

Spring 2015

Water Law Transitions

Robert H. Abrams

Florida A&M University College of Law

Follow this and additional works at: <https://scholarcommons.sc.edu/sclr>



Part of the [Law Commons](#)

Recommended Citation

Robert H. Abrams, *Water Law Transitions*, 66 S. C. L. Rev. 597 (2015).

This Article is brought to you by the Law Reviews and Journals at Scholar Commons. It has been accepted for inclusion in South Carolina Law Review by an authorized editor of Scholar Commons. For more information, please contact digres@mailbox.sc.edu.

WATER LAW TRANSITIONS

Robert H. Abrams*

I. THE LIMITATIONS OF REASONABLE USE RIPARIANISM AND THE NEED FOR CHANGE	600
II. A CAMEO DESCRIPTION OF THE TYPICAL REGULATED RIPARIANISM SYSTEM	607
III. LOOKING AT SOUTH CAROLINA’S ACT 247 OF 2010: A CRITIQUE OF UNUSUAL PROVISIONS IN THE SOUTH CAROLINA STATUTE.....	611
<i>A. The Law and its Principal Standard</i>	611
IV. TRANSITION FROM COMMON LAW RIPARIANISM AND TAKINGS OF PROPERTY.....	613
V. THE UNUSUAL TREATMENT OF AGRICULTURAL USE AND THE PUBLIC TRUST.....	616
VI. CONCLUSION AND RECOMMENDATIONS	622

The history of water law throughout the United States is dynamic. Beginning with the inherited doctrine of English common law natural flow riparianism, the changes in law can be described as instrumentalist in the sense that “judges and legislatures made this branch of water law an instrument of pro-developmental policy.”¹ When the natural flow doctrine’s requirement that the stream flow down to lower owners undiminished as to quantity and quality² clashed with the needs of the extensive utilization of water powered mills in the nineteenth century, the courts pioneered an American doctrine of reasonable use riparianism that would sustain water-dependent industrialization.³ Legislatures joined in as well, passing the Mill Acts, which defused the threat of injunction against mills whose ponds inundated portions of neighboring lands.⁴ Those laws effectively

*Professor of Law, Florida A & M University College of Law. I would like to thank Jacqueline Bertelsen, Florida A&M University College of Law, class of 2016, for her research assistance on this article.

1. BARTON H. THOMPSON, JR., JOHN D. LESHY & ROBERT H. ABRAMS, *LEGAL CONTROL OF WATER RESOURCES* 55 (5th ed. 2013) [hereinafter *LEGAL CONTROL*]. See also, Clyde Fisher, *Western Experience and Eastern Proposals*, in *THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES* 75 (David Haber & Stephen W. Bergen eds.).

2. For an early American example of the inherited natural flow doctrine, see *Merritt v. Parker*, 1 N.J.L. 460, 463 (1795).

3. Far and away the most frequently cited case for this proposition is *Tyler v. Wilkinson*, 24 F. Cas. 472, 473–74 (C.C.D.R.I. 1827).

4. See Morton Horwitz, *The Transformation in the Conception of Property in American Law, 1780–1860*, 40 U. CHI. L. REV. 248, 253 (1973).

forbade injunctions for continuing trespass and substituted judicially determined amounts of compensation in what can only be viewed as an early instrumentally-driven form of condemnation favoring a private use that allowed water to be used in a manner that contributed to growth and prosperity.⁵

Indeed, practical re-ordering of law has been a necessary staple of American water law. In the arid West, where the vast majority of lands were not adjacent to the region's rivers and the diversion and transport of water was necessary to support settlement for farming and ranching, Chief Justice Hallett of the Colorado Territorial Supreme Court deliberately inverted the usual dominance of a landowner to be free of rights of way across his or her parcel.⁶ What is more, the result is inexorably correct as soon as the reader takes in the import of the passage. Using water instrumentally is an obvious imperative: "In a dry and thirsty land it is necessary to divert the waters of streams from their natural channels, in order to obtain the fruits of the soil, and this necessity is so universal and imperious that it claims recognition of the law."⁷

The passage went on to explain the contextual necessity of the altered legal rule:

The value and usefulness of agricultural lands, in this territory, depend upon the supply of water for irrigation, and this can only be obtained by constructing artificial channels through which it may flow over adjacent lands. . . . [L]ands situated at a distance from a stream cannot be irrigated without passing over intermediate lands, and thus all tilled lands, wherever situated, are subject to the same necessity. In other lands, where the rain falls upon the just and the unjust, this necessity is unknown, and is not recognized by the law. . . .

When the lands of this territory were derived from the general government, they were subject to the law of nature, which holds them barren until awakened to fertility by nourishing streams of water, and the purchasers could have no benefit from the grant without the right to irrigate them. It may be said, that all lands are held in subordination to the dominant right of others, who must necessarily pass over them to obtain a supply of water to irrigate their own lands, and this servitude arises, not by grant, but by operation of law.⁸

5. *See id.*

6. *See Yunker v. Nichols*, 1 Colo. 551, 554 (1872), *superseded by statute*, COLO. CONST. Art. 2 § 14, *as recognized in Stewart v. Stevens*, 10 Colo. 440 (1887).

7. *Id.* at 553.

8. *Id.* at 553, 555.

West-wide, beyond the 100th meridian, virtually all states moved, at least in part, to a system that either replaces or supplements riparianism with prior appropriation.⁹

The focus of the “Transitions” topic of this symposium, however, is the East. Its emphasis is even narrower than the East as a whole, because the sponsoring institution is the *South Carolina Law Review*, and the State of South Carolina in 2010 enacted a regulated riparianism statute.¹⁰ This Article attempts to locate the South Carolina law in the gradual process of eastern states’ water law transformation. This effort exposes at least one major aspect of the new South Carolina law that is both unusual, controversial, and potentially damaging to the water resource future of the state.¹¹

South Carolina can hardly be described as a “dry and thirsty land.” Rather it is a part of the nation where an average of forty to fifty inches of precipitation per annum¹² “falls on just and the unjust.” The necessity for change in South Carolina and the remainder of the East is not “so universal and imperious” as to require total repudiation of the doctrine of reasonable use riparianism. Even so, modern water resource conditions in the region are precarious. The majority of eastern states have altered their water law to reduce or eliminate their adherence to common law reasonable use riparianism in favor of more managerial systems usually labelled “regulated riparianism.”¹³

As stated in the Preface to the American Society of Civil Engineers Model Regulated Riparianism Water Code, the two words “regulated” and “riparianism” emphasize that the common law is being replaced by an administrative permit process, and that water is still being allocated using riparian principles of reasonable use, as opposed to rules based on priority in time or capture of the resource.¹⁴ The change is more far-reaching as well. The regulatory side requires anticipatory planning for low-flow scenarios and

9. See, e.g., LEGAL CONTROL, *supra* note 1, at 14. The unique experience in Oklahoma will be discussed *infra* Part IV.

10. Act 247 of 2010 substantially amended Sections 49-4-10 to -180 of the 1976 S.C. Code of Laws, renaming these sections as the South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act. See S.C. CODE ANN. §§ 49-4-10 to -180 (Supp. 2014).

11. The agricultural provisions are, in general, unusual to the extent that they do not appear to be subject to the normal permit system. See *id.* § 49-4-35. Perhaps more critical is the perpetual right to automatic renewal of registered agricultural uses. See *infra* Part V.

12. See S.C. DEP’T OF NATURAL RES., 1981–2010 *Climate Normal Annual Precipitation*, <http://www.dnr.sc.gov/climate/sco/ClimateData/Images/PANN.png> (last visited on Feb. 25, 2015). As one moves to the northwest, precipitation amounts are even more. *Id.*

13. WATER LAWS COMM., WATER RES. PLANNING & MGMT. DIV., AMERICAN SOC’Y OF CIVIL ENG’RS, *Preface to THE REGULATED RIPARIAN MODEL WATER CODE v* (Joseph W. Dellapenna ed., 1997) [hereinafter ASCE Model Code]. The “riparian” label, however, overstates the role of riparian location because the system in many states applies to both surface water and groundwater and permits for use are not limited to lands that are riparian to a surface watercourse. *Id.* §§ 2R-2-32 & -33.

14. *Id.* at v (citing Joseph Dellapenna, *The Early Regulation of Riparian Rights*, in 1 & 2 WATERS AND WATER RIGHTS § 9.01 (Robert E. Beck ed., 7th vol. 1991)).

prospectively determines alterations in water use under those conditions.¹⁵ The permits to make use of the water are quantified by the regulator at the outset, rather than determined reactively after a use has been initiated and challenged in a lawsuit.¹⁶ The permits are temporally limited and the total permitted amount at any one time cannot exceed a maximum amount set by the regulator with reference to the public interest, which includes ecological needs for minimum flows and levels.¹⁷ The most “un-riparian” aspects of regulated riparianism discards riparian location as a determinant of the usufructuary rights being granted, and—in most states, but not in South Carolina—extend the reach of the regulation to include groundwater.¹⁸

I. THE LIMITATIONS OF REASONABLE USE RIPARIANISM AND THE NEED FOR CHANGE¹⁹

Unlike the arid western states where repudiation of riparianism occurred quickly on the heels of settlement or increased competition for use of limited supplies,²⁰ the East’s generally adequate water supply in relation to demand for its use forestalled discomfiture with riparianism until the middle of the twentieth century. Advocacy attempting to explain the need for, and to describe the

15. *Id.* § 1R-1-05.

