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Water Rights Based on State Law

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A. INTRODUCTION

Today state law almost exclusively governs the allocation of surface waters in the United States.¹ States determine the scope and distribution of water rights and what users can do with those rights. In the seminal 1935 decision in *California Oregon Power Co. v. Beaver Portland Cement Co.*, the U.S. Supreme Court held that

all nonnavigable waters then a part of the public domain became *publici juris*, subject to the plenary control of the designated states . . . with the right in each to determine for itself to what extent the rule of appropriation or the common-law rule in respect of riparian rights should obtain.²

1. JOHN NOLAN, ENVTL. LAW INST., *NEW GROUND: THE ADVENT OF LOCAL ENVIRONMENTAL LAW* (2002).

2. *Cal. Or. Power Co. v. Beaver Portland Cement Co.*, 295 U.S. 142, 163–64 (1935).

In addition, section 8 of the 1902 Reclamation Act provides that

[n]othing in this Act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws, and nothing herein shall in any way affect any right of any State or of the Federal Government or of any landowner, appropriator, or user of water in, to, or from any interstate stream or the waters thereof.³

Three different allocation systems have emerged based on availability of water, geographical conditions, and landownership: riparianism, prior appropriation, and a hybrid system.

Generally, in water-abundant states located to the east of Kansas City, adequate rainfall, conveniently located surface flows, and shallow available groundwater are available at little or no cost, and shortages are rare and of short duration.⁴ Riparianism, shaped by common law and case law, is the prevalent doctrine in these states. It treats water as common property and assigns the right to water use to the landowners who own land abutting surface waters.⁵

In nine arid states west of Kansas City, traditional riparian rights were abandoned in favor of prior appropriation. Under this system, the right to use water is treated more like private property.⁶ This system, which relies on priority of initiation of use to determine which rights are to be served when supplies are short, was developed by gold miners who did not own the land that they worked, but needed access to water. They could not assert riparian rights. A system emerged that was later validated by case law and state law: the first one to put the water to beneficial use had the priority right to the water.

3. 43 U.S.C. § 383 (1958).

4. Joseph W. Dellapenna, *The Evolution of Riparianism in the United States*, 95 MARQ. L. REV. 53, 53–54 (2011).

5. *Id.*

6. *Id.*

A hybrid water rights system that combines aspects of both riparian rights and prior appropriation rights exists in ten Western and Midwestern states.⁷ It is not a uniform system.⁸

B. RIPARIAN RIGHTS

1. Origins of Riparian Rights

Riparian law, which grants rights of water use to landowners whose lands are contiguous with the water's edge,⁹ has origins dating back to the ancient Roman Empire.¹⁰ Common law, a system that the United States adopted from England, and case law have molded the doctrine of riparianism in America.¹¹ English common law by itself did not provide a clear theory of riparian rights.¹² A jury instruction in the 1795 New Jersey Supreme Court case *Merritt v. Parker* provides what is believed to be the earliest judicial expression of the riparian rights doctrine in the United States:¹³

In general, it may be observed, when a man purchases a piece of land, through which a natural water-course flows, he has a right to make use of it in its natural state, but not to stop or divert it to the prejudice of another. . . . The water flows in its natural channel, and ought always to be permitted to run there, so that all, through whose land it pursues its natural course, may continue to enjoy the privilege of using it for their own purposes. It cannot legally be diverted from its course without the consent of all who have an interest in it. If it should be turned into

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7. *Water Appropriation Systems*, ENERGY & ENVTL. RESEARCH CTR. 3, <http://www.undeerc.org/water/Decision-Support/Water-Law/pdf/Water-Appr-Systems.pdf> (last visited Nov. 18, 2017).
 8. Dellapenna, *supra* note 4, at 61; Rev. 53 (2011); NAT'L ACADEMIES OF SCIENCES, ENGINEERING, & MEDICINE, USING GRAYWATER AND STORMWATER TO ENHANCE LOCAL WATER SUPPLIES: AN ASSESSMENT OF RISKS, COSTS, AND BENEFITS (2016), <https://doi.org/10.17226/21866> (see Figure 8-1).
 9. BARTON THOMPSON, JR., JOHN LESHY, & ROBERT ABRAMS, LEGAL CONTROL OF WATER RESOURCES 29 (5th ed. 2013).
 10. A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 3:3 (2006); SAMUEL C. WIEL, WATER RIGHTS IN THE WESTERN STATES § 2 (3d ed. rev. and enl. to June 1, 1911).
 11. T. E. Lauer, *The Common Law Background of the Riparian Doctrine*, 28 MO. L. REV. 59 (1963).
 12. Dellapenna, *supra* note 4, at 57.
 13. *Id.*; *Merritt v. Parker*, 1 N.J.L. 526 (1795).

another channel, or stopped, and this illegal step should be persisted in, I should think a jury right in giving almost any valuation which the party thus injured should think proper to affix to it. This principle lies at the bottom of all the cases which I have met with, and it is perfectly reasonable in itself, and at the same time so firmly settled as a doctrine of the law, that it should never be abandoned or departed from.¹⁴

Judge Kinsey's instruction went on to intermingle and confuse what are now known as distinct theories; he referenced prior use, appropriation, and reasonableness as a basis for his conclusion that landowners have a legal right to address unreasonable interference with the natural flow of water across their land.¹⁵ In the 30 years following *Merritt*, a number of other courts adopted doctrines that largely followed Kinsey's approach, which forbade other uses of a stream that caused a material change in the flow or quality of the stream.

