

# HAVE WE GOT A *DEAL* FOR YOU: CAN THE EAST BORROW FROM THE WESTERN WATER MARKETING EXPERIENCE?

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## INTRODUCTION

In early 2004, Georgia State University College of Law hosted a water law conference to help inform state water planning in Georgia.<sup>1</sup> The invited speakers included a bevy of westerners, including this author. The western visitors addressed a host of issues that are standard fare for western water policy wonks but that are only of recent interest to easterners, such as interstate water allocation devices and water markets.

Georgia is one of the ten fastest growing states in the country, as is its neighbor Florida.<sup>2</sup> All but one of the remaining states in the top ten are in the West.<sup>3</sup> Demand for water in the Atlanta metropolitan

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\* Professor of Law, Lewis and Clark Law School, Portland, Oregon and President, Oregon Water Trust. I would like to thank Jim Bross for inviting me to speak at Georgia State University's water conference—*Critical Issues in Georgia Water Law and Policy*—in Atlanta, Georgia on January 7, 2004. *Critical Issues in Georgia Water Law and Policy* (Jan. 7, 2004) [hereinafter *Critical Issues Conference*]. Although that presentation was the genesis of this Article, the Article evolved considerably as I wrote it, making the topic—water marketing—more pertinent to eastern states. A related article with a more western focus is forthcoming in the *Nebraska Law Review*. Janet C. Neuman, *The Good, the Bad, and the Ugly: The First Ten Years of the Oregon Water Trust*, 83 NEB. L. REV. 801 (forthcoming 2005) [hereinafter *The Good, the Bad, and the Ugly*]. Thanks to Sharon Bolesky and Kristen West for excellent research assistance and to Robin Teal and the rest of the Georgia State University Law Review editorial staff for their patience.

I also want to issue a disclaimer. I do not ascribe to a nonchalant “let the market do it” philosophy when it comes to water or any other inherently public and common resource because of the significant externalities (both positive and negative), the non-economic values, and the interrelated natural systems that water use and allocation decisions implicate. *See infra* note 212. However, I do believe that subjecting water to market forces to *some degree*, while being cognizant of the concerns above and regulating for their protection as necessary, can help create a more rational, sound, and healthy system of water management.

1. James Bross, Professor of Law, Georgia State University College of Law, Opening remarks at *Critical Issues Conference* (Jan. 7, 2004).

2. News Release, Robert Bernstein, U.S. Census Bureau, U.S. Population Passes 290 Million; Mountain and Coastal States Fastest-Growing (Dec. 18, 2003), available at <http://www.census.gov/Press-Release/www/releases/archives/population/001624>.

3. *Id.* (noting that, from July 1, 2002 to July 1, 2003, the ten fastest-growing states in descending order were Nevada, Arizona, Florida, Texas, Idaho, Georgia, Delaware, Utah, California, and Hawaii; that, between 2002 and 2003, Georgia passed New Jersey to take over the spot of ninth most populous state in the nation; and that California and Texas were numbers one and two). *Compare id.*, with

region and elsewhere in the State is increasing dramatically, outstripping available supplies.<sup>4</sup> The region has also struggled with several years of severe drought.<sup>5</sup> Furthermore, Georgia has battled for over a decade with its neighboring states—Florida and Alabama—over their shared interstate rivers.<sup>6</sup> Georgia's current water challenges suddenly look very western indeed. Perhaps it is no surprise that the State is turning toward the sunset in search of help and ideas. After all, the western states have struggled for more than a century to manage a relatively small amount of water for numerous and conflicting needs.<sup>7</sup> As a result, western states and their water users have developed a panoply of legal devices to allocate scarce water.

In contrast, until recently, the East has been relatively water-rich. As a consequence, the East has never had as much use for a comprehensive body of law to allocate water.<sup>8</sup> Instead, the

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PAMELA CASE & GREG ALWARD, U.S. DEP'T OF AGRIC. FOREST SERV., PATTERNS OF DEMOGRAPHIC, ECONOMIC, AND VALUE CHANGE IN THE WESTERN UNITED STATES 28 tbl.4 (1997), available at [http://www.fs.fed.us/institute/news\\_info/wwpre\\_1.html](http://www.fs.fed.us/institute/news_info/wwpre_1.html) (predicting that Georgia would overtake New Jersey as the ninth most populous state by 2025 and ranking California and Texas as the first and second fastest growing states).

4. U.S. GEOLOGICAL SURVEY, GEORGIA (1999), available at <http://water.usgs.gov/pubs/fs/FS-011-99/pdf/fs-011-99.pdf> (stating that between 1990 and 1995 water demand increased 16%).

5. See Julia L. Fanning, *Water Use in Georgia, 2000; And Trends, 1950-2000*, in PROCEEDINGS OF THE 2003 GEORGIA WATER RESOURCES CONFERENCE (Kathryn J. Hatcher ed., 2003) (describing drought in Georgia), available at <http://ga.water.usgs.gov/pubs/other/gwrc2003/pdf/Fanning-GWRC2003.pdf>; see also Joseph W. Dellapenna, *Regulated Riparianism*, in 1 WATERS AND WATER RIGHTS 9-2 & n.6 (Beck ed., repl. vol. 2001) [hereinafter *Regulated Riparianism*] (describing recent drought conditions in areas west of Kansas City); Janet C. Neuman, *Drought Proofing Water Law*, 7 U. DENV. WATER L. REV. 92, 94-96 (2003) [hereinafter *Drought Proofing*] (documenting recent drought conditions across the country, in the Southeast, and other eastern states).

6. J.B. Ruhl, *Equitable Apportionment of Ecosystem Services: New Water Law for a New Water Age*, 19 J. LAND USE & ENVTL. L. 47, 48-49 (2003); Dustin S. Stephenson, *The Tri-State Compact: Falling Waters and Fading Opportunities*, 16 J. LAND USE & ENVTL. L. 83, 84-88 (2000); see generally Jeffrey Uhlman Beaverstock, Comment, *Learning to Get Along: Alabama, Georgia, Florida and the Chattahoochee River Compact*, 49 ALA. L. REV. 993, 993-97 (1998); C. Hansell Watt, IV, Comment, *Who Gets the Hooch?: Georgia, Florida, and Alabama Battle for Water From the Apalachicola-Chattahoochee-Flint River Basin*, 55 MERCER L. REV. 1453, 1459-61 (2003); Stacy Shelton, *Water Wars: GOP Shift New Reality as Tri-State Talks Begin*, ATLANTA J. CONST., Jan. 6, 2003, available at 2003 WL 8961990 [hereinafter *Water Wars: GOP Shift*].

7. See ROBERT G. DUNBAR, FORGING NEW RIGHTS IN WESTERN WATERS 1 (1983); see also A. DAN TARLOCK, LAW OF WATER RIGHTS AND WATER RESOURCES § 5.03 (2004).

8. See Carol M. Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 577-78 (1988) (describing how laws allocate plentiful resources, such as water in the eastern states, according to a few "muddy" legal principles, while much more rigid, crystalline systems develop to allocate scarce resources, such as western water). To put it another way, "The precision with which water rights are defined and enforced will be a positive function of scarcity. . . . As long as the demands for water are low relative to the cost of definition and enforcement, well-specified and transferable water rights are unlikely to evolve." Terry L. Anderson & Peter J. Hill, *Taking the Plunge, Introduction to WATER*

developing American states on the east coast borrowed from English common law, which developed in a fairly wet place and allocated water on the basis of owning riparian land.<sup>9</sup> Courts resolved the occasional water disputes case by case, developing and applying a loose set of tort principles.<sup>10</sup> The parameters of common law riparian rights are unclear, creating uncertainty for water users concerning how much water they can use and discouraging investment in water development.<sup>11</sup> Further, common law riparianism is inadequate to manage water for increasing and competing demands, especially in times of significant shortage.<sup>12</sup>

Spurred by failings of the “pure” riparian doctrine, several eastern states have adopted administrative permit systems and other regulatory devices to manage water use.<sup>13</sup> The phrase “regulated riparianism” describes legislative efforts to codify and partially amend the common law riparian rights doctrine.<sup>14</sup> The statutory changes moved some of the water use decisions from courts to administrative agencies and from ongoing disputes to the time before an individual initiates the water use.<sup>15</sup> By issuing permits upfront,

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MARKETING—THE NEXT GENERATION xiii (Terry L. Anderson & Peter J. Hill eds., 1997) (citation omitted).

9. Cf. TARLOCK, *supra* note 7, §§ 3.01-3.02 (noting that both English and American courts also borrowed from Roman law).

10. *Id.* See generally Joseph W. Dellapenna, *The Right to Consume Water Under “Pure” Riparian Rights*, in 1 WATERS AND WATER RIGHTS 7-57 to 7-90 (Beck ed., repl. vol. 2001) (describing common law riparianism where courts resolved disputes between users); Joseph W. Dellapenna, *Adapting Riparian Rights to the Twenty-First Century*, 106 W. VA. L. REV. 539, 554 (2004) [hereinafter *Adapting*]; Robert H. Abrams, *Charting the Course of Riparianism: An Instrumentalist Theory of Change*, 35 WAYNE L. REV. 1381, 1392-96 (1989) [hereinafter *Charting the Course*] (describing the evolution of natural flow riparianism into reasonable use riparianism).

11. *Adapting*, *supra* note 10, at 559-61; cf. *Charting the Course*, *supra* note 10, at 1392-96 (suggesting that reasonable use riparianism afforded somewhat more clarity to promote more optimal utilization of the water than natural flow riparianism).

12. *Charting the Course*, *supra* note 10, at 1400.

13. See *Regulated Riparianism*, *supra* note 5, at 9-2 to 9-8, 9-33 to 9-42; see also Robert H. Abrams, *Water Allocation by Comprehensive Permit Systems in the East: Considering a Move Away from Orthodoxy*, 9 VA. ENVTL. L.J. 255, 255 (1990) [hereinafter *Permit Systems*]; *Adapting*, *supra* note 10, at 583-86 (describing the evolution of eastern regulation from occasional regulation of certain uses through piecemeal permit requirements to broader, though still not fully comprehensive, statutory schemes in 18 states).

14. *Regulated Riparianism*, *supra* note 5, at 9-7 & nn.32-37 (describing his coinage of the term “regulated riparianism” to describe the statutory codification of and amendments to the common law riparian doctrine and the growing general acceptance of the term).

15. *Id.* at 9-7; *Permit Systems*, *supra* note 13, at 260-61 (discussing the benefits of having an agency review the proposed use before initiating that use).

regulated riparian systems may clarify how much water a user has available and may promote certainty and economic investment.<sup>16</sup>

Western states have also modified aspects of their prior appropriation systems in recent decades to address that doctrine's shortcomings.<sup>17</sup> The problems with prior appropriation systems are the opposite of the problems with riparianism. The prior appropriation states have had comprehensive water codes and prospective permit requirements for many years.<sup>18</sup> Since water scarcity is an annual reality in arid states, prior appropriation systems also have a very clear rule for dealing with shortages—"first in time, first in right."<sup>19</sup> Therefore, uncertainty about water rights, fuzzy rules of use, and after-the-fact decision making on water use have not been the West's major problems.<sup>20</sup> What the western doctrine has never done well is control excessive water use, balance uses against each other, and protect watersheds.<sup>21</sup> Riparianism has done a bit better in this regard.<sup>22</sup>

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16. Other important changes include loosening the appurtenancy requirement of common law riparianism, which prohibited water use off riparian property, and, as a result, further limited potentially productive and valuable uses of water. Cf. *Permit Systems*, *supra* note 13, at 261-65 (discussing the advantages of regulated riparianism).

17. See generally Charles F. Wilkinson, *Western Water Law in Transition*, 56 U. COLO. L. REV. 317 (1985); A. Dan Tarlock, *New Water Transfer Restrictions: The West Returns to Riparianism*, 27 WATER RESOURCES RES. 987, 987-94 (1991).

18. See Janet C. Neuman & Keith Hirokawa, *How Good Is an Old Water Right? The Application of Statutory Forfeiture Provisions to Pre-Code Water Rights*, 4 U. DENV. WATER L. REV. 1, 6-12 (2000) (describing western comprehensive code adoption beginning in the late 1800s). Even though some describe regulated riparian states' water laws as "comprehensive," the description seems simply to mean that the state has more than a few isolated statutes governing water use. See, e.g., *Regulated Riparianism*, *supra* note 5, at 9-34 to 9-40. Western water codes, in contrast, are truly comprehensive, requiring advance permission for nearly every water use, creating state agencies with significant water allocation and enforcement authority, and outlining general water adjudication processes for straightening out water rights. See DUNBAR, *supra* note 7, at 86-112 (describing codification of numerous requirements).

19. See, e.g., Neuman & Hirokawa, *supra* note 18, at 6. Even though some of the lower 48 states west of the 100th meridian have pockets of significant precipitation, every single one of them also has large arid areas that require irrigation to support agriculture.

20. See Reed D. Benson, *Maintaining the Status Quo: Protecting Established Water Uses in the Pacific Northwest, Despite the Rules of Prior Appropriation*, 28 ENVTL. L. 881, 882 (1998). It is easy to overstate the clarity and certainty of the prior appropriation doctrine. Within its rigid outlines, a good deal of fuzziness often creeps in. See *id.* (listing some of the "clearly established and simple to state" traditional rules of prior appropriation, but noting how states occasionally ignore them); Janet C. Neuman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENVTL. L. 919, 933-46 (1998) [hereinafter *Beneficial Use*] (describing the vague content of the supposedly strict rules prohibiting waste by appropriators).

21. See, e.g., A. Dan Tarlock, *Reconnecting Property Rights to Watersheds*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 69, 88-90 (2000) (arguing that "for over two centuries, land and water law has functioned to detach property rights from specific landscapes and, thus, has contributed to landscape

To address the prior appropriation doctrine's failings, the western states have added provisions to their already-extensive water codes. Reforms include a variety of measures to restore and protect instream flows, to curb excessive water use, to reverse groundwater overdraft and surface water over-appropriation, and to address damage done to aquatic ecosystems by over one hundred years of aggressive water development and consumptive water use.<sup>23</sup>

The changes in the riparian and prior appropriation doctrines have brought western and eastern water management closer together.<sup>24</sup> However, the 100th meridian dividing the relatively wet eastern states from the mostly arid western states, though perhaps not as bright a line as it once was, is still an important physical and legal divide. This line on maps happens to coincide with the zone where average precipitation drops below about 20 inches annually and where irrigation is necessary to support farming.<sup>25</sup> The 100th meridian also represents the original dividing line between riparian

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degradation"); Wilkinson, *supra* note 17, at 344 ("If unchecked, [prior appropriation] can be the death knell for the streams that it draws dry.").

22. See Robert H. Abrams, *Replacing Riparianism in the Twenty-First Century*, 36 WAYNE L. REV. 93, 96-97 (1989) (discussing the shortcomings of prior appropriation and why it is not the solution to the East's water issues); see also, Olivia S. Choe, Note, *Appurtenancy Reconceptualized: Managing Water in an Era of Scarcity*, 113 YALE L.J. 1909, 1923-29 (2004) (describing the riparian doctrine's indirect protection of streamflows that results from the traditional requirements limiting water use to riparian land, land within the same watershed, or both).

23. See MARC REISNER & SARAH BATES, *OVERTAPPED OASIS: REFORM OR REVOLUTION FOR WESTERN WATER* 111-43 (1990) (discussing the potential for improving irrigation efficiency and laying out recommendations for federal and state governments); see also CHARLES F. WILKINSON, *CROSSING THE NEXT MERIDIAN: LAND, WATER, AND THE FUTURE OF THE WEST* 274-86 (1992) (describing preliminary attempts to reform western water law and policy).

24. See, e.g., George William Sherk, *Meetings of Waters: The Conceptual Confluence of Water Law in the Eastern and Western States*, 5 NAT. RESOURCES & ENV'T 3 (1991) [hereinafter *Meetings of Waters*]. Sherk's article provides an excellent summary of the ways in which riparian and prior appropriation systems have borrowed from each other and have consequently become more alike. "[T]he conceptual confluence of eastern and western water law, driven by consistent environmental and economic circumstances, is gradually producing a system of water laws in which the harsh rigidity of the prior appropriation doctrine is made more flexible, and the useless vagaries of the riparian doctrine are given new definition." *Id.* at 49; see also A. DAN TARLOCK ET AL., *WATER RESOURCE MANAGEMENT: A CASEBOOK IN LAW AND PUBLIC POLICY* 158 (2002) ("Today, riparian law and prior appropriation law have grown together into similar, if not identical, types of administrative systems . . ."). I take exception to these statements to the extent that they suggest that the similarities have swamped the differences. Although both western states and eastern states have some sort of administrative water system now, critical differences remain between the two systems and will persist for some time due to widely divergent climate and history. See *infra* Part II.B.

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

systems of water allocation and states that use prior appropriation.<sup>26</sup> The division is still particularly evident in terms of water marketing.