16. *See id.* at viii.

17. *Id.* § 1R-1-11.

18. *Id.* at viii.

19. A quarter of a century ago, this author wrote a series of three articles on this topic. A mercifully shortened version of many of those ideas appears here, mostly without citation to that material. *See* Robert H. Abrams, *Charting the Course of Riparianism: An Instrumentalist Theory of Change*, 35 WAYNE L. REV. 1381 (1989) [hereinafter Abrams, *Instrumental Change*]; Robert H. Abrams, *Water Allocation by Comprehensive Permit Systems in the East: Considering a Move Away From Orthodoxy*, 9 VA. ENVTL. L.J. 255 (1990) [hereinafter Abrams, *Water Allocation*]; Robert H. Abrams, *Replacing Riparianism in the Twenty-First Century*, 36 WAYNE L. REV. 93 (1990). The thesis of this trilogy was stated as follows:

[T]he problems of endemic water shortage are inescapable and are emphatically not ones well addressed by riparianism alone. Rather, these problems are best solved through government intervention and management of the water resources at issue. Government action will most likely take the form of direct regulation of competing users, but in all events, Eastern water law will be different as a result.

Abrams, *Instrumental Change*, at 1382.

20. Each state has its own history, but the states of the intermountain West all tended to follow the so-called Colorado doctrine that immediately parted ways with riparianism and denied it had ever been their law. *See* LEGAL CONTROL, *supra* note 1, at 14. The Pacific tier, since much of the initial settlement was in the better watered areas, made the transition post-statehood early in the twentieth century. *See id.* California retained a mixed system. *Id.* The 100th meridian tier, like the Pacific tier, saw most of the change near the beginning of the twentieth century. *Id.* One of those states, Oklahoma, has seen efforts to make a transition to prior appropriation, efforts which were prevented by its supreme court’s interpretations of riparian property rights and takings law. That experience will be discussed *infra* Part IV.

principles of, alternatives to riparianism began to surface in the 1950s.²¹ It is arguable that the source of frustration with reasonable use riparianism was more academic than instrumental, given the small number of localized water shortage events. The intellectual frustration has some of its roots in the then-nascent law and economics thinking that was finding its way into legal academia. The criticism from that quarter, had it been explicit, would have gone something like this:

Reasonable use riparianism, as a system of property rights relating to the land and adjacent water, could function far more efficiently and instrumentally permit the full utilization of the water resource if riparianism was replaced by a system of water rights having legal rules that provide a clear set of entitlements.²²

Even in the words of William Goldfarb, a water law scholar having a more congenial attitude toward reasonable use riparianism in the East, the rights created by the doctrine are “mud” rather than “crystals” and frustrate proactive governance of the resource:

The riparian system favors flexibility over security. By and large it has worked well in the humid, water-rich eastern states Allocation decisions in pure riparian states are made by the courts, an institution lacking the expertise and administrative continuity to assure a predictable diversion rights system. Case-by-case judicial decisionmaking results in inconsistent and impermanent results. Any allocation may be altered by the entry of new users, changes in patterns of use, or changes in the characteristics of the watercourse. This absence of definite, quantifiable diversion rights inhibits investment. . . . [C]ourt decisions on water allocations are ad hoc [and] . . . [c]omprehensive record-keeping and water supply planning are impossible in a pure riparian state.²³

21. See, e.g., DAVID HABER, *Introductory Essay*, in *THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES* xxv, xxvii–xxxii (David Haber & Stephen Bergen eds. 1957).

22. Cf. Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15 (1960) (describing efficiency gains that are available in externalities trading regardless of the initial legal entitlement as long as the rule of property rights is clear). See generally CHARLES J. MEYERS & RICHARD A. POSNER, *MARKET TRANSFERS OF WATER RIGHTS: TOWARD AN IMPROVED MARKET IN WATER RESOURCES*, NATIONAL WATER COMMISSION, LEGAL STUDY NO. 418-25 (1971) (giving examples of ways to use land and water more efficiently).

23. WILLIAM GOLDFARB, *WATER LAW* 24–25 (2d ed. 1988) (citing Donna Downey & Stewart Sessions, *Innovative Water Quality-Based Permitting: A Policy Perspective*, 57 J. WATER POLLUTION CONTROL FED’N 358, 360 (1985); 1985–86 Marine Water Quality Comm., *How Stringent Should Marine Waivers From Secondary Treatment Be?*, 58 J. WATER POLLUTION

Two principal factors kept the need for reforms at bay. First, although reasonable use riparianism did not make adequate provision for the secure rights needed to support public water supply needs, municipalities and other public water suppliers were early on granted adequate powers of condemnation to support their operations and obtain whatever water they needed.²⁴ Second was the old adage, “If it ain’t broke, don’t fix it.”²⁵ Even though the ad hoc, unpredictable and reactive equitable nature of riparian rights case law was potentially a problem,²⁶ there were no more than a handful of reported cases of conflicts among riparians where riparianism failed to provide an adequately principled and predictable adjustment of competing uses.²⁷ In most cases, adjustment of competing uses was possible simply because there was an adequate supply of water to permit all uses to be continued, although some would have to be reduced or adjusted as to their intensity so as to permit all of the parties a reasonable share.²⁸

What finally upgraded the threat of serious water conflict in the East²⁹ was the possibility of broader water supply instability posed by population growth in coastal regions and an increase in water demand for irrigation, which is an extraordinarily high-volume and highly consumptive use of water. Exacerbating the impact of both of those pressure points since the latter half of the twentieth

CONTROL FED’N 1101, 1103 (1986)). See also T. E. Lauer, *Reflections on Riparianism*, 35 MO. L. REV. 1, 12–15 (1970) (explaining the shortcomings of the riparian doctrine).

24. LEGAL CONTROL, *supra* note 2, at 37, 100–32 (citations omitted).

25. See Abrams, *Instrumental Change*, *supra* note 19, at 1389.

26. Common law riparianism is quintessentially reactive because the rights of the parties are determined after the competing uses are established and one complains of the actions being taken by the other.

27. See Abrams, *Instrumental Change*, *supra* note 19, at 1400–05 (citing Taylor v. Tampa Coal, 46 So. 2d 392, 394 (Fla. 1950) (concerning a boating-irrigation conflict); Pyle v. Gilbert, 265 S.E.2d 584, 586 (Ga. 1980), *clarified by* Tunison v. Harper, 690 S.E.2d 819 (Ga. 2010) (concerning a mill seat-irrigation conflict); RESTATEMENT (SECOND) OF TORTS § 850A (1977)). The leading “problem” cases are discussed *infra* Part IV.

28. See, e.g., Mason v. Hoyle, 14 A. 786, 789 (Conn. 1888) (stating that the riparian mill-owners have a right to their fair proportion and beneficial use of the stream, even if limited). No doubt even under the amorphous contours of riparianism, some self-regulation occurred, too. A riparian proprietor, knowing that the law demanded uses be reasonable in light of the correlative rights of others, would not invest in uses that demanded the entire stream be diverted into another watercourse or that consumptively used the entire flow to the detriment of downstream co-riparians.

29. There were some early moves to managerial permit systems, most notably Iowa and Florida. In Iowa, Chapter 455A of the Iowa Code, was repealed and replaced in 1982 by Acts of 1982, ch. 1199, § 97. See IOWA CODE § 455A (1983). The repealed sections were later reenacted with some changes in Chapter 455B of the Code of 1983. See IOWA CODE § 455B (2015). Those provisions have, periodically, been amended further. Florida has the Florida Water Resources Act of 1973, which was codified at Chapter 373 of the Florida Statutes. See FLA. STAT. § 373 (2014). The Florida regulatory system was based on a model code. See FRANK MALONEY, RICHARD AUSNESS & J. SCOTT MORRIS, A MODEL WATER CODE WITH COMMENTARY v (1972).

century is an observable increase of extreme weather patterns that have emerged as a manifestation of global warming.³⁰

Water shortage problems in the East tend to be most acute in coastal regions.³¹ Those areas are faced with a multi-headed hydra: less access to freshwater, high population growth, and adverse climate change impacts.³² Consider the demands of population growth in terms of municipal water supply and other larger volume uses, such as thermoelectric generation or irrigation. The natural tidally-driven upstream movement of the salt front in rivers means that surface water intakes must be located sufficiently far upstream to avoid the risk of drawing salt water into the water supply system.³³ While sufficient water may be available for importation from upstream in-basin or out-of-basin sources, water importation projects are flashpoints for resistance and have proved very difficult to accomplish.³⁴ For that reason, in many coastal areas groundwater is now (and in some of those areas has been) the preferred source of fresh water.³⁵ With growth and population pressure, however, the risk of saline intrusion into fresh water aquifers limits pumping.³⁶ Here, too, climate change is playing a role. The upstream movement of the salt front is exacerbated by climate change,³⁷ which is increasing sea level, causing more violent storm surges, and, in times of drought, reducing freshwater out-flow.³⁸ The reactive and slow-moving process of riparian rights litigation lacks the ability to support planned responses to what seems to be inevitably repeating water shortages in growing coastal areas.

Moving to irrigation, the potential for conflict with other water users should be fairly clear. It is both a high-volume use and highly consumptive use of water. The list of twentieth century cases that riparianism handled poorly is led

30. See Robert Abrams, *Water, Climate Change, and the Law: Integrated Eastern States Water Management Founded on a New Cooperative Federalism*, 42 ENV'T L. REP. 10,433, 10,438 (2012) [hereinafter Abrams, *New Cooperative Federalism*]; see also Abrams, *Instrumental Change*, *supra* note 19, at 1409–18 (citations omitted) (discussing the climatic impact on precipitation and water supply characteristics in Eastern states).