The word "riparian" was coined in a decision on a dispute concerning mill power between downstream mill owners and upstream diverters of flow.¹⁶ In the 1827 ruling in *Tyler v. Wilkinson*,¹⁷ Justice Joseph Story, sitting as a circuit court judge, held that all riparians had equal rights to the river and that no one "has a right to diminish the quantity which will, according to the natural current, flow to the proprietor below, or to throw it back upon a proprietor above."¹⁸ Prior to *Tyler*, courts relied on existing real property rules such as nuisance, trespass, or prescription to decide water disputes.¹⁹

In *Tyler*, flow to drive mills located on both the river and a diversion channel was the essential resource to be allocated. Justice Story recognized that an absolute right was impractical because it would prohibit all changes to flow and consumptive withdrawals. He qualified the natural flow language by permitting a reasonable diminution of the flow. First, he disavowed the *Merritt* principle that non-injurious use may be enjoined due to effects on flow: "The true test of the principle and extent of the use is, whether it is to the injury of the other proprietors or not."²⁰ Justice Story's lengthy opinion covers the riparian

14. *Merritt*, 1 N.J.L. at 530.

15. *Id.* at 532.

16. Lauer, *supra* note 11, at 60–61.

17. *Tyler v. Wilkinson*, 24 F. Cas. 472, 473 (C.C.D.R.I. 1827).

18. *Id.* at 474.

19. Lauer, *supra* note 11.

20. *Tyler*, 24 F. Cas. at 474.

rights, the effect of prior use, and prescriptive rights obtained by exclusive uninterrupted use for 20 years or more. He held that each riparian owner has a right to a reasonable use if such use is not “positively and sensibly injurious” to the rights of other riparian owners, and he rejected the principle that prior use alone conveys a right to the water.²¹ His second point, which has proved lasting, is that

[t]here may be, and there must be allowed of that which is common to all, a reasonable use. . . . There may be a diminution in quantity, or a retardation or acceleration of the natural current indispensable for the general and valuable use of the water, perfectly consistent with the existence of the common right.²²

This precedent that each riparian had a right to a reasonable use of the water helped to systematize water law principles, but courts continued to struggle for 30 years to develop the doctrine that exists today.

2. Reasonable Use Doctrine

Under the natural flow doctrine that had been followed in England and was initially advanced in the United States by cases such as *Merritt v. Parker*, courts originally embraced the right of riparian landowners to enjoin any water uses that materially altered the quantity or quality of the natural flow without proof of actual injury.²³ This natural flow theory, which was based on private property rights, was quickly replaced or tempered by the adoption of a theory of common property rights that recognized competing uses to determine which use was more socially beneficial.²⁴

The “reasonable use” doctrine requires that the riparian landowner make a reasonable use of the waters that does not interfere with the reasonable use of another riparian landowner.²⁵ Reasonableness is determined by comparing the uses of the riparian landowner with the downstream uses. Reasonable uses under most state law include

21. *Id.*

22. *Id.*

23. Lauer, *supra* note 11.

24. *Id.*

25. *Water Law: An Overview*, NAT'L AGRIC. LAW CTR., <http://nationalaglawcenter.org/overview/water-law/> (last visited Nov. 18, 2017); DAVID H. GETCHES, SANDI ZELLMER, & ADELL AMOS, *WATER LAW IN A NUTSHELL* 276 (5th ed. 2015).

natural uses, such as water for drinking, family livestock, or growing food for use by the riparian, and artificial uses, such as irrigation or industrial uses.²⁶

3. Regulated Riparianism

A shift in the supply–demand dynamics led many states to begin using a new form of water allocation that is now termed “regulated riparianism.”²⁷ Due to changing weather patterns, water shortages have become more frequent in traditionally water-rich eastern states resulting in demand that approaches or exceeds supply during these periods.²⁸ This shift and temporal lack of supply has led to an increase in competing water needs among formerly compatible users.²⁹ This scenario sets up a potential tragedy of the commons that the traditional riparian rights doctrine is ill-equipped to address.³⁰

Regulated riparianism departs from common law riparianism by looking at the projected use before any water is used.³¹ Regulated riparianism allocates and reallocates use by a collective decision-making process³² administered by a state agency through the issuance of time-limited licenses based on the reasonableness of the proposed use.³³ This allows the state to consider both the potential benefits to society and the compatibility with current uses.³⁴ Many states do not require a permit for non-consumptive uses where no diversion or removal of water is necessary.³⁵

Today, almost all riparian jurisdictions have enacted some form of permit system.³⁶ There is a model law for such statutes: the Regulated Riparian Model Water Code of the American Society of Civil Engineers.³⁷

26. Frank J. Trelease, *The Concept of Reasonable Beneficial Use in the Law of Surface Streams*, 12 Wyo. L.J. 1 (1957).

27. Dellapenna, *supra* note 4, at 85–86.

28. *Id.* at 86.

