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Water Transfers: The Case Against Transbasin Diversions in the Eastern States

*Christine A. Klein**

ABSTRACT

Water policy in the western states consistently has embraced a nineteenth century, supply-side mentality, requiring cities and other water providers to satisfy an ever-growing demand for water at virtually any cost. As a result, the western states rely upon thousands of engineered water transfers—even siphoning water from one side of mountain ranges to the other—in an unsustainable attempt to support growth. This article challenges the conventional reliance upon transbasin diversions as a response to shortage. It argues that importing water from distant watersheds lulls growing communities into a false sense of security, subsidizes unsustainable growth, and exacts significant social, economic, and environmental costs. Although this article recognizes the infeasibility of reducing western reliance upon existing large-scale transfers, it offers an alternative paradigm for the eastern states, as many of them begin to face the limits of existing water supplies. This article argues that communities could achieve water independence by shifting to a demand-side model and by nourishing the living rivers essential to both human and natural ecosystems.

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I.

INTRODUCTION: MOVING WATER TO THE PEOPLE

"[A watershed] is that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

John Wesley Powell¹

For more than a century, the default presumption among American planners has been to bring water to the people, wherever the people decide to build their cities or cultivate their farms. Ignoring the advice of John Wesley Powell, water suppliers have relied heavily upon transbasin diversions, pumping or siphoning water from its natural source for use in distant watersheds. When some of the nation's most arid cities such as Los Angeles and Denver experienced explosive growth, they welcomed their ever-expanding populations with "new" water wrestled from rural communities on the other side of the Sierra Nevada and Rocky Mountain ranges, respectively. According to one journalist, California has engineered a water infrastructure so complex that it resembles something that "might have been invented by a Soviet bureaucrat on an LSD trip."²

Transbasin diversions are ubiquitous, perhaps surprisingly so to the casual observer. There are literally thousands of transbasin diversions in the United States.³ Although more numerous

1. Environmental Protection Agency, *Watershed Information Network: What is a Watershed* (quoting John Wesley Powell, scientist geographer), <http://www.epa.gov/win/what.html> (last visited Mar. 6, 2007).

2. See *infra* note 59 and accompanying text.

3. *South Florida Water Management Dist. v. Miccosukee Tribe of Indians*, 541 U.S. 95, 109 (2004) (noting thousands of "engineered diver[sions] of one navigable water into another," particularly in the western states, "whose water supply net-

in the western states,⁴ transbasin diversions also occur in the east. New York City, for example, relies upon pristine, upstate sources for its water supply, collecting water from a 1,972 mile watershed spanning eight counties in New York and one in Connecticut.⁵ Although eastern riparian doctrines such as the “watershed rule” purport to forbid the separation of land and water,⁶ those rules are riddled with exceptions, particularly in the case of securing urban water supplies.⁷

Despite heroic efforts, many American cities have not secured reliable water supplies, and continue to seek more water.⁸ Increasingly, cities have turned their thirsty sights toward agriculture, transferring water rights from irrigation to urban uses.⁹ But this may not be enough. From a global perspective, water shortage is not simply a problem that happens somewhere else. In connection with “World Water Day 2007,” the United Nations declared “coping with water scarcity” as its theme.¹⁰ The UN’s five-color map of critically dry regions is not confined to improv-

works often rely on engineered transfers among various natural water bodies”). See also *South Florida Water Management Dist. v. Miccosukee Tribe of Indians*, *Brief of Amici Curiae of the National Water Resources Ass’n et al. in Support of Petitioner*, 2003 WL 22137029, at *8 (Sept. 10, 2003) (explaining that “in the Upper Colorado River Basin alone there are at least 36 major transbasin conveyances that move approximately 700,000 acre-feet of water per year from the basin of origin for use in another basin”).

4. From its inception, the western prior appropriation doctrine has endorsed transbasin diversions. See, e.g., *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443 (1882) (protecting prior transbasin diversion over subsequent riparian use within the basin).

