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Abstract

Although rainwater harvesting would appear to be a win-win solution to the problem of developing new sources of water, implementing rainwater harvesting in the American West has been fraught with tensions that have pitted rural farmers and other agricultural interests against urban and suburban homeowners. The water law of the western states is based on the prior appropriation doctrine, which creates a "first in time, first in right" system of water rights tied to when a user diverts surface water for beneficial use. Since water rights are property rights, state statutes and regulations that "go too far" in affecting them risk giving senior appropriators a takings claim. Based on the nature of rainwater harvesting and judicial interpretations of federal and state constitutional takings clauses, the most likely claims by downstream agricultural irrigators in the West are that state statutes authorizing rainwater harvesting are per se *physical takings. Such takings require compensation, even though they do not result in the total loss of the right to use water or have a minimal economic impact on a senior appropriator. To avoid a taking, state legislatures need to draft these statutes in ways that take advantage of how existing state laws implement the prior appropriation doctrine. Colorado's most recent rainwater harvesting statute leverages how the no-injury requirement placed on junior appropriators ultimately limits the scope of the senior appropriators' water rights and avoids a taking.*

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Introduction

One source of "new" water is an ancient one—capturing rain and storing it for later use.[1] During a time when the planet is becoming hotter, drier, and more crowded, rainwater harvesting provides a

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1. *See* Troy L. Payne & Jane Neuman, *Remembering Rain*, 37 Envtl. L. 105, 121 (2007).

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means of conserving water before it disappears as runoff using simple, relatively low cost methods and materials.[2] Rainwater harvesting has the potential to be the greenest of green practices because it allows a locally produced natural resource to be locally consumed while reducing the dependence of building owners and occupants on public utilities.

Although rainwater harvesting would appear to be a win-win solution to the problem of developing new sources of water, implementing rainwater harvesting in the American West has been fraught with tensions that have pitted rural farmers and other agricultural interests against urban and suburban homeowners.[3] The water law of the western states is based on the prior appropriation doctrine, which gives senior appropriators priority over junior appropriators in the right to use water, especially when a surface water source becomes over-appropriated because it carries too little water relative to all the water rights.[4] Rainwater harvesting creates issues when downstream agricultural irrigators become concerned that the collection and use of rainwater by urban and suburban homeowners in the aggregate may reduce the amount of water that is available to satisfy their senior water rights. Homeowners, incredulous about the illegality of placing rain barrels under gutters and downspouts, have used their growing political clout to convince state legislatures in the American West to enact statutes explicitly permitting rainwater harvesting.

Since water rights are property rights under the prior appropriation doctrine, state statutes and regulations that affect water rights risk giving senior appropriators a takings claim with the resulting requirement to pay just compensation. Based on the nature of rainwater harvesting and judicial interpretations of federal and state constitutional takings clauses, the most likely claims by downstream agricultural irrigators are that statutes authorizing rainwater harvesting are *per se* physical takings. Such takings require compensation even though they do not result in the total loss of the right to use water or have a minimal economic impact on a senior appropriator.[5]

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2. A typical rainwater harvesting system in the western United States uses the roof of a structure to catch the rain, a first flush device to remove accumulated debris flushed from the roof by the rain, a network of gutters and drainpipes to route the water, and an above-ground tank or underground cistern to store the water. A filtration system may also be needed if the water will be used for drinking water or other household uses. *See* R. Waskom & J. Kallenberger, *Graywater Use and Rainwater Harvesting*, COLO. ST. UNIV. EXTENSION (July 2009), https://www.csu.org/CSUDocuments/iwrpgraywaterrainwater.pdf [https://permacc/YWD4-5NSH].

3. *See* Stephen N. Bretsen, *Rainwater Harvesting Under Colorado's Prior Appropriation Doctrine: Property Rights and Takings*, 22 FORDHAM ENVTL. L. REV. 159, 160–62 (2011). The current article updates and adapts from this older article.

4. Descriptions of the prior appropriation doctrine appear repeatedly in the academic literature. *See, e.g.*, A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881, 882 (2000).

5. *See* Bretsen, *supra* note 3, at 211.

To avoid the compensation requirement of federal and state constitution takings clauses, legislatures in states that have adopted the prior appropriation doctrine need to draft statutes authorizing rainwater harvesting in ways that take advantage of how existing state law creates property rights in water. The recent rainwater harvesting statutes enacted in Colorado demonstrate how the no-injury requirement placed on junior appropriators limits the scope of the senior appropriators' water rights and can be used to avoid a taking.[6]

I. NEW WATER AND RAINWATER HARVESTING

Developing new sources of water in Colorado will be critical due to a combination of population growth and climate change. According to Colorado's Water Plan, the population of Colorado is expected to grow from 5.2 million in 2015 to between 8.3 million and 9.2 million by 2050.[7] Throughout this time period, over 80% of Colorado's population will live along the urbanized Front Range on the eastern slope of the Rocky Mountains.[8] In addition to the increasing demand for water, especially along the Front Range, Colorado faces the probability of a diminishing supply of water. As the Water Plan notes, "[c]limate change and its associated effects make it more difficult to meet Colorado's future water needs because of . . . potential big swings in precipitation patterns and amounts of precipitation in the future."[9] The combination of increased demand and decreased supply creates the risk of a water supply gap, especially for municipal purposes like residential drinking water. According to the Water Plan, "the completion of proposed water projects [is] likely insufficient to address projected 2050 shortfalls [in the municipal water supply] that could total more than 500,000 acre-feet statewide."[10]

Despite these dire predictions, rainwater harvesting does not appear to be part of the solution in Colorado. The Water Plan only mentions rainwater harvesting twice—once to describe the state's sole rainwater harvesting pilot project and a second time to note that pro-rainwater harvesting comments were received as part of the public input in developing the plan.[11] However, rainwater harvesting has not

6. *Id.* at 225.

7. *Colorado's Water Plan*, COLO. WATER CONSERVATION BD., at 5–4 (2015), https://www.colorado.gov/pacific/sites/default/files/CWP2016.pdf [hereinafter *Colorado's Water Plan*].

8. *Colo.'s 2016 Population & Econ. Overview*, COLO. DEP'T OF LOC. AFF., https://demography.dola.colorado.gov/crosstabs/2016-overview/ [https://permacc/32LH-MBHV] (last visited Sept. 11, 2017).

9. *Colorado's Water Plan*, *supra* note 7, at 1-9.

10. *Id.* An acre-foot is enough water to cover an acre of land with one foot of water, or about 326,000 gallons of water. *See What's an Acre-Foot*, WATER EDUC. FOUND., http://www.watereducation.org/general-information/whats-acre-foot [https://permacc/KLW2-ZJXR] (last visited Nov. 2, 2017).

11. *Colorado's Water Plan*, *supra* note 7, at 6-63, & app. F-4.

always been neglected as a means of bridging the water supply gap.[12] According to a 2007 study prepared, in part, for the Colorado Water Conservation Board, rainwater and snowmelt harvesting could reduce outdoor water demand by approximately 65% to 88% when combined with active water management techniques ranging from "moderate conservation" to "water wise conservation" scenarios.[13]

Ironically, at the time of this 2007 study, rainwater harvesting was illegal in Colorado, and the uncertain role of rainwater harvesting as a supply-side solution to Colorado's municipal water gap reflects its changing legal status. Although Colorado is perceived to be an environmentally progressive state, it has been slower than other western states in more fully authorizing rainwater harvesting. Utah did so in 2010,[14] and California did so in 2012 with the Rainwater Capture Act.[15] In Colorado, over the last ten years, rainwater harvesting has moved from being illegal, to being allowed under limited circumstances at the time the 2015 state Water Plan was published, to being allowed more broadly the year after the plan was published. Colorado's love-hate relationship with rainwater harvesting reflects the influence of the prior appropriation doctrine, a tug-of-war between urban, residential interests and rural, agricultural interests, and at least a theoretical concern about property rights and takings.

II. THE PRIOR APPROPRIATION DOCTRINE AND PROPERTY RIGHTS IN WATER

The water law in Colorado, as it is in other western states, is based on the prior appropriation doctrine.[16] The rise of the prior appropriation doctrine reflects the limited availability of water in the American West and how the lack of water became the dominant factor in the economic and institutional development of the West.[17] While the western landscape has often been associated with mountains, another profound feature has been that "[w]ith local and minor exceptions, the lands beyond the 100th meridian received less than twenty inches of annual rainfall, and twenty inches was the minimum for unaided agri-

12. David Beaujon, *Rainwater Harvesting in Colorado*, 09-02 COLO. LEGIS. COUNCIL STAFF ISSUE BRIEF 1, (2009), http://hermes.cde.state.co.us/drupal/islandora/object/co%3A2467/datastream/OBJ/view [https://permacc/QGW4-LX5M].

13. *Holistic Approach to Sustainable Water Management in Nw. Douglas Cty. 2*, COLO. WATER CONSERVATION BD., (2007), http://cwcbweblink.state.co.us/weblink/docview.aspx?id=105705&searchhandle=8365&dbid=0 [https://permacc/6W6N-LXB5] [hereinafter DOUGLAS COUNTY WATER STUDY].

14. UTAH CODE ANN. § 73-3-1.5 (LexisNexis 2013).

15. CAL. WATER CODE § 10570 (West 2017).

16. *Colorado's Water Plan*, *supra* note 7, at 2-3. GEORGE VRANESH, VRANESH'S COLORADO WATER LAW 7-9 (James N. Corbridge & Teresa A. Rice eds., rev. ed. 1999).