29. *Id.*

30. *Id.*

31. *Id.* at 85.

32. *Id.* at 54–55.

33. *Id.* at 55.

34. *Id.* at 85–86.

35. *Id.* at 86–87.

36. *Id.*

37. *Id.*

4. Challenges Associated with Riparian Rights

a. Stormwater Pollution/Runoff and Green Infrastructure

In riparian jurisdictions, the capture and beneficial use of stormwater is not a contentious issue because water has been traditionally plentiful. Green infrastructure projects intended to mimic the natural hydrologic process are generally embraced. In prior appropriation states, there are competing interests for scarce water resources, which can complicate stormwater capture³⁸ and green infrastructure initiatives.

Responsibility for stormwater runoff, flooding, and pollution is, however, a major issue in eastern states. Landownership affords rights but also creates responsibilities. Urbanization, construction on slopes, and the addition of impervious surfaces (roads, roofs, sidewalks, etc.) has exacerbated runoff and flooding problems. When runoff from private property causes harm to another property, tort law is used to resolve disputes.

b. Groundwater

There are five main systems for state regulation of groundwater use that are based on the various surface rights doctrines and are complicated by site-specific conditions, complexities in aquifer conditions, geographic conditions, changing weather patterns and water use patterns, and depletion impacts.³⁹ These systems are:

- Rule of Capture
- “American” Reasonable Use
- Beneficial Purpose Doctrine/Restatement (Second) of Torts § 858 Reasonable Use
- Correlative Use
- Prior Appropriation⁴⁰

Under the Rule of Capture, sometimes called the absolute ownership rule, the law allows the owner of the surface to pump the groundwater beneath the land and the overlying owner can withdraw and

38. In a prior appropriation jurisdiction, what is one user’s “stormwater capture” will often be water needed to fulfill the water rights of a downstream senior appropriator.

39. Sanjaya Raj Joshi, Comparison of Groundwater Rights in the United States: Lessons for Texas (2005), at 1 (M.S. in civil engineering thesis, Texas Tech University, 2005).

40. See THOMPSON, LESHY, & ABRAMS, *supra* note 9, at 468, 485–87.

use groundwater even if the use causes harm to adjoining property owners.⁴¹ The Reasonable Use or American Rule gives landowners a qualified rather than absolute right to withdraw and make use of groundwater. The qualification that separates this legal regime from absolute ownership arises in the event that withdrawing the water causes harm to other owners of land overlying the aquifer from which the groundwater is withdrawn. However, the landowner is subject to liability only if the use that causes harm to another overlying owner is determined to be unreasonable where reasonableness is measured almost exclusively by whether the use being made occurs on the tract that overlies the aquifer, rather than by some more intricate calculus. Historically, almost no uses made on the overlying tract are considered unreasonable. The classic example of a use that is so profligate as to be deemed unreasonable is using the water to drown gophers. Uses of the overlying tract that cause harm to other overlying owners are considered unreasonable and are subject to an injunction.⁴²

Under the Beneficial Purpose Doctrine, which was derived from the Restatement (Second) of Torts § 858, the landowner is subject to liability for unreasonable use if (1) withdrawal lowers the water table and thereby interferes unreasonably with the withdrawal by other landowners; (2) withdrawal interferes with the groundwater recharge of surface waters that depend on groundwater; or (3) landowner withdraws more than a reasonable share.⁴³ The factors that go into measuring whether a use of groundwater is reasonable are the same as those for surface water and are set out in Restatement (Second) of Torts § 850A.

Under the Correlative Use rule, all landowners with land over a groundwater reservoir have coequal or correlative rights to groundwater, usually based on the surface acreage owned. As to uses made on the overlying tracts, the correlative rights doctrine approximates vertical riparianism, where uses have to be adjusted to what is reasonable under the totality of the circumstances. Uses of groundwater made in locales that do not overlie the aquifer are governed by an entirely separate rule: they can be made only if the water being moved to non-overlying land is surplus to the needs of the overlying owners and then, as to the surplus water, a rule of priority is used.⁴⁴

41. Joshi, *supra* note 39, at 3–4.

42. THOMPSON, LESHY, & ABRAMS, *supra* note 9, at 467.

43. Joshi, *supra* note 39, at 6.

44. THOMPSON, LESHY, & ABRAMS, *supra* note 9, at 467.

Climate change will continue to put pressure on both groundwater and surface water systems, especially those based on reasonable use. What courts and states have considered reasonable in the past will evolve based on contemporary water issues. Absolute ownership will also face greater political and societal scrutiny as water shortages grow in severity and demand continues to increase.