Markets of one sort or another have played a role in western water allocation for many decades, and this role is on the rise for a variety of reasons.<sup>27</sup> In contrast, water markets have not played a significant part in water allocation east of the Great Plains states.<sup>28</sup> Eastern markets have not developed for two main reasons. As long as there was plenty of water to go around, there was little pressure to move water from one use to another—something that markets can help to accomplish. Also, because laws poorly defined riparian rights for so long and usually limited riparian water to use on riparian lands, what

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26. See, e.g., TARLOCK, *supra* note 7, at 1-1. Professor Joseph Dellapenna, one of the leading experts on eastern water law, uses Kansas City as the reference point for separating the East from the West in water law systems. See, e.g., *Regulated Riparianism*, *supra* note 5, at 9-2. It is true that the prior appropriation doctrine prevails west of Kansas City. However, the 100th meridian itself is a bit further west, essentially slicing off the Oklahoma panhandle. Thus, the Great Plains states from North Dakota to Texas, both of which straddle the meridian, are relatively humid in their eastern halves and arid in their western halves. Most of these Great Plains states originally recognized the riparian doctrine but then switched to prior appropriation systems as settlement moved further west. During a cross-country driving trip some years ago, I watched for signs of the 100th meridian as I passed through North Dakota. Sure enough, I found what I was looking for. Although nearly identical fields of sunflowers lined the road for many miles on both sides of the imaginary line on the map, I started to see sprinklers dotting the fields around Jamestown. The same change—starting with riparianism and adding or turning to prior appropriation—occurred in the Pacific Coast states that are humid along the coast but arid inland over the mountains.

27. See BONNIE COLBY SALIBA & DAVID B. BUSH, *WATER MARKETS IN THEORY AND PRACTICE: MARKET TRANSFERS, WATER VALUES, AND PUBLIC POLICY* 4-7 (1987) (describing western water markets and the increase in water rights transfers); see also CLAY J. LANDRY, *SAVING OUR STREAMS THROUGH WATER MARKETS: A PRACTICAL GUIDE* 4-13 (1998), available at [www.perc.org/publications/guidespractical/save\\_streams.php](http://www.perc.org/publications/guidespractical/save_streams.php) (noting that, since the late 1980s, the Pacific Northwest states have been leaders in encouraging the development of markets for instream uses and that total acquisition of water by lease, purchase, and donation is showing an upward trend). *But see Adapting*, *supra* note 10, at 592 (2004) (contending that, even in appropriative jurisdictions, there is a “dearth of markets”). In fact, many commentators have accurately identified and criticized market barriers in the prior appropriation system. See, e.g., Charles W. Howe, *Protecting Public Values in a Water Market Setting: Improving Water Markets to Increase Economic Efficiency and Equity*, 3 U. DENV. WATER L. REV. 357, 359 (2000) (“In the western United States, one finds some significant barriers to the reallocation of water in general and to water markets in particular.”); Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CAL. L. REV. 671, 726 (1993) (describing legal impediments to water transfers outside of irrigation districts). I myself have said that “there simply is no smoothly functioning market in western water, and never has been.” *Beneficial Use*, *supra* note 20, at 992. By this I meant that there is no true “free market” in water for a number of reasons: administrative permits determine initial water allocations with no price assigned to the water; any transfers of water rights that involve changes in the place and type of use require state approval; and the “no-injury” test, which applies to transfer reviews, creates a property right for other water users by maintaining existing patterns of use. *Id.* at 992-95. However, considerable water marketing takes place in spite of and within the constraints of these barriers, significantly overshadowing eastern water marketing. See generally *Annual Transaction Review*, WATER STRATEGIST, Feb. 2004, at 10-20.

28. *Regulated Riparianism*, *supra* note 5, at 9-34 to 9-40. This is in spite of provisions in the Regulated Riparian Model Code that encourage market transfers of water. *Id.*

was there to buy? However, now that statutory changes have begun to firm up the parameters of some water rights, while also loosening restrictions on the places of use, there is more room for eastern markets to develop. As the East looks to the West for help in managing an increasingly scarce resource, markets are one device attracting interest. Whether western tools will be useful in building Georgia's water plan is ultimately up to Georgians to determine.<sup>29</sup> This Article offers one tool for consideration—using water markets to preserve instream flows. Part I briefly describes the use of markets in the West, particularly streamflow markets, and addresses some of the pros and cons of water marketing. Part II considers the similarities and differences between eastern states like Georgia and the western states where these markets are flourishing. Part III offers some thoughts on what a streamflow market might offer to an eastern state in Georgia's situation.

## I. USING MARKETS TO RESTORE INSTREAM FLOWS IN WESTERN RIVERS

### A. *Western Water Markets: The Evolution of Buying Water for Rivers*

A decade or two ago, new water markets began emerging in the western states. The buyers were looking for water to put back into depleted streams and rivers instead of water to divert and consume. These streamflow markets did not develop spontaneously like springs flowing from the ground but instead merged like a tributary with a meandering, but perennial, market for consumptive uses of water.

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29. The Georgia Legislature considered House Bill 237 in 2003, part of which would have legalized the trading of water permits. Jim Butler, *Stem the Tide of Marketeers: Movement Puts State Money Toward Goal of Private Water Rights*, ATLANTA J. CONST., Oct. 30, 2003, available at 2003 WL 66525702. The proposal faced serious opposition, which eventually defeated it. *Id.*; see also James L. Bross, *Georgia*, in 6 WATERS AND WATER RIGHTS 106-08 (Beck ed., Supp. 2003) (describing extensive debate and controversy over water marketing). However, in spite of the opposition, Georgia has already begun limited experiments with markets. In 2000, the legislature authorized payments to farmers in southern Georgia who irrigate from the Flint River in exchange for agreements by these farmers not to irrigate. O.C.G.A. § 12-5-540 (2000); see also Bross, *supra* note 29, at 107 (discussing the bill and its implementation). Courts could eventually impose some decisions on the State that might influence the debate. Due to the collapse of the interstate compact involving the Apalachicola-Chattahoochee-Flint ("ACF") River System, Georgia may be in for a western-style showdown in the Supreme Court that could result in a court-decreed apportionment of Georgia's share of its interstate rivers. See *infra* Part II.

In the dry intermountain and southwestern states, water and consumptive water rights have been trading hands since the early 1900s.<sup>30</sup> Many of the West's major metropolitan areas would not exist but for water wheeling and dealing because local water supplies are insufficient to support significant populations.<sup>31</sup> For example, Salt Lake City receives an average of about 16 inches of annual precipitation; the Los Angeles and Denver areas receive an average of about 15 inches; Phoenix receives less than 8 inches; and Las Vegas receives only about 4 inches annually.<sup>32</sup> These population centers contain millions of people—many more than local water supplies alone could support.<sup>33</sup>

Water acquisition fueled the western growth engine—water that westerners purchased, “horse-traded,” or (according to some) stole from afar.<sup>34</sup> Even many easterners have heard the tale of Los Angeles and the Owens Valley, if only the partially fictionalized version depicted in the movie *Chinatown*.<sup>35</sup> In the early 20th century, the Los Angeles Water and Power Department purchased land with appurtenant water rights in the Owens Valley northeast of Los Angeles on the eastern slope of the Sierra Nevada.<sup>36</sup> Eventually, the

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30. Cf. SALIBA & BUSH, *supra* note 27, at 35-38.

31. I am not using the term “wheeling” here as a water term but in its colloquial sense.

32. *Table of Average Annual Precipitation and Temperature*, Missouri Botanical Garden Education Division, at <http://www.mobot.org/education/02programsresources/mappingenvironment/mynaturalcommunity/table.htm> (last modified Mar. 11, 2003) (including data compiled from the National Oceanic and Atmospheric Administration between 1961 and 1990).

33. *Fact Sheet: Census 2000 Demographic Profile Highlights*, United States Census Bureau, at [http://factfinder.census.gov/servlet/SAFFacts?\\_sse=on](http://factfinder.census.gov/servlet/SAFFacts?_sse=on) (last visited Feb. 2, 2005) (Los Angeles = 3.6 million; Denver = .5 million; Salt Lake City = .2 million; Las Vegas = .4 million; Phoenix = 1.3 million). These figures are even higher for the total metropolitan areas. For instance, the population of greater Los Angeles is 17 million. See *Encyclopedia: List of Metropolitan Areas by Population*, Nationmaster.com, at <http://www.nationmaster.com/encyclopedia/List-of-metropolitan-areas-by-population> (last updated Oct. 9, 2004) (noting that the “Los Angeles metropolitan area” is the eighth largest in the world). Also, Los Angeles has the largest Metropolitan Statistical Area (“MSA”) in the United States; statisticians use MSAs to calculate the population of a metropolitan area. See *The 100 Largest Metropolitan Statistical Areas (MSAs)*, FCC, at <http://ftp.fcc.gov/cgb/NumberPortability/msas.html> (last updated Nov. 17, 2003) (listing Los Angeles-Long Beach, CA as number one).

34. See, e.g., David H. Getches, *From Askhabad, to Wellton-Mohawk, to Los Angeles: The Drought in Water Policy*, 64 U. COLO. L. REV. 523, 534-41 (1993) (describing the lengths to which Los Angeles has gone to obtain water).

35. See *id.* at 535; CHINATOWN (Paramount Pictures 1974). For an excellent and balanced account of the Los Angeles-Owens Valley story, see WILLIAM L. KAHRL, WATER AND POWER: THE CONFLICT OVER LOS ANGELES' WATER SUPPLY IN THE OWENS VALLEY (1982).

36. See KAHRL, *supra* note 35, at 175-185; see also MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 64-75 (1986). Because California has a hybrid water law system recognizing both riparian and appropriative rights, Los Angeles needed to buy riparian land in the Owens Valley in order to assure rights to the water. See TARLOCK, *supra* note 7, at 1-1. Owens



City acquired enough water rights to effectively control the Owens River and send most of its flow through pipelines and aqueducts over 200 miles southwest to Los Angeles.<sup>37</sup> Deception and secrecy tainted the purchases, but they took the form of a market transaction all the same; the City paid money and in exchange many Owens Valley landowners gave up their water rights.<sup>38</sup>

At that time, the Los Angeles population was only a fraction of what it is today, and the City did not yet need the imported water.<sup>39</sup> However, bringing in the water was part of a larger plan for growth and development in the area.<sup>40</sup> In fact, the officials and business interests promoting the boosterism created a false water crisis to encourage the City's voters to pass a bond measure to pay for the Owens Valley aqueduct project.<sup>41</sup>

Perhaps the Los Angeles-Owens Valley "black hat and white hat" drama is not the most appealing example of a water market since there is some question about how fully-informed and truly willing all the buyers and sellers were. In fact, this story might be enough to scare plenty of southeasterners away from water marketing if they envision Atlanta as the thirsty villain—a sweet-talking Los Angeles with a southern drawl. However, the point is this: Los Angeles needed water to grow, and the City used the market, in part, to get it from other parties. This transaction has enabled millions of gallons of

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Valley was water-rich compared to Los Angeles; even though the area is essentially desert, it receives significant snowmelt from the nearby mountains. KAHRL, *supra* note 35, at 32-33. The early Reclamation Service targeted it for a federal reclamation project, but ultimately the city plan beat the federal plan, in part due to "double dealing" by one of the Reclamation Service employees. *Id.* at 39-68.

37. KAHRL, *supra* note 35, at 47, 63, 75, 79.

38. *Id.* at 39-79. According to Kahrl, accounts of the story are usually one of two extreme opposing versions of a "simplistic political morality play," of which neither version is entirely accurate. *Id.* at xi. Either Los Angeles was the deceitful, powerful villain cheating the innocent locals out of their water, or the Owens Valley residents were "terrorists" interfering with perfectly legal and rational progress in the productive development of Southern California. *Id.* at viii-xi.

39. KAHRL, *supra* note 35, at 2-3, 25. Los Angeles had already begun to bump up against its local supply of water by 1900, but it had grand plans for future growth. *Id.*

40. *Id.*; REISNER, *supra* note 36, at 64-65.

41. KAHRL, *supra* note 35, at 83-88. *Chinatown* fans will remember the scene where private eye Jake Gittes, played by Jack Nicholson, discovers water being released from Los Angeles' reservoirs in the middle of the night to keep water levels low and public concern high. CHINATOWN (Paramount Pictures 1974). Among the boosters behind the aqueduct project were several prominent Los Angeles residents who owned land in the San Fernando Valley just north of the City. KAHRL, *supra* note 35, at 96-99. These landowners had designs for use of the Owens Valley water until the City required it. *Id.* They used the water to irrigate citrus groves and other crops in the Valley, generating tremendous profits, and then made even more money when Los Angeles eventually annexed and developed the land. *Id.* at 96-99, 180-194.

water to flow hundreds of miles for nearly a century, helping to supply a population that now exceeds 17 million people.<sup>42</sup> Indeed, when present-day Los Angeles residents take showers or fill swimming pools, not only do they draw Owens Valley water from their taps and hoses, but they also use water acquired from other distant places using market transactions and other devices.<sup>43</sup>

Denver, Salt Lake City, Las Vegas, and Phoenix have also amassed municipal water supplies that enabled them to grow far beyond the carrying capacity of their local water supplies. Although their stories do not have quite the same intrigue, plot twists, and complex characters as the Los Angeles tale, these cities also used market transactions to obtain the water they needed.<sup>44</sup>

In addition to municipal water transactions, the West also has a long history of other types of water deals.<sup>45</sup> The members of irrigation districts rent and trade water.<sup>46</sup> Farmers and ranchers buy and sell from each other.<sup>47</sup> Cities, farmers, and power companies buy federal reclamation project water.<sup>48</sup> Some level of market activity

42. See *supra* note 33.

43. Tania Soussman, *S. Calif. Advice: Tap Many Sources, Have Backup Plan*, ALBUQUERQUE JOURNAL, June 1, 2003, available at <http://www.abqjournal.com/water/43926news06-01-03.htm> (describing the diversity of sources that Los Angeles uses, including purchases from farmers, importation from Northern California and the Colorado River, groundwater storage, conservation, and desalination). The Metropolitan Water District ("MWD") serving the Los Angeles area is one of many "buyers" in the California water market. Scott Flodin, *Who's Wheeling and Dealing in California Water Market*, SACRAMENTO BEE, available at <http://www.sacbee.com/static/richmedia/pdf/20020714water.pdf> (last modified July 14, 2002). The MWD has "purchas[ed] water from Palo Verde farmers and . . . [aid] water agencies in Kern County millions to store water." *Id.* The MWD has also made a deal with southern California's large Imperial Irrigation District to purchase the District's conserved water. University of California, Berkeley, *Imperial Valley—San Diego Water Transfer Controversy*, Institute of Governmental Studies, at <http://www.igs.berkeley.edu/library/htImperialWaterTransfer2003.html> (last modified Sept. 2004). Of course, not all of southern California's water acquisitions involved market transactions. The prior appropriation doctrine allows long-distance water transportation without the need to purchase either water or land by obtaining a permit. See *Nat'l Audubon Soc'y v. Superior Court of Alpine County*, 658 P.2d 709, 724-25 (Cal. 1983). This is how Los Angeles acquired water from another High Sierras source—Mono Lake. See *id.* at 711, 713 (describing Los Angeles's four permits acquired during the 1940s to take water from Mono Lake tributaries).

44. See, e.g., SALIBA & BUSH, *supra* note 27, at 105-06 (detailing Scottsdale, Arizona's purchase of Planet Ranch to acquire water rights on the Bill Williams River).

45. See Thompson, *supra* note 27; Joseph W. Dellapenna, *The Importance of Getting Names Right: The Myth of Markets for Water*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 317, 324 (2000) [hereinafter *Myth of Markets*]; Richard Roos-Collins, *Voluntary Conveyance of the Right to Receive a Water Supply from the United States Bureau of Reclamation*, 13 ECOLOGY L.Q. 773 (1987).

46. Thompson, *supra* note 27, at 718-19.

47. See LANDRY, *supra* note 27, at 15 (discussing "bulletin boards" for water sales).

48. "Buy" has different meanings to these different groups of customers. The government originally built reclamation projects for the primary purpose of irrigation, and farmers receive project water at

makes sense, given the relative scarcity of water in the western states. Market development is really a simple equation of supply and demand.<sup>49</sup> Where water is scarce, parties are willing to give “up something else of value in order to obtain it. Where water is abundant, there is no reason for anyone to pay to obtain it.”<sup>50</sup>

The more recent genesis of the new instream flow market was also organically western.<sup>51</sup> The very existence of rivers without water is a function of the West’s aridity, its patterns of precipitation, and the doctrine of prior appropriation.<sup>52</sup> The prior appropriation doctrine developed explicitly to reward productive use of what little water is available, thereby encouraging settlement and economic development.<sup>53</sup> Settlers and lawmakers did not consider it productive to leave precious water in the stream.<sup>54</sup> The features of the western landscape and the concomitant structure of water allocation laws and of the water development infrastructure have thus combined forces to deplete and to alter streamflows to such a degree that many streams are bone dry during parts of the year.<sup>55</sup> Dry rivers and upside down hydrographs have in turn wreaked havoc with native species of fish and wildlife, with water quality, with recreation, and with esthetics.<sup>56</sup>

The story of dewatered and otherwise modified western streams appears in lists—not humorous lists like David Letterman’s Top Ten

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highly subsidized prices, sometimes paying only delivery costs. Richard Roos-Collins, *supra* note 45, at 776-77. Municipal and power customers pay non-subsidized rates, and these revenues in turn help cover the irrigation subsidies. *Id.* at 816.

