸⁸ According to the EPA, "warmer

⁸¹ *Id.* See also, Lawrence J. MacDonnell, *Water Banks: Untangling the Gordian Knot of Western Water*, 41 ROCKY MTN. MIN. L. INST. 22 (1995).

[T]he term 'water bank' in its most generalized sense to refer to *an institutionalized process specifically designed to facilitate the transfer of developed water to new uses*. The primary objective of a water bank is to bring together those holding legally valid water use entitlements interested in making the water available to another with those needing to obtain additional supplies of water for their uses. Broadly speaking, a water bank is an intermediary. Like a broker it seeks to bring together buyers and sellers. Unlike a broker, however, it is an institutionalized process with known procedures and with some kind of public sanction for its activities.

See also *Tracking Washington 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/UHU3-RCE7>] (last revised July 7, 2017).

⁸² WASH. DEP'T. OF ECOLOGY, PUB. NO. 11-111111-010, FOCUS ON WATER AVAILABILITY: STILLAGUAMISH WATERSHED, WR1A 5 at 1 (Nov. 2016).

⁸³ *Id.*

⁸⁴ *Id.* at 2.

⁸⁵ *Id.* at 1.

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *The Impact of Climate Change on Water Resources*, GRACE COMMUNICATIONS FOUNDATION, [<http://www.gracelinks.org/2380/the-impact-of-climate-change-on-water-resources>] [<http://perma.cc/W53W-XK8V>] (last visited April 27, 2018).

temperatures increase the rate of evaporation of water into the atmosphere...increased evaporation may dry out some areas and fall as excess precipitation in other areas.”⁸⁹ As a consequence of warmer temperatures, mountain snow packs melt faster. While this may seem like a positive in terms of water levels, in reality it could mean more frequent water shortages because the excess water runoff that occurs cannot be stored. This excess water is not seeping through the soil and rocks and recharging the natural storage basins, which drastically impacts soil moisture and groundwater.⁹⁰ Changes in soil moisture and groundwater could eventually mean disastrous effects for areas that rely on mountains for their freshwater sources, and ultimately may result in water scarcity by the end of the summer months.⁹¹ A clear example of this phenomenon is the Colorado River; a decrease in the Colorado River water supply has been attributed to droughts, lack of winter precipitation, small snowpack, and warm, dry springs.⁹² Subsequently, the Colorado River watershed has experienced early or reduce run off from snowmelt, decreased hydro power, and reassessment of water storage procedures. The Colorado River is the poster child for the detrimental effects that climate change has on a watershed because it is a river that serves approximately thirty-three million people.⁹³

Climate change affects the prior appropriation doctrine by limiting the availability of water, making the appropriation of new rights, as well as full use of senior rights, nearly impossible. Now, more than ever, water needs to be viewed as a shared resource. A cohesive system needs to replace a fragmented state-specific system in order to reassess water rights in the West.

Climate change is diminishing water rights equally regardless of date of appropriation. Such a phenomenon makes the “first in time, first in right” rule difficult to grapple with because right holders will be unable to access their water to its fullest extent. Because every human has a right to fresh water, the first in time, first in right mentality can no longer be sustained with the current state of climate change and population growth. Seeing the global degradation of the environment, in addition to the decline in water availability, the UN convened a special conference to address environmental issues.

⁸⁹ EPA, *supra* note 14.

⁹⁰ Grace Communications Foundation, *supra* note 88.

⁹¹ *Id.* Summer ends on September 22.

⁹² EPA, *supra* note 14.

⁹³ *Id.*

V. PARIS CLIMATE CHANGE CONFERENCE

In 2015, the United Nations held a Climate Change Conference in Paris with the aim of directly combating climate change and mitigating its effects on the planet.⁹⁴ The conference set up goals designed to encourage action on issues of vital importance to humanity and the planet.⁹⁵ Specific to water, Sustainable Development Goal #6 (“Goal #6”) sets up an idea for the world to operate in a sustainable way with regard to fresh water supplies. The language of the goal states, “[to] ensure availability and sustainable management of water and sanitation for all.”⁹⁶ Of particular importance, is section 6.4 which emphasizes “water use efficiency,” “sustainable withdrawals,” and “supply of freshwater,” in order to respond to the growing problem of water scarcity.⁹⁷ The UN defines “water scarcity” as the occurrence when the water supply or water quality of an area is overused and, as a result, it can no longer satisfy all of the users fully.⁹⁸