31. See LEGAL CONTROL, *supra* note 1, at 108.

32. See *id.* at 108–09.

33. See *id.*

34. See *id.* at 108–114 (citing *State of North Carolina v. Hudson*, 731 F. Supp. 1261 (1990)); see also Robert Abrams, *Interbasin Transfer in a Riparian Jurisdiction*, 24 WM. & MARY L. REV. 591, 621 (1983) (discussing effects of inhibiting interbasin diversion).

35. Paul M. Barlow, *Ground Water in Freshwater-Saltwater Environments of the Atlantic Coast*, U.S. GEOLOGICAL SURV. CIRCULAR 1262 iii (2003), <http://pubs.usgs.gov/circ/2003/circ1262/pdf/circ1262.pdf>.

36. *Id.*; see also, e.g., *Martin v. City of Linden*, 667 So. 2d 732, 737 (Ala. 1995) (finding potential saltwater contamination of freshwater aquifer constitutes an irreparable injury).

37. See J. Christopher Walker et al., *Impact of Global Climate Change on Urban Infrastructure*, in THE POTENTIAL EFFECTS OF GLOBAL CLIMATE CHANGE ON THE UNITED STATES 2-29, 2-31 (1989).

38. See Mark A. Ayers et al., *Sensitivity of Water Resources in the Delaware River Basin to Climate Variability and Change*, U.S. GEOLOGICAL SURV. WATER-SUPPLY PAPER 2422, 32–33, 38 (1994).

by three irrigation-prompted conflicts.³⁹ To see how this plays out, imagine for a moment smaller watercourses, and, now, superimpose the typical eastern state's hydrograph. Most streams have their lowest levels of flow in mid-summer and late summer. Similarly, as the summer progresses, most lakes experience lowered lake levels due to reduced runoff and higher evaporation rates. When potential irrigators are added to the picture the situation can spiral out of historically adequate supply/demand balance.⁴⁰ For example, even a moderate level of drought may force those farmers often able to succeed at dry land farming to irrigate.⁴¹ Along with summer drought comes summer heat, which can increase the demand for electricity and, in turn, the amount of water needed to cool thermoelectric generation units.⁴² The need to irrigate and cool escalates during those key parts of the growing season that are already the low-flow time of the year for the watercourse.⁴³ That intensifies their competition with any *in situ* use, such as boating or recreation, which require not only that the water not be consumed, but also that it be left in place or immediately returned to the watercourse at or near the place of withdrawal.⁴⁴ While there are not yet a skein of new reported cases having these characteristics, encountering them while common law riparianism holds sway would compromise the ability to respond and helps explain calls for legislative action.

39. See *Pyle v. Gilbert*, 265 S.E.2d 584 (Ga. 1980), *overruled* by *Tunison v. Harper*, 690 S.E.2d 819 (Ga. 2010) (involving a mill-seat irrigation conflict); *Harris v. Brooks*, 283 S.W.2d 129 (Ark. 1955) (involving a boating-irrigation conflict); *Taylor v. Tampa Coal Co.*, 46 So. 2d 392 (Fla. 1950) (involving a boating-irrigation conflict).

40. See Joby Warrick, *California's Drought Could Cause Massive Crop Failure, National Ripple Effects*, NEW HAVEN REGISTER (August 18, 2014), <http://www.nhregister.com/general-news/20140818/californias-drought-could-cause-massive-crop-failure-national-ripple-effects> (discussing effect of drought on demand for aquifers).

41. See, e.g., *id.* (discussing farmers changing their traditional methods during drought).

42. See *Nuclear Power and Water*, UNION OF CONCERNED SCIENTISTS (Dec. 2011), http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/fact-sheet-water-use.pdf. The heat effects on water supply tend to cascade. See *id.* Increased air conditioning demands more thermoelectric generation, which in turn requires increased amounts of surface water for cooling. See *id.* Some of that surface water is consumed in evaporation and that which is returned is now warmer, which increases the evaporation rate from the surface watercourse itself and reduces the cooling capacity of the water if it is reused or serves as source water for another facility that needs cooling. See *id.*

43. Robert Abrams et al., *Framing Water Policy in a Carbon Affected and Carbon Constrained Environment*, 50 NAT. RESOURCES J. 3, 43 (2010).

44. All three of the prior cases cited raise this type of conflict. Incidentally, in the two older cases, the irrigation use was deemed to have caused the conflict and was enjoined. See *Harris*, 283 S.W.2d at 135; *Taylor*, 46 So. 2d at 394. *Pyle* involved an interlocutory appeal of the trial court's award of partial summary judgment to the *in situ* user on the grounds that the irrigation use was, in effect, *per se* unreasonable. The Georgia Supreme Court overruled, holding that irrigation was a reasonable (i.e., permissible) use under that state's common law of riparian rights, and remanded for further consideration of whether, on the particular facts of the competing uses and the size of the stream, etc., the irrigation use was reasonable or unreasonable. See *Pyle*, 265 S.E.2d at 589 (citing Robert Clark Kates, *Georgia Water Law*, in INSTITUTE OF GOVERNMENT 35–36 (1969); *Oostanaula Mining Co. v. Miller*, 88 S.E. 562 (Ga. 1916)).

Certainly, such a scenario is possible in South Carolina. Irrigation can reduce water supply quickly and once the critical competition between irrigation and other uses begins, the potential for major conflict becomes strong. South Carolina irrigation rates, by western-states' standards that run four to six times as high, are quite modest, averaging only slightly less than one acre-foot per acre per year.⁴⁵ At that rate, the same amount of water typically used to irrigate a single acre of crops through the growing season is enough to sustain the domestic needs of about a dozen people for the entire year.⁴⁶ That number overstates the tradeoff to a degree because roughly 50% of the irrigation water withdrawn and applied becomes return flow that either finds its way back to the stream or becomes recoverable groundwater.⁴⁷ Even so, as depicted in the scenario above, irrigation use has immense room to grow if climatic conditions deteriorate. Making the summer irrigation scenario that much more dramatic, the rate and timing of water demand of irrigation withdrawals, particularly in regard to surface water sources,⁴⁸ is of consequence. The ecological effects and disruptions from other uses and major irrigation withdrawal at a low-flow time of year will be far more significant than an identical volume withdrawn steadily throughout the year or at a high-flow time of year.

Facts about water use patterns tend to bear out the predictions that irrigation usage in the East is growing substantially. Importantly, the growth of irrigation is already occurring at a time when the eastern states have experienced what seems almost certain to be the leading edge of climate change impacts on water supplies.⁴⁹ Until at least the second half of the twentieth century, irrigation in

45. Molly A. Maupin et al., *Estimated Use of Water in the United States*, U.S. GEOLOGICAL SURV. CIRCULAR 1405 26 (2010), <http://pubs.usgs.gov/circ/1405/pdf/circ1405.pdf>.

46. This calculation is based on a water duty of one acre-foot per acre. *Id.* There are approximately 325,851 gallons in an acre-foot of water. *Id.* at iv. The domestic use value used is 69.3 gallons per day per person. See PETER W. MAYER ET AL., AWWA RESEARCH FOUNDATION, RESIDENTIAL END USES OF WATER 86 (1999).

47. See, e.g., Jerry E. Carr et al., *National Water Summary 1987—Hydrologic Events and Water Supply and Use*, U.S. GEOLOGICAL SURV. WATER-SUPPLY PAPER 2350 137 (1987) (utilizing a chart to depict this return flow scenario).

48. In aquifers that receive significant amounts of recharge, unless saline intrusion or aquifer compaction problems arise, periods of summer overdraft (withdrawals in excess of recharge) can be offset by periods of the year in which recharge exceeds withdrawals. See LEGAL CONTROL, *supra* note 1, at 447, 450 (proffering a thumbnail description of this and other potential advantages of groundwater).

49. See, e.g., LYNNE M. CARTER ET AL., CLIMATE CHANGE IMPACTS IN THE UNITED STATES 396–407 (Thomas R. Karl, Jerry M. Melillo & Thomas C. Peterson eds., 2014) (citations omitted) (discussing the impacts of climate change on the Southeast). Multiple sources indicate that most of the southeastern United States will experience hotter, drier summers with more severe storms in the fall and winter months. These models also indicate that the northeastern United States will experience more severe storm events (and precipitation in general) in the winters and marked increases in summer droughts and temperature. See *Extreme Climate Predicted in Eastern U.S.: Storms, Heat Waves with Global Warming*, SCIENCEDAILY (Dec. 17, 2012), www.sciencedaily.com/releases/2012/12/121217121732.htm; *Climate Modelers Predict Warmer*,

the East operated on a far smaller scale of water use than is now the case. Using South Carolina as an example, based on United States Geological Survey (USGS) data, irrigation use of water more than tripled between 1955 and 2010, from approximately 30,000 acre feet per year⁵⁰ to more than 100,000 acre feet per year. Using state data for 2006, the total irrigation use in South Carolina was more than 114,000 acre-feet.⁵¹ The state itself notes one of the impacts of climate change in its reporting, when it commented on a comparatively recent and substantial increase in the number of acres being irrigated:

From 2002 to 2007, the number of farms using irrigation increased 6 percent from 1,918 to 2,030, and the area of irrigated farmland increased 38 percent from 95,642 acres to 132,439 acres (U.S. Department of Agriculture, 2009). This notable increase in irrigation may be a result of the severe drought that occurred from 1998–2002. Still, in 2007, only about 9 percent of the harvested cropland was under irrigation.⁵²

This data is concerning—should droughts become more frequent or more severe, 91% of South Carolina’s farms are potential new entrants into the irrigation user community that will add water demand for irrigation.⁵³ As discussed more fully later, the impetus to establish new or expanded irrigation water use in South Carolina is greatly increased by the operation of the new South Carolina statute, which richly rewards the winners of the race to the diversion head gate, or pump house, by granting in perpetuity what amounts to de facto priority-protected rights to water.⁵⁴ Irrigation efficiency improvements, if required under the permits, can be used to blunt a portion of the growth in water quantity demand, but that requires political will to put requirements in place, especially when the most efficient systems are correspondingly more

Wetter Northeast U.S. Winters by 2070, SCIENCE DAILY (Dec. 12, 2012), www.sciencedaily.com/releases/2012/12/121212111331.htm.