49. SALIBA & BUSH, *supra* note 27, at 11.

50. *Id.*

51. See Christopher H. Furey & Andrew T. Purkey, *Flow Restoration in the Pacific Northwest: Columbian Basin Water Transactions*, THE WATER REPORT, Apr. 15, 2004, at 10; *The Good, the Bad, and the Ugly*, *supra* note \*; Janet C. Neuman & Cheyenne Chapman, *Wading into the Water Market: The First Five Years of the Oregon Water Trust*, 14 J. ENVTL. L. & LITIG. 135 (1999); Zach Willey & Adam Diamant, *Water Marketing in the Northwest: Learning by Doing*, WATER STRATEGIST, Summer 1996, at 1.

52. See REISNER & BATES, *supra* note 23, at 65; WILKINSON, *supra* note 23, at 219-22, 265.

53. Charles F. Wilkinson, *In Memoriam: Prior Appropriation 1848-1991*, 21 ENVTL. L. v, at v, viii, ix (1991) [hereinafter *In Memoriam*]; DUNBAR, *supra* note 7, at 46, 76, 80 (describing beneficial use for irrigation and mining as the central motivation of prior appropriation).

54. *In Memoriam*, *supra* note 53, at xvii; DUNBAR, *supra* note 7, at 214-17.

55. See, e.g., WATER WATCH, LEGALLY DRY: HOW OREGON’S WATER LAWS FAIL OUR RIVERS, available at <http://www.waterwatch.org/PDFs/legallydry.PDF> (last modified Oct. 18, 2004).

56. See NORTHWEST POWER AND CONSERVATION COUNCIL, RETURN TO THE RIVER 8-9 (2000), available at <http://www.nwcouncil.org/library/return/2000-12.htm>; W. WATER POLICY REVIEW ADVISORY COMM’N, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY 2-12 to 2-14 (1998), available at <http://www.waterwest.org/reading/readingfiles/fedreport.htm> [hereinafter WATER IN THE WEST].

but much more distressing indices: over 100 species of native fish already extinct or listed as endangered or threatened;<sup>57</sup> major rivers like the Colorado that no longer make it to the ocean;<sup>58</sup> thousands of miles of stream segments on the 303(d) “water quality limited” list under the Clean Water Act, many for flow limitations;<sup>59</sup> and repeat appearances of western rivers on a national conservation group’s annual list of the ten most endangered rivers.<sup>60</sup>

In spite of these distressing facts, all the king’s horses and all the king’s men haven’t been able to put the rivers back together again. Governmental agencies and environmental groups sue to force restoration under both state and federal law.<sup>61</sup> Water users counter with lawsuits of their own, either resisting regulation with cries of unconstitutional takings<sup>62</sup> or insisting that the environmental damage is not so bad.<sup>63</sup> Turning to the market to put water back instream is an attempt to use voluntary transactions to accomplish what regulation and litigation have not been able to do—rewater the streams.

The streamflow market began developing in the 1980s with a few initial transactions by The Environmental Defense Fund and The

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57. *Threatened or Endangered Species System (TESS): Summary of Listed Species: Species and Recovery Plans as of 01/17/2005*, U.S. Fish & Wildlife Service, at [http://ecos.fws.gov/tess\\_public/TESSBoxscore](http://ecos.fws.gov/tess_public/TESSBoxscore) (last visited Oct. 4, 2004) (listing a total of 126 threatened or endangered fish species).

58. PHILIP L. FRADKIN, *A RIVER NO MORE: THE COLORADO RIVER AND THE WEST* 319-23 (1984); Robert Jerome Glennon & Peter W. Culp, *The Last Green Lagoon: How and Why the Bush Administration Should Save the Colorado River Delta*, 28 *ECOLOGY L.Q.* 903, 905 (2002).

59. See, e.g., OREGON DEP’T OF ENVTL. QUALITY, *THE 2002 303(D) LIST OF IMPAIRED WATERS IN OREGON* (2003), available at [http://www.deq.state.or.us/wq/wqfact/Final2002\\_303\(d\)list.pdf](http://www.deq.state.or.us/wq/wqfact/Final2002_303(d)list.pdf).

60. See, e.g., AMERICAN RIVERS, *AMERICA’S MOST ENDANGERED RIVERS OF 2004: TEN RIVERS REACHING THE CROSSROADS IN THE NEXT 12 MONTHS* 12 (2004), available at <http://www.americanrivers.org/site/DocServer/2004report.pdf?docID=321> (last visited Mar. 9, 2005). Eastern rivers also make the list but usually for water quality problems rather than quantity problems. *Id.* at 20-21, 32-33 (detailing problems with the Tennessee and Mississippi Rivers respectively); see also U.S. DEP’T OF THE INTERIOR, *WATER 2025: PREVENTING CRISIS AND CONFLICT IN THE WEST* 9 (2003), available at <http://www.doi.gov/water2025/Water2025.pdf> [hereinafter *WATER 2025*] (showing a map of western states where water supply crises may occur by 2025).

61. See, e.g., *County of Okanogan v. Nat’l Marine Fisheries Serv.*, 347 F.3d 1081, 1082 (9th Cir. 2003) (upholding Forest Service authority to set instream flow standards to protect endangered fish species).

62. See, e.g., *Tulare Lake Basin Water Storage Dist. v. United States*, 49 Fed. Cl. 313, 314 (2001) (involving an irrigation district suing the Bureau of Reclamation for unconstitutional taking by decreasing water deliveries to protect endangered species).

63. See, e.g., *Alsea Valley Alliance v. Evans*, 161 F. Supp. 2d 1154, 1159-63 (D. Or. 2001) (involving a challenge to the National Marine Fisheries Services “threatened” listing of coho salmon as arbitrary and capricious because it included only “naturally spawned” and not “hatchery spawned” coho and holding that counting hatchery fish would make the listing unwarranted).

Nature Conservancy.<sup>64</sup> In 1987, Oregon became the first state to create actual instream water rights.<sup>65</sup> A 1987 instream water rights law paved the way for a market for instream flow restoration by authorizing the purchase, lease, or gift “of all or a portion of an existing water right for conversion to an in-stream water right” while retaining the original right’s priority date.<sup>66</sup> This type of conversion provision is the key to streamflow restoration and protection in prior appropriation states because only senior priority dates can assure protection of instream flows in dry seasons (precisely the times and places that struggling fish populations need water) on over-appropriated streams.<sup>67</sup> Thus, Oregon’s law created the legal framework for a water market to restore instream flows, and other states followed suit.<sup>68</sup> In 1993, the Oregon Water Trust became the first water trust in the country with the mission of using Oregon’s instream water rights law to acquire water rights in the market and then to convert these rights to instream flows.<sup>69</sup>

The Oregon Water Trust borrowed from the land trust strategy of buying what you want to protect. The idea caught on around the West; water trusts have since formed in Colorado,<sup>70</sup> Texas,<sup>71</sup> New Mexico,<sup>72</sup> the Great Basin region,<sup>73</sup> Montana,<sup>74</sup> and Washington.<sup>75</sup> The Oregon, Washington, and Montana Water Trusts also actively

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64. Willey & Diamant, *supra* note 51.

65. OR. REV. STAT. §§ 537.332-.360 (2003); see Neuman & Chapman, *supra* note 51, at 137.

66. OR. REV. STAT. § 537.348(1) (2003).

67. See Janet C. Neuman, *Implementing Instream Flow Protections in Prior Appropriation Systems: Continuing Challenges*, 7 RIVERS 345, 349-50 [hereinafter *Implementing Instream Flow Protections*] (discussing the importance of senior rights to flow restoration).

68. See, e.g., WASH. REV. CODE § 90.22.010 (2005); COLO. REV. STAT. § 37-92-102(3) (2005).

69. Neuman & Chapman, *supra* note 51, at 135-36, 138-40; *The Good, the Bad, and the Ugly*, *supra* note \*. I have been fortunate to be the President of the Oregon Water Trust since we began the work of acquiring water rights in late 1993. This experience is the basis for my observations on water marketing.

70. *Introducing the Colorado Water Trust*, Colorado Water Trust, at <http://www.coloradowatertrust.org/> (last modified May 5, 2004).

71. *Texas Water Trust*, Texas Water Development Board, at <http://www.twdb.state.tx.us/assistance/WaterBank/wtrust.asp> (last modified Feb. 2, 2005).

72. *The Water Bank Trust*, WaterBank, at <http://www.waterbank.com/WaterBankTrust/waterbanktrust.html> (last modified Apr. 17, 2004).

73. See *Contact Information for Member Land Trusts*, Land Trust Alliance, at <http://www.lta.org/findlandtrust/UT2.htm> (last modified Jan. 14, 2004). The Great Basin Land and Water Trust works primarily in the Truckee and Carson River Systems. E-mail from Aaron Peskin, President, The Great Basin Land and Water Trust, to Janet C. Neuman, Professor of Law, Lewis and Clark Law School (June 23, 2004) (on file with author).

74. Montana Water Trust, at <http://www.montanawatertrust.org/> (last modified Nov. 29, 2004).

75. Washington Water Trust, at <http://www.thewatertrust.org/> (last modified Jan. 20, 2005).

participate in the Columbia Basin Water Transactions Program.<sup>76</sup> The Bonneville Power Administration created this regional program to fund innovative water transactions with the goal of mitigating the fish and wildlife impacts of the Columbia River Power system by restoring habitats for threatened and endangered fish populations.<sup>77</sup> The buyers in the growing western streamflow market now include both water and land trusts, other non-profit conservation groups, federal and state governmental agencies, and water users seeking to mitigate the impacts of their water use.<sup>78</sup>

*B. Positive and Negative Impacts of Marketing Water*<sup>79</sup>

As the President of the Oregon Water Trust during its first ten years, I have had an inside view of water marketing. Granted, my experience only includes a narrow niche—acquiring water for streamflow restoration in Oregon, a prior appropriation state. However, this direct participation is the source of some general observations about the positive and negative impacts of water markets.

Allowing water uses to change through market transactions can avoid the significant costs of new water development projects. Market transactions can also help meet new water demands voluntarily rather than through litigation or contentious regulation. The market can help to mitigate the environmental impacts of past water development and of long-term consumptive use of water.

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76. *The Program*, Columbia Basin Water Transactions Program: Finding Balance in the Basin, at <http://cbwtp.org/jsp/cbwtp/program.jsp> (last modified Feb. 2, 2005).

77. *Id.* The program implements Action 151 under the National Marine Fisheries Service (now National Oceanic and Atmospheric Administration (“NOAA”) fisheries) 2000 Biological Opinion on the Operation of the Federal Columbia River Power System and also implements Implementation Provision A.8 of the Northwest Power Planning Council’s Fish and Wildlife Program, both of which suggest that the Bonneville Power Administration establish a program to use innovative market devices to acquire water for improving tributary habitat to help struggling fish populations. *Id.*; *Fish and Wildlife Program: Implementation Provisions*, Northwest Power and Conservation Council, at <http://www.nwcouncil.org/library/2000/2000-19/implementation.htm#a8> (last modified July 25, 2002); NAT’L OCEANIC AND ATMOSPHERIC ADMIN., U.S. DEP’T COMMERCE, 2000 FEDERAL COLUMBIA RIVER SYSTEM BIOLOGICAL OPINION, at F-16 (2000), available at <http://www.nwr.noaa.gov/1hydropl/hydroweb/docs/Final/table.pdf>.

78. See *The Good, the Bad, and the Ugly*, *supra* note \*.

79. For a more detailed discussion of these observations, see *The Good, the Bad, and the Ugly*, *supra* note \*.

Buying water for streamflows can also produce direct environmental, economic, and social benefits.

However, water markets also have the potential to produce negative impacts. Treating water as just another commodity for participants to trade in the marketplace rather than treating it as a public good with significant non-economic value is problematic.<sup>80</sup> Water marketing can cause water to flow to the users with the most money to the detriment of other uses that are certainly “valuable” but have less purchasing power. Suggesting that market forces should entirely, or even partially, determine water allocation creates tremendous political conflict between water use constituencies—particularly between urban and rural interests or between new and traditional water uses. The remainder of this Section describes these positive and negative impacts in more detail. I conclude that, at least in the niche market with which I am familiar, regulated water markets can be useful tools to allocate water among voluntary alternative demands. Parts II and III will explore how this experience might be of some use in the East.

### *1. Avoiding Costs of New Water Development*

Letting water markets move water from one use to another avoids the tremendous costs associated with new water development. These avoided economic costs include the following: construction costs of new storage projects and of transportation and delivery systems; significant permitting and regulatory costs; and environmental mitigation requirements. The cost of buying water from existing users and then transferring this water to new demands is often a fraction of the cost of finding and developing “new” water.

Recent figures for western water supply project construction and related costs appear in a Senate Report on the Reclamation Projects Authorization and Adjustment Act of 1990.<sup>81</sup> Congress authorized \$3 million (in 1989 values) for the Lake Meredith Salinity Control Project in Texas and New Mexico, and estimated the cost of the

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80. *Myth of Markets*, *supra* note 45, at 329-30. See generally Joseph L. Sax, *The Constitution, Property Rights and the Future of Water Law*, 61 U. COLO. L. REV. 257 (1990) (discussing the importance of water as a public resource in addition to its importance as a private commodity).

81. S. REP. NO. 101-499 (1990).

Central Arizona Project at \$4.7 billion in 1993.<sup>82</sup> As of 1995, the Bureau was estimating that the Animas La Plata Project would cost \$710 million.<sup>83</sup>

Although the East does not share the West's history of irrigation reclamation projects, eastern water supply projects are also very expensive and hard to fund in the current economy. In 2000, estimates put the cost of the Comprehensive Everglades Restoration Plan at \$7.8 billion over 30 years.<sup>84</sup> The Plan charges the United States Army Corps of Engineers ("the Corps") with environmental restoration to mitigate engineering projects that drained wetlands and channeled water movement; the Corps is also mandated to improve water quality, provide municipal water supply, and accomplish flood control.<sup>85</sup>

However, the days of large federal water supply projects are over, partly due to these tremendous economic costs.<sup>86</sup> Most states will be hard pressed to fund large storage projects as well.<sup>87</sup> Municipal water supply projects will be more and more expensive, due to increasing construction costs, environmental mitigation costs, and expensive

82. *Id.* at tit. III, § 305; BUREAU OF RECLAMATION, U.S. GEN. ACCOUNTING OFFICE, REP. NO. T-RCED-94-92, INFORMATION ON THE FEDERAL FINANCIAL COMMITMENT AND REPAYMENT STATUS OF THE CENTRAL ARIZONA PROJECT 1, 3 (1993) (testimony of James Duffus, II, Division Director, Bureau of Reclamation, before the House Subcommittee on Oversight and Investigations, Committee on Natural Resources on December 10, 1993). Historically, reclamation projects were primarily for irrigation and hydropower purposes (to help pay for the irrigation subsidies); the Central Arizona Project was also partly an urban water supply project. *Id.* at 2.

83. RES., CMTY., & ECON. DEV. DIV., U.S. GEN. ACCOUNTING OFFICE, REP. NO. RCED-96-1, ANIMAS-LA PLATA PROJECT: STATUS AND LEGISLATIVE FRAMEWORK 8-12 (1995), available at <http://frwebgate.access.gpo.gov/cgi-bin/useftp.cgi?IPaddress=162.140.64.21&filename=rc96001.pdf&directory=/diskb/wais/data/gao> (report to Senator Bill Bradley, November 1995). This project is also quite controversial. See *Four Southwest Rivers Named Among the Nation's Most Endangered and Threatened Rivers*, U.S. NEWSWIRE, Apr. 16, 1997, available at 1997 WL 5712057 (noting that this project has substantial economic and environmental consequences).

84. The Comprehensive Everglades Restoration Plan (CERP), [http://www.evergladesplan.org/about/rest\\_plan.cfm](http://www.evergladesplan.org/about/rest_plan.cfm) (last updated June 2002).

85. *Id.*

86. WATER IN THE WEST, *supra* note 56, at 5-23 to 5-28; CONG. BUDGET OFFICE, U.S. CONG., WATER USE CONFLICTS IN THE WEST: IMPLICATIONS OF REFORMING THE BUREAU OF RECLAMATION'S WATER SUPPLY POLICIES (1997) [hereinafter CBO].