5. New York City Dep’t of Env’tl. Protection, *History of New York City’s Water Supply System*, <http://www.ci.nyc.ny.us/html/dep/html/history.html> (last visited Mar. 18, 2007) (describing upstate network of 19 reservoirs, and 3 controlled lakes with approximate storage capacity of 580 billion gallons); New York City Dep’t of Env’tl. Protection, *Watershed Protection*, <http://www.nyc.gov/html.dep/watershed/html/whereprotect.html> (last visited Mar. 18, 2007).

6. See, e.g., *Stratton v. Mt. Hermon Boys’ School*, 103 N.E. 87 (Mass. 1913) (observing that “[i]n the main, the use by a riparian owner by virtue of his right as such must be within the watershed of the stream, or at least that the current of the stream shall be returned to its original bed before leaving the land of the user” but declining to enjoin diversions out of the watershed or award damages unless there is proof of “actual injury to the lower estate for any present or future reasonable use.”).

7. *Id.* See also DAVID H. GETCHES, *WATER LAW IN A NUTSHELL* (West Pub. Co. 3d ed. 1997) at 36-38 (discussing exceptions to the riparian doctrine, including eminent domain, to allow municipal use by cities not owning significant tracts of riparian land).

8. See *infra* Part III.C.

9. See *infra* Part III.D.

10. See UN Water, *2007 World Water Day: Coping With Water Scarcity*, <http://www.unwater.org/wwd07/downloads/documents/wwd07brochure.pddf> (last visited Apr. 12, 2007).

erished sections of Africa or to the great deserts of the world. Instead, a disturbingly bright swathe of orange—designating areas of physical water scarcity—sweeps across a large chunk of the American southwest. Moreover, such shortages are likely to be exacerbated by climate change, including global warming.¹¹

This article challenges the conventional reliance upon new transbasin diversions as a response to shortage. Although it recognizes the infeasibility of reducing western reliance upon existing large-scale water transfers, this article offers an alternative paradigm for the eastern states, as many of them begin to face regional water shortages. Part II sets the stage by defining transbasin diversions, placing them in context, and considering their relationship to so-called “water markets” and to the bottled water industry. Part III offers a critique of transbasin diversions, pondering the consistently violent negative reaction that they engender. Beyond the human drama, Parts III.B and C posit that transbasin diversions lull growing communities into a false sense of security with the myth that “new” water will always be available, thereby feeding an unsustainable addiction to growth. Parts III.D and E survey the negative social, economic, environmental, and philosophical costs associated with large-scale water transfers. Part IV provides an intellectual blueprint to help communities move away from a precarious dependence upon importing water from increasingly distant sources by regulating demand rather than supply, living within a water budget, and nourishing living rivers as an essential prerequisite to protect both human and watershed ecosystems from collapse. This article concludes by placing water independence on a par with energy independence, framing it as an easily overlooked pillar of national security.

II.

THE CONTEXT

A. *Transbasin Diversions Defined*

For purposes of this article, “transbasin water diversion” means the removal of water from its natural watershed for use in a different drainage basin. Although most commonly associated

11. See, e.g., Peter N. Spotts, *Latest Global Warming Report Urges World to Begin Adapting*, CHRISTIAN SCIENCE MONITOR, April 6, 2007, <http://www.csmonitor.com/2007/0406/p25s01-wogi.htm> (last visited Apr. 10, 2007) (summarizing findings of Intergovernmental Panel on Climate Change predicting 10-30% decreases in river runoff in dry, mid-latitude regions).

with diversions from surface water sources, the term might also encompass the interbasin transport of groundwater. From the perspective of the basin or aquifer of origin, transbasin diversions have a consumptive use of 100% because excess water cannot return to its natural source by gravity flow. The physical mechanism supporting such diversions varies widely. In some instances, water may be exported from its source through a complex network of dams, reservoirs, pipes, canals, and aqueducts.¹² Other transfers may be engineered more simply, incorporating natural stream channels to the extent possible as conveyance structures.¹³