50. See *Estimated Use of Water in the U.S.*, U.S. GEOLOGICAL SURV. CIRCULAR 398 13 (1955); see also Maupin, *supra* note 45, at iv (depicting conversion table for acre-foot).

51. See LAND, WATER & CONSERVATION DIVISION, SOUTH CAROLINA STATE WATER ASSESSMENT, S.C. DEPT. OF NAT. RESOURCES 4–4 tbl.4.2 (Andrew Wachob et al. eds., 2d ed. 1999) [hereinafter *Land, Water & Conservation*], available at https://www.dnr.sc.gov/water/hydro/HydroPubs/assessment/SCWA_Ch_4.pdf. This total includes farm and golf course irrigation. Golf course irrigation is approximately 30% of that total. Using an estimate that 30% of domestic and municipal supply water is devoted to lawn and landscape irrigation of dwellings, public parks, other public facilities, and roads, based on the 2005 USGS South Carolina data, the usage for all types of irrigation triples. *Id.*; see also Maupin, *supra* note 45, at iv (depicting conversion table for acre-foot).

52. Land, Water & Conservation, *supra* note 51, at 4–13 (citing *2007 Census of Agriculture*, 1 GEOGRAPHIC AREA SERIES pt. 51, 378 (2009)).

53. *Id.*

54. See *infra* text accompanying notes 99–105.

costly.⁵⁵ Worse still, under the new South Carolina law, agricultural users are subject to conservation requirements only if they opt into the permit system rather than securing their water uses through participation in the largely unregulated registration process.⁵⁶

To the extent there are other eastern states that have not moved away from common law riparianism, it seems only a matter of time before they begin to experience conflicts between irrigators and other surface users that are not adequately addressed by their common law. If prior cases are indicative, those states will find it difficult to establish predictable standards, and if cases continue to arise, they, too, will move away from common law riparianism in an effort to protect high valued interests such as municipal, ecology, and energy production on a consistent basis.

The historical disjunction between surface water rights and groundwater rights works in tandem with the shortcomings of riparianism. Although the two water sources often are hydrologically linked, their legal governance has been largely independent, creating an ongoing and poorly addressed potential for competing entitlements to the same corpus of water.⁵⁷ The move to managerial systems permits the treatment of all waters in the state as being subject to the permit system and allows the permitting agency to take the hydrologic interconnections of groundwater and surface water into account.⁵⁸

II. A CAMEO DESCRIPTION OF THE TYPICAL REGULATED RIPARIANISM SYSTEM

The breadth of promise of regulated riparianism can be grasped in the opening section of the ASCE Model Code:

The waters of the State are a natural resource owned by the State in trust for the public and subject to the State's sovereign power to plan, regulate, and control the withdrawal and use of those waters, under law, in order to protect the public health, safety, and welfare by promoting economic growth, mitigating the harmful effects of drought, resolving conflicts among competing water users, achieving balance between consumptive and nonconsumptive uses of water, encouraging conservation, preventing excessive degradation of natural environments,

55. In general, agricultural users as registrants and not permittees can avoid any and all conservation requirements. *See infra* text accompanying notes 94–97.

56. *See infra* text accompanying notes 94–98.

57. *See, e.g.*, Peter N. Davis, *Wells and Streams: Relationship at Law*, 37 MO. L. REV. 189, 193 (1972) (discussing the need for recognition of hydrologic connection in order for law to function properly).

58. *See, e.g.*, ASCE Model Code, *supra* note 13, §§ 2R-2-32 to -33 (defining “waters of the state” and “water source”).

and enhancing the productivity of water-related activities.⁵⁹

The section establishes state ownership of the water resource at the outset, which is a not very subtle reminder to both past and future water users that their property “rights” are merely usufructuary (rights of use).⁶⁰ As a further limitation on the extent of any claimed private rights, the state’s ownership of the corpus of water is itself subject to the public trust, which limits the ability of the state to alienate the resource in contravention of its trust responsibilities.⁶¹ The Model Code’s list of allowable purposes freely mixes both economic development and environmental conservation and elsewhere offers greater guidance on how the purposes are to be balanced in the traditionally hard cases where a proposed use of water furthers one purpose at the expense of another.⁶²

By defining waters of the state to include both groundwater and surface water, regulated riparianism sweeps out the troubling phenomenon of parallel systems, which create competing entitlements based on the manner in which water is withdrawn.⁶³ This simple sweep of the pen overcomes two centuries of ostrich-like jurisprudence, for at least half of which it was well known that groundwater and surface water users often use water that is part of a unitary hydrologic system. Once the method of withdrawal is deprived of legal significance and regulated riparianism begins to pursue a series of beneficial outcomes aimed at maximizing the value of the water to society, the situs of use is relevant only instrumentally. Any land, riparian or not, might be able to benefit from having water for use.⁶⁴ In a slightly more subtle manner, the section’s use of the phrase “the State’s sovereign power to plan, regulate, and control the withdrawal and use of those waters”⁶⁵ uproots the ad hoc and reactive nature of common law riparianism.

A total break from common law riparianism is avoided and the heritage of riparianism persists in the standard used to decide what uses are to be rewarded with permits.⁶⁶ The first of five listed standards for a permit requires that the state agency administering the program make a determination that “the proposed use is reasonable.”⁶⁷ The remaining four, all of which must be satisfied to obtain a permit, are (1) maintenance of safe yield limits, (2) consistency with the comprehensive plan and any emergency plans, (3) inclusion of reasonable conservation measures, and (4) consistency with the water code and other statutes pertaining to the use of water.⁶⁸ Principles taken from common law

59. *Id.* § 1R-1-01.

60. *Id.*

61. *See infra* text accompanying note 100.

62. ASCE Model Code, *supra* note 13, § 6R-3-02.

63. *See id.* § 2R-2-32.

64. *Id.* § 2R-1-02.

65. *Id.* § 1R-1-01.

66. *See id.* § 1R-1-02.

67. *Id.* § 6R-3-01(1)(a).

68. *Id.* § 6R-3-01(1)(b)–(c).

riparianism are utilized to determine the crux of the matter, which is defining what is reasonable:

§6R-3-02 Determining Whether a Use Is Reasonable

In determining whether a use is reasonable, the State Agency shall consider:

- A. the number of persons using a water source and the object, extent, and necessity of the proposed withdrawal and use and of other existing or planned withdrawals and uses of water;
- B. the supply potential of the water source in question, considering quantity, quality, and reliability, including the safe yields of all hydrologically interconnected water sources;
- C. the economic and social importance of the proposed water use and other existing or planned water uses sharing the water source;
- D. the probable severity and duration of any injury caused or expected to be caused to other lawful consumptive and nonconsumptive uses of water by the proposed withdrawal and use under foreseeable conditions;
- E. the probable effects of the proposed withdrawal and use on the public interest in the waters of the State, including, but not limited to:
 1. general environmental, ecological, and aesthetic effects;
 2. sustainable development;
 3. domestic and municipal uses;
 4. recharge areas for underground water;
 5. waste assimilation capacity;
 6. other aspects of water quality; and
 7. wetlands and flood plains;
- F. whether the proposed use is planned in a fashion that will avoid or minimize the waste of water;
- G. any impacts on interstate or interbasin water uses;
- H. the scheduled date the proposed withdrawal and use of water is to begin and whether the projected time between the issuing of the permit and the expected initiation of the withdrawal will unreasonably preclude other possible uses of the water; and
- I. any other relevant factors.⁶⁹

69. *Id.* § 6R-3-02.