The UN has suggested a holistic management approach:

Holistic management of the water cycle means taking into account the level of “water stress,” calculated as the ratio of total fresh water withdrawn by all major sectors to the total renewable fresh water resources in a particular country or region. Currently, water stress affects more than 2 billion people around the world, a figure that is projected to rise. Already, water stress affects countries on every continent and hinders the sustainability of natural resources, as well as economic and social development. In 2011, 41 countries experienced water stress, an increase from 36 countries in 1998. Of those, 10 countries, on the Arabian Peninsula, in Central Asia and in Northern Africa, withdrew more than 100 percent of their renewable fresh water resources.⁹⁹

By accounting for water stress in the American West, the US will be better equipped to grasp the severity of the climate change problem and the need to curtail the overuse of water through potentially wasteful appropriations. A document created by the UN, *Transforming our World: the 2030 Agenda for Sustainable Development*,¹⁰⁰ provides loose guidance

⁹⁴ UNITED NATIONS, UN CLIMATE CHANGE CONFERENCE PARIS 2015, <https://www.un.org/sustainabledevelopment/cop21/#About>. [<https://perma.cc/5WBJ-DX9T>] (last visited April 27, 2018).

⁹⁵ G.A. Res. 70/1, *Transforming Our World: the 2030 Agenda for Sustainable Development* (Sept. 25, 2015).

⁹⁶ *Id.* at 14.

⁹⁷ *Id.* at 18 (describing sections 6, 6.4).

⁹⁸ *Water for Life Decade: Water Scarcity*, U.N., <http://www.un.org/waterforlifedecade/scarcity.shtml> [<https://perma.cc/N9YZ-8TAB>] (last updated Nov. 24, 2014).

⁹⁹ U.N. Secretary General, *Progress towards the Sustainable Development Goals: Rep. of the Secretary-General*, 8, E/2017/66 (May 11, 2017).

¹⁰⁰ U.N., *supra* note 95.

as to how countries should address Goal #6. The UN chose vague guidance language to give countries the ability to work within their governmental structure and financial capabilities.¹⁰¹ For the US to incorporate Goal #6 into “national planning, policies, and strategies,” there will need to be interagency communication with the Bureau of Reclamation, Ecology, and state water districts. Although incorporating a UN goal into a well-established water law regime may seem daunting, other countries around the world have embraced the challenge, which provides proof that implementation is possible. Two examples of implementation of the holistic approach come from the Middle East and North Africa (MENA) countries and the European Union.

MENA countries are in a current wide-spread state of water scarcity.¹⁰² To meet the demands of the population, countries have turned to over-drilling groundwater reserves which have further depleted the water table.¹⁰³ To address the historically unsustainable water practices in the region, MENA countries are focusing on reallocating water away from agricultural crops, particularly those that are water intensive, choosing more sustainable crops and routing water to meet city water needs.¹⁰⁴ In conjunction, MENA countries aim to develop wide-spread efficient irrigation practices.

The overall implementation of water regulation reform is an ongoing challenge in the MENA region. Some issues that the countries have encountered are the lack of incentives for participation and coordination, and lack of enforcement power.¹⁰⁵ To help garner participation from farmers, Water User Associations became involved to help marry local knowledge, modern information about sustainable practices, and governmental goals.¹⁰⁶ On a more individual level, MENA countries have focused on instituting voluntary conservation plans. For example, by focusing on schools, these arid countries are teaching children the importance of conservation and how to voluntarily limit water use.

Europe is facing similar problems to those in the United States. More precisely, Europe faces a water crisis manifested by the exploitation of rivers, over consumption, and water scarcity.¹⁰⁷ The EU implemented

¹⁰¹ *Id.* at 13.

¹⁰² SLOBODAN MILUTINOVIC, WATER AND SECURITY- CAN LOCAL PLANNING AND ACTION FURTHER CONTRIBUTE? 3 (2015), http://submission.worldwaterweek.org/2014/sites/default/files/wwc_mena_bp_wg-3.pdf [<http://perma.cc/9GMU-DG7B>].