Transbasin diversions can involve either the small- or large-scale movement of water, depending upon the scope of the drainage basin. As the scale of the relevant watershed increases, the potential for significant impacts also grows. At one end of the spectrum, transfers may be relatively minor, involving the movement of water among drainage sub-basins just a few acres in size. At the other end of the spectrum, transmountain diversions in Rocky Mountain states such as Montana, Wyoming, Colorado, and New Mexico, may divert waters destined for the Pacific Ocean or the Atlantic Ocean to ultimate destinations at the opposite side of the continent.

As an important distinction, transbasin diversions can involve either the *initial* removal of water from its natural source for a particular use at a distant location, or the *reallocation* of water from one place of use to another. In the case of the former, virtually all states allow water users to extract the resource free of charge, provided that the water is put to a use recognized by the state as beneficial or reasonable, and provided that the water is not wasted.¹⁴ In the case of the latter, the reallocation of water for use in a different watershed—a change in the place of use—is often accompanied by other changes. These include changes in the type of use (as from agricultural irrigation to municipal use) and time of use (as from the irrigation season to year-round use). Reallocations may also involve changes in authorized water users

12. See *Brief of Amici Curiae of the National Water Resources Ass'n et al. in Support of Petitioner*, *supra* note 3, at *7-8 (noting that “[t]ransbasin conveyances may be as mundane as the diversion of water from a river into a nearby (but hydrologically separate) stream bed for delivery to a nearby town or field, or as massive as the transport of the vast waters of Northern California through the San Francisco Delta”).

13. *Id.*

14. GETCHES, *supra* note 7, at 3-7

(the “owners” of water rights or holders of water permits), typically in states that allow water users to “transfer” their rights or permits to others. The transfer generally takes the form of a sale—particularly under the western prior appropriation doctrine—whereby users who acquire water rights for free may sell them to others at significant profits.¹⁵

B. *Water Markets Compared*

Water transfers, as discussed above, may be facilitated by so-called *water markets*, which depend upon the legal recognition of secure property rights to the use of water, thereby allowing the sale of water rights (or permits) from one private user to another.¹⁶ Increasingly, the seller is an agricultural irrigator, and the buyer is an urban municipality—potentially implicating sweeping changes in the place of use, as well as ownership, type of use, and time of use. The relationship between water markets and transbasin diversions can be conceptualized as two spheres of a Venn diagram. The area where the spheres overlap represents water rights that have undergone both a change of ownership (by sale) and a changed place of use (to a new watershed).

The modern push for free trade and free markets has spilled over into the realm of water markets. There is widespread and enthusiastic support for the development of robust water markets in the western states.¹⁷ Proponents cite to the potential for

15. The sale of water rights through water markets is discussed in *infra* Part II.B.

16. See, e.g., Brian E. Gray, *The Shape of Transfers to Come: A Model Water Transfer Act for California*, 4 HASTINGS W-NW, J. ENVTL. L. & POL'Y, 23, 24 (1996) (asserting that “[s]ecure property rights are a prerequisite of all market-based systems of resource allocation,” and noting the challenge posed by “the reasonable and beneficial use doctrines, forfeiture laws, the public trust, and the panoply of statutes that protect water quality, instream uses, and endangered species [thereby] render[ing] water rights (and contract rights to water) less secure than other forms of property rights”).