Importantly, in addition to the multiple factors to be considered in determining reasonableness, the Model Regulated Riparianism Water Code also recognizes the need for each state to put its own stamp on priorities among uses by having a section that sets preferences, beginning with human consumption, followed by livestock and protecting crops and other economic interests that would be damaged by denial of water.⁷⁰

The planning mechanism provision is one of the less glamorous changes wrought by these laws. Especially in recent times, under the threat of climate-altered water flows, many states have engaged in water planning efforts.⁷¹ The difference in this instance is the integration of the planning with the permitting of uses. As previously noted, permits must conform to the plan. In that regard the plan is more than hortatory;⁷² it is being actively implemented. Emergency planning shortage provisions also are implemented and can take the form of permit conditions that require special conservation or cessation of use in a declared emergency.⁷³ The plan and the permits, thus, create prospective predictability for water users—they can't know the weather in advance, but they know how their usage will be affected under water shortage and water emergency conditions.⁷⁴

Finally, regulated riparianism has very important advantages over the other well-known system of quantified water rights, prior appropriation. Under regulated riparianism, water use permits are temporally limited, usually picking a period that is sufficient to allow adequate time to justify and recoup the water-dependent investment.⁷⁵ The ASCE Code, for example, set an initial period of up to 20 years for most uses and up to 50 years for major public water supply projects.⁷⁶ Upon permit expiration, renewals are allowed and given a degree of preference over competing applications, if there is not sufficient water to fulfill all applications.⁷⁷ The preference for existing uses in the ASCE Model Code is as follows:

[R]enewals shall be favored over competing applications for new withdrawals if the public interest is served equally by the competing water uses after giving consideration to the prior investment pursuant to a valid water right in related facilities as a factor in determining the

70. *Id.* § 6R-3-04.

71. *See infra* Part III (discussing South Carolina's efforts in this area).

72. ASCE Model Code, *supra* note 13, § 6R-3-01 (outlining standards for a permit).

73. *Id.* §§ 7R-3-02 to -03.

74. *See id.* § 7R-3-06 (establishing a framework for earning conservation credits and trading them in water shortage situations).

75. *Id.* § 7R-3-01 (establishing that restrictions apply for the duration of water shortage or the water emergency).

76. *Id.* § 7R-1-02.

77. *Id.* § 6R-3-04(4).

public interest.⁷⁸

What emerges, hopefully, is a complete system that is planned, managed, and effective at obtaining a well-orchestrated spectrum of benefits from the water resource.⁷⁹ By limiting terms of permits and adding direction as to how the many factors that make up the determination of reasonableness are to be weighed,⁸⁰ the end result aims for a system that is proactive, predictable, and not ossified.

III. LOOKING AT SOUTH CAROLINA'S ACT 247 OF 2010: A CRITIQUE OF UNUSUAL PROVISIONS IN THE SOUTH CAROLINA STATUTE

A. The Law and its Principal Standard

Act 247 of 2010 substantially amended South Carolina's water law and renamed the governing provisions as the "South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act."⁸¹ While the facial application of the statute to surface water alone does not appear to be as comprehensive as the models for regulated riparianism, based on the state data, groundwater accounts for less than one-half of one percent of all withdrawals.⁸² The statute makes the locational break with riparianism because permits are to be issued without regard to place of use.⁸³ With a significant exception for agricultural use,⁸⁴ the statute requires all surface water withdrawals in excess of 3 million gallons per month to have permits.⁸⁵

The South Carolina statute is administered by the Department of Health and Environmental Control ("Department") and has standards based on reasonable

78. *Id.*

79. *See id.*

80. *See, e.g., id.* § 6R-4-03 (addressing how to evaluate allocations for their effect on water quality).

81. The new statute appears in codified form at Title 49, Chapter 4 of the South Carolina Code of Laws. S.C. CODE ANN. §§ 49-4-10 to -180 (Supp. 2014).

82. Land, Water & Conservation, *supra* note 51, at 4-4 tbl.4.2 (noting statewide water use from ground-water sources totaled 91,401 million gallons [0.4 percent] in 2006).

83. S.C. CODE ANN. § 49-4-60.

84. *Id.* § 49-4-30(3).

85. The definition of a "surface water withdrawer" adopts three million gallons per month as its measure. *Id.* § 49-4-20(28). The statute also has a second category of below-threshold uses. "Minimal changes in water quantity," involve withdrawals that return 90% of the water whose consumption is less than 3 million gallons in any month and does not significantly reduce safe yield at the point of diversion. *Id.* § 49-4-20(13). Those users are then drawn into the definition of "nonconsumptive use," per Section 49-4-20(16), and upon proper application, the department shall issue a permit. *Id.* § 49-4-40(A). There also are other exemptions from the permitting which, other than the agricultural uses, do not appear to threaten major gaps in the statute's coverage of water uses that significantly deplete stream flows. *See id.* § 49-4-30 (establishing exemptions for water withdrawals).

use riparianism for the issuance of permits that are similar to those of the Model Code set out above.⁸⁶ Section 49-4-80(B) provides:

To determine whether an applicant's proposed use is reasonable, the department must consider the following criteria:

1. the minimum instream flow or minimum water level and the safe yield for the surface water source at the location of the proposed surface water withdrawal;
2. the anticipated effect of the applicant's proposed use on existing users of the same surface water source including, but not limited to, present agricultural, municipal, industrial, electrical generation, and instream users;
3. the reasonably foreseeable future need for the surface water including, but not limited to, reasonably foreseeable agricultural, municipal, industrial, electrical generation, and instream uses;
4. whether it is reasonably foreseeable that the applicant's proposed withdrawals would result in a significant, detrimental impact on navigation, fish and wildlife habitat, or recreation;
5. the applicant's reasonably foreseeable future water needs from that surface water;
6. the beneficial impact on the State and its political subdivisions from a proposed withdrawal;
7. the impact of applicable industry standards on the efficient use of water, if followed by the applicant;
8. the anticipated effect of the applicant's proposed use on the following if the permit is granted:
 - a. interstate and intrastate water use;
 - b. public health and welfare;
 - c. economic development and the economy of the State; and
 - d. applicable federal laws and interstate agreements and compacts; and
9. any other reasonable criteria that the department promulgates by regulation that it considers necessary to make a final determination.⁸⁷

The permit factors cover virtually all of the bases—resource conservation and stewardship (factors 1 and 4), correlative uses present and anticipated (factors 2 and 3), the public interest broadly conceived (factors 6 and 8), matters specific to the user or use (factors 5 and 7), and all administratively determined standards (factor 9).⁸⁸

86. *Id.* § 49-4-25.

87. *Id.* § 49-4-80(B).

88. *See id.*

IV. TRANSITION FROM COMMON LAW RIPARIANISM AND TAKINGS OF PROPERTY

The transition from common law riparianism to the statutory regime is important and potentially controversial. The importance is twofold—legal and political. Legally, because the change to regulated riparianism affects an aspect of riparian proprietors' state law property rights, the change must be reviewed for determination of whether it violates the due process guarantee that private property shall not be taken for public use without just compensation.⁸⁹ Politically, because riparian owners are an important segment of the population, a political firestorm may be triggered by a substantial change in their rights.

The most common mode of easing the disruption that might otherwise accompany the transition from common law riparianism to a permit system is to grant initial permits for all existing uses being made by riparian proprietors.⁹⁰ Doing so would ensure that no present water uses of riparians are terminated and, because the typical term of an initial permit is twenty years,⁹¹ any negative impacts on the water use would be quite remote. In other areas, such as zoning, amortization of nonconforming uses that allows them to be continued for a number of years—often far less than twenty years—has blunted claims of unconstitutional takings of property.⁹²

The most vexing problem relates to the fate of those landowners holding unexercised riparian rights, which would allow future use of the water on a reasonable basis where the reasonableness is measured correlatively to the rights of co-riparians and other water uses allowed in the jurisdiction.⁹³ Existing users are assured of permits on transition, but unexercised rights have no such guarantee.⁹⁴ Those riparians, like all other would-be water users, are free to apply for a permit.⁹⁵ Thus, it would seem that riparians with the pre-existing common law "right" to initiate a use shared with other riparians have lost the guaranteed right to entry into the class of water users in trade for a contingent right shared with all other applicants. The difference between these two positions is not as great as the statement of them makes it sound. As a co-riparian under the common law, all uses, present and proposed, are allowed to go forward only so long as they are "reasonable," as defined by the common law of the state in relation to all other uses then being made.⁹⁶ Even a current water-

89. S.C. CONST. art. I, § 13(A) (2009 & Supp. 2014). Under the doctrine of selective incorporation, that Fifth Amendment guarantee is applicable to the several states under the Fourteenth Amendment. Almost all states have their own state constitutional counterpart to the United States Constitution.

90. S.C. CODE ANN. § 49-4-70(B).

91. ASCE Model Code, *supra* note 13, § 7R-1-02.

92. *See, e.g., Village of Skokie v. Walton*, 456 N.E.2d 293, 297 (Ill. App. 1983) (stating seven year amortization period is a valid constitutional exercise to regulate and ban signs).

93. S.C. CODE ANN. § 49-4-80(B).

94. *Id.* § 49-4-70(B).

95. *Id.* § 49-4-70.

96. *Id.* § 49-4-25.

using riparian could see that use reduced (i.e., be determined no longer reasonable) if there are additional demands for the water.⁹⁷ Thus, the riparian that seeks to initiate a use pursuant to the permit system is being held to a standard that is quite similar⁹⁸—the use must be found “reasonable” as defined by the statute in relation to all other uses then being made.⁹⁹

The already weak takings claim faces other strong counter arguments. In the riparianism context, it is very important to remember that the riparian’s land holdings are unaffected and many incidents of riparianism remain intact—for example, the right to wharf out, or the rights related to use of the water surface for navigation and recreation.¹⁰⁰ Additionally, the corpus of the water does *not* belong to the riparian *ab initio*.¹⁰¹ The water is owned by the state in trust for the people.¹⁰² The riparian had only a usufructuary interest that was granted by the state and that interest was enjoyed subject to the state’s ability to alter, modify, or eliminate the use in its trust-mandated governance of the resource for the benefit of the people.¹⁰³

A quasi-empirical look at the takings issue when states replace riparianism with either prior appropriation or a permit-based system shows that only a small minority of states encountered significant judicial resistance to approving the transition.¹⁰⁴ Because current and some historic riparian rights are converted to the new system on transition, the primary legal concern is the abolition of the “right” of a riparian to initiate a new use without perfecting it in the new system.¹⁰⁵ California is deemed to maintain a mixed system of common law riparianism and legislatively introduced prior appropriation, but the courts have permitted the de facto subordination of unexercised riparian rights to established appropriations.¹⁰⁶ In Oklahoma, the judiciary has rebuffed several legislative

97. *See id.* § 49-4-80.