¹⁰³ *Id.* at 8.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 9.

¹⁰⁶ *Id.* at 11.

¹⁰⁷ EUROPEAN UNION WATER SCARCITY DRAFTING GROUP, WATER SCARCITY MANAGEMENT IN THE CONTEXT OF WFD: POLICY SUMMARY 7 (2006), http://ec.europa.eu/environment/water/quantity/pdf/comm_droughts/8a_summary.pdf [<https://perma.cc/GB5E-DLV4>].

water framework directives, (WFD) which are recommendations on drought management and water scarcity.¹⁰⁸ With this framework in place, the EU focuses on imbalances, meaning that the “water demands exceeds the supply capacity of the natural system.”¹⁰⁹ To combat water imbalances, the EU has focused on water demand management measures, “where necessary authorities should implement a combination of both demand and supply-side measures for all users in a coherent river basin management program. The role of water managers should be focused on the improvement of the equilibrium between the supply and demand.”¹¹⁰ By bringing the water demands into equal balance with water supply, Europe plans to put an end to scarcity and overuse. The EU directly affects imbalances through promoting subsidies for lower consumptions, water banks, and quota systems. Additionally, the EU will focus its attention in the future on several other imbalances including the improvement of irrigation technologies, wastewater reuse, natural storage, and existing water infrastructure, as well as the preservation of natural catchments and consideration of water bank implementation.¹¹¹ Furthermore, the EU is committed to “setting up an obligation for using a costs/needs/advantages/alternative solutions analysis with economic, environmental and social impact for every project of new water resource creation.”¹¹² By weighing the needs and advantages against the costs and alternatives, Europe is dedicating time to figure out efficient and sustainable uses for water. Most importantly, Europe has identified “environmental use” among priority uses.¹¹³ This is significant because it means that recharge of aquifers and natural storage will be possible making natural water available for future use.

As a key member of the EU, Germany has focused on producing scholarship on sustainable consumption and production patterns.¹¹⁴ Germany works closely with its immediate neighbors in Central and Eastern Europe to come up with land use plans to better address past ineffective drought and water management strategies.¹¹⁵ Furthermore, Germany, and the EU generally, have addressed the issue of water quantity impacting water quality.¹¹⁶ Because Germany has highly developed infrastructure

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ *Id.* at 4.

¹¹¹ *Id.* at 5.

¹¹² *Id.* at 5.

¹¹³ *Id.* at 4.

¹¹⁴ U.N., FRESHWATER COUNTRY PROFILE GERMANY, 5, http://www.un.org/esa/agenda21/nat-info/countr/germany/germany_freshwater.pdf [<https://perma.cc/PJ9U-DBLB>], (last visited Apr. 4, 2017).

¹¹⁵ *Id.* at 8.

¹¹⁶ *Id.* at 5.

systems, it has the ability to focus on both water scarcity and healthy quality simultaneously.¹¹⁷ This focus spills over into less financially sound or developed countries because Germany is committed to the UN's acknowledgment of the world's "...interdependence and providing a guiding framework for overcoming the crises."¹¹⁸

The key to addressing the prior appropriation doctrine is acknowledging the level of water stress and consistent years of unpredictable water supply that the western states are experiencing. With an acknowledgement of the shear stress, the state and federal governments can address the ways in which to change the currently ineffective system.

VI. ADDRESSING THE PRIOR APPROPRIATION DOCTRINE

Addressing the underlying doctrine is essential to tackling the water use system. According to water law expert, Burke Griggs, one of the main ways to address the current issue with the doctrine, and over-appropriation, is to properly quantify the current amount of water available.¹¹⁹ Once a reassessment of available quantity occurs, then an appropriate reduction in existing rights may take place; however, the reduction should only be the minimum necessary to achieve sustainability. Although some may find this idea farfetched, Australia has already begun reducing rights. "In the Murray-Darling Basin of Australia, total water use is limited to the amount that is environmentally sustainable through a complex system of water rights, defined in terms of volumes and security of supply. In drought years many users may receive far less than their "normal" entitlement..."¹²⁰ Western states need to start viewing water law through the lens of climate change. Using scientific data, the states should prepare to alter storage and available waters to address the projected lowest available levels.