17. See Jedidiah Brewer et al., *Transferring Water in the American West: 1987-2005*, 40 U. MICH. J.L. REFORM 1021 (2007); Robert Glennon & Michael J. Pearce, *Transferring Mainstem Colorado River Water Rights: The Arizona Experience*, 49 ARIZONA L. REV. 235 (2007); Andrew P. Morriss, *Real People, Real Resources, and Real Choices: The Case for Market Valuation of Water*, 38 TEX. TECH. L. REV. 973, 974 (2006) (arguing that “markets provide the only way to value resources, including water, which enables their use without provoking conflicts among those who compete for their use”); Robert Glennon, *Water Scarcity, Marketing, and Privatization*, 83 TEX. L. REV. 1873, 1884 (2005) (arguing that water markets “would facilitate the movement of water from low-value activities to higher-value ones, thus resulting in a more efficient deployment of the resource”); Gary D. Libecap, *Chinatown: Owens Valley and Western Water Reallocation—Getting the Record Straight and What it Means for Water Markets*, 83 TEX. L. REV. 2055, 2058 (2005) (arguing that decision-

makers must “consider the societal benefits of cities and the reasons that water transfers to urban areas so greatly serve the public interest”); Scott S. Slater, *A Prescription for Fulfilling the Promise of a Robust Water Market*, 36 MCGEORGE L. REV. 253, 256 (2005) (arguing that in California, “substantial progress must be made . . . in creating an orderly process to measure and consider third-party impacts so as to improve local support for inter-regional transfers”); Barton H. Thompson, Jr., *Uncertainty and Markets in Water Resources*, 36 MCGEORGE L. REV. 117, 119 (2005) (arguing that “to reduce the evils of uncertainty for water users, one of the strongest steps that . . . [California and the federal government] can take is to further promote the development of robust water markets”); James L. Huffman, *Water Marketing in Western Prior Appropriation States: A Model for the East*, 21 GA. ST. U. L. REV. 429 (2004) (concluding optimistically “that the future will lead to more water marketing and, as a result, to better use and protection of scarce water resources”); Janis M. Caring & David L. Sundig, *Emerging Markets in Water: A Comparative Institutional Analysis of the Central Valley and Colorado-Big Thompson Projects*, 41 NAT. RES. J. 283 (2001) (arguing that “[w]ater trading is a potential means to improve the productivity of developed water supplies and reconcile competing uses”); Andrew P. Morriss, *Lessons from the Development of Western Water Law for Emerging Water Markets: Common Law vs. Central Planning*, 80 OR. L. REV. 861, 864 (2001) (arguing that “there . . . will be an increased incentive for national governments to stymie . . . [the] development [of water markets] by imposing state controls to appropriate the increasingly valuable water resources,” an action “likely to result in destruction of valued local institutions and legal rules”); 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, 358 (2000) (focusing upon “the potential usefulness of extended water markets in which public values are adequately protected”); James W. Boyd, *Canada’s Position Regarding an Emerging International Fresh Water Market with Respect to the North American Free Trade Agreement*, 5 NAFTA L. & BUS. REV. AM. 325, 352 (1999) (arguing that “fresh water is inequitably distributed throughout the earth” and noting “the plausibility of the need for an international fresh water market”); Chris Seldin, *Interstate Marketing of Indian Water Rights: The Impact of the Commerce Clause*, 87 CAL. L. REV. 1545 (1999) (observing that in recent years Native American tribes and Indian law commentators “note that, for many tribes, marketing tribal water for off-reservation use can generate substantial revenue from a resource for which the tribes have little present use on the reservation”); David W. Yoskowitz, *Spot Market for Water Along the Texas Rio Grande: Opportunities for Water Management*, 39 NAT. RES. J. 345 (1999) (arguing that “[w]ater markets have become increasingly popular with water managers and state officials as a means of allocating or reallocating [water] resource[s]”); Thomas J. Graff & David Yardas, *Reforming Western Water Policy: Markets and Regulation*, 12 WTR NAT. RESOURCES & ENVT 165, 166-67 (1998) (concluding that “it is our view that needed water reallocations can best be accomplished through the development of water markets”); Ronald A. Kaiser & Laura M. Phillips, *Dividing the Waters: Water Marketing as a Conflict Resolution Strategy in the Edwards Aquifer Region*, 38 NAT. RESOURCES J. 411 (1998) (arguing that water marketing “offers a means to minimize conflicts over the reallocation of water from lower economic valued agricultural uses to higher valued domestic, industrial, environmental and recreational uses”); Ronald A. Christaldi, *Florida’s Water Future: A Legislative Proposal for the Distribution of Water Resources in Florida*, 71 FLA. BAR J. 88 (1997) (favoring interdistrict transfers of water, in context of initial allocations rather than water markets); Santos Gomez & Penn Loh, *Communities and Water Markets: A Review of the Model Water Transfer Act*, 4 HASTINGS W.-N.W.J. ENVT. L. & POL’Y 63, 63-64 (1996) (observing that “there seems to be growing agreement among economists, environmentalists, urban water agencies and others that water