98. *Id.* § 49-4-70(A).

99. *Id.* § 49-4-80(B).

100. These remaining uses substantially undercut takings claims because the remaining value of the entire parcel to the riparian is almost always considerable and would, accordingly, pass muster under the tests announced by *Penn. Central Transp. Co. v. City of New York*, 438 U.S. 104, 130–31 (1978), and would not qualify as a wipeout under *Lucas v. South Carolina Coastal Comm’n*, 505 U.S. 1003, 1014–19 (1992) (citations omitted).

101. *See* LEGAL CONTROL, *supra* note 1, at 680 (citing *Nat’l Audubon Soc’y v. Super. Ct.*, 658 P.2d 709, 727 (Cal. 1983)).

102. *Id.*

103. *Id.*

104. *See, e.g.*, *Nat’l Audubon Soc’y v. Super. Ct.*, 658 P.2d 709, 732 (Cal. 1983) (finding that the public trust was not negated by a prior appropriation, even by the “public” or the state; however, the public trust could not automatically foreclose the right of the Department of Water and Power for the City of Los Angeles diversions).

105. ASCE Model Code, *supra* note 12, at iv–ix.

106. *See In re Waters of Long Valley Creek Stream Sys.*, 599 P.2d 656, 663 (Cal. 1979). The State Water Resources Control Board once tried to eliminate unexercised riparian rights and was in part rebuffed by the state’s high court. Unexercised riparian rights, however, survived that decision in a far more precarious position in which they could be placed at the bottom of the then-current priority list when exercised. *Id.* at 668–69.

efforts at change.¹⁰⁷ Although it is the outlier, the reasoning of the Oklahoma court should be mentioned.

The Oklahoma statute limited riparians' future uses that could be initiated on the basis of their riparian status to domestic use only.¹⁰⁸ Relying on article 2, section 24 of the Oklahoma constitution's prohibition against takings of property,¹⁰⁹ the court majority described the nature of the Oklahoma property rights as including "easements, personal property, and *every valuable interest which can be enjoyed and recognized as property.*"¹¹⁰ The majority then stated:

"A 'vested right' is the power to *do certain actions* or possess certain things lawfully, and is substantially a property right. It may be created by common law, by statute or by contract. Once created, it becomes absolute, and is protected from legislative invasion"

Therefore, the common-law riparian right to use stream water, as long as that use is reasonable, has been long recognized in Oklahoma law as a private property right.¹¹¹

The striking feature of that passage is the inclusion of the word "absolute," which allows the *Franco-American* majority to transform a right that is correlative and always contingent upon the state of competing uses of water at the time a use is sought to be made into a "stick in the bundle" of property rights¹¹² which is so central to the bundle that it must be held inviolate. The dissent criticizes this position by first affirming the power of each state over its waters, quoting Justice Holmes famous defense of comprehensive state authority over the state's waters,¹¹³ and then characterizing what the majority has created as "the ability to demand a reasonable use of the stream in the future (unencumbered by compliance with our State's water laws) under common law

107. *Franco-American Charolaise Ltd. v. Okla. Water Res. Bd.*, 855 P.2d 568, 582 (1990).

108. OKLA. STAT. tit. 60, § 60(A) (2014).

109. OKLA. CONST. art. II, § 24. The *Franco-American* court cites only Oklahoma cases in this regard, but the distinctive parts of its analysis lie in the definition of the nature of the riparian right, not the state's constitutional provision. See *Franco-American*, 855 P.2d at 576 (quoting *Graham v. City of Duncan*, 354 P.2d 458, 461 (Okla. 1960)).

110. *Franco-American*, 855 P.2d at 576 (quoting *Graham*, 354 P.2d at 461) (emphasis in original).

111. *Franco-American*, 855 P.2d at 576 (quoting *Okla. Water Res. Bd. v. Cent. Okla. Master Conservancy Dist.*, 464 P.2d 748, 755 (1968)).

112. *Id.*

113. *Id.* at 589–90 (Lavender, J., dissenting) (quoting *Hudson Cnty. Water Co. v. McCarter*, 209 U.S. 349, 356 (1908)). The aspect of *Hudson* that had relied on *Geer v. Connecticut*, 161 U.S. 519 (1896), to immunize state water regulation beyond the limitations of the Dormant Commerce Clause was later limited by *Sporhase v. Nebraska*, 458 U.S. 941 (1982). That change in law, however, in no way limited the intramural authority of the state over its waters.

or judicially imposed factors that courts over the years had utilized to decide piecemeal disputes involving riparians or their privies.”¹¹⁴

In a modern era that demands careful water regulation, according so much inviolate independence to initiate new riparian water uses free of regulation has been rejected by all other states that have addressed the issue.¹¹⁵

V. THE UNUSUAL TREATMENT OF AGRICULTURAL USE AND THE PUBLIC TRUST

The South Carolina statute separates and treats agricultural use differently than many other uses under a registration program.¹¹⁶ As a result, agricultural users who opt for the registration program¹¹⁷ do not become “permittees,”¹¹⁸ and thus, are not subject to the same standards as the permit program.¹¹⁹ “Registered surface water withdrawers must register their surface water use with the department on forms provided by the department and *are subject only to the reporting requirements* of Section 49-4-50. Registered surface water withdrawers are authorized to withdraw surface water up to their registered amount.”¹²⁰ Note also that the final sentence of that subsection grants *carte blanche* to withdraw the entire registered amount subject to no regulatory limitations other than the registration itself.¹²¹

Those reporting requirements are effectively ministerial rather than substantive, calling for use of a statutorily recognized method of measurement of the quantity withdrawn or the rated capacity of the equipment.¹²² Initial

114. *Franco-American*, 855 P.2d at 590 (Lavender, J., dissenting).

115. The *Franco American* dissent reviews several precedents from other states that undercut the majority. *Id.* at 590–91 (Lavender, J., dissenting) (citing *Water of Hallet Creek Stream Sys.*, 749 P.2d 324, 336–38 (1988), *cert denied*, 488 U.S. 824 (1988); *United States v. Gerlach Livestock Co.*, 339 U.S. 725 (1950); *Belle Fourche Irrigation Dist. v. Smiley*, 176 N.W.2d 239 (S.D. 1970), *after remand*, 204 N.W.2d 105 (1973); *In re Adjud’n of the Water Rights of the Upper Guadalupe River Basin*, 642 S.W.2d 438 (Tex. 1982); *Texaco, Inc. v. Short*, 454 U.S. 516 (1982)). Of special importance is the discussion of California’s limitation of riparian rights because of the heavy reliance that the majority places (erroneously) on California’s choice to continue to give its riparian rights preference over appropriative rights. *See supra* Part IV.

116. *See* S.C. CODE ANN. § 49-4-20(21), (23) (Supp. 2014) (defining public water system uses compared to registered surface water withdrawer for agricultural uses).

117. Agricultural users may obtain permits. *See id.* § 49-4-55(A); *see also id.* § 49-4-35(F) (qualifying surface water withdrawers for permits).

118. *See id.* § 49-4-20(19).

119. This is done through a series of elements in the statute that begins with a broad definition of agricultural use and agricultural facility. *See id.* § 49-4-20(2), (3). Section 49-4-20(23) then creates a class of “Registered surface water withdrawer” that includes “surface water withdrawals for agricultural uses at an agricultural facility.” Registration has its privileges, as discussed *infra* at Section V. *See generally id.* § 49-4-35 (outlining registration of surface water user).

120. *Id.* § 49-4-35(A).

121. *Id.* A separate provision does provide a sanction for withdrawals “substantially” in excess of the registered amount. *See id.* § 49-4-35(E). In such cases, the Department “may” take action if, in addition to the excess it also finds “the withdrawals result in detrimental effects to the environment or human health.” *Id.*

122. *Id.* § 49-4-50(A), (B).

registrations at the outset of the program were generous to a fault, offering those registrants the option of their largest historic amount withdrawn or the amount corresponding to the maximum capacity of their equipment:

An existing registered surface water withdrawer already reporting its withdrawals to the department as of January 1, 2011, may maintain its withdrawals at its highest reported level or at the design capacity of the intake structure which will be permanent as of January 1, 2011, and is deemed to be registered with the department.¹²³

New would-be registrants face a single standard for obtaining registration—the anticipated surface water withdrawal must be “within the safe yield for that water source at the time of the request.”¹²⁴ “Safe yield” is defined, essentially, as everything in excess of the Department of Health and Environmental Control’s calculated minimum level or flow, including both natural and supplemental sources.¹²⁵ By fixing the registered amount with reference to the conditions existing at the time of registration, any future risk of a decreased flow regime or falling levels (due to climatic events or otherwise) is borne by permittees whose permits may be conditioned on cutting back in times of low flow,¹²⁶ and/or the citizens of the state who may suffer as a result of levels or flows less than the recognized minimum.