17. VRANESH, *supra* note 16, at 3; *See generally*, Stephen N. Bretsen & P.J. Hill, *Irrigation Institutions in the American West*, 25 UCLA J. ENVTL. L & POL'Y 283 (2006–2007).

culture."[18] In Colorado, "[w]ith annual average rainfall averaging less than fifteen inches . . . , melting snow was the primary source of water" for irrigation and other purposes.[19]

The starting point of the prior appropriation doctrine in Colorado and other western states is the vesting of ownership of water in the state. From its ratification in 1876 to the present, the Colorado Constitution has declared that "[t]he water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided."[20] Although the state owns the water, this ownership interest does not automatically give the public the right to use water. The Colorado Supreme Court has held that the declaration of state ownership of water in the Colorado Constitution "was primarily intended to preserve the historical appropriation system of water rights upon which the irrigation economy in Colorado was founded, rather than to assure public access to waters for purposes other than appropriation."[21] However, this declaration provides the legal foundation for the state's role in the creation, transfer, and loss of water rights through a combination of regulatory agencies and a system of special water courts.[22]

Since the state owns the water, the property right created in water is a use or usufructuary right.[23] Under the prior appropriation doctrine, water rights are created when surface water is diverted for a beneficial use.[24] The water right's seniority is established under the rubric of "first in time, first in right," which gives the first appropriator from a surface water source rights that are senior to subsequent appropriators.[25] The property right in water "is not a right to specific water itself, but rather a right to divert a quantity of water, in accordance with one's priority" from a certain point in a stream system.[26]

The value of a water right is in its priority, which has been characterized as "the most valuable stick in the bundle"[27] so that to "deprive a person of his priority is to deprive him of a most valuable property

18. WALLACE STEGNER, BEYOND THE HUNDREDTH MERIDIAN: JOHN WESLEY POWELL AND THE SECOND OPENING OF THE WEST 214 (1954).

19. VRANESH, *supra* note 16, at 3.

20. COLO. CONST. art. XVI, § 5.

21. People v. Emmert, 597 P.2d 1025, 1028 (Colo. 1979).

22. *See* Andrew P. Morriss, *Lessons from the Development of Western Water Law for Emerging Water Markets: Common Law vs. Central Planning*, 80 OR. L. REV. 861 (2001).

23. VRANESH, *supra* note 16, at 30.

24. Kobobel v. State, 249 P.3d 1127, 1134 (Colo. 2011).

25. Comstock v. Ramsay, 133 P. 1107, 1110 (Colo. 1913).

26. VRANESH, *supra* note 16, at 30.

27. Gregory J. Hobbs, *Priority: The Most Misunderstood Stick in the Bundle*, 32 ENVTL. L. 37, 43 (2002).

right."[28] A senior appropriator with a decreed water right can use its priority on a stream system to require the State Engineer to close the diversion works of junior appropriators to protect its senior water rights and meet its needs.[29] The concept of priority and its value highlights that the property right in water is a use right under the prior appropriation doctrine.[30]

The concept of beneficial use plays a dual role since it both creates and limits the property right in water.[31] Beneficial use as a limitation is encompassed in the idea of the duty of water, which "draws a distinction between the maximum rate of diversion and the total amount of water that may be diverted. The former is controlled by the decree, while the latter is determined by the reasonable needs of the purpose for which the decree was entered."[32] Although property rights in water are created and strengthened by continuous diversions of surface water for beneficial uses, water rights are not permanent and can be abandoned or forfeited for failing to divert or to make beneficial use of the water.[33]

In Colorado, the right to use water is considered a private property right.[34] The property right to use water is most often treated as an interest in real property.[35] However, the Colorado courts have offered a confusing array of common law categories of property over time to try to describe the nature of the property right in water:

> Water rights have been characterized as a freehold, *Gutheil Park Inv. Co. v. Montclair*, 32 Colo. 420, 76 P. 1050 (1904); *Grand Valley*

28. Navajo Dev. Co. v. Sanderson, 655 P.2d 1374, 1378 (Colo. 1982).

29. *Id.* at 1377; Mari W. Deminski, *Water Rights: Real Property*, *in* COLORADO WATER LAW BENCHBOOK § 7.2.5 (Carrie L. Ciliberto & Timothy J. Flanagan eds., 1st ed. Supp. 2010). However, both Professor Tarlock and Justice Hobbs note that such enforcement of priorities may be more of a theoretical exercise than an actual practice. A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?* 76 N.D. L. REV. 881, 883 (2000); Hobbs, *supra* note 27, at 43.

30. The concept that water itself is not owned is highlighted by the Water Right Determination and Administration Act, which defines a "water right" as "the right to use in accordance with its priority a certain portion of the waters of the state by reason of appropriation of the same." COLO. REV. STAT. § 37-92-103(12) (2016).

31. Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson, 990 P.2d. 46, 53 (Colo. 1999).

32. *Id.*

33. VRANESH, *supra* note 16, at 251–54.

34. Kobobel v. State, 249 P.3d 1127, 1134 (Colo. 2011); *see also* Strickler v. City of Colo. Springs, 26 P. 313, 314 (Colo. 1891). Although the question of water rights as property rights appears to be well-settled in Colorado, legal scholars consider the matter unsettled. *See* Brian E. Gray, *The Property Right in Water*, 9 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 1, 4 (2002); Sandra B. Zellmer & Jessica Harder, *Unbundling Property in Water*, 59 ALA. L. REV. 679, 691–92 (2008); Scott Andrew Shepard, *The Unbearable Cost of Skipping the Check: Property Rights, Takings Compensation & Ecological Protection in the Western Water Law Context*, 17 N.Y.U. ENVTL. L.J. 1063, 1116 (2009); Shelley Ross Saxer, *The Fluid Nature of Property Rights in Water*, 21 DUKE ENVTL. L. & POL'Y F. 49, 50–53 (2010).

35. Deminski, *supra* note 29, at § 3.2.3.

> *Irrigation Co. v. Lesher*, 28 Colo. 273, 65 P. 44 (1901), see also *Comstock v. Olney Springs Drainage Dist.*, 97 Colo. 416, 50 P.2d 531 (1935); *Davis v. Randall*, 44 Colo. 488, 99 P. 322 (1908); *Monte Vista Canal Co. v. Centennial Irrigating Ditch Co*., 22 Colo. App. 364, 123 P. 831 (1912); as an interest in real estate, *West End Irrigation Co. v. Garvey*, 117 Colo. 109, 184 P.2d 476 (1947); *Talcott v. Mastin*, 20 Colo. App. 488, 79 P. 973 (1905); as a property right lacking the dignity of an estate in fee, *Knapp v. Colorado River Water Conservation Dist*., 131 Colo. 42, 279 P.2d 420 (1955); as personal property, *Brighton Ditch Co. v. Englewood*, 124 Colo. 366, 237 P.2d 116 (1951); and, perhaps most accurately, as a "usufructuary" right, *Coffin v. Left Hand Ditch Co*., supra; see also *Wheeler v. Northern Colo. Irrigation Co*., 10 Colo. 582, 17 P. 487 (1887); *Monte Vista Canal Co. v. Centennial Irrigating Ditch Co.*, supra.[36]

Perhaps water rights are best understood "as usufructuary rights with significant physical components" such as physical possession or control via diversion and a beneficial use that is appurtenant to a specific parcel of land.[37] What is certain in Colorado is the importance of preserving the idea of a water right as a private property right as a matter of public policy. The current state Water Plan notes that the goal of applying and strengthening the prior appropriation doctrine "requires [Colorado] to recognize that water rights are property rights whose owners are free to respond to the economics of the marketplace and to continue to work within [Colorado's] local control structure."[38]

The property rights in water of senior appropriators are especially important when surface water sources are already over-appropriated. Surface water is considered over-appropriated "when there is not enough water in the stream during irrigation season or at other times of the year to satisfy all decreed appropriations."[39] Over-appropriation is an issue in Colorado and impacts streams on the Front Range and eastern plains of Colorado, where the controversy over rainwater harvesting has been most intense.[40] And over-appropriation is not a new issue in Colorado. With over-appropriation occurring as early as the 1890s on some streams, junior water rights can have priorities as

36. Navajo Dev. Co. v. Sanderson, 655 P.2d 1374, 1377 (Colo. 1982).

37. Josh Patashnik, *Physical Takings, Regulatory Takings, and Water Rights*, 51 SANTA CLARA L. REV. 365, 390 (2011) (citing High Plains A&M, LLC v. Se. Colo. Water Conservancy Dist., 120 P.3d 710, 717 (Colo. 2005)).

38. *Colorado's Water Plan*, *supra* note 7, at 1-1.

39. Hall v. Kuiper, 510 P.2d 329, 330 (Colo. 1973).

40. Beaujon, *supra* note 12, at 2; Matthew S. Pozanovic & Carmen S. Hall, *Surface Water Rights*, *in* COLORADO WATER LAW BENCHBOOK 2–6 (Carrie L. Cilberto & Timothy J. Flanagan eds., CLE in Colorado, 1st ed. Supp. 2009); City of Thornton v. Bijou Irrigation Co., 926 P.2d 1, 71 n. 66 (Colo. 1996) (noting that the South Platte River Basin is substantially over-appropriated); Se. Colo. Water Conservancy Dist. v. Shelton, 529 P.2d 1321, 1323 (Colo. 1974) (noting that the Arkansas River is "greatly over-appropriated"); Cache La Poudre Water Users Ass'n v. Glacier View Meadows, 550 P.2d 288, 290 (Colo. 1976) (agreeing that the Cache La Poudre River is over-appropriated except during flood stages).

old as 100 years.[41] Priority becomes an especially critical element of a water right in an over-appropriated water basin, with rainwater as part of the equation. From the perspective of a downstream senior appropriator, rainwater that seemingly disappears into the ground becomes water needed to satisfy its water rights.