While states have attempted to address the problem of shrinking water availability through regulation, those regulations are not uniform across the West.¹²¹ Currently, the system is akin to slapping a bunch of different state Band-Aids on the problem. The binding factor across the states is the idea, or priority, of rights.¹²² Instead, the new common ground that should bind the states together should be sustainability and Goal #6.

¹¹⁷ *Id.*

¹¹⁸ SIWI, *supra* note 1, at 2.

¹¹⁹ Griggs, *supra* note 28, at 1317-18.

¹²⁰ WORLD BANK, MAKING THE MOST OF SCARCITY: ACCOUNTABILITY FOR BETTER WATER MANAGEMENT IN THE MIDDLE EAST AND NORTH AFRICA 115-137 (1st Ed., 2007).

¹²¹ Getches, *supra* note 4, at 130.

¹²² *Id.*

To address Goal #6, the U.S. needs to adopt a holistic management approach to alter the inefficient prior appropriation doctrine. Western states should adopt the variation of the implementation strategy similar to that of the EU. The EU, as a group of 28 member states, encourages “cross-regional and cross-border water management.”¹²³ Because the EU’s focus is on reaching equilibrium of supply and demand, the European strategies of subsidies for lower consumption and water banking would be a good fit if incorporated into U.S. water law. This would not be difficult because both are already being done in some states.¹²⁴ In conjunction with implementing EU strategies, the U.S. should also adopt the MENA countries’ example of focusing on less water intensive crops and widely disseminating conservation information. By incorporating such strategies, U.S. water law would encourage consumers to use more sustainable amounts of water.

Water in the West is primarily used for agriculture; the U.S. Geological Survey cites that approximately 39% of America’s fresh water use is for irrigation.¹²⁵ The Colorado River provides an excellent example as approximately 70% of its annual flow is used for farming and agriculture.¹²⁶ Common irrigation methods in the U.S. are flood, drip and spray systems.¹²⁷ These popular methods of irrigation create issues with water lost to evaporation; transpiration; and, runoff, which may be further complicated by contamination from pesticides.¹²⁸ One way to deal with the massive amounts of water used annually for irrigation is to offer farmers subsidies to incentivize conservation.

Subsidies distributed to farmers for use of better irrigation equipment is not new.¹²⁹ However, since the Environmental Quality Incentive Program of 1996, subsidies have been largely ineffective in reducing the water used in farming across America.¹³⁰ While better irrigation technology has reduced the amount of water used and wasted, it has also encouraged farms

¹²³ EUROPEAN INVESTMENT BANK, FINANCING WATER AND CLIMATE CHANGE ADAPTATION (2011) http://www.eib.org/attachments/strategies/water_and_climate_change_adaptation_en.pdf [<http://perma.cc/23T9-S5R4>].

¹²⁴ CONSTITUTIONALITY, CONSTRUCTION, AND APPLICATION OF COMPACTS AND STATUTES INVOLVING CO-OPERATION BETWEEN STATES, 134 A.L.R. 1411 (referencing interstate compacts). See Getches, *supra* note 4, at 12.

¹²⁵ Zamora, *supra* note 42; *Irrigation Techniques*, USGS, <https://water.usgs.gov/edu/irmethods.html> [<http://perma.cc/AC5B-WCCY>] (last updated December 2, 2016).

¹²⁶ *Id.*

¹²⁷ USGS, *supra* note 125.

¹²⁸ See Nisha Noroian, *Prior Appropriation, Agriculture and the West: Caught in a Bad Romance*, 51 *Jurimetrics J.* 181, 187-193 (2011).

¹²⁹ Ron Nixon, *Farm Subsidies Leading to More Water Use*, NEW YORK TIMES, June 7, 2013, at A17.

¹³⁰ *Id.*

to expand their operations because the prior appropriation doctrine allows farms to use their entire right even if it is unnecessary.¹³¹ Strict constraints need to be put on subsidies to make a substantial change towards water conservation.