Other than small domestic users, whose rights are absolutely protected in American jurisdictions, the literal terms¹²⁷ of the South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act grant to South Carolina’s agricultural users the most absolute water use rights of any user class under any water law currently recognized in the United States! Prior appropriation is a good first point of comparison.

In the American West, prior appropriation was structured to provide secure, ongoing water rights for transporting water from streams to the point of use, with the support of irrigated agricultural being singularly important to the settlement of the region.¹²⁸ To obtain a water use right under prior appropriation, all states, other than Colorado,¹²⁹ have a state official, usually the state engineer, to whom

123. *Id.* § 49-4-35(B).

124. *Id.* § 49-4-35(C).

125. *Id.* § 49-4-20(25).

126. *See id.* § 49-4-100(A)(6), (7), (9) (indicating that permits are expressly to be conditioned and reduced on change in flows or levels in response to the South Carolina Drought Response Act). The statute does not impose similar limitations on registrations.

127. The law leaves almost no discretion available to the Department in relation to registrations. Thus, a facial reading of the law and its practical application appear highly likely to be identical.

128. LEGAL CONTROL, *supra* note 1, at 169, 171.

129. Colorado imposes requirements even more stringent in many cases than those described in the text, but Colorado administers its water rights via a specialized system of water courts that, in

application must be made before initiating a withdrawal of the water.¹³⁰ The criteria for obtaining an appropriation include, among other things, a determination that the use is beneficial and a determination that there is unappropriated water available from which the appropriation may be satisfied.¹³¹ The water rights of appropriators are temporally strong in the sense that, once obtained, they are perpetual rights unless modified or lost.¹³² The registered withdrawals under the South Carolina law are effectively perpetual and subject to neither loss nor modification.¹³³ Within the South Carolina system, registrations are superior to permits in regard to duration. Whereas permits expire,¹³⁴ registrations have no stated temporal limits.¹³⁵ The terms in the law describe registration amounts as being “permanent,”¹³⁶ and registrants are allowed to make those same withdrawals in “subsequent years.”¹³⁷

On the beneficial and security prongs, the South Carolina law is even more generous to agricultural use compared to prior appropriation law. Agricultural use is an economically important use that is universally deemed beneficial as a general matter,¹³⁸ but the South Carolina law does not leave any room for state scrutiny of the manner in which it is carried on. In contrast, most prior appropriation states would insist, at a minimum, that the use be made in a non-wasteful manner, which both promotes efficient water use and threatens a reduction of use in the event that older irrigation methods become sufficiently outmoded as to be reduced for waste.¹³⁹ In contrast, the South Carolina registration system makes virtually any form of agricultural use eligible for registration; the act of registration automatically results in a right to withdraw the maximum amount of water the equipment and design of the facilities can carry.¹⁴⁰ In that regard, the state forfeits a check on agricultural inefficiency, which in water-short times could reduce agricultural withdrawals by as much as 65% or even 90%.¹⁴¹ The prior appropriation doctrine also includes doctrines of

effect, conduct an ongoing adjudication of rights. *See generally* LEGAL CONTROL, *supra* note 1, at 190–99 (providing an overview of the Colorado prior appropriation doctrine).

130. *Id.* at 172–73 & n.14.

131. *Id.* at 169–70.

132. *Id.* at 170. The principal grounds for modification and loss are discussed *infra* at Part V.

133. *See* S.C. CODE ANN. § 49-4-35 (Supp. 2014).

134. *Id.* § 49-4-100(A)(8).

135. *See id.* § 49-4-35(B).

136. *Id.*

137. *Id.* § 49-4-35(C).

138. *See, e.g.,* IDAHO CONST. art. XV, § 3; TEX. WATER CODE ANN. § 11.002 (2013) (providing an example of the fact that many States explicitly list agricultural use under the definition of beneficial use in their constitutions and statutes).

139. *See, e.g.,* State Dep’t. of Ecology v. Grimes, 852 P.2d 1044, 1050–52 (1993) (citations omitted) (discussing the efficiency, usage, and water duty in prior appropriation).

140. S.C. CODE ANN. § 49-4-35 (Supp. 2014).

141. Terry Howell, U.S. DEPT. OF AGRIC., IRRIGATION EFFICIENCY, ENCYC. OF WATER SCI. 467, 468 tbl.1 (2003), available at <http://www.cprl.ars.usda.gov/pdfs/Howell-Irrig%20Efficiency-Ency%20Water%20Sci.pdf>.

abandonment and forfeiture that require a user to regularly use the water allocated by the appropriative right.¹⁴² In contrast, the South Carolina law has no similar limit on registrations¹⁴³ and thereby forfeits an important control on water speculation. There is no requirement in the South Carolina statute that a registrant must put the water to beneficial use.¹⁴⁴ Thus, for example, an agricultural registrant can tie up the water without using it by investing in a delivery system of considerable capacity, a move that under the terms of the statute might block the issuance of permits for the water subject to registration.¹⁴⁵ Even if the Department concludes a permit should be issued for unused registered water, the registration itself casts a cloud over the rights of the permittee and deters investment. Permittees and not registrants are at risk of use reductions needed to ensure minimum flows and levels are maintained.¹⁴⁶

For post-2010 registrations, the “safe yield” protection of the South Carolina law is similar to prior appropriation’s unappropriated water requirement when it is combined, as it typically is, with a public interest criterion.¹⁴⁷ South Carolina reserves some water from registration (or permitting) based on minimum levels and flows and implements that protection under the “safe yield” requirement, which applies to newly initiated registrations.¹⁴⁸ The unappropriated water requirement of prior appropriation historically was a bit cruder, considering only whether there was water that was not already appropriated by others.¹⁴⁹ In modern times, however, prior appropriation states routinely require protection of minimum levels and flows by insisting that appropriations are consistent with the public interest, which includes level and flow protection under the public interest umbrella of protections of the state’s waters.¹⁵⁰

The waters that are governed by the South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act include “all water that is wholly or partially within the State, including the Savannah River, or within its

142. LEGAL CONTROL, *supra* note 1, at 356.

143. As noted previously, the only post-registration limitation on registrants that is evident on the face of the statute is Section 49-4-35(E), which addresses significant overuse as a ground for possible modification of a registration, but is silent as to underuse or non-use. S.C. CODE ANN. § 49-4-35(E).

144. *See id.* § 49-4-25 (requiring reasonable use but not beneficial use).

145. *See id.* § 49-4-80(B).

146. *See id.* § 49-4-80(B), (J).

147. *See id.* § 49-4-35(C).

148. *See id.*

149. *See supra* note 132 and accompanying text.

150. *See, e.g.,* IDAHO CODE ANN. § 42-1501 (stating that maintaining minimum level and flow protection is in the public interest); ALASKA STAT. § 46.15.080(b)(3) (necessitating other requirements pertinent to public interest). *See also* Shokal v. Dunn, 707 P.2d 441, 450 (Idaho 1985) (stating that “[t]hose applying for permits and those challenging the application bear the burden of demonstrating which elements of the public interest are impacted and to what degree”).

A full reading of the cited Alaska statutory public interest statute further highlights the lack of comparative evaluation given to registration under the South Carolina statute and what is now the norm in both prior appropriation states and in states following more conventional forms of regulated riparianism. *See* ASCE Model Code, *supra* note 13, at v.

jurisdiction, which is open to the atmosphere and subject to surface runoff, including, but not limited to, lakes, streams, ponds, rivers, creeks, runs, springs, and reservoirs,” with exceptions for certain wastewater and other storage impoundments.¹⁵¹ Given their prominence and importance to the state, the waters themselves are public trust resources of the state.¹⁵²

Most South Carolina public trust case law concerns public rights of access and navigation.¹⁵³ In those cases the South Carolina Supreme Court has recognized public trust claims and the duty of the state to maintain control of public trust resources.¹⁵⁴ Looking at potential harm to navigation in isolation, agricultural uses registered before the end of 2010 could totally dewater surface streams and lakes.¹⁵⁵ Post-2010 agricultural uses could reduce flows to the state set minima,¹⁵⁶ which in some cases might be insufficient to protect public trust navigational interests.

The real thrust of the public trust doctrine in this case, however, is the loss of the state’s ability to protect the public interest in the surface water resource. The totemic case of *Ill. Cent. R.R. Co. v. Illinois*¹⁵⁷ could hardly be more on point. In that case, the Illinois legislature granted the submerged lands fronting Chicago’s entire commercial waterfront to the railroad company, thereby losing the ability to govern the resource.¹⁵⁸ Justice Field’s majority opinion makes the distinction between acceptable grants of private rights in the use of trust resources and grants that are impermissible abdications of the trust responsibility:

It is grants of parcels of lands under navigable waters, that may afford foundation for wharves, piers, docks and other structures in aid of commerce, and grants of parcels which, being occupied, do not substantially impair the public interest in the lands and waters remaining, that are chiefly considered and sustained in the adjudged cases as a valid exercise of legislative power consistently with the trust to the public upon which such lands are held by the State. But that is a very different doctrine from the one which would sanction the abdication of the general control of the State over lands under the

151. S.C. CODE ANN. § 49-4-20(27) (Supp. 2014).

152. See generally Robin Kundis Craig, *A Comparative Guide to the Eastern Public Trust Doctrines: Classifications of States, Property Rights, and State Summaries*, 16 PENN. ST. ENVTL. L. REV. 1, 98–99 (2007) (citations omitted) (for a synopsis of South Carolina trust case law).