III. RAINWATER HARVESTING AS A CRIME

Rainwater harvesting was considered illegal in Colorado prior to 2009 based on its strict application of the prior appropriation doctrine.[42] At one time, the Colorado Division of Water Resources noted that "in much of the state, it is illegal to divert rainwater falling on your property expressly for a certain use unless you have a very old water right or during occasional periods where there is surplus water in a river system."[43] Prior to 2009, all rainwater captured out-of-priority had to be replaced in the stream system in like time and place.[44] Even though Colorado had no law until 2009 specifically prohibiting rainwater harvesting, the Colorado Division of Water Resources was relying on constitutional and statutory provisions.

After declaring public ownership of unappropriated water in streams,[45] the Colorado Constitution guarantees that "[t]he right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied."[46] In addition to creating a legal framework for granting private water rights, the constitutional language also creates a limitation. Since the legislature cannot grant rights that exceed those provided by the constitution,[47] the water that is subject to appropriation in Colorado is limited to "the . . . waters of any natural stream."[48] In Colorado, such surface water is fed by a combination of snowmelt and rainwater.[49]

While rain may be identifiable as rainwater, it is or is on its way to becoming some other form of water once it hits the ground, such as surface water, groundwater, water being consumed by a plant, or water evaporating back into the atmosphere. One form of surface

41. Pozanovic & Hall, *supra* note 40, at § 9.3.

42. M. Subramanian, *Rainwater Harvesting Catches the Attention of State and Local Government*, 12 W. WATER L. & POL'Y REP. 226, 227–28 (June 2008).

43. Bretsen, *supra* note 3, at 168; *see also* Matt Corrion, *Collecting Rainwater Still Illegal in Much of Colorado,* OUTDOOR DESIGN GRP., http://www.lot-lines.com/collecting-rainwater-still-illegal-in-much-of-colorado/ [https://permacc/UH8Z-N3TM].

44. Carolyn F. Burr & James N. Noble, *Rainwater Harvesting: A New Water Supply Option in Colorado?*, COLO.B. ASS'N 1 (2008), http://webcache.googleusercontent.com/search?q=cache:lIWekxMmnOsJ:www.cba.cobar.org/repository/Inside_Bar/Water%2520Law/October%25209,%25202008/Rainwater%2520Harvesting%2520Handout-10-9-08.pdf+&cd=1&hl=en&ct=clnk&gl=us [https://permacc/5AQ3-KKXK].

45. COLO. CONST. art. XVI, § 5.

46. COLO. CONST. art. XVI, § 6.

47. *See* Marbury v. Madison, 5 U.S. 137, 178 (1803).

48. COLO. CONST. art. XVI, § 6.

49. VRANESH, *supra* note 16, at 3.

water is diffused surface water, defined as "water from rain, melting snow, springs, or seepage, or detached from subsiding floods, which lies or flows on the surface of the earth but does not form part of a watercourse or lake."[50] The key issue for classifying water as either surface water or diffused surface water is whether it has flowed into a discrete watercourse or body of water.[51] In several western states that have adopted the prior appropriation doctrine, diffused surface water is not water subject to appropriation and is instead governed by common law property doctrines that address how one can affect the property of another based on how water is controlled, drained, or used.[52] These doctrines allow property owners to capture and store diffuse surface water before it reaches a surface water course or body of water or the adjacent property.[53]

However, due to Colorado's strict application of the prior appropriation doctrine, the common law doctrines that govern diffused surface water are inapplicable, at least in practice if not in theory.[54] According to the Colorado Supreme Court, the constitutional provisions establishing water subject to appropriation "were intended to be used in their broadest scope" so that intermittent streams and water that is tributary to a natural stream are included within the constitutional language.[55] All flowing water, whether from a spring, an underground stream, or via percolation or seepage, as well as all groundwater, is presumed to be tributary to a natural stream, and the burden of proof is on the one asserting that the flowing water or groundwater is not tributary to a natural stream to prove that fact by clear and satisfactory evidence.[56] Thus, the question in Colorado is ultimately not whether water is surface water, groundwater, or diffused surface water. Instead, "[t]he real question to be asked is whether water, even if diffused, is tributary to a natural stream."[57] Given the presumption, little, if any, rainwater in Colorado could be classified as diffuse surface water that is subject to the ownership and control of a landowner under common law property doctrines. Instead, rainwater is more

50. DAVID H. GETCHES, SANDRA B. ZELLMER, & ADELL L. AMOS, WATER LAW IN A NUTSHELL 278 (5th ed. 2015) (citing RESTATEMENT (SECOND) OF TORTS § 846 (AM. LAW. INST. 1965)).

51. GETCHES ET AL., *supra* note 50, at 94–96.

52. William P. Elliott II, *Diffused Surface Water in Wyoming: Ascertaining Property Owners' Rights and Settling Disputes*, 11 WYO. L. REV. 409, 410–11 (2011).

53. State v. Hiber, 44 P.2d 1005, 1008 (Wyo. 1935); *see also*, LAWRENCE J. MACDONNELL, TREATISE ON WYOMING WATER LAW 84, 90 (2014).

54. VRANESH, *supra* note 16, at 116.

55. In re German Ditch & Reservoir Co., 139 P. 2, 9 (Colo. 1914). Colorado statutes confirm the constitutional language by stating that "[t]he water of every natural stream, as referred to in sections 5 and 6 of article XVI of the state constitution, includes all the water occurring within the state of Colorado which is in or tributary to a natural surface stream but does not include nontributary groundwater as that term is defined in section 37-90-103." COLO. REV. STAT. § 37-82-101(1) (2016).

56. Safranek v. Town of Limon, 228 P.2d 975, 977 (Colo. 1951).

57. VRANESH, *supra* note 16, at 116.

likely to be water that a senior appropriator could claim was needed to satisfy its water right.[58]

Reinforcing the uncertain and limited status of diffused surface water in Colorado is another statute referenced by the Colorado Division of Water Resources as legal support for its position that rainwater harvesting was illegal.[59] The Colorado Weather Modification Act, originally enacted in 1963 and reenacted in 1972, declares that Colorado:

> [C]laims the right to all moisture suspended in the atmosphere which falls or is artificially induced to fall within its borders. Said moisture is declared to be the property of the people of this state, dedicated to their use pursuant to sections 5 and 6 of article XVI of the Colorado constitution and as otherwise provided by law.[60]

The effect of the law is to extend the original 1876 constitutional declaration of state ownership and water subject to appropriation from only natural streams to include rainwater and other forms of precipitation. In theory, the Colorado Weather Modification Act would preempt even the idea of rainwater becoming diffused surface water because no rain could be considered private water subject to common law private property doctrines.

In 2009, a Colorado law authorizing small-scale rainwater harvesting in limited circumstances included enforcement provisions for the first time.[61] A violation of the law's regulations, such as an unauthorized rainwater system, allowed the State Engineer to seek an injunction from the appropriate water court and collect court costs and reasonable attorney's fees from the violator.[62] A fine of $500 could be imposed for each violation.[63]

As an illegal activity, rainwater harvesting was presumed to injure the water rights of senior appropriators. Overcoming this presumption required a rainwater harvester to develop costly hydrological evidence or submit a plan to augment all of the rain captured out of priority.[64]

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58. "States seeking broad control of waters are likely to define diffused surface waters narrowly." GETCHES ET AL., *supra* note 50, at 292. Several other western states besides Colorado, such as Nevada, Oregon, and Utah, extend state control to diffused surface water. *Id.* at 292–93 (citing In re Manse Spring v. Merickel Holding Corp., 108 P.2d 311, 314 (Nev. 1940); O.R.S. § 537.110 (2015); Stubbs v. Ercanbrack, 368 P.2d 461, 463 (Utah 1962); Richlands Irrigation Co. v. Westview Irrigation Co., 80 P.2d 458 (Utah 1938)). Like Colorado, the "Utah approach is based upon the realization that stream flow depends on runoff." GETCHES ET AL., *supra* note 50, at 293.

59. Corrion, *supra* note 43.

60. COLO. REV. STAT. § 36-20-103 (2016). The Colorado Weather Modification Act was amended to shift its repeal date from July 1, 2011 to September 1, 2018. COLO. REV. STAT. § 36-20-127 (2016).

61. *See infra*, notes 78–82 and accompanying text.

62. COLO. REV. STAT. § 37-92-602(1)(g)(V)(B) (2015).

63. *Id.* § 37-92-602(1)(g)(V)(C) (2015).

64. Beaujon, *supra* note 12, at 2; *Authorization of Pilot Projects for the Beneficial Use of Captured Precipitation in New Real Estate Developments: Criteria and Guide-*

As residential homeowners in Colorado discovered that rainwater harvesting was essentially illegal, they began complaining to their state legislators, who crafted political solutions that tried to balance the desires of rainwater harvesters with the rights of senior appropriators.[65] Although these statutory schemes permitting rainwater harvesting removed its taint as a crime, they raised issues of whether their authorizations created a taking of senior appropriators' water rights.