■ C. THE PRIOR APPROPRIATION DOCTRINE ■

1. The Doctrine

The doctrine of prior appropriation has long been the law of the land in the American West. In essence, the doctrine is a first-in-time, first-in-right approach to allocating rights to water, giving the first person to put a water source to beneficial use superior rights over any future users. The doctrine emerged in California during the gold rush to govern the allocation of water needed to carry on mining, and it was broadly adopted in western states over time. In its infancy, the doctrine made good sense—the West was sparsely populated with limited water resources—and prior appropriation helped to foster development by providing abundant resources to those souls brave enough to conquer the West.⁴⁵

In more recent years, the population in western states has exploded, stretching already thin water resources to the extreme. Meanwhile, a changing climate has produced record-breaking droughts throughout the West. California experienced the worst drought in 1,200 years, forcing the state to impose mandatory water cutbacks and

45. *Cal. Or. Power Co. v. Beaver Portland Cement Co.*, 295 U.S. 142, 157–58 (1935):

[I]t had become evident to Congress, as it had to the inhabitants, that the future growth and well-being of the entire region depended upon a complete adherence to the rule of appropriation for a beneficial use as the exclusive criterion of the right to the use of water. The streams and other sources of supply from which this water must come was separated from one another by wide stretches of parched and barren land which never could be made to produce agricultural crops except by the transmission of water for long distances and its entire consumption in the processes of irrigation. Necessarily, that involved the complete subordination of the common-law doctrine of riparian rights to that of appropriation. And this substitution of the rule of appropriation for that of the common law was to have momentous consequences. It became the determining factor in the long struggle to expunge from our vocabulary the legend ‘Great American Desert,’ which was spread in large letters across the face of the old maps of the far west.

conservation measures for the first time in the state's history. Municipalities are often on the front lines of the crisis, seeking opportunities to innovate through water reuse and recycling and other conservation measures that have the added benefit of eliminating the discharge of pollutants to surface waters. Despite their value, these innovations may be hampered by prior appropriation. This section outlines the history and use of the prior appropriation doctrine, discusses how it can serve as a barrier to innovation intended to address water supply and water pollution issues, and suggests a reconsideration of the doctrine in the era of climate change.

2. Early Days in California

Prior appropriation was developed by gold miners trespassing on federal land in the early days of California statehood. Gold mining required large quantities of water, either as sources of gravel in the streambeds or for use in high-pressure blasting of rock off hillsides.⁴⁶ This early development of the doctrine was shaped by miners and water suppliers working without permission on federal lands. Because these users did not own the property surrounding the water they put to use, the California courts resolved conflicting claims between the users based on priority and timing of the use.

In 1855, the California Supreme Court in its landmark decision in *Irwin v. Phillips*,⁴⁷ established the right of prior appropriators over the common law riparian doctrine. In *Irwin*, the claimant, a later-in-time miner operating alongside the streambed, alleged a right to water based on the common law doctrine of natural flow riparianism, against a prior-in-time canal operator who was diverting the water for use by miners working sites not adjacent to the stream. Neither of the parties owned the lands being worked; they were held by the state or national governments. The court held in favor of the defendant, whose use of the water predated the plaintiff's, explaining that it was appropriate for courts to "take notice of the political and social condition of the country, which they judicially rule" and therefore recognize

the rights of those who, by prior appropriation, have taken the waters from their natural beds, and by costly artificial works have conducted

46. Lawrence J. MacDonnell, Prior Appropriation: A Reassessment, 18 U. DENV. WATER L. REV. 228, 243–55 (2015).

47. *Irwin v. Phillips*, 5 Cal. 140, 145–47 (1855).

them for miles over mountains and ravines, to supply the necessities of gold diggers, and without which the most important interests of the mineral region would remain without development,

thereby legitimizing the fact that they were technically trespassers on federal lands.⁴⁸

Over the next several years, the details of the prior appropriation doctrine developed as the California Supreme Court continued to address challenges among users of water. Through these decisions, the following essential elements evolved: priority of use equaled priority of right;⁴⁹ priority was established based on efforts to “commenc[e] and diligently pursu[e] the work” rather than actual possession;⁵⁰ and that the water must be put to some “useful purpose.”⁵¹

Then, in section 9 of the Mining Act of 1866, Congress established that rights to use of water “for mining, agricultural, manufacturing, or other purposes,” had “vested and accrued” and that “the possessors and owners of such vested rights shall be maintained and protected in the same,” thereby ratifying the prior appropriation customs used by miners on public lands.⁵² In 1872, California enshrined the doctrine in its Civil Code, establishing, among other things, a first-in-time first-in-right approach to water rights, requiring that the water be put to some beneficial use, and requiring that appropriators post and register notice of their intent to divert the water.⁵³

3. The Spread of the Prior Appropriation Doctrine throughout the West

Early statutes and decisions in other western states rejected prior appropriation as applicable only to mining on federal lands, and instead followed the riparian doctrine, attaching use of water to ownership of

48. *Id.* at 146.

49. MacDonnell, *supra* note 46, at 243.

50. *Conger v. Weaver*, 6 Cal. 548, 558 (1856).