87. A recent working draft of part of the California State Water Plan estimated costs of \$2.9 to \$5.7 billion for surface storage projects to provide between .4 and 1.0 million acre feet of water. See CAL. DEP'T WATER RES., CALIFORNIA WATER PLAN UPDATE 2004 ADVISORY COMMITTEE REVIEW DRAFT 1-13, (CHAPTER 1: PLAN OVERVIEW, 1-PAGE IMPLEMENTATION AND INVESTMENT GUIDE), available at [http://www.waterplan.water.ca.gov/b160/B160.Draft.June.7.2004/Vol\\_1/Chap1%20\\_06-07-2004\\_.pdf](http://www.waterplan.water.ca.gov/b160/B160.Draft.June.7.2004/Vol_1/Chap1%20_06-07-2004_.pdf) (June 7, 2004) [hereinafter CALIFORNIA WATER PLAN].



drinking water treatment requirements.<sup>88</sup> Even if the funding is available, large surface water storage projects are no longer a likely source for significant future water supply because of their substantial and detrimental environmental impacts.<sup>89</sup>

Innovative new sources of supply, other than large dams and reservoirs, are also very expensive. For example, estimated costs to desalinate ocean water for drinking water supplies in southern California range from \$900 to \$2500 per acre-foot.<sup>90</sup> A \$108 million plant to desalinate 25 million gallons of water a day in Florida went into bankruptcy just after completing construction.<sup>91</sup> Groundwater storage and recycling or treatment and reuse of water are also costly.<sup>92</sup>

Market transfers begin to look like one of the most economical sources of new water supply for both municipalities and instream flow restoration.<sup>93</sup> A California water district compared cost estimates of \$1800 to \$2700 per acre foot for desalinization and \$1300 per acre foot for recycling against \$300 per acre foot for water banking and less than \$300 per acre foot for long-term water transfers.<sup>94</sup> Since western agricultural water users use almost 80% of the water (often to produce low value crops) while paying bargain rates for that water, it is easy to see why transfers from agriculture can be a viable, attractive, and economically efficient strategy to find

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88. In fact, New York City has already turned to the market for future water supplies—albeit the real estate market rather than a per se water market. The City is buying land, conservation easements, and development rights to protect the Catskills Mountain watershed that supplies some of its drinking water since this alternative is cheaper than building a filtration plant to meet EPA water quality standards. Barton H. Thompson, Jr., *People or Prairie Chickens: The Uncertain Search for Optimal Biodiversity*, 51 STAN. L. REV. 1127, 1174 (1999).

89. WATER IN THE WEST, *supra* note 56, at 5-35 to 5-38.

90. CBO, *supra* note 86, at 32 (citing 1 METRO. WATER DIST. OF S. CAL., REP. NO. 1107, SOUTHERN CALIFORNIA'S INTEGRATED WATER RESOURCES PLAN 3-12 (1996)).

91. *Contractor Files for Chapter 11 on Tampa Desalination Project*, MCGRAW HILL CONSTRUCTION: ENGINEERING NEWS REC., Nov. 10, 2003, available at <http://enr.construction.com/news/bizlabor/archives/03110.asp>.

92. See CALIFORNIA WATER PLAN, *supra* note 87 (estimating costs of \$1.3 billion and up for .5 to 1.5 million acre feet of water in groundwater storage and \$6 to \$7 billion for recycling .9 to 1.1 million acre feet of municipal water).

93. See CBO, *supra* note 86, at ix-x. In fact, some years ago, some commentators dubbed the coming phase of water supply development the "era of water reallocation." Steven J. Shupe et al., *Western Water Rights: The Era of Reallocation*, 29 NAT. RESOURCES J. 413, 414 (1989).

94. Integrated Water Res. Plan Project Team, Santa Clara Valley Water Dist., *Integrated Water Resources Plan Final Report* app. H tbl.H-1 (1997) (discussing the Santa Clara Valley Water District's 1997 Integrated Water Resource Plan).

needed water.<sup>95</sup> Although the pressures for reallocation are currently not as great in the East, demands for water are increasing everywhere.<sup>96</sup> Meeting demand for water through market transactions can avoid the significant monetary costs of new supply development and the often unacceptable environmental and social impacts of this development.

## 2. *Opting for Voluntary Transactions Rather than Regulation or Litigation*

Demands for water are growing across the country and around the world. Rapid urban growth and environmental restoration compete for this often overtaxed resource.<sup>97</sup> Tremendous efficiency improvements of existing water use practices could free up water for these demands.<sup>98</sup> However, water users resist change, especially when litigation or regulation forces the improvements. Allowing water markets to develop and flourish is one way of “creating” new water.<sup>99</sup>

The following example illustrates the possibilities of finding water using the market. Although this particular example is decidedly western, the point that it demonstrates is not geographically unique. Assume that a cattle rancher in southern Oregon holds a water right that allows him to divert approximately 1 cubic foot per second (“cfs”) from a small stream for stock watering and other uses. By late summer, the rancher diverts nearly the entire flow of the stream to water his 50 cattle. His crude makeshift diversion structure takes more water than he actually needs, and the lack of water in the stream interrupts fish passage. One cfs equals almost 650,000 gallons a day,

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95. See CBO, *supra* note 86, at x.

96. See Lawrence J. MacDonnell & Teresa A. Rice, *Moving Agricultural Water to Cities: The Search for Smarter Approaches*, 2 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 27, 27-28 (1995).

97. See THE WORLD'S WATER 2004-2005: THE BIENNIAL REPORT ON FRESHWATER RESOURCES (Peter H. Gleick ed., 2004) [hereinafter THE WORLD'S WATER]; see also WATER IN THE WEST, *supra* note 56, at 1-1 to 1-2.

98. WATER 2025, *supra* note 60, at 3, 12, 14-15; see also NAT'L RESEARCH COUNCIL, A NEW ERA FOR IRRIGATION 65-66 (1996) (noting potential for significant efficiency improvements in agricultural water use); THE WORLD'S WATER, *supra* note 97, at chs. 5, 6 (discussing urban water conservation potential).

99. See CBO, *supra* note 86, at ix-x.

which comes to almost 13,000 gallons a day for each cow—far beyond what even the thirstiest cow requires.<sup>100</sup>

This rancher is vulnerable to regulation for wasteful water use.<sup>101</sup> He could also face litigation since fish runs all over the West appear on endangered or threatened species lists.<sup>102</sup> An environmental organization or even the federal government might sue the rancher for an illegal “take” of the species.<sup>103</sup> The rancher might counter that any compelled reduction or change in the way he has historically used water is an unconstitutional taking.<sup>104</sup>

But suppose someone offers to help the rancher pay for a conservation project to make his use more efficient. Suppose this person even offers a cash payment to sweeten the pot. Flowing streams and healthy fish habitats have their own economic value, and numerous parties are willing to pay for these values. These buyers want something that a potential seller has—excess water. The water would likely be more valuable instream than it would be seeping into the ground or evaporating from a stockpond. If the buyer can offer the seller an attractive enough price for part of his water, the situation is ripe for a market transaction that could produce a “win-win” outcome. The rancher gets a more efficient water diversion and delivery system and perhaps gets more cash in his pocket. A more efficient system improves productivity by providing better control over the water. Restored streamflows produce both intangible and tangible benefits—an esthetically pleasing, flowing stream instead of a dry streambed, and sufficient minimum flows to maintain fish and wildlife habitat. Flowing streams and healthy fisheries generate tangible economic benefits through recreation, tourism, sport and commercial fishing, amenity values, and pollution absorption.

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100. A more reasonable amount might be closer to 15 to 35 gallons per day per cow. *See Stock Watering*, The Small Farm Resource, at [www.farminfo.org/property/stckwtrg-m.htm](http://www.farminfo.org/property/stckwtrg-m.htm) (last modified Nov. 16, 2002) (containing the disclaimer: “The information contained in these web pages has not been verified for correctness. Some of the information contained herein is hearsay and may not be correct. Use the information from these pages only at your own risk!”).

101. *Beneficial Use*, *supra* note 20, at 920. It is black letter law in the West that “[b]eneficial use, without waste, is the basis, measure, and limit of a water right” and that wasteful use of water is therefore illegal. *Id.* at 920. It is also unfortunately true that the waste prohibition is fuzzy in definition and rare in enforcement. *See id.* at 928-29. However, pressure is mounting for water users to become more efficient. *See WATER 2025*, *supra* note 60, at 12.

102. *See supra* text accompanying note 57.

103. *See, e.g.*, *United States v. Glenn-Colusa Irrigation Dist.*, 788 F.Supp. 1126 (E.D. Cal. 1992).

104. *See, e.g.*, *Tulare Lake Basin Water Storage Dist. v. United States*, 49 Fed. Cl. 313, 314 (2001).

Moreover, willing sellers and willing buyers can achieve these results voluntarily rather than through contentious regulation or litigation.

This example applies across the western states and to a lesser degree in the East. Agricultural uses still account for nearly 80% of total western water use.<sup>105</sup> In the East, agriculture uses a much smaller percentage—about 24%—but the proportion is increasing.<sup>106</sup> In spite of significant efficiency improvements in some segments of the industry, average efficiency still hovers around 50% to 60% in the western states.<sup>107</sup> In the eastern states, irrigation efficiencies depend on the type of irrigation system used, but flood irrigation efficiencies are similar to the western average.<sup>108</sup> The efficiency improvements have primarily come in larger agribusiness operations or in high-value crop sectors that can recoup the costs of conservation improvements.<sup>109</sup> Smaller operations, especially those with low profit margins like operations using water primarily for forage crops, feel they cannot afford to use water differently.<sup>110</sup> It is often these water users who divert large amounts of water from small streams where small transfers could make a big difference.

### *3. Mitigating the Environmental Impacts of Past Water Use Practices and Reaping the Benefits of Restored Streamflows*

A tremendously positive impact of using water markets to transfer water back instream is the prospect of producing significant environmental, economic, and social benefits from restored streamflows. Indeed, this is the very reason for the emergence of western streamflow markets.<sup>111</sup> Many commentators have documented the detrimental impacts of more than a century of

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105. Todd G. Glass, *The 1992 Omnibus Water Act: Three Rubrics of Reclamation Reform*, 22 *ECOLOGY L.Q.* 143, 145 (1995).

106. See CBO, *supra* note 86, at 6.

107. See *id.*

108. See WATER 2025, *supra* note 60, at 14; see also NOEL GOLLEHON ET AL., 2.1 AGRICULTURAL RESOURCES AND ENVIRONMENTAL INDICATORS: WATER USE AND PRICING IN AGRICULTURE 3, Fig. 2.1.2 (2002), available at [http://www.ers.usda.gov/publications/arei/ah722/arei2\\_1/AREIch2\\_1watuspricing.pdf](http://www.ers.usda.gov/publications/arei/ah722/arei2_1/AREIch2_1watuspricing.pdf); MARCEL AILLERY & NOEL GOLLEHON, 2.2 AGRICULTURAL RESOURCES AND ECONOMIC INDICATORS: IRRIGATION WATER MANAGEMENT 2-3, 7-8 (2003), available at [http://www.ers.usda.gov/publications/arei/ah722/arei2\\_2/arei2\\_2irrigationwatermgmt.pdf](http://www.ers.usda.gov/publications/arei/ah722/arei2_2/arei2_2irrigationwatermgmt.pdf).

109. AILLERY & GOLLEHON, *supra* note 108, at 13-14.

110. *Id.* at 16-17.

111. See Neuman & Chapman, *supra* note 51, at 135-37.

aggressive dam building, diversion to the point of over-appropriation, and wasteful consumptive use of limited water in the arid West.<sup>112</sup> Buying some of that water back and putting it back instream can help rectify some of those harms and can also mitigate impacts of new water development projects.

In some instances, laws mandate restoration or mitigation, and they authorize market transactions as one device for accomplishing the restoration.<sup>113</sup> Water users also employ market transfers proactively to accomplish restoration goals in hopes of avoiding water use regulation once endangered species or water quality problems have matured. Many of the conservation buyers doing water deals in the West operate in this way; for instance, buyers might work preventively to restore water for fish habitats before a crisis exists.<sup>114</sup> An example from the western streamflow market illustrates the benefits that come even with fairly small water transactions.<sup>115</sup>

Beaver Creek is a small stream in southwestern Oregon.<sup>116</sup> The creek is a tributary of the Applegate River, which in turn is a tributary of the Rogue River.<sup>117</sup> The Rogue River begins near the crest of the Cascade Mountains at Crater Lake and flows about 200 miles to the Pacific Ocean.<sup>118</sup> The Rogue System contains “the most genetically diverse anadromous fish stocks on the Oregon and Washington coasts;” all of these stocks were listed or are under consideration for listing under the Endangered Species Act.<sup>119</sup> Beaver Creek appears

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112. See, e.g., David Getches, *Water Wrongs: Why Can't We Get It Right the First Time?* 34 ENVTL. L. 1, 2-3 (2004).

113. See, e.g., Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, § 301, 106 Stat. 4600, 4625 (1992) (adding fish and wildlife restoration to irrigation and power production as primary purposes of many reclamation projects); § 3406 (listing the Central Valley Project Improvement Act and authorizing water purchases from irrigators to meet a target of 800,000 acre feet for increased streamflows).

114. Neuman & Chapman, *supra* note 51, at 142-45.

115. See *infra* Part III.

116. OREGON ATLAS & GAZETTEER 19 (DeLorme 3d ed. 1998).

117. *Id.* at 19, 27.

118. *Id.* at 17, 19-20, 25-29; see *Projects: Rogue River Basin*, Oregon Water Trust, at <http://www.owt.org/basin-rogue.html> (last modified May 14, 2004) [hereinafter *Rogue River*].

119. *Rogue River*, *supra* note 118. However, the status of listed fish species in Oregon is now in limbo as a result of recent litigation. On June 7, 2004, the Ninth Circuit Court of Appeals rejected a request for a rehearing in the case of *Alsea Valley Alliance v. Department of Commerce*, thereby letting stand an Oregon Federal District Court decision that had invalidated the government's listing of the Oregon coastal coho. 358 F.3d 1181 (9th Cir. 2004). The lower court found the agency's separation of hatchery fish and wild fish for purposes of determining the level of wild fish endangerment was unjustified because NOAA had not sufficiently shown that the two groups were genetically distinct. *Alsea Valley Alliance v. Evans*, 143 F. Supp. 2d 1214, 1216-17 (D. Or. 2001). However, the Ninth

on the American Fisheries Society's "Aquatic Diversity Area" list for species richness, but also appears on the state's 303d List of streams for water quality problems.<sup>120</sup>

For years, a rancher had diverted substantial flows from the Creek to irrigate a parcel of grass pasture and alfalfa that was a considerable distance from Beaver Creek, but adjacent to the Applegate River (upstream from the Creek's confluence with the River). The rancher's 1876 water right was the most senior on Beaver Creek, and by the end of the season, his diversion took most of the Creek's remaining live stream flow. The diversion structure (which included a dam and long irrigation ditch) interfered with fish passage, lost considerable water during delivery, and required continual maintenance by the user. A 1997 flood had damaged the diversion structure, destroying a recently installed fish ladder that attempted to get fish past the dam, and the damage also caused further problems for the rancher. Meanwhile, the flows in the Applegate River could support diversion of the same amount of water as that taken from Beaver Creek without causing the equivalent ecological harm. Better yet, the diversion from the River was directly adjacent to the rancher's pasture, which eliminated the need for the dam on Beaver Creek and the long, inefficient diversion ditch.

The Water Trust negotiated a "source switch" transaction with the water user. Applegate Lake, a small reservoir at the head of the Applegate River, became the source for the water right with a new point of diversion on the River right next to the rancher's pasture. Complete removal of the Beaver Creek diversion dam allowed effective fish passage for the first time in decades. The Trust paid the rancher \$12,700 for approximately 168.7 acre feet of water, which translated to about \$500 per acre of land and \$70 per acre foot of

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Circuit's decision did not review the merits of the lower court's reasoning, instead dismissing the appeal for lack of jurisdiction because the intervenor conservation groups brought it instead of the government. 358 F.3d at 1185. Meanwhile, the agency has reworked its listing policy regarding hatchery fish. The policy was out for public comment at the time of publication, so the list does not necessarily reflect the ultimate status of the numerous previously listed fish species in Oregon and elsewhere. *See also* Barry Espenson, *Court Officially Takes Oregon Coastal Coho Off ESA List*, COLUMBIA BASIN FISH & WILDLIFE NEWS BULL., June 19, 2004, available at <http://klamathbasin.crisis.org/esa/esacohoooffesa061804.htm>.

120. The description of this project is from the *Oregon Water Trust Staff Acquisition Summary: Beaver Creek Project*. Oregon Water Trust, Oregon Water Trust Staff Acquisition Summary: Beaver Creek Project (Jan. 4, 2002) (on file with the Georgia State University Law Review).

water. This cash payment covered the rancher's annual assessment for the storage right in the reservoir and his pumping costs for a ten year period. The rancher also ended up with a much more efficient supply and delivery system.

The end result of the Beaver Creek deal is an 1876 instream water right in the Creek for .4 cfs, protectable from the historic point of diversion about 2.5 miles up the Creek to the mouth of the Creek at the confluence with the Applegate. Though the water right is small, the flow is large enough and senior enough to assure streamflow in late summer, to provide a late summer rearing habitat for fish, and to improve water quality.