IV. RAINWATER HARVESTING AS A TAKING

The taking issue arises because rainwater harvesting statutes permit newer appropriators living upstream to intercept rain and use the water in ways that could interfere with the property rights in water that Colorado has granted to downstream senior appropriators. From the perspective of a downstream senior appropriator, an upstream rainwater harvester is taking out of priority. In addition, to the extent that a rainwater harvester is consuming water beyond what would be lost to evapotranspiration, the rainwater harvester is depriving a senior appropriator of the opportunity to use the full amount of its water right, especially in an over-appropriated stream.[66]

As private property, water rights are protected from takings under the United States Constitution and the Colorado Constitution.[67] Both contain public use and just compensation requirements, and the Colorado Constitution provides even greater protection by requiring just compensation if property is "taken or damaged."[68] Courts employ a two-part test to determine if a government action constitutes a taking:

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lines for the "Rainwater Harvesting" Pilot Program 1, COLO. WATER CONSERVATION BD. (Jan. 28, 2010), http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=142162&searchid=c25573eb-f1b7-4b8c-9810-6dd02adee4e2&dbid=0 [https://perma.cc/WXR5-ER37].

65. Steven K. Paulson, *Get Out Your Rain Barrels; New Law Lets Some of You Collect Water*, THE GAZETTE (June 30, 2009), http://www.gazette.com/articles/barrels-57687-colorado-denver.html [https://permacc/795K-EHK3].

66. *See* Arlene J. Kwasniak & Daniel R. Hursh, *Right to Rainwater – A Cloudy Issue*, 26 WINDSOR REV. OF LEGAL & SOC. ISSUES 105, 110–11 (2009) (suggesting in an exploration of rainwater harvesting in Canada that large-scale rainwater harvesting could impact the entire water cycle and other users).

67. U.S. CONST. amend. V; U.S. CONST. amend. XIV; COLO. CONST. art. II, §§ 14–15.

68. The purpose of the "damage" provision of the Colorado Constitution was "to grant relief to property owners who [have] been substantially damaged by the making of . . . public improvements abutting their lands, but whose property has not been physically taken by the government." City of Northglenn v. Grynberg, 846 P.2d 175, 179 (Colo. 1993). "A priority to the use of water for irrigation or domestic purposes is a property right" constitutionally protected from damage. Game & Fish Comm'n v. Farmers Irrigation Co., 426 P.2d 562, 565 (1967). The takings analysis of the "damage" provision is similar to the multi-factor balancing test used by the United States Supreme Court to review partial regulatory takings. *See infra*, notes 106–10 and accompanying text.

> First, the court determines whether the claimant has identified a cognizable Fifth Amendment property interest that is asserted to be the subject of the taking. Second, if the court concludes that a cognizable property interest exists, it determines whether the government's action amounted to a compensable taking of that interest.[69]

For water rights under the prior appropriation doctrine, a "cognizable property interest" depends on state law,[70] and in Colorado, the property right in water is strong.[71] Colorado, like most western states, has not adopted the public trust doctrine, and Colorado is one of the few prior appropriation states that has not incorporated a public interest standard into its statutory provisions on water rights.[72] Although the property right in water is strong in Colorado, it is not absolute. Doctrines such as abandonment, waste, and the no-injury rule place boundaries around the property right.[73] Thus, in a takings analysis, both parts of the test must be examined.

A. *Colorado's Rainwater Harvesting Statutes*

The nature of the government's action is found in three rainwater harvesting statutes that Colorado enacted between 2009 and 2016. The first two, Senate Bill 09-080[74] ("SB 09-080") and House Bill 09-1129[75] ("HB 09-1129"), enacted in 2009, are limited in their scope, while the third, House Bill 16-1005[76] ("HB 16-1005") enacted in 2016, allows residential rainwater harvesting to become widespread. The third statute supplements rather than supersedes the earlier ones.[77]

SB 09-080 authorizes small-scale rainwater harvesting for household purposes, fire protection, domesticated-animal watering, and irrigating gardens or lawns of up to one acre.[78] However, the statute also limits rainwater harvesting to single house or a small cluster of houses drawing water from small capacity wells in designated groundwater

69. Casitas Mun. Water Dist. v. United States, 708 F.3d 1340, 1348 (Fed. Cir. 2013).

70. *Id.*

71. *See supra* Section III.

72. Marcus J. Lock, *Braving the Waters of Supreme Court Takings Jurisprudence: Will the Fifth Amendment Protect Western Water Rights from Federal Environmental Regulation?*, 4 U. DEN. WATER L. REV. 76, 85–86 (2000). *See* People v. Emmert, 597 P.2d 1025, 1027–29 (Colo. 1979); Zellmer & Harder, *supra* note 34, at 733–34.

73. VRANESH, *supra* note 16, at 245–66.

74. COLO. REV. STAT. § 37-90-105(1)(f), § 37-92-602(1)(g) (2017).

75. COLO. REV. STAT. § 37-60-115(6) (2017).

76. COLO. REV. STAT. § 37-96.5-101–105, §§ 25-1.5.210(1)(g), 38-33.3-106.5(1)(j) (2017).

77. *Rainwater Collection*, COLO. DIV. OF WATER RESOURCES, http://water.state.co.us/SurfaceWater/RainwaterCollection/Pages/default.aspx [https://permacc/KTD8-ELML].

78. COLO. REV. STAT. §37-90-105(f) (2017). *See* Bretsen, *supra* note 3, at 172–73 (describing the statute in more detail.)

basins or exempt wells elsewhere.[79] The first limitation relates to the eight designated groundwater basins established by the Colorado Groundwater Commission, which are all on the eastern plains of Colorado and removed from the urbanized areas of the Front Range.[80] Groundwater within such basins is presumed to be designated groundwater that is not required to fulfill surface water rights and "has no more than a de minimis impact" on surface stream flows.[81] The second limitation ties rainwater harvesting to small capacity and exempt wells, which are restricted to flow rates ranging from fifteen to fifty gallons per minute and uses ranging from residential household and lawn irrigation to watering livestock and fire protection.[82]

HB 09-1129 authorizes larger, development-wide rainwater harvesting pilot projects for non-potable uses.[83] The purpose of these projects is to develop information on precipitation and return flows to evaluate rainwater harvesting system designs, "measure precipitation capture efficiencies," and "quantify the amount of precipitation that must be augmented to prevent injury to decreed rights."[84] For the first two years, each project must have a substitute water supply plan to replace the water captured from the development's rooftops and impermeable surfaces.[85] After this initial period, the pilot project may either apply to a water court for a permanent augmentation plan or permanently retire the rainwater harvesting system.[86] The projects are supposed to consist of a variety of sizes, geographic areas, and hydrological conditions, with priority given to projects in areas facing renewable water supply challenges.[87] Although ten pilot projects are authorized, the current state Water Plan indicates that only one is in place—the Sterling Ranch Precipitation Harvesting Pilot Study for a 3,400 acre planned development in the Denver metropolitan area.[88]

However, the demand for rainwater harvesting was not sated by these limited authorizations, and incredulous voters in the heavily populated urban areas running along the eastern edge of the Rocky Mountains, from Pueblo in the south to Fort Collins in the north,

79. COLO. REV. STAT. §§ 37-90-105(1)(f)(I)–(II), 37-92-602(1)(g)(I) and (III) (2017).

80. *Designated Basins and Ground Water Management Districts*, COLORADO GROUND WATER COMMISSION, http://water.state.co.us/groundwater/CGWC/Pages/ManagementDistricts.aspx [https://permacc/EKV2-U63Z].

81. Gallegos v. Colo. Ground Water Comm'n, 147 P.3d 20, 28–29 (Colo. 2006); *see* COLO. REV. STAT. §37-90-103(6)(a) (2016).

82. COLO. REV. STAT. §§ 37-90-105(1)(a)–(e) (2016); §§ 37-92-602(1)(b)–(f) (2016).

83. COLO. REV. STAT. § 37-60-115(6)(a) (2016). *See* Bretsen, *supra* note 3, at 173–75 (describing the statute in more detail.)

84. *Id.*

85. COLO. REV. STAT. §§ 37-60-115(6)(c)(I), 37-92-308(4)(a) (2016).

86. COLO. REV. STAT. § 37-60-115(6)(c)(II)(A) (2016).

87. COLO. REV. STAT. §§ 37-60-115(6)(b)(III)–(V) (2016).

88. *Colorado's Water Plan*, *supra* note 7, at 6-63.

placed political pressure for change on their state legislators. During the 2015 session of the Colorado General Assembly, three legislators representing Pueblo, Colorado Springs, and Wheat Ridge introduced House Bill 15-1259, a broader rainwater harvesting bill that would have allowed collection from residential rooftops and storage in a maximum of two rain barrels.[89] The bill passed the House of Representatives by a vote of 45-20, but was opposed by agricultural interests, such as the Colorado Farm Bureau, the Colorado Corn Growers Association, and water districts on the eastern plains.[90] A state senator on the Agriculture, Natural Resources and Energy Committee from Sterling, a farming and ranching community on the eastern plains, was able to keep the bill from being debated on the Senate floor.[91]

A second attempt the next year was successful. This broader rainwater harvesting law has been touted as a bipartisan one that balances the interests of different water users.[92] The statute begins by reaffirming the prior appropriation doctrine and declaring that "nothing in this article is intended to infringe upon or impair the doctrine of prior appropriation."[93] The next declaration states that "the use of a rain barrel does not constitute a water right."[94] This latter declaration reinforces the prior two and represents a key compromise made to assuage the concerns of downstream senior appropriators.[95] Rainwater can only be collected via the gutters and downspouts connected to the roof of a building used primarily as a single-family residence or as a multi-family residence with four or fewer units, which excludes large apartment buildings and all commercial buildings.[96] To comply with the declaration that nothing in the statute is intended to impair the prior appropriation doctrine, two restrictions are placed on homeowners. First, the collection system is limited to two rain barrels with a maximum combined storage capacity of 110 gallons.[97] Second, the

89. Lynn Bartels, *Sen. Jerry Sonnenberg: No Rain Barrels for You*, THE DENVER POST: THE SPOT FOR POL. & POL'Y (May 6, 2015, 9:13 AM), http://blogs.denverpost.com/thespot/2015/05/06/sen-jerry-sonnenberg-no-rain-barrels-for-you/119911/ [https://permacc/MF33-VSZJ].