51. *Maeris v. Bicknell*, 7 Cal. 261, 262–63 (1857). Note, however, that California did not entirely abandon the riparian rights doctrine, but instead operates under a “hybrid” system. See *United States v. State Water Res. Control Bd.*, 182 Cal. App. 3d 82, 101 (Cal. Ct. App. 1986).

52. Act of July 26, 1866, ch. 262, §§ 1, 9, 14 Stat. 251, *repealed* by Federal Lands Policy and Management Act of 1976, Pub. L. No. 94-579, § 706(a), 90 Stat. 2744, 2793.

53. 1 CAL. CIV. CODE §§ 1410–19 (enacted 1872); “1872—Appropriation of Water in California, Civ. Code, §§ 1410–1422.” (2017). *Water Statutes*, 1, http://digitalcommons.csUMB.edu/hornbeck_usa_3_h/1.

land.⁵⁴ For example, in his concurrence in *Thorp v. Freed*, Montana Chief Justice Wade criticized the doctrine as inappropriate for irrigation of privately owned lands:

And because this principle of “prior in time, prior in right” became thus established in California, as applied to mineral lands of the public domain, an effort has been made in this Territory to apply the same doctrine to agricultural or farming lands, but the principle has never been acquiesced in by the people, and is now in litigation all over the Territory. And it seems to me perfectly clear that the reason for the doctrine as applied to trespassers upon the public domain, utterly fails when applied to actual purchasers from the government of agricultural lands.⁵⁵

Montana, along with Colorado and Nevada, adopted statutes establishing the common law riparian doctrine as the law of the land, attempting to equitably apportion water throughout their arid climates.⁵⁶

Ultimately, however, the proverbial tides shifted, as it became clear that access to water was essential to development, and that prior appropriation would be the key to this access. In 1876, Colorado made an about face and adopted the doctrine in its constitution, and established that all waters in the state belonged “to the public,” thereby clarifying that ownership of water and the right to its use had no relationship to ownership of the surrounding land. The Colorado Supreme Court in *Coffin v. Left Hand Ditch Co.*, explained that because of the arid climate, water had substantial value and the right to its use could therefore not be acquired simply by obtaining ownership of appurtenant land:

The climate is dry, and the soil, when moistened only by the usual rainfall, is arid and unproductive; except in a few favored sections, artificial irrigation for agriculture is an absolute necessity. Water in the various streams thus acquires a value unknown in moister climates. Instead of being a mere incident to the soil, it rises, when appropriated, to the dignity of a distinct usufructuary estate, or right of property.⁵⁷

54. MacDonnell, *supra* note 46, at 256–58.

55. *Thorp v. Freed*, 1 Mont. 651, 667 (1872) (Wade, C.J., concurring).

56. MacDonnell, *supra* note 46, at 256–57.

57. *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443, 446 (1882).

The *Coffin* court also explained that much of the value of western land was bound up in its potential for agricultural and industrial uses, and the absence of sufficient water would destroy this value:

It has always been the policy of the national, as well as the territorial and state governments, to encourage the diversion and use of water in this country for agriculture; and vast expenditures of time and money have been made in reclaiming and fertilizing by irrigation portions of our unproductive territory. Houses have been built, and permanent improvements made; the soil has been cultivated, and thousands of acres have been rendered immensely valuable, with the understanding that appropriations of water would be protected. Deny the doctrine of priority or superiority of right by priority of appropriation, and a great part of the value of all this property is at once destroyed.⁵⁸

Thus, the prior appropriation doctrine became essential to the development of the American West, and following Colorado's adoption of the doctrine, it spread throughout the western states either alone or in combination with common law riparianism.

4. Prior Appropriation Today

Today, prior appropriation is the law of the land in the American West. Eighteen states use prior appropriation, or a blended doctrine that includes prior appropriation with some elements of riparianism. Alaska, Arizona, California, Colorado, Hawaii, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming all use some form of prior appropriation in allocating water rights.

The basic principles remain the same as in the early days of the doctrine, with four primary components: intent, diversion, beneficial use, and priority.⁵⁹ The major modification from the early days is that most states now oversee appropriation through permitting programs. Wyoming was the first to enact such a statute in 1890, and all states

58. *Id.*

59. There are two additional requirements for obtaining an appropriative right. First, the doctrine when applied to surface waters applies only to waters of a natural stream. Natural streams do not include "diffuse surface waters," which are the waters flowing across the surface before they enter a defined channel. Second, and somewhat obviously, to obtain an appropriative right, the water to which the right attaches must be unappropriated.

but Colorado have enacted a statute that requires some sort of permit application before use can be established. Most require a permit application and notice to other users, and once the permit is approved, the right must be “perfected,” meaning that it must actually be put to beneficial use that is then proven to the state. This allows states to continue to provide junior water rights where available, while protecting existing uses, but also serves to prevent speculation, by preventing persons from obtaining water rights that are not actually used.