For instance, some restraints might require water rights holders who use their water allocation for industry and irrigation to use the best available technology (BAT). State's would offer subsidies to the people who employed the BAT as incentives to conserve water use and shrink their water right. Offering agricultural producers incentives via subsidies to use more efficient technology would be the simplest and least controversial way to curtail the water rights of senior users. The water that is no longer put to beneficial use, as a result of conservation measures, would be lost and removed from the right.¹³² To ensure that the new irrigation methods are not being abused, thorough water use measurements will need to be taken before and after the implementation of the technology, and all water savings documented. The quantity of water documented as lost to non-use can then be held in trust by the State for the people.

Water banks, like those discussed in the Washington case study, exist in all western states, but remain relatively unused.¹³³ Water banks will be an effective tool for states to translate water rights into this era of climate change because they allow current holders to sell their right so that the right may be applied to new uses.¹³⁴ Further, "water markets are a mechanism to encourage efficient allocation and to compensate those who choose to give up their water and water rights."¹³⁵ Water banks are used to facilitate the legal transfer and market exchange of surface water, groundwater, and storage rights.¹³⁶ Prior appropriation makes transfer of water rights difficult because of its priority, perpetuity, and forfeiture nuances. Water banking makes transferring rights easier and more efficient because more right holders are likely to participate, as their risk of forfeiture is low.¹³⁷ Water rights may be withdrawn from a bank by the owner, or leased for a fee to another user for a specified amount of time.¹³⁸ Such flexibility has removed the perpetuity designation for the new user; the

¹³¹ See Nisha Noroian, *supra* note 128, at 201.

¹³² Getches, *supra* note 4.

¹³³ PEGGY CLIFFORD, WASH. DEP'T. OF ECOLOGY, CLAY LANDRY & ANDREA LARSEN-HAYDEN, ANALYSIS OF WATER BANKS IN THE WESTERN STATES, 2 (2004), https://ecology.wa.gov/programs/WR/instream-flows/Images/trust/clifford_analysis.pdf [<http://perma.cc/6GJW-SXSU>].

¹³⁴ *Id.* at 1.

¹³⁵ THE WORLD BANK, MAKING THE MOST OF SCARCITY: ACCOUNTABILITY FOR BETTER WATER MANAGEMENT IN THE MIDDLE EAST AND NORTH AFRICA, 125 (2007).

¹³⁶ Clifford, *supra* note 133, at 12.

¹³⁷ *Id.* at 25.

¹³⁸ MacDonnell, *supra* note 5, at 282.

water can be put to more beneficial use, and the original right holder still has the option to re-acquire the right in the future.

The purposes of water banks are to promote conservation, create a secure water supply in dry years, help maintain instream flows, and ensure regulation compliance.¹³⁹ The State or private bank may then apply new standards and restrictions to the pool of rights requiring the new user to act in the most sustainable way possible. Water banks answer a conundrum of the prior appropriation doctrine: the only way to acquire a new a right is through forfeiture or condemnation of an old water right.¹⁴⁰ By providing a new mechanism and market by which rights may be acquired, water banks can help alleviate the overburdened state application system.

Implementing similar tools that MENA countries and Europe have used will not, on its own, solve the problem of over-appropriated water. Another tool that could be used to reach equilibrium, in an attempt to achieve sustainable water usage, would be evaluating individual rights and determining if, and where, they can be trimmed, thus decreasing the amount of water available for each permit. Such a regulatory overhaul would be a significant challenge from an implementation standpoint, but also because of the likely backlash from current water holders.

Water reduction targets, similar to those required for Urban Water Providers,¹⁴¹ should also be required for individual rights holders. Essentially, this would alter a right by requiring the holder to place the unused portion of their right in storage to be drawn on in times of drought. Water reduction targets for individual right holders under the prior appropriation doctrine should be prorated based on the size of the right holder's consumption. Consumption under a certain amount will not be subject to a reduction if their right will be so infringed upon as to diminish their right entirely. On the other end of the spectrum, individuals holding large rights will need to accept prorated water reduction targets. By proportionally assessing reduction targets, states can better take into account the hardship felt by water reduction used in a wide variety of capacities.

In conjunction with lowering current rights, new rights need to be given a duration limit upon which they will be considered for reevaluation. "Appropriation statutes are silent on the duration of water rights, the Supreme Court of the United States once said that an appropriation is a

¹³⁹Clifford *supra* note 133, at ii.