90. Joey Bunch, *Colorado Household Rain Barrel Law Takes Effect Wednesday*, THE DENVER POST (Aug. 9, 2016, 6:53 AM), http://www.denverpost.com/2016/08/05/colorado-household-rain-barrel-law-takes-effect-tuesday/ [https://permacc/D7V6-UDS3]; Jack Healy, *A Thirsty Colorado Is Battling Over Who Owns Raindrops*, N.Y. TIMES (June 15, 2015), https://www.nytimes.com/2015/06/16/us/a-thirsty-colorado-battles-over-the-destiny-of-its-raindrops-drought.html?_r=0 [https://permacc/XYP8-RH5M].

91. Bartels, *supra* note 89; Healy, *supra* note 90.

92. Kole Kelley, *Legislative Report*, 20 U. DEN. WATER L. REV. 119, 120 (2016); Bunch, *supra* note 90.

93. COLO. REV. STAT. § 37-96.5-101(1)–(2) (2016).

94. COLO. REV. STAT. § 37-96.5-101(3) (2016).

95. Kelley, *supra* note 92, at 121; Bunch, *supra* note 90.

96. COLO. REV. STAT. § 37-96.5-103(1)(b) (2016).

97. *Id.* § 37-96.5-103(1)(a) (2016).

rainwater must only be used for outdoor purposes on the residential property where it is collected.[98] To further protect downstream senior appropriators, the State Engineer is given authority to curtain rain barrel usage if downstream senior appropriators are materially injured. In addition, the State Engineer must monitor and report to the agricultural committees of the General Assembly on the impact of the authorized rainwater harvesting on downstream water rights.[99]

B. *Regulatory Takings of Water Rights*

Since Colorado's current rainwater harvesting statutes authorize and regulate rainwater harvesting systems rather than condemn water rights, the takings analysis based on the nature of the government action involves examining the regulatory takings jurisprudence of the United States Supreme Court and the Colorado Supreme Court.[100] Over time, the United States Supreme Court has developed three means of analyzing the nature of a government regulatory action in response to a takings claim based on the degree to which the regulation burdens private property rights:

> Our precedents stake out two categories of regulatory action that generally will be deemed *per se* takings for Fifth Amendment purposes. First, where government requires an owner to suffer a permanent physical invasion of her property—however minor—it must provide just compensation. See *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982) (state law requiring landlords to permit cable companies to install cable facilities in apartment buildings effected a taking). A second categorical rule applies to regulations that completely deprive an owner of "all economically beneficial us[e]" of her property. *Lucas*, 505 U. S., at 1019 (emphasis in original). We held in *Lucas* that the government must pay just compensation for such "total regulatory takings," except to the extent that "background principles of nuisance and property law" independently restrict the owner's intended use of the property. Id., at 1026-1032.
>
> Outside these two relatively narrow categories (and the special context of land-use exactions. . .), regulatory takings challenges are governed by the standards set forth in *Penn Central Transp. Co. v. New York City*, 438 U. S. 104 (1978). . .. .[101]

98. *Id.* § 37-96.5-103(1)(c), (d) (2016). To emphasize the requirement of outdoor use, the statute contains another provision prohibiting indoor or drinking water uses. *Id.* § 37-96.5-103(2) (2016).

99. COLO. REV. STAT. §§ 37-96.5-103(3), 105 (2016).

100. Cent. Colo. Water Conservancy Dist. v. Simpson, 877 P.2d 335, 346 (Colo. 1994) ("[T]his court has considered decisions of the United States Supreme Court construing the federal takings clause as a guide in determining what constitutes a taking under the comparable provision of the Colorado Constitution.").

101. Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 538–39 (2005).

Rainwater harvesting does not implicate the second type of categorical rule based on total regulatory takings of water rights. In *Lucas v. South Carolina Coastal Council*,[102] the United States Supreme Court considered a total regulatory taking caused by a confiscatory regulation (i.e., "a regulation that prohibits all economically beneficial use of land")[103] a *per se* taking because "the total deprivation of beneficial use is, from the landowner's point of view, the equivalent of a physical appropriation."[104] With rainwater harvesting, no matter how the impact on the senior appropriator is categorized or described, the senior appropriator does not lose all the economically beneficial use of the water right. The senior appropriator's water right and its priority continue to exist, and the senior appropriator can enforce its priority against other junior appropriators. In addition, the senior appropriator receives the benefit of any return flow from the rainwater harvester's activities based on the priority of its water right.[105]

Rainwater harvesting also does not implicate the third category based on a partial regulatory taking of water rights, which occurs when the regulation "goes too far"[106] in its impact on the use of the property even though some economically beneficial use remains. Unlike a total regulatory taking, a partial regulatory taking is not a *per se* taking. Instead, as set forth in the United States Supreme Court's decision in *Penn Central Transportation Co. v. New York City*, courts are instructed to balance the following factors: (i) the economic impact of the regulation on the claimant; (ii) the extent to which the regulation has interfered with the claimant's distinct investment-backed expectations; and (iii) the character of the government action.[107] The Court noted that the focus of this balancing of the burdens and benefits of the regulatory scheme is "both on the character of the action and on the nature and extent of the interference with rights in the parcel as a whole,"[108] and in a later case noted that "at least where an owner possesses a full 'bundle' of property rights, the destruction of one 'strand' of the bundle is not a taking, because the aggregate must be viewed in its entirety."[109] As with the total regulatory takings analysis, rainwater harvesting activities would not completely affect the priority of the senior appropriator's water right since the senior appropriator retains his or her priority against all other junior appropriators. In ad-

102. 505 U.S. 1003 (1992).

103. *Id.* at 1029.

104. *Id.* at 1017. Similarly, Colorado courts recognize that a government regulation that prohibits all reasonable use of property is a taking. Williams v. City of Central, 907 P.2d 701, 703 (Colo. App. 1995).

105. *See* VRANESH, *supra* note 16, at 224–28.

106. Pa. Coal Co. v. Mahon, 260 U.S. 393, 415 (1922).

107. 438 U.S. 104, 124 (1978); *see also* Animas Valley Sand & Gravel, Inc. v. Bd. of Cty. Comm'rs of La Plata, 38 P.3d 59, 65 (Colo. 2001).

108. Penn Cent. Transp. Co. v. City of N.Y., 438 U.S. 104, 130–31 (1978).

109. Andrus v. Allard, 444 U.S. 51, 65–66 (1979).

dition, while priority may be the most important stick in the bundle of water rights, it is not the only stick. Other sticks include the amount of water, the nature of the beneficial use, and the ability to sell, lease, or encumber the water right.[110]

In a dispute between the Casitas Municipal Water District and the Bureau of Reclamation over diverting water through a fish ladder to protect an endangered species, the water district conceded that if the taking was deemed to be a partial regulatory taking, it could not prevail.[111] The Federal Circuit court noted that the "concession was prompted by the fact that a plaintiff pursuing a regulatory takings claim must demonstrate a significant loss of value relative to the property as a whole," citing *Penn Central*.[112] The court also noted that "no such limitation exists, however, in the case of a physical taking," citing *Loretto*.[113] Thus, if the regulatory taking can be characterized as a *per se* physical taking, then the takings claimant is more likely to succeed based on the application of a categorical rule, which makes this analysis the most promising one for senior appropriators.[114]

According to *Loretto*, a permanent physical occupation of private property results in a taking, no matter how minor and regardless of the public interest justification.[115] As a rationale for the *per se* nature of this type of taking, the United States Supreme Court has noted:

> Property rights in a physical thing have been described as the rights "to possess, use and dispose of it." To the extent that the government permanently occupies physical property, it effectively destroys each of these rights. First, the owner has no right to possess the occupied space himself, and also has no power to exclude the occupier from possession and use of the space. The power to exclude has traditionally been considered one of the most treasured strands in an owner's bundle of property rights. Second, the permanent physical occupation of property forever denies the owner any power to control the use of the property; he not only cannot exclude others, but can make no nonpossessory use of the property. Although deprivation of the right to use and obtain a profit from property is not, in every case, independently sufficient to establish a taking. . . Finally, even though the owner may retain the bare legal right to dispose of the occupied space by transfer or sale, the permanent occupation of that space by a stranger will ordinarily empty the

110. VRANESH, *supra* note 16, at 229.

111. Casitas Mun. Water Dist. v. United States, 708 F.3d 1340, 1345 (Fed. Cir. 2013).

112. *Id.* at n. 3 (citing *Penn Cent.*, 438 U.S. at 130–31).

113. 458 U.S. 419 (1982).

114. James E. Holloway & Donald C. Guy, *Weighing the Need to Establish Regulatory Takings Doctrine to Justify Takings Standards of Review and Principles*, W&M ENVTL. L. & POL'Y REV. 315, 330 (2010).

115. Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 434–35 (1982).