States also administer claims by senior users in times of water shortage. If there is not enough water to supply all users, senior right holders call upon the state to notify junior users to curtail their use to ensure sufficient supply for the senior right holders. Because some rights were established prior to the modern permitting system, ascertaining the extent of those senior rights can be a complicated process requiring complex and lengthy adjudication. States may also decline to heed this call if too much water would be lost through evaporation before reaching the senior rights holder. This doctrine, known as the “futile call” doctrine, is based on the rationale that the water will be better used by junior appropriators than lost altogether to evaporation.⁶⁰

5. Beneficial Use Requirement

States following the prior appropriation doctrine also require that actual, beneficial use be made of existing water rights, and rights can be “abandoned” or “forfeited” if not put to use over a period of time. Abandonment requires that the rights holder intends to abandon the right and fails to put the water to beneficial use, whereas forfeiture can occur if the holder simply fails to put the water to beneficial use over the statutory period, regardless of intent. Many states specify a comparatively short period for forfeiture, as little as five or ten years.

States that do not have a forfeiture statute may nonetheless have a statutory abandonment period, after which intent to abandon is presumed. Courts in abandonment cases have proven very generous in finding a lack of intent to abandon.⁶¹ Similarly, the impact of forfeiture statutes is diminished by a number of defenses that in some states include, “any other reason that a court of competent jurisdiction

60. See *San Carlos Apache Tribe v. Superior Court*, 972 P.2d 179, 195 n.9 (Ariz. 1999).

61. See THOMPSON, LESHY, & ABRAMS, *supra* note 9, at 356–67.

deems would warrant nonuse.”⁶² In cases where abandonment or forfeiture is found, the water that had been allocated is returned to the state or allocated to other users.⁶³ Originally, this doctrine was intended to ensure that priority was given to those who would actually make use of the water, and prevent speculation by those hoping to claim water rights (essentially for little or no cost) and then sell those water rights as the demand for them rose in arid regions.

In the modern West, the effect of abandonment and forfeiture doctrines often has been to promote waste over conservation to secure continued access to existing water rights. Water rights holders will continue to utilize water in economically marginal activities to avoid risk of loss to abandonment or forfeiture. Those same users, knowing that the financial gain to be obtained lies in selling as much water as possible after market prices have risen, also have the perverse incentive of using their water as inefficiently as possible so as to continue to use the full amount of water allowed by their appropriative right. Although courts have made clear that the use must continue to be “beneficial,” courts have yet to do so in an active manner that favors efficiency and conservation over pure use.⁶⁴

6. Flow Protection

Historically, the focus of western water policy has been on apportioning water for human use, either as drinking water or for industrial, commercial, or agricultural uses, but beginning in the 1990s, states began to recognize a need to protect in-stream flow for use as wildlife habitats and for recreation purposes. Indeed, at least one commentator has suggested that over-allocation of water rights in the West was the name of the game for many years, arguing that “[f]or most of the modern era, state law considered water left in stream to be wasted,” and that “the agencies charged with administering water rights have allowed appropriation from streams that in most years would not carry enough water to satisfy the right created.”⁶⁵ As a result of

62. ARIZ. REV. STAT. § 45-189(E)(13). See also N. MEX. STAT. § 72-5-28.

63. Adam Schempp, *Western Water in the 21st Century: Policies and Programs that Stretch Supplies in a Prior Appropriation World*, 40 ENVTL. L. REP. NEWS & ANALYSIS 10394, 10395–96 (20).

64. MacDonnell, *supra* note 46, at 297–98.

65. Jesse A. Boyd, *Hip Deep: A Survey of State Instream Flow Law from the Rocky Mountains to the Pacific Ocean*, 43 NAT. RESOURCES J. 1151, 1152 (2003).

this over-appropriation, western legislatures and courts began looking for ways to protect at least some of the remaining flow. Because this body of law developed more than a century after the early days of prior appropriation, the protections only apply to those streams and segments where unappropriated flow remains. In most cases, state agencies are given discretion to limit further appropriation based on a need to protect flows, but the states are often hesitant to exercise this power.⁶⁶

7. Groundwater and Prior Appropriation Doctrine

Application of prior appropriation doctrine to groundwater did not occur until the early 20th century, and increasingly following World War II as the population in the West grew. Since then, states that apply prior appropriation as their groundwater law have developed a statutory structure of prior appropriation where rights to groundwater are based on withdrawal or possession and actual application to beneficial use. As with surface water rights, property ownership does not correlate with a right to use the water, and is relevant only to access.

While priority still applies to groundwater users, it is slightly modified to address the physical nature of groundwater. Senior users are still given priority over junior users and a right to use their allotment of the water, but they are not guaranteed access. Specifically, courts have found that if junior users of groundwater pump an aquifer below the level of the senior user's well, the senior user may be required to deepen its well in order to access the water.⁶⁷ Thus, while junior users cannot oversubscribe the resource such that they deny the senior user its allotment, they are not required to protect fully that user's ability to access the water.⁶⁸

66. MacDonnell, *supra* note 46, at 304–05.

67. *Id.* at 277–78 (citing *City of Colorado Springs v. Bender*, 366 P.2d 552, 555 (Colo. 1961)).