This example shows that water market transactions can have the positive impacts of supplying new water while avoiding extensive construction, environmental, and social costs. Water deals, particularly those that restore instream flows, can also mitigate past environmental damage from water development and use. Furthermore, streamflows in over-appropriated streams can create their own direct environmental, economic, and social benefits. However, not all of the consequences of subjecting water to market forces are positive. There are possible negative impacts as well. In the West, water users raise concerns about disrupting existing water use regimes, bringing unwanted scrutiny to existing water uses and management, and forcing changes in water use due to irresistible market forces—for instance, sales that take agricultural land out of production.<sup>121</sup> The first two concerns are uniquely western. They grow out of the complex, interrelated, seniority-based western system that firmly entrenches historical uses even if they are very inefficient; one reason inefficiency is tolerated is because one water user's return flow is another user's water supply.<sup>122</sup> The last impact—that markets will affect water allocation or distribution in some detrimental way—concerns the East as well.

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121. See *The Good, the Bad, and the Ugly*, *supra* note \*, at 825-36.

122. *Id.* at 837.

#### 4. *Concern About Allowing Water to Flow to Money to the Detriment of Other Important Uses*

A cynical western expression is that “water flows uphill to money.” In other words, water markets will allow those with the most money to control the water to the detriment of uses that have high non-monetary value but do not command as high an economic price.

The fear is that water markets will result in inequitable or undesirable water allocation because water uses that are valuable in non-monetary terms will not be able to compete against high economic value uses in the market.<sup>123</sup> This is a legitimate concern, but it “proves too much” because it ignores some salient facts. First, a market does not necessarily equate to a totally unregulated market. In fact, regulation exists in all U.S. markets to some degree. For instance, unchecked market forces would likely turn historic buildings into high rises, but regulation can protect historic, esthetic, and architectural values that the market might not fully recognize. In the context of water, regulation can protect basins of origin, valuable farmland, public trust uses, and other values from market forces. A regulated market can require recognition of externalities, something current water law does only in limited circumstances—particularly in the West.<sup>124</sup>

One particular manifestation of the fear of mixing money and water is that urban areas, or even conservation buyers, will buy up all the water from farmers and ranchers.<sup>125</sup> This concern sidesteps the

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123. See *Myth of Markets*, *supra* note 45, at 357-58.

124. See *Meetings of Waters*, *supra* note 24, at 3.

125. See *The Good, the Bad, and the Ugly*, *supra* note \*. Farmers and ranchers who depend on irrigation (perhaps following in the footsteps of their parents, grandparents, and great-grandparents) argue passionately that water belongs on the land and thus, both greedy cities and proponents of instream flows are the enemy of agriculture. *Id.* They contend that removing water from the land will ultimately take agricultural land out of production, destroying both the agricultural sector of the economy and the country’s food-production self-sufficiency. See *id.* at 831; WATER IN THE WEST, *supra* note 56, app. B at O’Toole-4; see also Ian Hoffman, *NM State Officials Say Leaving Water in Rivers Is a Valid Use: A New Day for Instream Flows and the Species that Depend on Streams*, ALBUQUERQUE J., Mar. 28, 1998, available at <http://www.fguardians.org/news/n980329.html> (stating that New Mexico farmers will argue against instream water rights, fearing they would be a “death knell” for their irrigation ditches). Ironically, reducing irrigated agriculture in the West and increasing it in the East might be a wise policy to strengthen the agricultural sector and improve food-production self-sufficiency. Richard T. McNider et al., *Bringing Agriculture Back to Water—A Solution for the 21st Century* (2004), at <http://ams.confex.com/ams/pdfpapers/85724.pdf>. Cf. Thomas Greider, *Instream Flows, the State, and Voluntary Action*, 3 CATO J. 811, 821-23 (1983-1984), available at



disastrous ecological, social, and economic consequences resulting from past water use practices.<sup>126</sup> Furthermore, insisting that urban or conservation-driven water demands are a threat to the agriculture industry's viability ignores the tremendous potential for conserving water in the agricultural sector.<sup>127</sup> Improved irrigation methods and technologies can often make it possible to maintain agricultural operations while also restoring streamflows and supplying urban areas.<sup>128</sup> Finally, casting the debate as a zero-sum game does not take account of the need for healthy aquatic ecosystems to support agriculture, provide clean drinking water for municipalities, and maintain other human endeavors.

The fear that water markets will unjustly rob water from farmers, ranchers, and other historic users flares up in response to regulation and litigation, as well as in response to using the market for water transfers.<sup>129</sup> Nonetheless, the fear seems heightened when the situation involves money because existing users are afraid they will be forced to sell by "offers they can't refuse."<sup>130</sup> But it is easy to blame water markets unfairly for a host of other social changes. For instance, it is certainly true that some urban or conservation-based water purchases might result in the retirement of agricultural land. However, water purchases alone are not likely to be the sole cause of those land use changes. All manner of local and global forces affect the amount of land devoted to agriculture.

Much farm and ranch land now faces substantial development pressure, particularly near booming urban centers. Development also occurs some distance away from densely settled areas in response to

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<http://www.cato.org/pubs/journal/cj3n3/cj3n3-11.pdf> (explaining the general polarization of those who promote private ownership versus public ownership of instream rights).

126. WATER IN THE WEST, *supra* note 56, at 1-1 to 1-2, 2-12 to 2-14.

127. Steven Shupe, *Waste in Western Water Law: A Blueprint for Change*, 61 OR. L. REV. 483, 492-511 (1982).

128. *Id.*

129. For instance, farmers have filed suits in response to regulation favoring instream flows. *See, e.g., County of Okanogan v. Nat'l Marine Fisheries Serv.*, 347 F.3d 1081, 1082, 1085 (9th Cir. 2003) (holding that Forest Service had authority to set instream flow standards to protect endangered fish species and that doing so did not impermissibly interfere with the farmers' vested water rights); *Methow Valley Irrigators Appeal Federal In-Stream Flow Standards*, CITIZEN REV. ONLINE (Apr. 12, 2002), at [http://www.citizenreviewonline.org/methow/methow\\_valley.htm](http://www.citizenreviewonline.org/methow/methow_valley.htm) (explaining farmers' belief that legislation setting instream flow standards will shut them down).

130. *See The Good, the Bad, and the Ugly*, *supra* note \*, at 832-34.

people's desire for rural or semi-rural residences.<sup>131</sup> In either case, the water market is not solely to blame for these changes. Instead, the market driving development of agricultural land is the real estate market fueled by population growth.<sup>132</sup> Land is often worth more in purely economic terms for residential subdivisions or other urban development than for agriculture.

Agricultural land also faces “undevelopment” pressure—pressure to mitigate the detrimental environmental impacts of agricultural operations and to restore damaged terrestrial and aquatic ecosystems.<sup>133</sup> The past few decades have witnessed both tremendous advancements in scientific understanding about these environmental impacts and tightening legal requirements to address them under the Clean Water Act and the Endangered Species Act.<sup>134</sup> Irrigated agriculture and other agricultural practices (such as confined animal feeding operations) face legal mandates and social pressure to conserve water, reduce pollution, restore riparian zones, and otherwise change long standing practices to reduce environmental impacts.<sup>135</sup> All of these pressures fuel the market for transferring agricultural water to other purposes, but the driving forces are not water markets individually.

Global forces also play a role in the conversion of agricultural land. In recent years, the market for agricultural goods has become increasingly globalized.<sup>136</sup> Due to international free trade agreements and improved shipping technology, United States farmers and ranchers must now operate in a global context that is complex,

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131. See, e.g., WATER IN THE WEST, *supra* note 56, at 2-14 to 2-18 (describing the process of “exurban” and rural development). Although some states, such as Oregon, have strong land use planning laws that protect productive farm and forest land from urban sprawl, many other states do not. See OR. REV. STAT. § 197.005 (2003); AMERICAN FARMLAND TRUST, FACT SHEET: WHY SAVE FARMLAND? 2 (2003), available at [http://www.farmlandinfo.org/documents/28562/FS\\_Why%20Save%20Farmland\\_1-03.pdf](http://www.farmlandinfo.org/documents/28562/FS_Why%20Save%20Farmland_1-03.pdf) (comparing Portland, Oregon to Atlanta, Georgia from the mid-1980s to the mid-1990s and finding that, with about the same rate of population growth, “the size of Portland increased by only 2 percent while Atlanta doubled in size.”).

132. See *supra* notes 2-3 and accompanying text; see also WATER IN THE WEST, *supra* note 56, at 2-14 to 2-18, 2-28 to 2-33.

133. See, e.g., J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 *ECOLOGY L.Q.* 263, 270 (2000) [hereinafter *Farms*] (“Environmental law can no longer ignore the fact that farming is integrally related to the future of our national and global environmental quality.”).

134. 33 U.S.C. § 1251 (1972); 7 U.S.C. § 136 (2000); 16 U.S.C. § 460 (1973).

135. See generally Ruhl, *supra* note 133 (providing an inventory of various types of environmental degradation caused by farms).

136. AMERICAN FARMLAND TRUST, *supra* note 131, at 1.

competitive, and constantly changing.<sup>137</sup> Water markets have thus developed as a result of these other, more fundamental changes. Indeed, many commentators have noted that subjecting water to at least some market forces would *improve* water allocation and would force recognition of other values.<sup>138</sup>

### 5. *Political Conflict Generated by Water Marketing*

Political conflict is not an “impact” of water markets in the same sense as the impacts previously discussed. But water marketing proposals do elicit strong emotions and objections that market proponents must acknowledge and discuss. In the western streamflow market, virulent political backlash has certainly occurred. A brief discussion of the attacks on instream water rights transfers from the perspective of the Oregon Water Trust will round out the discussion of the positive and negative impacts of water marketing for streamflow restoration before considering what the East can learn from the West’s experience.

In Oregon, traditional water users, particularly irrigators, have tried to use legislative, administrative, and judicial processes to circle the wagons around historic uses of water to insulate them from market pressures—especially the market for instream flow restoration. The Oregon legislature adopted the Oregon Instream Water Rights Act and the Conserved Water Program in 1987.<sup>139</sup> However, the statutes did not have any immediate impact because all of the instream rights applied for in the first few years were new agency rights with post-1987 priority dates, and the first conserved water right application

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137. See WORLD TRADE ORGANIZATION, UNDERSTANDING THE WTO: THE AGREEMENTS 26-29 (2003), available at [http://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/utw\\_chap2\\_e.pdf](http://www.wto.org/english/thewto_e/whatis_e/tif_e/utw_chap2_e.pdf) (explaining how the Agriculture Agreement under General Agreement on Tariffs and Trade aims to put uniform tariffs on agriculture); *Fact Sheet: North American Free Trade Agreement*, USDA FASonline, at <http://www.fas.usda.gov/info/factsheets/NAFTA.html> (July 2001) (explaining how NAFTA benefits agriculture); *Fact Sheet: Importance of Trade for Agriculture*, USDA FASonline, at <http://www.fas.usda.gov/info/factsheets/TPA/economy.html> (June 2002) (describing U.S. agriculture’s dependence on international markets).

138. See, e.g., MARGOT ANDERSON ET AL., U.S. DEP’T OF AGRIC. ECONOMIC RESEARCH SERVICE, AGRICULTURAL RESOURCES AND ENVIRONMENTAL INDICATORS 53 (1994), available at <http://www.ers.usda.gov/publications/arei/ah705/AREI2-1.pdf> (discussing disincentives to conservation based on the current water-pricing system); see also Anderson & Hill, *supra* note 8, at xiv (discussing how appropriate pricing of water will lead to more efficient use and allocation).

139. Neuman & Chapman, *supra* note 51, at 137-38 & nn.12-16.

was in 1999, by the Oregon Water Trust.<sup>140</sup> But throughout the 1990s, when the Oregon Water Trust and other parties started actively using the market to convert consumptive water rights into instream rights with senior priority dates, the opposition mobilized.<sup>141</sup> Since then, opponents have regularly mounted legislative attacks on instream water rights.<sup>142</sup> Early proposals included outright repeal of the instream water rights law and prohibition of agricultural water rights transfers to anyone other than another agricultural user.<sup>143</sup>

The most recent proposal during the 2003 legislative session was slightly more subtle. Senate Bill 642 would have continued to allow transfers of consumptive rights into instream rights but would have made the priority date for the new instream right the date of the transfer approval, rather than the original date of acquisition of the water right.<sup>144</sup> This proposal would have gutted the portion of the instream water rights law that allows purchase, lease, or donation of existing consumptive rights for conversion to instream rights.<sup>145</sup> This change would guarantee that all instream rights would carry relatively junior priority dates and would undermine the usefulness of the instream water rights law for putting water back into over-appropriated streams.<sup>146</sup>

However, Senate Bill 642 turned out to be a double-edged sword. Not surprisingly, several agricultural interest groups testified in support of the legislation.<sup>147</sup> The bill's supporters were unified in their position that the statutory amendment would protect irrigated agriculture and keep "the water on the land."<sup>148</sup>

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140. *Id.* at 152.

141. *Id.* at 177-79.

142. *Id.* at 177-78 & nn.117-18; *see also* S.B. 642, 72nd Leg., Reg. Sess. (Or. 2003), *available at* <http://www.leg.state.or.us/03reg/measures/sb0600.dir/sb0642.intro.html>.

143. Neuman & Chapman, *supra* note 51, at 177-78 & nn.117-19.

144. S.B. 642, 72nd Leg., Reg. Sess. (Or. 2003), *available at* <http://www.leg.state.or.us/03reg/measures/sb0600.dir/sb0642.intro.html>.

145. OR. REV. STAT. § 537.348(1) (2003).

146. *See Implementing Instream Flow Protections, supra* note 67, at 349-50.

147. *See Pub. Hearing on SB 642 Before the S. Water and Land Use Comm., 72nd Leg., Reg. Sess., (Or. Mar. 10, 2003)* [hereinafter *Hearing on SB 642–Mar. 10*] (recording that Katie Fast of the Oregon Cattlemen Association testified in support of SB 642), *available at* <http://arcweb.sos.state.or.us/legislative/legislativeminutes/03/s/wat/SWLU03102003.htm>; *Pub. Hearing on SB 642 Before the S. Water and Land Use Comm., 72nd Leg., Reg. Sess., (Or. Apr. 2, 2003)* [hereinafter *Hearing on SB 642–Apr. 2*] (noting that Glen Stonebrink, Oregon Cattlemen Association representative, stated "that water rights belong to the land"), *available at* <http://arcweb.sos.state.or.us/legislative/legislativeminutes/03/s/wat/SWLU04022003.htm>.

148. *Hearing on SB 642–Mar. 10, supra* note 147; *see Hearing on SB 642–Apr. 2, supra* note 147.

The bill's opponents painted a slightly more complex view of the legislation's impact. Instead of arguing for reallocation of water from agriculture to environmental purposes and, thus, confirming the fear that instream flows and irrigation are mutually exclusive, most of those who testified in opposition to the bill stressed that the legislation itself was an attack on irrigators' property rights because it would deprive them of the opportunity to enter into a voluntary transaction for the sale or lease of their water rights.<sup>149</sup> Indeed, the bill's opponents included agricultural interest groups, property owners, and those interested in streamflow restoration.<sup>150</sup> Although the bill did have a second hearing, it became evident that the proposal did not present the clear choice in favor of irrigated agriculture that its proponents had intended. There were pro-water-rights-holder arguments on both sides. At the end of the day, the bill fizzled in committee, never being put to a vote.<sup>151</sup>

Opponents have also mounted administrative and judicial challenges. Water users have lodged objections in the administrative transfer approval process for converting consumptive rights to instream rights.<sup>152</sup> Opponents of instream transfers have tried to get rights proposed for transfer cancelled by claiming that users have forfeited these rights by non-use.<sup>153</sup> Opponents have even used this attack after the transfer proceeding was complete.<sup>154</sup>

Some of the "administrative maneuvers" detrimental to instream rights have come from within the Water Resources Department itself, rather than from irrigators or others opposed to instream rights. A few years ago, some of the agency field staff proposed the imposition of a

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149. *Hearing on SB 642—Mar. 10, supra* note 147 (summarizing the testimony of representatives of the Water Resources Department, Oregon Trout, Water Watch, Confederated Tribes of the Umatilla, the Oregon Water Trust, and others in opposition to SB 642).

150. *Hearing on SB 642—Mar. 10, supra* note 147; *Hearing on SB 642—Apr. 2, supra* note 147.

151. *Id.*

152. *See, e.g., The Good, the Bad, and the Ugly, supra* note \*, at 828-30 (discussing an extensive administratively contested case proceeding prompted by neighboring irrigators' protest of an Oregon Water Trust instream transfer).

153. *See, e.g., Kerivan v. Water Res. Comm'n*, 72 P.3d 659, 661 (Or. Ct. App. 2003).