> right of any value, since the purchaser will also be unable to make any use of the property.[116]

Compensation must be paid to the property owner for this type of taking even if the occupation does not result in a total loss of use of the property or has a minimal economic impact.[117] The United States Supreme Court subsequently noted that permanent physical occupations resulting in a *per se* taking are "relatively rare, easily identified, and usually represent a greater affront to individual property rights."[118] Despite the assurance that this type of taking is easily identified, legal scholars and courts have disagreed over whether the *per se* takings rule that applies to physical occupations can apply to an interference with a senior appropriator's water rights.

In three pre-*Loretto* cases, the United States Supreme Court held that a physical diversion of water affecting existing water rights is a *per se* physical taking.[119] In *International Paper,* a government requisition of hydroelectric power redirected water used by a mill.[120] In *Gerlach* and *Dugan*, a dam built by the Bureau of Reclamation interfered with the natural flow of a river and impacted the water rights of downstream users.[121] The dam was part of a larger project to impound water to supply other water users.[122] In each case, the Court found a physical taking and characterized it as either the loss of the right to use the water;[123] the loss of beneficial use;[124] or the interference with water rights.[125] As the Court noted in *Dugan*:

> A seizure of water rights need not necessarily be a physical invasion of land. It may occur upstream, as here . . . . Therefore, when the Government acted here 'with the purpose and effect of subordinating' the respondents' water rights to the Project's uses 'whenever it saw fit,' 'with the result of depriving the owner of its profitable use [there was] the imposition of such a servitude [as] would constitute an appropriation of property for which compensation should be made.'[126]

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116. *Id.* at 435–36 (citations omitted).

117. *Id.* at 441.

118. Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 324 (2002).

119. Dugan v. Rank, 372 U.S. 609 (1963); United States v. Gerlach Live Stock Co., 339 U.S. 725 (1950); Int'l Paper Co. v. United States, 282 U.S. 399 (1931).

120. 282 U.S. at 405–06.

121. *Gerlach Live Stock Co.*, 339 U.S. at 729–30; *Dugan*, 372 U.S. at 614–16.

122. *Gerlach Live Stock Co.*, 339 U.S. at 729; *Dugan*, 372 U.S. at 612.

123. *Int'l Paper Co.*, 282 U.S. at 407.

124. *Gerlach Live Stock Co.*, 339 U.S. at 752–53.

125. *Dugan*, 372 U.S. at 624–25.

126. *Id. Dugan* relied, in part, on *United States v. Causby*, 328 U.S. 256 (1946), in which a taking was found based on the effect of low-level flights by military planes from an airfield leased by the federal government on a small chicken farm. *Id.* at 258–59. The Court concluded that the flights resulted in "an intrusion so immediate and direct as to subtract from the owner's full enjoyment of the property and to limit

Two more recent cases that applied a *per se* physical takings analysis to claims of takings of water rights—*Tulare Lake Basin Water Storage District v. United States*[127] and *Casitas Municipal Water District v. United States*[128]—highlight the difficulties in applying these precedents.[129]

Tulare applied the *per se* physical takings rule and found a taking of water rights without a permanent physical occupation or diversion.[130] The California Department of Water Resources' State Water Project, which shared a coordinated pumping system with the Bureau of Reclamation's Central Valley Project, reduced deliveries of water to irrigation districts to bolster instream flows for migrating salmon in the Sacramento-San Joaquin Delta.[131] The water service contracts permitted such reductions to meet the requirements of the Endangered Species Act.[132] The court concluded that "[t]he federal government is certainly free to preserve the fish; it must simply pay for the water it takes to do so."[133] In addressing the issue of how a usufructuary right can be physically occupied, the court noted:

> While water rights present an admittedly unusual situation, we think the *Causby* example is an instructive one. In the context of water rights, a mere restriction on use—the hallmark of a regulatory action—completely eviscerates the right itself since plaintiffs' sole entitlement is to the use of the water. See *Eddy v. Simpson*, 3 Cal. 249, 252-253 (1853) ("the right of property in water is usufructuary, and consists not so much of the fluid itself as the advantage of its use."). Unlike other species of property where use restrictions may limit some, but not all of the incidents of ownership, the denial of a right to the use of water accomplishes a complete extinction of all value. Thus, by limiting plaintiffs' ability to use an amount of water to which they would otherwise be entitled, the government has essentially substituted itself as the beneficiary of the contract rights with regard to that water and totally displaced the contract holder. That complete occupation of property—an exclusive possession of plaintiffs' water-use rights for preservation of the fish—mirrors the invasion present in *Causby*. To the extent, then, that the federal government, by preventing plaintiffs from using the water to which they would otherwise have been entitled, have rendered the usu-

his exploitation of it" and was essentially a taking of an easement of airspace. *Id.* at 265.

127. 49 Fed. Cl. 313 (2001).

128. 708 F.3d 1340 (2013).

129. The procedural history of *Casitas* is an example. The *Casitas* litigation has resulted in six opinions by the Court of Federal Claims and the Court of Appeals for the Federal Circuit. *Id.* at 1343.

130. Tulare Lake Basin Water Storage District v. United States, 49 Fed. Cl. 313, 320 (2001).

131. *Id.* at 314–16.

132. *Id.*

133. *Id.* at 324.

> fructuary right to that water valueless, they have thus effected a physical taking.[134]

Tulare combines the legal reasoning underlying *Loretto* and *Causby* so that a physical occupation becomes irrelevant when the government interferes with the use rights associated with a vested water right.[135]

Tulare remains a Court of Federal Claims decision because the United States decided to settle rather than appeal.[136] Both legal scholars and other judges have criticized its holding and rationale. *Tulare* has been criticized for its failure to first analyze whether a property right exists under California law given the language of the water service contracts, California's reasonable use doctrine, and the public trust doctrine.[137] In *Klamath Irrigation District v. United States*, the Court of Federal Claims examined similar takings claims by agricultural irrigators when a drought required the Bureau of Reclamation to reduce water deliveries to satisfy obligations under the Endangered Species Act.[138] The court refused to follow the holding of *Tulare*, noting that "with all due respect, *Tulare* appears to be wrong on some counts, incomplete on others and, distinguishable, at all events."[139] Even the trial judge who authored *Tulare* refused to later apply its reasoning in *Casitas*.[140] Although the judge did not disavow the application of the *per se* physical takings rule to a reduction in water rights not created by a physical diversion, he felt constrained from using the rationale in *Tulare* by the United States Supreme Court's subsequent decision in *Tahoe-Sierra*.[141]

In *Casitas,* the Bureau of Reclamation required a water district in California to construct a fish ladder at a diversion dam and divert water through it from its canal to protect an endangered trout.[142] The water district claimed that the diversion resulted in a taking due to the permanent loss of water that would have gone from its canal into its reservoir and been used for agricultural irrigation.[143] The Federal Circuit Court of Appeals initially found that the requirements were a *per*

134. *Id.* at 319.

135. Kathryn M. Casey, Comment, *Water in the West: Vested Water Rights Merit Protection under the Takings Clause*, 6 CHAP. L. REV. 305, 338 (2003).

136. Settlement Agreement at 1-3, Tulare Lake Basin Water Storage Dist., 49 Fed. Cl. 313 (No. 98-101L), 2004 WL 3728318.

137. *See* Brian E. Gray, *The Property Right in Water*, 9 Hasting W.-NW. J. ENVTL. L. & POL'Y 1, 9-11 (2002); Zellmer & Harder, *supra* note 34, at 739–40; Ling-Yee Huang, *Fifth Amendment Takings & Transitions in Water Law: Compensation (Just) for the Environment*, 11 U. DENV. WATER L. REV. 49, 84–85 (2007).

138. 67 Fed. Cl. 504 (2005).

139. *Id.* at 538. Ironically, the decision containing this criticism was reversed on appeal. *See* Klamath Irrigation Dist. v. United States, 635 F.3d 505, 522 (Fed. Cir. 2011).

140. Casitas Mun. Water Dist. v. United States, 76 Fed. Cl. 100, 105–06 (2007).

141. Again, ironically, this decision was reversed on appeal. *Infra* note 142.

142. Casitas Mun. Water Dist. v. United States, 708 F.3d 1340, 1343–44 (Fed. Cir. 2013).

143. *Id.*

se physical taking since they physically directed water away from the plaintiff's diversion works into the fish ladder, thus permanently taking the water and the right to use that water.[144] Instead of a restriction on use, the court held the requirements to be a direct appropriation of water for the public purpose of protecting an endangered species.[145] On remand, the Court of Federal Claims held that "the only compensable right under California water law is a right to beneficial use" and no independent right to divert existed independent of beneficial use.[146] Although the water district's state license allowed it to divert 107,800 acre-feet of water per year, the license also capped its beneficial use at 28,500 acre-feet per year, and with this differential, the water district was unable to show a reduction in water deliveries despite a loss of water diverted.[147] Despite its prior ruling, the Federal Circuit upheld the decision without overruling itself.[148] The Federal Circuit highlighted that its prior decision only addressed the issue "of whether a diversion of water from the Robles-Casitas Canal would constitute a physical or regulatory taking" and was based on the government's admission for summary judgment purposes that the water district had a property right in the water at issue.[149] With the issue now about the scope of the water district's property rights in the diverted water and whether a taking had occurred, the Federal Circuit stated that the right to use water is a private property right under California law, but that right is "limited to the beneficial use of water involved."[150] The failure to show a loss of beneficial use meant that the water district's takings claim had not yet accrued, although it could subsequently bring a claim if it had evidence of such a loss.[151] While the water district's claims were not illegitimate as a *per se* physical takings claim, they were not ripe for judicial review.[152]

144. Casitas Mun. Water Dist. v. United States, 543 F.3d 1276, 1291–95 (Fed. Cir. 2008).

145. *Id.* at 1293.