¹⁴⁰Getches, *supra* note 4.

¹⁴¹See CALIFORNIA DEP'T. OF WATER RESOURCES, 2015 URBAN WATER MANAGEMENT PLANS: GUIDEBOOK FOR URBAN WATER SUPPLIERS, 8-12-8-13 (2016).

‘vested right to take and divert from the same sources and to use and consume the same quantity of water annually forever.’”¹⁴² The idea of drawing on the same quantity of water in perpetuity is unsustainable because the water is not being regenerated at the same rate every year due to climate change and excessive anthropogenic use. This is the fatal flaw of the prior appropriation doctrine. Historically there has been no incentive to curb uses in either times of water equilibrium or shortage. By reevaluating the new rights regularly, states can better determine the amount of water available for new uses.

Addressing Goal #6 cannot be done through equilibrium balancing, water banking, trimming rights, and water reduction targets alone. For these practices to be successful, better storage practices will be required. States rely heavily on water storage in the face of consistent droughts. Water storage regulations should be technology forcing. Increased storage aligns with the idea of decreased withdrawals because people are taking less water out of the system to save for future years of consumption. Long-term water storage would allow states to better regulate water use by releasing water back into the system on a sustainable basis, retaining that water necessary to meet the basic needs of domestic users, agriculture, and industry.

Potential effects and complications of implementing the above strategies are that people don’t want to give up their water rights, especially in a time where water is hard to come by. An argument that people will likely make is that this is a taking of private property. Another argument is that re-evaluation on this scale will be incredibly costly to the government agencies involved. Clearly, any change to U.S. water law will come down to “...state initiative and innovation, since states have a pivotal role in water planning, as well as allocating and protecting the resource.”¹⁴³ More than anything, the state and Federal governments will need to dedicate significant funding to the implementation of water banks, irrigation subsidies, and enforcement officials. More than funding, a federal mandate is needed by Congress, requiring a sustainable limitation on water usages in each state. By setting an overarching goal for sustainable use of water through use reductions, the Federal Government can help trigger the discussion, and allow states to determine the best implementation strategies.

For successful change to be possible, local involvement will need to occur through community meetings and other similar forums; this will increase the level of transparency and create an open dialogue between the

¹⁴² Weber, *supra* note 8, at 202 (quoting *Arizona v. California*, 283 U.S. 423, 459 (1931)).

¹⁴³ WESTERN GOVERNORS’ ASSOCIATION, WATER NEEDS AND STRATEGIES FOR A SUSTAINABLE FUTURE: NEXT STEPS, WESTERN STATES WATER COUNCIL (2008), <http://waterwebster.org/documents/water08.pdf> [<http://perma.cc/CG2W-2W7A>].

states and the people who are most directly affected by the diminishing water resources of the country.

VII. CONCLUSION

The age of climate change and water scarcity is upon us. The western states can no longer ignore the inefficiency of the prior appropriation doctrine. The main flaw in U.S. water law is that the prior appropriation doctrine does not fit within the framework of population growth, associated uses of water, and climate change. The emphasis that the doctrine places on priority, instead of sustainability and efficiency, has exacerbated the shrinking water supply problems in the West.

As disputes about water become increasingly political and prevalent in the daily lives of Americans, it is important to remember UN Secretary General Ban-Ki Moon's words, "Water is life. Water is health. Water is dignity. Water is a human right."¹⁴⁴ Those words are important to keep in mind when discussing changes to U.S. water law. While the American West may not be experiencing water scarcity and stress on the same level as MENA countries, it remains important to remember that water is a human right, and that rural farmers should have access too. This paper does not call for people's water rights to be taken away in their entirety. Rather, this paper has suggested ways in which western states may reform their laws, which are heavily focused on the idea of priority, and tailor them to focus more on sustainability and inter-basin cooperation.

¹⁴⁴ *Sustainable Development Knowledge and Platform: Building on the Successes of the Water for Life Decade*, U.N. (June 15, 2015), <https://sustainabledevelopment.un.org/sdg6?page=view&nr=826&type=230&menu=2059> [<http://perma.cc/U4XC-QUZD>].