153. See *id.*

154. See *Sierra Club v. Kiawah Resort Assocs.*, 318 S.C. 119, 128, 456 S.E.2d 397, 402 (1995). See, also *McQueen v. S.C. Coastal Comm’n*, 354 S.C. 142, 149, 580 S.E.2d 116, 119–20 (2003) (reciting exclusive right of public control over tidelands below the high water mark), *Port Royal Mining Co. v. Hagood*, 30 S.C. 519, 524, 9 S.E. 686, 689 (1889)) (holding state controls land below high water mark for public benefit to prohibit activity that impairs public interest).

155. See generally S.C. CODE ANN. § 49-4-35(A), (B) (Supp. 2014) (providing water withdrawal requirements post-2011).

156. See *id.* § 49-4-80(B).

157. 146 U.S. 387 (1892).

158. *Id.* at 439–40.

navigable waters of an entire harbor or bay, or of a sea or lake. Such abdication is not consistent with the exercise of that trust which requires the government of the State to preserve such waters for the use of the public. The trust devolving upon the State for the public, and which can only be discharged by the management and control of property in which the public has an interest, cannot be relinquished by a transfer of the property. The control of the State for the purposes of the trust can never be lost, except as to such parcels as are used in promoting the interests of the public therein, or can be disposed of without any substantial impairment of the public interest in the lands and waters remaining.¹⁵⁹

Turning that concept upon Act 247, another of the statements of Justice Field, with the simple excision of the words “the lands under,” is applicable: “A grant of all the lands under the navigable waters of a State has never been adjudged to be within the legislative power; and any attempted grant of the kind would be held, if not absolutely void on its face, as subject to revocation.”¹⁶⁰ Even though registration of surface water users sounds far short of a grant of the water, the inability of the state to subsequently control the surface water resource is the functional equivalent of “disposal” of the resource, which is forbidden by South Carolina law.¹⁶¹ Properly understood through the lens of the statute, the degree of abdication of state authority here is greater than that ceded by the Illinois legislature in *Illinois Central*.¹⁶²

This public trust conclusion indirectly bolsters the claim of riparians that the new statute has taken their common law correlative rights to initiate new uses. In this regard, the comparatively unregulated ability of agricultural users to register uses lends added importance to the statute’s permit/registration defense against potential claims by riparians:

Surface water withdrawals made by permitted or registered surface water withdrawers shall be presumed to be reasonable. No private cause of action for damages arising directly from a surface water withdrawal by a permitted or registered surface water withdrawer may be maintained unless the plaintiff can show a violation of a valid permit or

159. *Id.* at 452–53.

160. *Id.* at 453.

161. S.C. CODE ANN. § 49-4-25 (Supp. 2014); *see also* McQueen v. S.C. Coastal Comm’n, 354 S.C. 142, 149, 580 S.E.2d 116, 119–20 (2003) (citing *Sierra Club v. Kiawah Resort Assocs.*, 318 S.C. 119, 128, 456 S.E.2d 397, 402 (1995); *Port Royal Mining Co. v. Hagood*, 30 S.C. 519, 524, 9 S.E. 686, 689 (1889)) (holding state controls land below high water mark for public benefit to prohibit activity that impairs public interest).

162. *Compare* S.C. CODE ANN. § 49-4-35(C), *with Illinois Central*, 146 U.S. at 452–53 (demonstrating the degree to which South Carolina abandons its authority).

registration.¹⁶³

Riparians cannot compete for legal recognition of their uses; they simply lose to agricultural registrants.

VI. CONCLUSION AND RECOMMENDATIONS

The principal conclusion of this Article is that the South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act is badly flawed because it includes agricultural users in an almost totally uncontrolled registration track.¹⁶⁴ That single choice effectively puts almost 90% of the state's water use beyond meaningful present or future regulation.¹⁶⁵ Precedents such as *Illinois Central* suggest that this aspect of the statute is a clear violation of the public trust. It is also bad policy. In an era of potentially escalating water challenges, the state needs to have a means to ensure its future ability to address the ongoing governance of its waters. This particular enactment denies the state that ability and could even harm many of the agricultural users it appears to benefit. A small number of high capacity registrants could monopolize the state's water supply and force other users, such as smaller farmers, municipalities, and industries, to pay forms of tribute.¹⁶⁶

The remedy for the most egregious failing of the statute is simple—require agricultural users to participate in the permit system. The more quickly this is done, the better. Quick action blunts potential claims by registrants who may assert that their property rights have become the subject of investment-backed expectations for which the state must pay compensation.¹⁶⁷ A second concomitant of regaining prospective regulatory flexibility for the state is to weaken the presumptions in favor of existing permits on renewal.¹⁶⁸ The state

163. S.C. CODE ANN. § 49-4-110(B). A lawsuit by riparians raising both the public trust and takings arguments is currently pending in the Barnwell County Court of Common Pleas. *See Jowers v. S.C. Dep't of Health and Envtl. Control*, No. 2014-CP-06-322 (Sept. 4, 2014).

164. The failure of the statute to include groundwater should be corrected. It is not a matter of great present concern because of the heavy predominance of surface water use in South Carolina. Over time, that balance may change.

165. *See Land, Water & Conservation*, *supra* note 51, at 4-4 & tbl.4.2.

166. A registered high capacity agricultural diverter who is physically able to make a low-value, highly-consumptive use (such as flood irrigation of a forage crop) could effectively require high-value downstream users to buy forbearance. Under the statute as enacted, South Carolina is powerless to prevent that result. *See S.C. CODE ANN. § 49-4-110(B)*.

167. Being able to state a valid takings claim for a requirement that a registration be converted into a permit seems highly unlikely. *See supra* Part IV. In *Illinois Central*, the only compensation the railroad received when the original grant was held to have been effectively rescinded by subsequent legislation was compensation for actual improvements made to which title was quieted in the state. 146 U.S. 387, 455 (1892).

168. For an example of how a weaker presumption for undiminished renewals allows ongoing managerial authority to protect the resource, permit new entrants, and allow the water to move to higher uses, or tighter conservation standards, see *Harloff v. City of Sarasota*, 575 So.2d 1324, 1328

needs to be better able to balance the security interest of current water users, who deserve some degree of recognition of the value of continuity of their use, with the interest of its other citizens in being able to initiate new uses that allow innovation and growth.

There is one important aspect of the South Carolina law on which it is too soon to comment until its implementation by the Department of Health and Environmental Control is more fully in view. The Department must set minimum levels and flows to protect “biological, chemical, and physical integrity” of streams and impoundments.¹⁶⁹ Presumably, such levels will protect all ecological, recreational, and aesthetic values of importance. Although the minimum in-stream flow definition section references percentages of mean annual flows as a determinant of monthly minima, experience in other states indicates that the process is contentious and the longer it is delayed the more likely it is that permits will be issued that are not adequately protective of the public values of water in place.¹⁷⁰

A final concern about Act 247 is its very modest planning component. The Act does call for water shortage contingency plans, but these are required only of permittees¹⁷¹ and are not part of a larger coordinated shortage plan. To a degree, the lack of a larger scale plan is offset by the presence of the South Carolina Drought Response Act.¹⁷² That law grants a different state agency, the Department of Natural Resources,¹⁷³ authority to promulgate regulations that would require “non-essential” water uses curtailed upon declaration of particular levels of drought; however, the agricultural use for food production is deemed “essential” and is not subject to that regulation.¹⁷⁴ The Act does create a preference among essential uses as follows: “Water used to maintain minimum water levels in the potable drinking water supply and water used for public safety purposes have the highest priority in the essential water category.”¹⁷⁵ That same section provides a series of criteria that are guides for determining the extent of curtailment of non-essential users.¹⁷⁶ It would be helpful if the same guidance were applicable to non-preferred essential uses, which would include agricultural uses. The benefits of announced standards and pre-drawn plans are

(Fla. Dist. Ct. App. 1991) (explaining that the burden of proof according to the statute is properly placed on the applicant rather than the state).

169. S.C. CODE ANN. §§ 49-4-20(14), (15) (Supp. 2014).

170. *Id.* § 4-23-20(a).

171. *Id.* § 49-23-70(C). The promulgation of regulations is not mandatory, but the importance of having such a response plan in place should be sufficient to ensure regulations will be promulgated.

172. *Id.* §§ 49-23-10 to -100 (2008).

173. *Id.* § 4-23-20(a).

174. *Id.* § 49-23-70(C). The promulgation of regulations is not mandatory, but the importance of having such a response plan in place should be sufficient to ensure regulations will be promulgated.

175. *Id.*

176. *Id.*

that those affected, the water users, can rely upon the plan when structuring their affairs in times of water shortage.¹⁷⁷

From a long-term view, South Carolina's water law has taken an important step away from the indeterminacy and reactive aspects of common law riparianism and moved toward a proactive regulatory system based on the sharing of the water that has long held sway under common law riparianism. That part is good. The treatment of agricultural use as a form of registered water use, outside of the regulatory scheme, abuses the well-founded concept of putting very small uses in a separate statutory category that requires only reporting. That part is not good. The manner in which it has been done deprives the state of an essential attribute of its sovereignty over its trust resources. The state must rectify that error. South Carolina can also make additional improvements to its new statute and water governance that together with water resource availability far greater than that of many sister states will position it to have one of the nation's better water futures.

177. See, e.g., Abrams, *New Cooperative Federalism*, *supra* note 30, at 10,461.