154. *See id.* at 661 (upholding the agency's rejection of forfeiture challenges filed after the Water Resources Department issued the final transfer order and new water rights certificate to the Oregon Water Trust).

blanket “loss factor” on instream rights.<sup>155</sup> The field staff proposed to reduce the amount of instream rights as they flowed downstream.<sup>156</sup> They did not base the proposed loss factors on actual hydrologic data, nor did the proposed calculations take into account individual stream characteristics.<sup>157</sup> Furthermore, the statutory authority offered for the practice was questionable.<sup>158</sup>

Opponents of instream water rights in Oregon have also taken their fight to the courts. One transfer attempted by the Oregon Water Trust triggered both administrative protests and a lawsuit.<sup>159</sup> A group of neighboring landowners who were already protesting the transfer in a contested case proceeding before the Water Resources Department filed a lawsuit to enjoin the agency from approving the transfer. The plaintiffs alleged that because the stream in question was the subject of a 1925 court decree in a general stream adjudication, the agency could not act.<sup>160</sup> By arguing that the 1925 decree in the adjudication continued to completely control the water rights in the basin to the exclusion of any role for the agency as specified by statute, the plaintiffs were essentially declaring both the agency and the Water Code itself irrelevant whenever there had been a general stream adjudication.<sup>161</sup> The trial court dismissed the lawsuit based on a finding that the complaint failed to state a cognizable claim for relief, and the court of appeals affirmed the dismissal.<sup>162</sup>

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155. E-mail from Andrew Purkey, Executive Director, Oregon Water Trust, to Tom Paul, Paul Cleary & Meg Reeves, Oregon Water Resources Department (Apr. 27, 2001, 1:11pm) [hereinafter Purkey E-mail] (on file with author) (arguing against the loss factor calculations).

156. *Id.*

157. *Id.*

158. *Id.* The field staff manager cited OR. REV. STAT. § 540.410 for authority to impose a loss factor as the water traveled downstream, but Water Trust staff pointed out that the referenced statute concerns using a watercourse to *deliver* reservoir water to a secondary point of diversion, which has nothing to do with beneficial *use* instream of an instream water right. Purkey E-mail, *supra* note 155.

159. *See supra* note 152 and accompanying text.

160. Motion to Enforce the Decree and Enjoin Its Violation at 6-12, *In re* Determination of the Relative Rights of the Various Claimants to the Use of the Waters of Grande Ronde River Above the Mouth of Gordon Creek and of All of its Tributaries Above Said Point, Including Gordon Creek, Except Mill Creek, Heretofore Adjudicated, in Union County, Oregon (Union County Cir. Ct. 2002) (No. 01-09-41016). Although the movant styled the document as a motion, it was served with a summons requiring defendants to defend the “complaint.”

161. *Id.*

162. Order, *In re* Determination of the Relative Rights of the Various Claimants to the Use of the Waters of Grande Ronde River Above the Mouth of Gordon Creek and of All of its Tributaries Above Said Point, Including Gordon Creek, Except Mill Creek, Heretofore Adjudicated, in Union County, Oregon (Union County Cir. Ct. June 12, 2002) (No. 01-09-41016); *Sheehy v. Becker*, 79 P.3d 916 (Or. Ct. App. 2003) (affirming the trial court without opinion).

This brief overview of the positive and negative impacts of water markets, viewed through the lens of western streamflow markets, sets the stage for considering whether Georgia or other eastern states can glean anything useful from the western experience. Although this Article has already noted East-West differences, Part III examines both converging similarities and key distinctions in greater detail to zoom in on possible opportunities for water marketing in the East.

## II. EAST VS. WEST: SIMILARITIES AND DIFFERENCES

Using Georgia and its neighboring states as a focal point illuminates emerging eastern water problems that may benefit from western experience and experiments. Some years ago, a commentator described Georgia's surface water laws as frozen "at the stillpoint between natural flow and reasonable use riparianism."<sup>163</sup> Thus, Georgia is clearly in the riparian doctrine camp. However, the State's courts have allowed specific water uses that courts in other states have found unreasonable, such as irrigation, use by non-riparians, and even hydraulic mining.<sup>164</sup> The State has also experienced saltwater intrusion in its heavily pumped coastal aquifers; saltwater intrusion into freshwater supplies is also a western problem.<sup>165</sup> Thus, Georgia perhaps has a bit more in common with western states than a more traditional riparian state. This Article explores the growing similarities and crucial remaining differences below.

### A. *Similarities: Western Water Scarcity Moves East*

#### 1. *Growing Demands for Water*

The story of increasing water scarcity in the East features Georgia as a key player. Georgia's population more than doubled between

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163. Bross, *supra* note 29 (citing O.C.G.A. §§ 44-8-1, 51-9-7).

164. *Id.* at 302-03.

165. *Id.* at 306; *see also* United States v. State Water Res. Control Bd., 227 Cal. Rptr. 161 (Cal. Ct. App. 1986) (discussing saltwater intrusion and other salinity problems in the San Francisco Bay-San Joaquin River Delta region); U.S. GEOLOGICAL SURVEY, DELTA SUBSIDENCE IN CALIFORNIA: THE SINKING HEART OF THE STATE (2000), *available at* <http://ca.water.usgs.gov/archive/reports/fs00500/fs00500.pdf> (describing saltwater intrusion in the Bay-Delta area).

1950 and 2000.<sup>166</sup> Not surprisingly, total offstream water use increased during that same period, reaching 6490 million gallons per day by 2000.<sup>167</sup> The State's population is concentrated in the Atlanta area, where the population is now four million and counting.<sup>168</sup> The City exceeded its 1989 growth projections for the year 2010 by 2003.<sup>169</sup> Atlanta has outgrown or worn out several municipal water supply systems in the past several decades.<sup>170</sup>

Increased water use in Georgia is not just a function of growing municipalities, however. Other categories of water use have ballooned as well, including water for thermoelectric power generation, irrigation, and industrial uses.<sup>171</sup> Irrigation water use experienced a phenomenal twelve-fold increase between 1950 and 1980 and then, after a slight decline through 1990, increased by another 35% between 1995 and 2000.<sup>172</sup> The State's largest industrial uses are pulp and paper mills, textiles, chemical manufacturers, and mining and mineral industries.<sup>173</sup>

Currently, Atlanta's water comes primarily from the Chattahoochee River, including the Lake Lanier Reservoir north of the City where the Corps impounds water.<sup>174</sup> Hydroelectric power

166 Fanning, *supra* note 5 (describing the State's population growth during this time from 3.4 million to 8.2 million).

167. *Id.*

168. *Cities & Counties: Atlanta, The New Georgia Encyclopedia*, at <http://www.newgeorgiaencyclopedia.org/nge/Article.jsp?id=h-2207> (last updated July 30, 2004).

169. Charles Seabrook, *Water Wars Take Shape Between Georgia and Neighbors*, ATLANTA J. CONST., Nov. 27, 1989, at A1 (reporting a population projection of 3.7 million for Atlanta by 2003).

170. See THE TRUST FOR PUBLIC LAND, PROTECTING THE SOURCE: LAND CONSERVATION AND THE FUTURE OF AMERICA'S DRINKING WATER 21 (2004). Bross, *supra* note 29, at 105 (citing Clint Williams, *Water from a Stone*, ATLANTA J. CONST., Sept. 3, 2000, at C1). Recent drought has sent Atlanta underground for municipal supply as well. Water shortages in 1999-2000 made well drilling more cost effective, and one estimate suggests that the city may eventually obtain up to 5% of its municipal supply from groundwater. *Id.*

171. Fanning, *supra* note 5.

172. *Id.* The U.S. Geological Survey ("USGS") attributes the latest increase to serious drought conditions in the late 1990s and the increase just prior to 1980 to the introduction of the center-pivot irrigation system. *Id.* Center pivot systems are also common throughout the western United States. Between 1970 and 1990, Georgia's agricultural water withdrawals from the Apalachicola-Chattahoochee-Flint ("ACF") River System increased by a whopping 1320%. RICHARD L. MARELLA ET AL., U.S. GEOLOGICAL SURVEY, REP. NO. 93-4084, ESTIMATED USE OF WATER IN THE APALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN DURING 1990 WITH STATE SUMMARIES FROM 1970 TO 1990, at 37 (1993), available at [http://onlinepubs.er.usgs.gov/lizardtech/iserv/browse?cat=WRI&item=/wri\\_93\\_4084.djvu&style=simple/view-dhtml.xml&wid=750&hei=600&props=img\(Name,Description\)&page=1](http://onlinepubs.er.usgs.gov/lizardtech/iserv/browse?cat=WRI&item=/wri_93_4084.djvu&style=simple/view-dhtml.xml&wid=750&hei=600&props=img(Name,Description)&page=1).

173. Fanning, *supra* note 5.

174. See MARELLA ET AL., *supra* note 172, at 26-31.



facilities at Lake Lanier also supply a portion of the region's electricity.<sup>175</sup> The demand for municipal water supply and power are increasing in step with Atlanta's growth.<sup>176</sup> The Chattahoochee also receives Atlanta's effluent, which restores some of the river's quantity of flow but can compromise its quality.<sup>177</sup>

After the Chattahoochee flows through Atlanta, it continues to the southwest.<sup>178</sup> The River forms the border between Georgia and Alabama for some distance, joins with the Flint River, flows into Florida as the Apalachicola River, and eventually arrives at Apalachicola Bay in the Gulf of Mexico just south of Tallahassee; the three rivers together are the Apalachicola-Chattahoochee-Flint ("ACF") System.<sup>179</sup>

As the Chattahoochee flows through southwestern Georgia, farmers withdraw water for irrigation.<sup>180</sup> Southwestern Georgia uses more irrigation water than any other part of the State.<sup>181</sup> The irrigation supports a variety of crops, including peanuts, corn, soybeans, wheat, hay, cotton, peaches, pecans, melons, and

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175. *Id.* at 29.

176. See Stephenson, *supra* note 6, at 85; see also *Georgia Sues Corps of Engineers Over Lake Lanier Management*, U.S. Water News Online, at <http://www.uswaternews.com/archives/arcrights/lgeosue3.html> (March 2001) (describing the competing interests for drinking water and hydroelectric power); Stacy Shelton, *No Extra Water for Gwinnett, Corps Says*, ATLANTA J. CONST., Oct. 16, 2004, available at 2004 WL 94296368 (describing the Corps contract with Gwinnett County, other Metro-Atlanta governments, the State of Georgia, and hydropower customers and noting that a federal court challenge by Alabama and Florida tied-up the contract).

177. See, e.g., *U.S. Geological Survey Programs in Georgia*, USGS, at <http://water.usgs.gov/pubs/fs/FS-010-96> (noting that certain pollutants discharged from Atlanta's wastewater treatment plants exceeded allowable maximums); *Chattahoochee River Facts*, Upper Chattahoochee Riverkeeper, at <http://www.ucriverkeeper.org/EducationWatershed/Index.shtml> (noting that metro Atlanta's sewage treatment plants release 250 million gallons of effluent per day into the River).

178. MARELLA ET AL., *supra* note 172, at 2.

179. ROY R. CARRIKER, UNIVERSITY OF FLORIDA EXTENSION INSTITUTE OF FOOD & AGRICULTURE SCIENCES, WATER WARS: WATER ALLOCATION LAW AND THE APPALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN (2000), available at <http://edis.ifas.ufl.edu/pdffiles/FE/FE20700.pdf>. The border between Georgia and Alabama happens to be the western bank of the River, rather than the thread of the stream, complicating matters further. *Alabama v. Georgia*, 64 U.S. 505, 515 (1859).

180. Fanning, *supra* note 5.

181. *Id.* (noting that irrigation accounted for 1090 million gallons a day ("mgd") of Georgia's water use in 2000 but that about two thirds of that came from groundwater). Irrigated land in Georgia has grown from 0 to 2 million acres in 40 years. Most of the irrigation uses groundwater in the southern part of the State, but the groundwater is hydrologically connected to surface water. See Barlow Burke, *Association of American Law Schools Conference: Transcript of the Section on Natural Resources in Atlanta, Georgia, January 5, 2004*, 21 GA. ST. U. L. REV. 249 (2004). With 22,000 irrigation permits extant and 2000 requests pending, the state placed a moratorium on new permits in 2003. See *id.*

vegetables that contribute significantly to Georgia's economy.<sup>182</sup> Alabamans, too, withdraw water to drink, to irrigate farmland, to produce both hydroelectric and thermoelectric power, and to supply other municipal uses.<sup>183</sup> Florida irrigators depend on the System to supply water for pulpwood processing operations, other commercial and industrial uses, municipal supplies, thermoelectric power production, and irrigation.<sup>184</sup>

Not all the demands on the ACF System are for consumptive uses, however. Instream uses also place demands on the rivers. Lake Lanier, besides supplying water and power to Atlanta, is heavily used for recreation, supporting another economic sector to the tune of \$1.5 billion annually.<sup>185</sup> The Chattahoochee also supports Georgia's recreation economy, both in and outside of Atlanta, including flyfishing and boating.<sup>186</sup> Others, primarily barges, use the river for shipping.<sup>187</sup> Alabama's residents also recreate on both the Chattahoochee and the Flint.<sup>188</sup>

Florida has a particular interest in maintaining instream flows in the ACF System. When the Apalachicola River enters the Apalachicola Bay, it feeds the state's most important oyster beds; the Bay produces 90% of the oysters for Florida's 70 million dollar oyster industry.<sup>189</sup> Inadequate water flows and insufficient nutrients in the water threaten the oyster beds.<sup>190</sup> Florida's interest in the aquatic ecosystem values of the ACF System competing with upstream consumptive water use provides a glimmer of the heated disputes that have erupted in the West over the damage to aquatic

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182. See MARELLA ET AL., *supra* note 172, at 6, 29.

183. *Id.* at 13-21.

184. *Id.* at 21-26.

185. Bruce Ritchie, *Value of River, Bay Weighed*, TALLAHASSEE DEMOCRAT, July 20, 2003, available at <http://www.tallahassee.com/mld/democrat/news/local/6342330.html>. More than 10,000 high-value homes surround Lake Lanier, and it supports 28,000 registered boats. See U.S. Army Corps of Engineers: Mobile District, *Lanier Promotes Shoreline Protection by Residents*, 21 MOBILE, May-June 1999, available at <http://www.sam.usace.army.mil/PA/May99/9906lan.htm> (noting approximately 10,000 homes on Lake Lanier, with the lowest in value at \$300,000 and many "million dollar mansions"); Dan Dickison, *Days of Dogwood*, 35 SAILING WORLD 44 (1996) (noting 28,000 registered boats on Lake Lanier).

186. See MARELLA ET AL., *supra* note 172, at 1.

187. *Id.* at 18.

188. *Id.*

189. Stephenson, *supra* note 6, at 85; see Greg Jaffe, *Water Deal May Settle Old Dispute*, WALL ST. J., Sept. 11, 1996, at F1, available at 1996 WL 11797854.

190. See Stephenson, *supra* note 6, at 85-86; Jaffe, *supra* note 189.

species from water diversions.<sup>191</sup> Although Florida's oysters are not endangered species under the Endangered Species Act, the dilemma is similar to western aquatic ecosystem problems in that it pits diversionary and consumptive water demands against demands to keep water instream.<sup>192</sup> Other eastern regions contain endangered aquatic plants and animals, such as turtles, salamanders, and Atlantic salmon, that past water use practices imperile.<sup>193</sup>

In the face of these numerous rising demands for both consumptive and instream uses of water, the southeastern states have experienced several years of record drought.<sup>194</sup> Georgia and Florida were particularly hard hit, beginning in the late eighties, and Florida's oyster production took a nosedive.<sup>195</sup> Both the Chattahoochee River and Lake Lanier dropped to record low levels.<sup>196</sup>

In spite of the dropping lake and river levels, Atlanta received the approval of the Corps to increase withdrawals from both Lake Lanier and the River by a total of 529 million gallons per day, an increase of 50%.<sup>197</sup> The City also proposed to build an additional reservoir on the Appalachian-Chattahoochee-Tallapoosa ("ACT") System to expand storage for future water supplies.<sup>198</sup>

Georgia's neighbors sat up and took notice. In 1990, Alabama sued the Corps to enjoin their approval of Atlanta's plans, and Florida and Georgia jumped into the suit to defend their interests as well.<sup>199</sup> Both

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191. See, e.g., WATER IN THE WEST, *supra* note 56, at 2-12 to 2-14 (discussing the environmental damage caused by dams and diversions and numerous extinct or endangered aquatic species).

192. *Id.*

193. See, e.g., David S. Wilcove et al., *Quantifying Threats to Imperiled Species in the United States: Assessing the Relative Importance of Habitat Destruction, Alien Species, Pollution, Overexploitation, and Disease*, 48 BIOSCIENCE 607, 608-11 (1998) (noting that eastern aquatic species are suffering particular harm from agricultural nonpoint pollution); *Reptiles, Amphibians, & Fishes in the Great Swamp National Wildlife Refuge*, Great Swamp Watershed Association, at <http://www.greatswamp.org/SeeDo/reptiles.htm> (describing endangered bog turtles and blue-spotted salamanders); News Release, U.S. Fish and Wildlife Service, Wild Atlantic Salmon in Maine Protected as Endangered Species (Nov. 13, 2000), available at <http://northeast.fws.gov/newsrel/asalmon2.html> (stating that wild Atlantic salmon population levels were at an all time low in 2000).