146. Casitas Mun. Water Dist. v. United States, 102 Fed. Cl. 443, 455 (2011).

147. *Id.* at 446. This differential makes the facts of *Casitas* somewhat unique. "Not every plaintiff will have a state water right that allows it to divert a certain amount of water, but limits beneficial use to roughly one-fourth of that amount." *Id.* at 470; A. DAN TARLOCK, JAMES N. CORBRIDGE, JR., DAVID H. GETCHES, REED D. BENSON, & SARAH F. BATES, WATER RESOURCE MANAGEMENT: A CASEBOOK IN LAW AND PUBLIC POLICY 524 (7th ed. 2014).

148. Casitas Mun. Water Dist. v. United States, 708 F.3d 1340, 1360 (Fed. Cir. 2013).

149. *Id.* at 1345–46. The Federal Circuit Court of Appeals emphasized that it had "relied on those concessions throughout the first appeal" but that "[t]he government's concessions (and this court's reliance on those concessions) only persisted, however, through the first appeal." *Id.* at 1352–53.

150. *Id.* at 1354.

151. *Id.* at 1360.

152. *See* TARLOCK ET AL., *supra* note 147, at 523–24 (noting "[o]n the one hand, the Federal Circuit held that the government's actions in [Casitas] should be analyzed as a physical taking," and asking the question "[i]f a plaintiff loses water it could have

Tulare and *Casitas*, along with *International Paper*, *Gerlach*, and *Dugan*, indicate that the connection between statutes authorizing rainwater harvesting and a *per se* physical taking cannot be simply dismissed.[153] Due to their different factual circumstances, *Casitas* does not appear to have overruled *Tulare*, and critics of the *Tulare* and earlier *Casitas* decisions have used these different factual circumstances to propose two different takings analyses.[154] For water rights affected by a requirement to leave water in place to maintain instream flows to protect endangered species, a partial regulatory takings analysis would apply.[155] However, "when the government restricts water rights in order to permit itself or a third party to make consumptive use of the water," a *per se* physical takings rule would apply.[156] In addition, legal scholars and commentators who support the maintenance of instream flows at the expense of agricultural irrigators concede that "taking water from one group of farmers and giving it to another group of farmers" creates a more compelling takings case than a "government's limitation on diversion[s] to protect the health of the aquatic environment as a whole."[157] Even with this distinction in analyses, rainwater harvesting in Colorado, with its transfer of water rights from rural farmers to urban and suburban homeowner via a physical diversion through a rooftop collection system and rain barrels, would seem to fall on the side of a *per se* physical taking. At a minimum, the public interest in allowing rainwater harvesting is certainly less compelling than the public interest in preserving endangered species. However, as *Casitas* reveals, the finding of a physical taking based on the nature of the government action will not necessarily result in a compensable

beneficially used based on environmental restrictions imposed by the government, doesn't a physical taking analysis make that a strong claim?").

153. "Casitas may or may not prove to be a highly influential case in deciding future claims of water rights takings. For now, it shows that the law in this area remains hotly debated, and the case results remain unpredictable." TARLOCK ET AL., *supra* note 147, at 524.

154. Patashnik, *supra* note 37, at 379–81.

155. *Id.*

156. *Id.* (noting that "this distinction . . . is compatible with the Supreme Court water-rights taking precedent"); "*Int'l Paper*, *Gerlach*, and *Dugan* were all examples of the government restricting the water right." *But see*, Washoe Cty. v. United States, 319 F.3d 1320, 1326–27 (Fed. Cir. 2003) (failing to grant a pipeline right-of-way permit to facilitate a water right's change of use of not a physical taking because "the government has neither physically diverted or appropriated any water *nor physically reduced the quantity of water that is available*") (emphasis added).

157. John D. Leshy, *A Conversation About Takings and Water Rights*, 83 TEX. L. REV. 1985, 2008 (2005); John D. Echeverria, *Is Regulation of Water a Constitutional Taking?*, 11 VT. J. ENVTL. L. 579, 597 (2010) (noting that restrictions on water use that result in the actual transfer of water interests from one private owner to a new private owner involve "just the kind of property restrictions 'of an unusually serious character' which, according to the Supreme Court, warrants *per se* takings treatment" (citing Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 426 (1982))).

taking in the absence of "a cognizable Fifth Amendment property interest that is asserted to be the subject of the taking."[158]

C. *Property Rights in Water and the No-Injury Standard*

The property interest analysis for claims by downstream senior appropriators that the statutorily authorized activities of upstream rainwater harvesters are a *per se* physical taking will focus on the concept of material injury. In Colorado, water rights are not protected from any injury—only from a material injury.[159] The concept of a material injury paradoxically both protects senior appropriators and defines the scope of their water rights by limiting their ability to block the activities of junior appropriators. Although the *per se* physical takings rule can result in a taking even with *de minimis* impairment of a property right, a water right must first be materially injured to qualify as a property right protected by the *per se* physical takings rule.

Whether a rainwater harvester as a junior appropriator has materially injured the water rights of a downstream senior appropriator is a question governed by statute. The State Engineer must examine the following non-exclusive list of factors before discontinuing a junior appropriator's diversions based on the materiality of the injury:

> [A]ll factors which will determine in each case the amount of water such discontinuance will make available to senior priorities at the time and place of their need. Such factors include the current and prospective volumes of water in and tributary to the stream flow from which the diversion is being made; distance and type of stream bed between the diversion points; the various velocities of this water, both surface and underground; the probable duration of the available flow; and the predictable return flow to the affected stream.[160]

These factors demonstrate that determining the existence of a material injury is fact specific and requires expensive, technical information developed by hydrologists, water engineers, and other experts.[161] This cost falls heavily on the junior appropriator in a scheme of shifting burdens of proof since "the ultimate burden of showing absence of injurious effect by a preponderance of the evidence where contrary

158. Casitas Mun. Water Dist. v. United States, 708 F.3d 1340, 1348 (Fed. Cir. 2013); *see also*, Klamath Irrigation Dist. v. United States, 635 F.3d 505, 519–20 (Fed. Cir. 2011).

159. COLO. REV. STAT. § 37-92-502(2)(a) (2016).

160. *Id.* The material injury standard applies whether the diversions are directly from the surface stream, via a well pumping tributary ground water, or a well pumping what was originally thought to be nontributary designated ground water. *See* Strickler v. City of Colo. Springs, 26 P. 313, 315 (Colo. 1891); Kobobel v. State, 249 P.3d 1127, 1136 (Colo. 2011); Gallegos v. Colo. Ground Water Comm'n, 147 P.3d 20, 32 (Colo. 2006).

161. State Eng'r v. Castle Meadows, Inc., 856 P.2d 496, 508 (Colo. 1993).

evidence of injury has been presented continues to rest on the applicant [i.e., the junior appropriator seeking a new water right]."[162]

Given the cost of developing technical information, the evidentiary presumption that a court is willing to make becomes crucial. Although the Colorado Supreme Court has stated that "injury 'must be demonstrated by evidential facts and not potentialities,'"[163] in the context of plans of augmentation, which employ the same scheme of shifting burdens of proof as new diversions and changes in water rights,[164] it has also been willing to presume that tributary groundwater depletions will injure senior surface water rights when a stream system is overappropriated.[165] Further, the Colorado Supreme Court has held that a prima facie case of material injury can be based on a preponderance of evidence of injury to senior appropriators generally, rather than to a particular senior water rights owner.[166] A presumption of material injury combined with the *per se* nature of a physical taking would allow a senior appropriator to bring a taking claim for the activities of rainwater harvesters and probably win on a motion for summary judgment. However, the loss of the presumption of material injury would place the senior appropriator in the almost impossible position of developing costly technical evidence.

Both 2009 rainwater harvesting statutes attempt to avoid creating a material injury via their internal limitations.[167] To address the problem of out-of-priority diversions under the prior appropriation doctrine, SB 09-080 integrates small-scale residential rainwater harvesting into Colorado's existing statutory and regulatory framework for groundwater.[168] By restricting rainwater harvesting to designated groundwater basins, SB 09-080 takes advantage of the presumption that such groundwater is not needed to fulfill surface water rights.[169] This presumption is not absolute, but "the burden of proving that groundwater within a designated basin is not designated groundwater is on the proponent of that proposition."[170] In any effort to thwart rainwater harvesting authorized under this statute, the burden is on the senior appropriator claiming that captured rainwater is not designated groundwater. In addition, by linking rainwater harvesting systems to exempt wells with permits, SB 09-080 builds upon the existing statutory presumption that the issuance of a permit reflects the State

162. Simpson v. Yale Invs., Inc., 886 P.2d 689, 697 (Colo. 1994).
163. *Id.* at 696.
164. COLO. REV. STAT. § 37-92-305(3)(a) (2016).
165. Kobobel, 249 P.3d at 1136; Buffalo Park Dev. Co. v. Mountain Mut. Reservoir Co., 195 P.3d 674, 685 (Colo. 2008).
166. *Buffalo Park Dev. Co.*, 195 P.3d at 684–85.
167. *See supra* Section IV.A.
168. *See* Colorado Groundwater Management Act, COLO. REV. STAT. §§ 37-90-101 to -143 (2016).
169. COLO. REV. STAT. § 37-90-103(6)(a) (2016).
170. Gallegos v. Colo. Ground Water Comm'n, 147 P.3d 20, 32 (Colo. 2006); *accord* State *ex rel.* Danielson v. Vickroy, 627 P.2d 752, 759 (Colo. 1981).