68. Most states will protect seniors in a reasonable means of diversion. In practice that might mean that a junior wishing to pump water that would impair the right of a senior whose well is considered reasonable (in terms of its depth) would have to bear the cost of protecting the senior (such as paying to deepen the senior well) in order to access the water or forego the appropriation. See, e.g., *Baker v. Ore-Ida Foods, Inc.*, 95 Idaho 575, 581–82, 513 P.2d 627, 633–34 (1973).

8. Western States and the Public Trust Doctrine

Though the nuances and application of the public trust doctrine vary by state in the West, the doctrine has taken on particular importance in the context of prior appropriation. As the Supreme Court explained in *Illinois Central Railroad Co. v. Illinois*,⁶⁹ the public trust doctrine vests states with title to submerged lands, such that the state holds them in trust for the people of the state for purposes of navigation, fishing, and commerce:

But it is a title different in character from that which the state holds in lands intended for sale. . . . It is a title held in trust for the people of the state, that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein, freed from the obstruction or interference of private parties.⁷⁰

Thus the doctrine traditionally protects the right of the public to use navigable waters for navigation, commerce, and fishing.

In several western states, however, the public trust doctrine has been broadly expanded beyond these traditional spheres of operation, largely because every state includes some element of public ownership of waters in its prior appropriation doctrine. Indeed, both Congress and the courts have recognized that because appropriation of waters is divorced from property ownership in the West, states have more of an ownership interest in the water itself. Specifically, in the Desert Land Act of 1877, which applies to lands in Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming, Congress recognized the need for water to be portable, such that it could be put to use in settlement of western states.⁷¹ As the Supreme Court explained in *California Oregon Power Co. v. Beaver Portland Cement Co.*, the Desert Land Act also gave control over non-navigable waters to the states, thereby allowing western states to assert ownership over waters where they did not have ownership of the bed and bank under traditional public trust doctrine.⁷²

69. *Ill. C. R. Co. v. Illinois*, 146 U.S. 387, 13 S. Ct. 110 (1892).

70. *Id.* at 118.

71. 43 U.S.C. § 321 (2012).

72. *Cal. Or. Power Co. v. Beaver Portland Cement Co.*, 295 U.S. 142, 165 (1935).

As a result, many states use the public trust doctrine to protect a broader scope of public values than are included in the traditional understanding of the doctrine. For example, the California Supreme Court has explained the rights protected by the doctrine

have been held to include the right to fish, hunt, bathe, swim, to use for boating, and general recreation purposes the navigable waters of the state, and to use the bottom of the navigable waters for anchoring, standing, or other purposes.⁷³

In *PPL Montana*,⁷⁴ the U.S. Supreme Court indicated that the public trust doctrine is a matter of state law. Accordingly, the expansion of the doctrine depends largely upon public policy interests of the state, and the likelihood of an individual state to view private property rights as having primacy over the rights of the public to use the water. For example, in Arizona the courts have taken a very active role in ensuring that public trust doctrine is limited both to navigable waters and to the traditional purposes of navigation, fishing, and commerce. Indeed, by statute, Arizona limits “navigable waters” to waters that are considered navigable under the federal navigable for title test,⁷⁵ and the courts have acted to maintain these limitations even in the face of legislative attempts to modify the doctrine.⁷⁶ By contrast, Hawaii courts seek to preserve the state’s “natural bounty” and place priority on the public interest in access to fresh water over private property and water rights.⁷⁷

73. *Nat’l Audubon Soc’y v. Super. Ct.*, 658 P.2d 709, 719 (Cal. 1983).

74. *PPL Mont., LLC v. Mont.*, 565 U.S. 576 (2012).

75. Upon the declaration of independence from England, the several states succeeded to the Crown’s ownership of the navigable waters and their beds as the sovereign to hold those lands and waters in trust for the benefit of public in relation to navigation, commerce, and fishing. The equal footing doctrine ensures that the later created states enjoy the same position in relation to federal navigable for title waters as did the original states. See generally THOMPSON, LESHY, & ABRAMS, *supra* note 9, at 588–92. The federal navigable for title test requires navigability in fact at the time the state was admitted to the nation. The beds beneath waters that are navigable under the federal navigable for title test pass to the states upon statehood. See, e.g., *Utah v. United States*, 403 U.S. 9 (1971).

76. See, e.g., *Defenders of Wildlife v. Hull*, 18 P.3d 722, 727 (Ariz. App. 2001); *San Carlos Apache Tribe v. Super. Ct. ex rel. Cnty. of Maricopa*, 972 P.2d 179, 199 (Ariz. 1999); *Calmat of Ariz. v. State ex rel. Miller*, 836 P.2d 1010, 1020–21 (Ariz. App. 1992); *Ariz. Ctr. for Law in the Pub. Interest v. Hassell*, 837 P.2d 158, 162–73 (Ariz. App. 1991).

77. See Robin Kundis Craig, *A Comparative Guide to the Western States’ Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward and Ecological Public Trust*, 37 *Ecology L.Q.* 53, 73 (2010).