194. Fanning, *supra* note 5.

195. See *Drought Proofing*, *supra* note 5.

196. Fanning, *supra* note 5.

197. *Water Wars: GOP Shift*, *supra* note 6. This request would have reallocated water in Lake Lanier from hydroelectric uses to municipal supply purposes and would have constituted the largest reallocation ever by the U.S. Army Corps of Engineers ("the Corps"). See CARRIKER, *supra* note 179, at 3.

198. CARRIKER, *supra* note 179, at 2-3; Stephenson, *supra* note 6, at 87.

199. See Complaint for Declaratory Judgment, Preliminary and Permanent Injunction, Alabama v. U.S. Army Corps of Eng'rs (N.D. Ala. 1990) (No. 90-CV-1331); Motion by Intervener-plaintiff Florida

downstream states were concerned that increased water use in Georgia would deprive them of water for their own current and future needs and would result in more pollution downstream.<sup>200</sup> Alabama raised concerns about harm to future economic development in the portion of its state within the ACF Basin.<sup>201</sup> Florida based its claims on damage to their oyster beds and other seafood operations as well as to the state's timber industry.<sup>202</sup> Georgia's response was short and to the point: it had sovereign control over the water within the State of Georgia and the proposed uses were entirely reasonable and necessary.<sup>203</sup>

However, Georgia, Florida, and Alabama soon took a different tack in their dispute. The three states agreed to adjourn the litigation in 1992 to try negotiating an interstate compact to allocate the water among themselves.<sup>204</sup> As the first step, the states funded a study by the Corps on water needs throughout the ACF Basin; while the study was underway, withdrawals could not be increased unless all three states agreed.<sup>205</sup> Five years later, the three states' legislatures adopted the ACF River Basin Compact, which Congress ratified before the year's end.<sup>206</sup> Among other things, the compact's purposes included ". . . equitably apportioning the surface waters of the ACF . . . ."<sup>207</sup> The three southeastern states thus joined the ranks of states sharing interstate water allocation compacts, most of which are in the West.<sup>208</sup>

As it turned out, however, the ACF Compact was tentative from the beginning because it did not actually allocate any water at all.<sup>209</sup>

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for Leave to Intervene, *Alabama v. U.S. Army Corps of Eng'rs* (N.D. Ala. 1990) (No. 90-CV-1331) Motion by State of Georgia to Intervene as a Party, *Alabama v. U.S. Army Corps of Eng's* (N.D. Ala. 1990) (No. 90-cv-1331).

200. Stephenson, *supra* note 6, at 87.

201. *Id.*

202. *Id.*

203. *Id.* at 104.

204. *Id.* at 88; Robert E. Vest, *Water Wars in the Southeast: Alabama, Florida, and Georgia Square Off Over the Apalachicola-Chattahoochee-Flint River Basin*, 9 GA. ST. U. L. REV. 689, 693 (1993).

205. Stephenson, *supra* note 6, at 86-88.

206. Apalachicola-Chattahoochee-Flint River Basin Compact, Pub. L. No. 105-104, 111 Stat. 2219 (1997).

207. Apalachicola-Chattahoochee-Flint River Basin Compact, Pub. L. No. 105-104, 111 Stat. 2219 (1997).

208. *See, e.g.*, GEORGE WILLIAM SHERK, *DIVIDING THE WATERS: THE RESOLUTION OF INTERSTATE WATER CONFLICTS IN THE UNITED STATES* app. C. at 487 (2000).

209. *Id.* at 12.

The compact was simply an agreement to agree. The legislation created the ACF Basin Commission and authorized it to negotiate a water allocation formula by the end of 1998.<sup>210</sup> Although the states extended the deadline a total of 14 times, the negotiations finally collapsed for good in late 2003, and the Compact expired without accomplishing any water allocation.<sup>211</sup>

The discussion so far has focused on the ACF System, which is bearing the brunt of much of Georgia's growing water demand and is drawing the State into water conflicts with its neighboring states. However, Georgia's expanding thirst is certainly not limited to the ACF River System. As in many other states, both East and West, water use is also outpacing supply with regard to groundwater. Agriculture is the biggest user of groundwater in Georgia, with a peak growing season demand of 1.5 billion gallons per day.<sup>212</sup> Agricultural, municipal, and industrial pumping has overdrawn several aquifers, resulting in the failure of artesian wells, saltwater intrusion, and withdrawal restrictions.<sup>213</sup>

Recent developments in the Southeast are thus creating the conditions for water markets to emerge—water scarcity in the face of increasing demands for both consumptive and instream uses of water; urban-rural competition for water supplies, along with differential economic values for those water uses; environmental regulation affecting water use; pressure on both surface and groundwater sources; and interstate water disputes.

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210. *Id.*

211. See Burke, *supra* note 181; Stacy Shelton, *Water Talks a Washout*, ATLANTA J. CONST., Sept. 6, 2003, at G1, 2003 WL 61733836.

212. *Science & Medicine: Groundwater*, The New Georgia Encyclopedia, at <http://www.georgiaencyclopedia.org/nge/Article.jsp?id=h-1181> (last updated Sept. 27, 2004). Georgia shares important aquifers with Florida and Alabama, as well as with South Carolina. *Id.*; *Apalachicola-Chattahoochee-Flint River Basin NAWQA Study, Description of the ACF River Basin Study Area: Ground-Water Hydrology*, USGS, at <http://ga.water.usgs.gov/nawqa/basin10.html> (last modified July 28, 2004).

213. *Science & Medicine: Groundwater*, The New Georgia Encyclopedia, at <http://www.georgiaencyclopedia.org/nge/Article.jsp?id=h-1181> (last updated Sept. 27, 2004); *Environmental Indicators for Groundwater*, Georgia Environmental Protection Division, [www.dnr.state.ga.us/dnr/environ/gaenviron\\_files/annlrpt\\_files/gaenv99\\_05.html](http://www.dnr.state.ga.us/dnr/environ/gaenviron_files/annlrpt_files/gaenv99_05.html) (1999).

*B. Differences: The Lingering Divide*

Several commentators have noted recently that the riparian and prior appropriation systems in the East and West have been growing more alike in the past few decades, in some ways “converging to the point where they are nearly identical.”<sup>214</sup> I disagree. It is certainly true that many eastern states have moved from an almost exclusively common law riparianism to a form of regulated riparianism by adopting statutes to govern water use. Most of these statutory schemes require a permit prior to initiating water use, similar to all the western states but one. This change allows an agency to make prospective decisions about reasonable and competing uses of water, which is a significant improvement in providing more rational public control over water and enhancing clarity in the parameters of allowable water use compared to after-the-fact judicial determinations.

It is also true that both the East and the West have borrowed key principles from each other, blurring some of the distinctions of a century ago.<sup>215</sup> For instance, as eastern states have tightened up on the common law riparian doctrine, they have given some credence to priority of use and allowed water use on non-riparian lands, thus injecting more certainty, security, and utility into eastern water rights. Meanwhile, western states have loosened up some of the more rigid aspects of the prior appropriation doctrine and have superimposed recognition of non-consumptive, in-situ uses of water.<sup>216</sup>

However, digging below these surface similarities reveals deep remaining differences. The most fundamental is the difference in climate. You simply cannot argue with the numbers. The eastern tier of states stretching from the Atlantic to the beginning of the Great Plains generally receives between 35 and 60 inches in annual precipitation, with a low of 30 and a high of 100 inches.<sup>217</sup> The Plains

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214. TARLOCK ET AL., *supra* note 24, at 158; *see also Meetings of Waters, supra* note 24, at 3.

215. *See supra* text accompanying notes 1-27. The borrowing, and the resulting convergence, was not always conscious and intentional but was more a result of changing conditions in both regions that forced adaptations in doctrines developed in earlier times for specific purposes and with more limited information.

216. *See generally* Benson, *supra* note 20, at 888-906.

217. *See* WATER 2025, *supra* note 60, at 7 (showing average annual U.S. precipitation from 1961-1990).

States, from North Dakota south to Texas, average about 30-50 inches annually in their eastern halves and drop to 15-20 in their western halves.<sup>218</sup> From the Great Plains to the Pacific, annual precipitation ranges from less than 5 inches to about 15 inches, with the exception of the coastal areas and some high mountains.<sup>219</sup> Along the Pacific coast, the pattern of the Plains States reverses itself.<sup>220</sup> A substantial portion of each coastal state is very arid, while other areas receive abundant precipitation.<sup>221</sup> Although climate change predictions inject a fair amount of uncertainty into future precipitation patterns and their impact on water supplies, no one is predicting that the East and West will completely swap arid for humid.

Centuries of climatic differences, as well as distinct geologic events, have created different landscapes. Different landscapes, topography, and climate create different land uses and different culture. *America the Beautiful* is a patriotic anthem rather than a geography lesson, but the words also capture some physical truths.<sup>222</sup> “From sea to shining sea,” the country contains “fruited plains,” “purple mountain majesties,” “amber waves of grain,” and “alabaster cities.”<sup>223</sup> The diversity adds to the tremendous beauty of the country, but the change from region to region does create considerably distinct conditions and adaptations. In many parts of the country, the “spacious skies” praised in the song, though spectacularly beautiful, are frequently devoid of rain.<sup>224</sup>

With all these differences in “back story,” the East and West retain key distinctions in their water laws. Only about half of the eastern states have arguably comprehensive statutes, and not even the most extensive of these approach the comprehensive scope and nature of

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218. *Id.*

219. *Id.* Isolated high mountain zones and narrow bands in the coastal region receive between 60 and 200 inches of annual precipitation. *Id.*

220. *Id.*

221. *Id.*

222. Katharine Lee Bates, *America the Beautiful* (1913).

223. *Id.*

224. *Id.*; see also TONY HILLERMAN, LISTENING WOMAN 135 (1978) (“It was hot. The promise of rain had faded as the west wind raveled away the thunderheads. Now the sky was blank blue.”). Hillerman writes mysteries set on the Navajo Reservation in the Four Corners area of the southwest (the intersection of Colorado, Utah, New Mexico, and Arizona). The image of storm clouds gathering and then dissipating without delivering any rain appears frequently in his novels.

the western states' water codes.<sup>225</sup> For example, since 1972 for groundwater and 1977 for surface water, Georgia law has required a permit for some water uses in advance of initiating the use.<sup>226</sup> However, only the use of more than 100,000 gallons of water per day triggers the permit requirement.<sup>227</sup> Furthermore, for many years, the state exempted agricultural uses and chicken processing—its two largest consumptive water uses—from the permit scheme; when it did include them in the late 1980s, it grandfathered in existing withdrawals.<sup>228</sup>

The types of permit decisions codified in the eastern statutes are also fundamentally different than those made by western water agencies. The primary change of regulated riparianism over common law riparianism is that decision making shifts from the courts to an administrative agency. Furthermore, the agency makes the decision about water use before the user initiates withdrawal rather than after a dispute has arisen between water users. However, the nature of the decision is still the same as under the common law: permit issuing agencies decide whether a proposed use is “reasonable” under a laundry list of factors.<sup>229</sup> Because the regulated riparian systems are not constrained in any way to recognize priority or seniority of use, the eastern statutes contain use preference lists that have more “bite” than those in the West where priority date usually trumps statutory preferences.

There would seem to be little room for a market to develop in riparian states. In those states with less comprehensive statutory systems, the water right is still so poorly defined and open-ended as to discourage investment. If the state still looks unfavorably on water use off riparian land or out of the watershed, then there really is nothing to sell. And if shortages are still relatively rare, there is little incentive for anyone to pay much value for water, and thus no

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225. See, e.g., *Regulated Riparianism*, *supra* note 5, at 9-36.

226. Bross, *supra* note 29, at 306.

227. *Id.*

228. *Id.* Other states' riparian codes have similarly broad exempt water uses. See, e.g., KY. REV. STAT. ANN. § 151.140 (2004) (exempting all agricultural diversions).

229. *Regulated Riparianism*, *supra* note 5, at 9-98 to 9-100 (summarizing statutory lists of reasonableness, including among others: public health, safety, and welfare; injury to other users; likely effects on water bodies and watersheds; the nature and size of the water source; economic and other benefits expected from the proposed water use; and “other relevant factors”). Georgia's own list is similar. O.C.G.A. § 12-5-31(e)(1) to -31(e)(10) (2003).



incentive to clearly define rights and allow their transfer.<sup>230</sup> Eastern permit requirements help somewhat by specifying the terms of a water use right so that purchasers know what might be for sale. However, unless the statutes clearly authorize voluntary transfers among permittees, water users will be understandably reluctant to try to buy or sell water permits. Most regulated riparian systems do not address transfers of water permits at all, and some expressly prohibit transfer.<sup>231</sup> Only a handful explicitly allow permit trading.<sup>232</sup> As long as water is available, it would seem to be much easier for users seeking water just to apply for their own permits.<sup>233</sup>

Some of the conditions making markets more attractive are developing, such as growing water demand, more frequent water shortages, aquatic environmental protection and restoration requirements, and the need for flexibility and perhaps reallocation to respond to these conditions. But this simply begs the question of whether the eastern states *should* consider authorizing, or even encouraging, water marketing if they do not already. Part IV addresses this question, focusing on streamflow markets in particular.

### III. IS THERE ANY ROLE FOR STREAMFLOW MARKETS IN THE EAST?

During the lunch break in the conference that gave rise to this paper, two conference attendees who represented Georgia environmental groups approached me. They said that they understood how markets could help put water back into dewatered western streams and appreciated that markets might even be a necessary last resort to create protected instream flows with seniority under the prior appropriation doctrine. But with furrowed brows, they asked me why any conservation group in a riparian state would ever put promoting streamflow markets or purchasing instream flows high on their agenda. I told them that, for the most part, I had to agree with

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230. See Anderson & Hill, *supra* note 8, at xii-xiii (noting that well-defined transferable rights unlikely to evolve in the absence of scarcity).

231. *Regulated Riparianism*, *supra* note 5, at 9-117 to 9-119 (noting that only four states seem to allow transfers, some by very indirect language, and that other states either expressly prohibit transfers, or are silent on the subject).

232. *Id.*

233. Available water is the key, of course. As noted, due to population growth, drought, and other growing water demands, many eastern states are not feeling quite as water-rich anymore.

them.<sup>234</sup> In most eastern states, few streams are dewatered, the rule of “first in time, first in right” is completely unknown, and there may be regulatory alternatives for protecting instream flows that do not threaten other water uses, much less vested water “rights.”<sup>235</sup>

If conservation groups and others interested in instream flows can meet instream needs effectively in riparian jurisdictions without buying water, it hardly makes sense to expend the tremendous effort and resources necessary to establish a market framework in the first place and, then on top of that, to invest money in purchasing streamflows.<sup>236</sup> However, there are several aspects of the western water marketing experience that could be very instructive for eastern states, short of wholesale adoption of a similar system. My advice to eastern states from my own experience in the western streamflow market is to be careful, be selective, and be flexible.

#### A. *A Cautionary Tale*

Perhaps the best lesson that eastern states could learn from the western streamflow markets is to take appropriate measures soon to avoid ever having to resort to markets to restore depleted streamflows. Most eastern streams and rivers actually have water in them most of the time, and that is a condition worth preserving. Interest groups and constituencies interested in keeping water in streams, whether for fisheries, wildlife habitat, recreation, channel maintenance, esthetics, water quality, or any other purpose, should be vigilant to prevent the streams from getting to the point where it might become necessary to buy water back from consumptive users for instream uses. Riparianism provides a variety of ways to protect instream flows before it is too late.

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234. In fact, as a result of that conversation, this Article is a different piece than I had originally intended.

235. Indeed, eastern water *permits* and western water *rights* seem quite different from each other. Eastern permits are more akin to long-term leases, while western water rights supposedly represent much more of a vested property interest.

236. *But see generally* TERRY L. ANDERSON, WATER CRISIS: ENDING THE POLICY DROUGHT (1983). Anderson argues that markets are preferable to centralized governmental control and regulation of water allocation in nearly every instance, including for the protection of instream flows, because institutional control produces inefficient rent-seeking behavior by interest groups and does not make resource users consider the real costs of their activities. *See id.* at 12-22, 35-40, 73-91.

### 1. *Considering Streamflows When Issuing Permits*

Riparian permitting statutes generally require consideration of the public welfare in making the initial permit decisions, either as part of the codification of common law “reasonableness” analysis or as a separate factor and finding.<sup>237</sup> This review should certainly include consideration of the impact of the requested water use on the stream itself and on instream values and uses; indeed, impacts are often delineated as separate review factors as well.<sup>238</sup> However, to avoid approving diversions that ultimately damage or even dewater a stream, as western states did many years ago with impunity, regulated riparian states should beef up their permitting standards to make sure that this review effectively considers cumulative impacts. Non-regulated riparian states might also take heed of the western saga of dewatered streams and take steps to protect instream flows and in-situ water uses proactively.