Engineer's judgment that pumping from the well will not cause material injury to existing water rights.[171] HB 09-1129 avoids the problem of causing material injury by simply requiring replacement of rainwater lost to harvesting activities, subject to net depletions.[172]

Net depletion is not a new concept created in response to the controversy caused by rainwater harvesting. Colorado's water regime has recognized in other contexts that the legal obligation to augment water used out of priority does not require full replacement. With evaporation from gravel pit ponds, the Colorado Division of Water Resources generally accepts a credit for evapotranspiration of 70% of the total precipitation for non-irrigated sites due to consumption by native plants.[173] The same would hold true for rainwater harvesting based on a 2007 study prepared for the Colorado Water Conservation Board on rain falling in northwest Douglas County, a rapidly suburbanizing area located in the foothills and plains west of the Rocky Mountains between Denver and Colorado Springs.[174] The study noted that "[p]recipitation falling on undeveloped sites is consumed during the growing season (typically April through November at this location) by native vegetation evapotranspiration processes and is lost through evaporation and sublimation processes during the non-growing season."[175] The average loss of water to evapotranspiration and sublimation on undeveloped sites was 97% of the precipitation so that only 3% of the precipitation was held as moisture in the soil or returned to surface water or groundwater sources.[176] In a wet year, the maximum evapotranspiration and sublimation rate was 85% of the total precipitation.[177] In a dry year, 100% of the precipitation was lost to evapotranspiration and sublimation.[178] The concept of net depletion creates a buffer for rainwater harvesters, although the sublimation rate of 85% probably best represents the watered lawns of urban and suburban homeowners along the Front Range.

HB 16-1005, Colorado's newer and broader rainwater harvesting statute, appears to take advantage of the interaction between net depletions, return flows, and the material injury standard. Requiring that the water collected only be used for outdoor purposes and not indoor purposes takes advantage of both net depletion and return flow rates

171. "If the state engineer finds that the vested water rights of others or any other existing well will be materially injured, he shall deny the permit. Otherwise, the permit shall be issued, and it shall set forth such conditions for drilling, casing, equipping, and using the well as are reasonably necessary to prevent waste, pollution, or material injury to existing rights." COLO. REV. STAT. § 37-92-602(3)(b)(I) (2016).

172. COLO. REV. STAT. § 37-60-115(6)(c) (2016).

173. BURR, *supra* note 44, at 1–2 (citing COLO. REV. STAT. §§ 37-84-117(5), 37-80-120(5), 37-92-305(12) (2010)).

174. DOUGLAS COUNTY WATER STUDY, *supra* note 13, at 2.

175. *Id.* at 21.

176. *Id.* at 24.

177. *Id.*

178. *Id.*

to limit the extent of the injury.[179] Supporters of rainwater harvesting note that "collecting rainwater for later outdoor use merely alters the timing of return flows, not the actual availability of water."[180] In addition, return flow rates are central to the idea that urbanization has increased the extent of paved and other impermeable surfaces, resulting in more runoff and water entering into the system downstream, which offsets the activities of rainwater harvesters.[181]

HB 16-1005 also attempts to minimize the extent of the injury by restricting a rainwater harvesting system to a residential rooftop and two rain barrels with a maximum combined capacity of 110 gallons limits the amount collected.[182] A formula for converting a residence's roof area into gallons of rainwater captured per year produces results ranging from 534 gallons to over 17,000 gallons, depending on the sublimation rate.[183] However, these calculations beg the question of whether these amounts, in the aggregate, are material. A study conducted by the Urban Water Center at Colorado State University estimated a 5% adoption rate for rain barrel systems in Colorado based on adoption rates in other states and concluded "that allowing 100 gallons of rainwater storage per household will not decrease surface runoff by any detectible amount on a typical lot" per year.[184] However, in upholding the denial of an application for surface water rights in a designated ground water basin based on increased runoff from the impermeable surfaces from a proposed development, the Colorado Supreme Court held that granting the application would have harmed senior designated ground water users by reducing the rate of aquifer

179. COLO. REV. STAT. § 37-96.5-103(1)(c)–(d) & (2) (2016).

180. Kelley, *supra* note 92, at 120.

181. "A study conducted by the Urban Water Center at Colorado State University . . . concluded that development on previously undeveloped (greenfield) land has a significantly greater effect on surface runoff and infiltration than rainwater storage." COLO. LEGIS. COUNCIL, *infra* note 184, at 4.

182. COLO. REV. STAT. § 37-96.5-103(1)(a) (2016); COLO. REV. STAT. § 37-96.5-103(1)(c) & (d) & -103(2) (2016).

183. "The formula for calculating the quantity of rain water which can be caught from a building's roof is: (1) to multiply the length of the roof by its width to get the area, (2) to multiply the roof area by the inches of average annual rainfall, and (3) to multiply that number by 0.623, which will provide the gallons of water that can be captured annually. The result can be surprisingly large." Julian Conrad Juergensmeyer, *Rainwater Recapture: Development Regulations Promoting Water Conservation*, 43 J. MARSHALL L. REV. 359, 361 (2010). The average annual rainfall in Denver between 1981 and 2010 is 14.30 inches. NATIONAL WEATHER SERVICE, *Denver's 2016 Climate Year In Review*, http://www.weather.gov/bou/Denver_2016_CliSum [https://permacc/74P6-V836] (last visited Sept. 14, 2017). With a roof area of 2,000 square feet, the water collected by a single-family residence is 17,817 gallons per year, assuming the rain barrels are emptied when full. Factoring in the sublimation rate of 85%, the amount lost is 2,672 gallons per year. With a sublimation rate of 97%, the amount lost is reduced to 534 gallons per year.

184. COLO. LEGIS. COUNCIL, WATER RESOURCE REVIEW COMMITTEE FINAL REPORT 4 (Dec. 2015), http://tinyurl.com/h5ednlo [https://permacc/P3BT-6W79].

recharge by 4%.[185] Thus, even small percentage changes related to water can result in a material injury.

The key factor becomes the presumption of material injury. Net depletion and return flow evidence along with estimates of the amount of water captured by residential rooftop rainwater harvesting systems will be necessary to support the rainwater harvesting activities authorized by HB 16-1005 from takings claims. Unfortunately, they may not be sufficient if a presumption of material injury is made in favor of the senior appropriator. However, HB 16-1005 appears to undermine the presumption of material injury from the activities of rainwater harvesters through the authorizations given to the State Engineer. First, the State Engineer "may curtail rain barrel usage pursuant to Section 37-92-502(2)(a)."[186] The referenced section describes the material injury standard and the multi-factor test that the State Engineer must use to determine a material injury. Incorporating the multi-factor test into the rainwater harvesting statute indicates a need to use the test, which would seem to negate a presumption of material injury. Second, the State Engineer must report to the agricultural committees of each house of the Colorado General Assembly in 2019 and 2022 on whether residential rainwater harvesting is causing "any discernable injury to downstream water rights."[187] The "discernable injury" standard is new, and its language indicates that it is different from the material injury standard, which creates some confusion. A synonym for "discernable" is "perceptible,"[188] which may indicate a higher standard if the injury has to be visible or a lower standard if the injury just has to be noticeable. However, the discernable injury standard is only for reporting purposes, and the material injury standard must still be met for the State Engineer to curtail rainwater harvesting. Since HB 16-1005 appears to address the issue of material injury and undermine the presumption of a material injury, the concepts of net depletion and return flows combined with the expense of generating hydrological evidence should make it difficult for a senior appropriator to prevail on a taking claim, even under a *per se* physical takings theory.

CONCLUSION

The United States Supreme Court refused to use a *per se* takings analysis to evaluate whether a thirty-two month moratorium on new residential development in the Lake Tahoe Basin to permit a govern-

185. *In re* Water Rights, 361 P.3d 392, 399 (Colo. 2015).

186. COLO. REV. STAT. § 37-96.5-103(3) (2016).

187. COLO. REV. STAT. § 37-96.5-105(1) (2016).

188. THESARUS.COM, http://www.thesaurus.com/browse/discernible (last visited Aug. 23, 2017).

ment agency to study impacts and make plans going forward was a taking.[189] As the Court noted:

> Land-use regulations are ubiquitous and most of them impact property values in some tangential way—often in completely unanticipated ways. Treating them all as *per se* takings would transform government regulation into a luxury few governments could afford. By contrast, physical appropriations are relatively rare, easily identified, and usually represent a greater affront to individual property rights.[190]

However, the Court's optimistic statement about easily identifying physical appropriations has not been true when applied to water rights in a prior appropriation state such as Colorado because of their nature as use rights. Whether government regulatory interference with a water right can be a *per se* taking remains unsettled and is fiercely debated among academics and by attorneys representing different types of water users and their interests. . Even something as seemingly simple as rainwater harvesting raises a takings issue and adds to the debate of whether a *per se* takings analysis can apply to a government regulation that affects appropriative water rights.

Under the prior appropriation doctrine, rainwater harvesters authorized by HB 16-1005 will likely be junior appropriators who are capturing, using, and consuming water out of priority. Senior appropriators can claim that rainwater harvesting interferes with their beneficial use rights and that the enabling statutes are *per se* physical takings. However, to determine if a government action constitutes a taking, a court must first be convinced that the senior appropriator had a cognizable property right under Colorado law. Taking advantage of the language of HB 16-1005 and the requirement that any injury to the senior appropriator's property right must be a material injury should allow supporters of rainwater harvesting to avoid, or at least overcome *per se* physical takings claims and allow the state to avoid paying compensation.

189. Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 337 (2002).

190. *Id.* at 324–25.