9. Prior Appropriation as a Barrier to Innovation and Compliance with Federal Law

a. Stormwater Control, Green Infrastructure, and Innovation

For many years, EPA has focused much of its enforcement effort on keeping raw sewage and contaminated stormwater out of the nation's waters. The agency has advanced this priority through multi-billion-dollar consent decrees with municipal wastewater and stormwater utilities throughout the country, with a focus on minimizing or eliminating sanitary and combined sewer overflows. As utilities have moved through planning and implementation of these decrees, many have discovered that green infrastructure and other source control measures that slow the flow of stormwater and prevent it from entering sewer systems can be an affordable and effective solution to what ails them.

These innovative practices do not always coexist easily with the doctrine of prior appropriation. If stormwater flow belongs to a senior rights holder, can it also be diverted to onsite retention basins and then either be reused onsite or slowly released into natural systems? These questions are still being answered. In 2016, following significant debate in the state legislature, Colorado made a major step forward in stormwater retention by "legalizing" rain barrels on private property.⁷⁸ Rain barrels can be a useful tool in controlling stormwater flow, serve to educate the public about the water cycle, and provide opportunities for stormwater reuse on private property. Despite these benefits, debate focused on whether use of rain barrels would deprive senior water rights holders of adequate flow and thereby impact agriculture in the state. Ultimately, the law passed, but only after insertion of language clarifying that a rain barrel does not create a water right, and requiring the state engineer to track rain barrel usage and implementation to ensure it does not deprive senior rights holders of flow. While Coloradans are now able to install rain barrels on their property, the saga illustrates the issue of whether larger-scale projects that divert stormwater flow, for water conservation or pollution control purposes, can coexist with the prior appropriation doctrine. And these issues are not isolated to Colorado, or to surface water flow.

In 2013, EPA issued a report discussing barriers to green infrastructure in Los Angeles, and focused in particular on issues surrounding

78. Colo. H. B. 16-1005 (2016).

rights to groundwater.⁷⁹ The report explains that stormwater runoff is a major source of pollution in urban areas, but goes on to highlight the many benefits of using green infrastructure to mimic natural systems and control the flow of polluted stormwater. The report also explains that groundwater rights in the Los Angeles region are governed by two major adjudications that outline groundwater extraction rights, but that do not allow “credit” for recharge or storage. This means that if a groundwater user captures stormwater flow that serves to increase the available groundwater either through natural systems or direct groundwater recharge, that user does not own that flow and cannot access any flow in excess of its adjudicated rights. As EPA argues in its report, these adjudications serve as a disincentive to investment in green infrastructure in Los Angeles, because there is no corresponding increase in groundwater rights.

b. Water Reuse and the Endangered Species Act

In drought-stricken areas, treated wastewater effluent is also becoming an important resource for groundwater recharge, for potential potable reuse, and for non-potable uses. These projects offer multiple benefits, such as eliminating discharges to surface waters by reusing treated water as water supply, either for landscape irrigation and other non-potable purposes, or for direct and indirect potable purposes (e.g., recharge of groundwater used as a drinking water source). For communities seeking to conserve water, benefits include access to a reliable water source, cost savings on imported water, and easing of the burden on wastewater treatment plants, which often face substantial costs to meet stringent discharge limits.

Because of historic over-appropriation in some areas of the West, however, utilities are finding obstacles to this approach to compliance and conservation. In areas where natural flows have been over-appropriated, the only remaining flow may be treated wastewater effluent, and utilities are facing Endangered Species Act (ESA) challenges where this flow serves to sustain critical habitat. Currently, the city of San Bernardino and the San Bernardino Municipal Water Department (SBMWD) are facing a challenge to their Clean Water Factory water recycling facility that would both upgrade the San

79. *Green Infrastructure Opportunities and Barriers in the Greater Los Angeles Region*, U.S. ENVTL PROT. AGENCY, https://www.epa.gov/sites/production/files/2015-10/documents/council_watershed_health_gi_report.pdf (last visited Sept. 16, 2017).

Bernardino water reclamation plant, increasing the rated capacity from 22 million gallons per day (mgd) to 33 mgd, and divert treated effluent to recharge basins and into direct use by local municipal facilities and other recycled water users.

The SBMWD provides its customers with drinking water and wastewater treatment, as well as geothermal heating services. Currently, SBMWD relies completely on groundwater from the Bunker Hill groundwater basin to meet the water supply needs of its service area. But the basin is presently in a condition of groundwater depletion, with future demand expected to increase over time. The proposed factory is designed to reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of clean water into the future. The Center for Biological Diversity and other groups have challenged the proposed project, arguing in part that the project would eliminate 10 percent of the flow in the receiving stream, that this will have significant impacts on aquatic species, and that mitigation is therefore required.⁸⁰

While the litigation is in early stages, and the outcome is unknown, the proposed remedy would place an affirmative obligation on wastewater treatment plants to maintain a certain level of flow in their receiving streams. This outcome would be significantly burdensome, casting uncertainty on the role of dischargers and their obligations during times of drought, but would also have a chilling effect on reuse projects that otherwise provide significant value to communities.

80. *Ctr. for Biological Diversity v. City of San Bernardino*, 247 Cal. App. 4th 326, 201 Cal. Rptr. 3d 898 (2016).