Many eastern water permitting agencies have additional existing authorities on which to rely when protecting eastern streams from following the West’s path of excessive diversions or over-appropriation. Limited duration permits, minimum streamflow requirements, and comprehensive state water planning authorities are all available tools to rationalize water allocation and to protect water and its consumptive uses.<sup>239</sup>

### 2. *Limited Duration Permits*

One strength of many of the riparian regulatory schemes is that regulators usually issued water use permits for limited duration terms instead of in perpetuity.<sup>240</sup> In contrast, most western prior appropriation permits are essentially perpetual.<sup>241</sup> Assuming that

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237. See, e.g., *Regulated Riparianism*, *supra* note 5, at 9-96 to 9-97 & n.461 (discussing a number of states’ public welfare requirements for water permit reviews). Examples include statutes from Florida and Georgia. FL. STAT. ANN. § 373.019 (13) (West 2003); O.C.G.A. § 12-5-31(e)(5) (2003).

238. See, e.g., CT. STAT. ANN. § 22a-373(b)(2), (5), (6), (7) (version 2003) (considering recreation, water quality, flows needed for fish and wildlife, navigation); O.C.G.A. § 12-5-31(e)(2)-(3) (2003) (considering nature, size, and impact on other uses).

239. *But see* ANDERSON, *supra* note 236, at 12-22 (describing the inefficiencies and lost value in relying on regulatory approaches).

240. *Regulated Riparianism*, *supra* note 5, at 9-57 to 9-62.

241. Robert E. Beck, *Elements of Prior Appropriation*, in 2 WATERS AND WATER RIGHTS 12-27 (Beck ed., repl. vol. 2001) (noting that terminating a water right granted under the prior appropriation

limited duration permit terms are not overly long, this feature can allow the administering agency to have a regular look at the permitted use to determine if it is still in the public interest and to assess continuing impacts of the water use, including the effect on streamflows and instream uses of water.<sup>242</sup> Of course, regulators need to balance the public's interest in a short leash for water users against the needs for certainty and investment security that were important reasons for adopting the permit requirements in the first place.<sup>243</sup>

### 3. *Protecting Instream Flows Proactively*

The common law riparian doctrine, especially in its earliest "natural flow" incarnation, recognized the value of streamflow and discouraged excessive diversion and consumption.<sup>244</sup> Even as the common law moved away from the strict natural flow doctrine to the American reasonable use version of riparianism, the doctrine was always much more protective of instream flow than the prior appropriation doctrine, and this approach carried over into the statutory schemes.<sup>245</sup> However, as with public welfare or reasonableness review and state water planning, to be effective in preventing eastern streams from going the way of western streams, the protection for minimum streamflows must exist in practice as well as in theory, and it must be systematic rather than ad hoc and case-by-case. Furthermore, a regulatory scheme must base minimum flow standards on a full understanding of the watershed functions and hydrologic processes.

In fact, Georgia has had a minimum flow standard in place for several years that it uses in issuing permits for water use, pollution

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doctrine effectively requires the user to cease the use of the water). *But see* MONT. CODE ANN. § 85-2-301(2)(a)(ii) (Version 2003) (using leases instead of perpetual water rights for uses in excess of 4000 acre feet per year or 5.5 cubic feet per second).

242. California alone among western states asserts authority to alter the terms of a water right in response to changing conditions. *See, e.g.,* United States v. State Water Res. Control Bd., 227 Cal. Rptr. 161 (Cal. Ct. App. 1986) (discussing California's continuing authority to review water rights).

243. Strong free market components would not likely favor short permit terms, precisely for these reasons, but would instead argue that clearly defined and transferable rights would solve the problem of changing needs more efficiently. *Cf. ANDERSON, supra* note 236, at 78-79 (noting the inefficiencies of giving significant power to administrators because they do not always have the information they need to make the best decisions and because they do not need to face the opportunity costs of their actions).

244. *See, e.g.,* Choe, *supra* note 22, at 1930-32.

245. *Id.*

discharge, and water impoundments; however, because the State originally developed the standard primarily for pollution dilution, it did not necessarily provide sufficient flows to protect aquatic life.<sup>246</sup> In 2001, the State adopted a more protective minimum flow policy that it will use until it completes a more comprehensive analysis of instream flow needs in 2006.<sup>247</sup>

#### 4. State Water Planning

Comprehensive state water planning can also help protect instream values even as consumptive use demands increase.<sup>248</sup> These plans can inventory a state's water resources and consider them in an integrated fashion, such as recognizing hydrologically connected surface water and groundwater and treating rivers as hydrologic units of nested watersheds, from small tributaries to large river basins. The planners can project water demands of all types, from in-stream recreational uses to irrigation to municipal supply. With a systematic appreciation of supply and demand, a water plan can then recommend strategies to protect a baseline of minimum streamflows and hydrologic integrity before allocating water for consumptive uses. This type of plan can also propose tools for demand management, such as appropriate water pricing to encourage efficiency.

#### B. Picking and Choosing: Mining the Western Experience for a Few Nuggets

Although many eastern states are still in a position to plan ahead for instream flow protection and to use existing legal devices to obtain the necessary protection, some states may no longer have

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246. See *Georgia's New Interim Instream Flow Policy*, Georgia Conservancy, at [http://www.georgiaconservancy.org/WaterQuality/WQ\\_instreamflowpolicy.asp](http://www.georgiaconservancy.org/WaterQuality/WQ_instreamflowpolicy.asp) (last visited Feb. 20, 2005).

247. *Id.*

248. In 2004, the Georgia Legislature directed the Georgia Environmental Protection Division ("EPD") to prepare a statewide comprehensive water plan by July 1, 2007. Press Release, State of Georgia Office of the Governor, Governor Purdue Signs Bill Authorizing Statewide Water Plan (May 13, 2004), available at <http://www.gov.state.ga.us/press/2004/press452.shtml>. The press release announcing the Governor's signature on House Bill 237, the authorizing legislation, quoted the EPD's director: "Population growth and periodic drought have put tremendous strain on our water resources, so there is no time to lose." *Id.* (quoting Carol A. Couch). However, the part of HB 237 that would have authorized trading water permits did not pass. See *supra* note 29.

either a sufficient planning horizon or sufficient water “in reserve” to preserve instream flows before it is too late, at least in some locations. For these states, selectively borrowing a few tools from the western water marketing toolbox could be very helpful in accomplishing their water management goals. In fact, the usefulness of these market tools can extend beyond streamflow protection and restoration to achieve overall water allocation needs.

Some eastern states already have plenty of water problems where market transactions can help. Although few eastern rivers actually run dry on a regular basis, there are certainly waterways in trouble due to pollution, alteration by dams, dredging, channelization, and aquatic species decimation. Even though eastern water rights are very different from western water rights and even though official instream water rights do not generally exist in the eastern states, there are still places where targeted purchases of water or other financial incentives could help solve these problems. The key is not to limit oneself by thinking that water marketing is only the narrow notion of buying title to a water right, as if it were the deed to a piece of real property, and instead to think expansively about what market-like transactions can offer and, thus, of how to use market-like tools selectively and creatively.<sup>249</sup>

For instance, dams have damaged many eastern rivers by disrupting migratory fish passage, altering water flow levels and timing, affecting water temperature and quality, and impeding the flow of nutrients and other materials.<sup>250</sup> Thousands of small dams throughout New England have exacted a tremendous toll on the populations of migratory Atlantic salmon.<sup>251</sup> Besides causing environmental damage, many of these dams pose safety hazards as

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249. Professor Dellapenna strenuously objects to the use of the word “market” to describe certain kinds of water transactions. *Myth of Markets*, *supra* note 45, at 318-27. I suppose by suggesting that states should consider water marketing expansively, I am committing precisely the offense he rails against. *Id.* Although I appreciate his desire for “getting names right,” it seems to me that what water management needs most these days is “out-of-the-box” thinking rather than an argument about use of terms, and since the kinds of transactions I am discussing involve voluntary transactions between parties and the exchange of money, “market” is at least a useful, if not perfect, term. *Id.* at 317.

250. See Jo Beth Mullens, *An Examination of Dam Removal in New England*, 51 NESTVAL PROCEEDINGS (2002), available at [http://www.wsc.ma.edu/nestval/Mullens\\_JoBeth.pdf](http://www.wsc.ma.edu/nestval/Mullens_JoBeth.pdf) (last modified Nov. 12, 2003).

251. *Id.* at 52-53. Users built these dams from the 1700s through the early 1900s, for the most part long before the federal government built large dams around the West. *Id.* They provided water power for grain mills, sawmills, textile production, and tanneries. *Id.*

well.<sup>252</sup> The cost of repairing or retrofitting dams for both safety and environmental restoration can be greater than the cost of dam removal.<sup>253</sup> For private owners, unless the dam is producing significant economic benefits, the costs of both repair and removal can be prohibitive.<sup>254</sup>

A market of sorts has already developed in the New England states in which conservation, fisheries, and river restoration interests are “buying” dam removal.<sup>255</sup> These interests include private parties, non-governmental entities, citizens’ groups, and governmental agencies.<sup>256</sup> These “buyers” are not buying water rights in the same way that the buyers in the western streamflow markets are buying them, but they are certainly using the power of the purse to achieve river restoration goals. Particular parties are willing to pay for a free-flowing stream, which in turn produces its own benefits, such as improved water quality and esthetics, recreational opportunities, and economic stimulation.<sup>257</sup> These are the same principles operating in the western streamflow markets.<sup>258</sup>

Another instance where market tools could improve eastern water use is in encouraging more efficient water use. Although irrigation is neither as prevalent nor as inefficient in the East as in the West, conservation is still possible in the agricultural sector, and efficiency

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252. *Id.* at 51-54.

253. *Id.* at 53-54.

254. Mullens, *supra* note 250, at 53-54 (giving examples from Wisconsin, New Hampshire, and Vermont where dam repair cost estimates were as much as three times estimated removal costs).

255. *Id.* at 53-56 & tbl.1 (discussing recent dam removals in Connecticut, Maine, Vermont, New Hampshire, Massachusetts, and Rhode Island mostly for environmental reasons).

256. *Id.* at 54, 56-59. Integrated water resources plans, as discussed earlier, can help target investments to achieve effective restoration. *Id.* at 50, 54 (discussing examples from Connecticut and Massachusetts where dam removal was a result of overall watershed restoration plans).

257. *Id.* at 54. Mullens also noted that sometimes groups should consider the historical values of certain dams when proposing dam removal. *Id.* Although many of the New England dams she discussed are considerably older than any western dams, the historical issue can also figure into western water transactions. The largest water rights purchase completed by the Oregon Water Trust to date involves Thompson’s Mill on the Calapooia River in Oregon’s Willamette Valley. The mill, holding a water right of 1858, is the oldest continuously operating grist mill on the West Coast and is on the National Register of Historic Places. Historical value aside, however, the mill blocked fish passage to anadromous fish. The Water Trust participated in a ten-year negotiation that eventually ended in the purchase of the mill by the State of Oregon for a state park and in the purchase of the water right by the Water Trust for conversion to an instream right. Both values and the prices paid to support them were important to putting a package together that was acceptable to the seller.

258. *See supra* Part I.B.3.

improvements could free up water for other uses.<sup>259</sup> Municipalities or industrial users might even be willing to pay for some of these changes in exchange for the saved water. Municipal users also have room for efficiency improvements. Conservation or government buyers could help restore damaged aquatic ecosystems in the East as they do in the West, encouraging efficiency improvements by both urban and rural water users.<sup>260</sup> Again, these buyers might not actually be “buying” property interests in the form of water rights as in the West, but monetary offers can help retire certain uses, help to clean up pollution, or improve efficiency in water use.

Eastern states can pick and choose from the western menu while infusing their selections with their own regional flavor. In Oregon and other western states, laws have tailored market transactions to fit particular local circumstances, and eastern states can do the same. For instance, the Oregon Water Trust has participated in several “split season leases” as a way of accommodating both agricultural production and instream flow restoration with a single water right.<sup>261</sup> In a split season transaction, a rancher irrigating hay pasture who normally irrigates throughout the summer and gets three cuttings of hay in a season agrees to stop irrigating as of a certain day, such as July 15. The Water Trust leases the late-season irrigation water, pays the rancher for the lost productivity, and protects the leased water instream in late summer and fall, when struggling anadromous fish populations most need the water.<sup>262</sup> Other transactions tailored to specific situations include “non-generation” agreements (paying a water user not to generate hydroelectric power at a certain time to keep water instream instead of diverting it through a power facility) and forbearance agreements (paying a water user to “forbear” from diverting irrigation water at a particular time of the year).<sup>263</sup>

Eastern circumstances might require different arrangements, but the goal would be the same—to allow a voluntary market transaction to take place that would meet both the buyer’s and seller’s needs. Perhaps Atlanta or the Florida oyster growers could help pay for

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259. Cf. McNider et al., *supra* note 125 (discussing the differences between eastern and western irrigation).

260. See *supra* Part I.B & notes 216-233.

261. See *The Good, the Bad, and the Ugly*, *supra* note \* (discussing split season lease transactions).

262. *Id.*

263. See *id.*



small offstream storage facilities to capture winter runoff for use by irrigators in low-water seasons and years, thereby reducing the irrigation demand at the times it would otherwise be in direct competition with urban users and ecosystem needs.<sup>264</sup>

Establishing minimum streamflows proactively and then putting that water off limits to consumptive use may be the most direct and efficient way to protect aquatic habitat, recreational uses, and esthetic flows. These instream uses are by nature public uses and are less likely to be valued or protected in the market unless governmental entities themselves are active participants. However, as I explained to the puzzled conservationists in that lunchtime conversation, streamflow markets arose in the West precisely because minimum streamflows came too late to help many over-appropriated streams. In the East, parties could use targeted investments in instream flows (which are a type of market tool) preventively to restore what is already damaged, to mitigate for further water development, and to assure that eastern rivers never run dry.

### *C. Flexibility Will Be the Key to 21st Century Water Management*

Markets, when they work properly, can provide flexibility, agility, and voluntary reallocation of water from lower value to higher value uses. These goals are certainly not unique to the West. Subjecting water to market forces such as price signals can promote more efficient water use because water users are likely to think more carefully about how much water they use. After all, inefficient water use is in fact a “rational response to low water prices,” whereas allowing water markets to operate should encourage efficiency and perhaps reduce political pressure in water allocation decisions:

Not only does political control of water preclude efficient pricing, it also exacerbates conflict and encourages waste in the decision-making process. Well-defined property rights encourage people to search out margins of agreement, such as the farmer who discovers he can economize on water and profit from transferring some of his rights to a municipality. However,

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264. Cf. McNider et al., *supra* note 125 (noting that farmers in the South can irrigate using only a fraction of the available water by catching more winter water in small reservoirs).

in the absence of such a market, farmers will lobby the bureaucracy that controls the allocation, claiming that few trade-offs exist in production and that water is essential to their way of life. Likewise, the municipality will claim that more water is necessary for urban growth. Because neither party has any incentive to search out cooperative solutions, acrimony and exaggerated statements of need will dominate the debate. Depending on the value of water, competing parties invest large amounts of time and effort into influencing the political process.<sup>265</sup>

As I said early in this Article, whether Georgia (or any other eastern state) borrows water marketing devices from the western states as tools for tuning up their water management and allocation system will be a state-by-state decision. In particular, streamflow markets may seem unnecessary and foreign to many humid eastern states. However, as the southeastern states' recent experience demonstrates, the East is no longer immune from the water problems that have plagued the West for decades. My advice, therefore, is to be careful, to be selective, and to be flexible but to give water markets a good hard look to help solve these emerging problems.

### CONCLUSION

In the 1820s, the first American gold rush swept through the southeastern United States.<sup>266</sup> In 1829, the gold rush took hold in Georgia.<sup>267</sup> In the 1840s, the Georgia gold rush went from boom to bust but when gold was discovered in California in late 1848, many of Georgia's "twenty-niners" followed their dreams of fortune west and became some of California's first "forty-niners."<sup>268</sup> The western mining camps are widely credited with developing the outlines of western water law.<sup>269</sup> More than 150 years later, perhaps the circle is

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265. See Anderson & Hill, *supra* note 8, at xiv.

266. See DAVID WILLIAMS, *THE GEORGIA GOLD RUSH: TWENTY-NINERS, CHEROKEES, AND GOLD FEVER* 4-5 (1993).

267. See *North Georgia's Gold Rush*, About North Georgia, at <http://ngeorgia.com/history/goldrush.html> (last visited Feb. 20, 2005).

268. *Id.*

269. See generally DUNBAR, *supra* note 7, at 59-72.

coming around again. Water itself has become “blue gold,” an increasingly valuable and sought-after resource. Georgia, its southeastern neighbors, and other eastern states are beginning to mine western water law for some nuggets that might prove valuable to the East in facing its growing water challenges. Water marketing tools might prove to be one of these finds with some promise. Fashioned with precision to meet eastern needs and buffed up by those who know the region, this tool might gleam like a miner’s pick reflecting a western sunset . . . or maybe an eastern sunrise.