markets to efficiently reallocate water to its most highly-valued use, relying upon willingness to pay as an acceptable proxy for value.¹⁸ A second group of commentators stops short of endorsing western water markets, but generally accepts their development as inevitable. Instead of challenging the fundamental notion of water markets, this group seeks to harness their force for environmental good,¹⁹ or at least to minimize the social

markets can and should help solve [the] problem” of conflicts over water); Ronald A. Kaiser, *Texas Water Marketing in the Next Millennium: A Conceptual and Legal Analysis*, 27 TEX. TECH. L. REV. 181, 185 (1996) (offering “suggestions for changing Texas laws and administrative rules to encourage the reallocation of water through market mechanisms”); Stuart L. Somach & Andrew M. Hitchings, *Antitrust Considerations in Water Marketing*, 11 NAT. RES. & ENV’T 26, 67 (1996) (arguing that both “excessive governmental involvement” and “monopolistic, anticompetitive behavior” should “be avoided if the idea of free market allocations of water is to be given a true opportunity to work”); Kevin M. O’Brien & Robert R. Gunning, *Water Marketing in California Revisited: The Legacy of the 1987-92 Drought*, 25 PAC. L.J. 1053, 1056 (1994) (examining “the major unresolved issues that continue to hinder the development of water marketing”); Richard W. Wahl, *Market Transfers of Water in California*, 1 WEST-N.W. 49, 68 (1994) (arguing that “California water agencies should consider continuing the water bank in some form and/or allowing privately negotiated transactions to serve the same function”); Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CAL. L. REV. 671, 673 (1993) (arguing that “[g]iven the significance of institutional obstacles to major interbasin transfers, institutional rather than legal reform may have the greatest impact on the future growth of water markets”); Zach Willey, *Behind Schedule and Over Budget: The Case of Markets, Water, and Environment*, 15 HARV. J. L. & PUB. POL’Y 391, 424-25 (1992) (arguing that the “overall gains from [water] trading systems are apparent, and the emergence of diverse regional water markets is the sensible result”); Kevin M. O’Brien, *Water Marketing in California*, 19 PAC. L.J. 1165, 1168 (1988) (arguing in favor of legislation “that would remove unnecessary barriers [to water marketing] while at the same time protecting legitimate interests”).

18. *Id.*

19. Several scholars have begun to explore the use of market mechanisms to promote watershed preservation, as through the sale, lease, or donation of water rights for the maintenance of water levels within natural stream channels. See, e.g., Janet C. Neuman, *Have We Got a Deal for You: Can the East Borrow from the Western Water Marketing Experience?*, 21 GA. ST. U. L. REV. 449, 455 (2004) (discussing use of water markets as mechanism to preserve instream flows); Ellen Hanak & Caitlin Dyckman, *Counties Wrestling Control: Local Responses to California’s Statewide Water Market*, 6 U. DENV. WATER L. REV. 490, 491 (2003) (observing that in some rural counties, “the advent of the [water] market has led to experimentations with new forms of . . . monitoring and mitigation systems” and noting that the rural reaction to water markets may go from protectionism to “one of advancing groundwater management at the local level”); Kelly A. Cole, *A Market-Based Approach to the Protection of Instream Flow: Allowing a Charitable Contribution Deduction for the Donation of a Conservation Easement in Water Rights*, 6 HASTINGS W.-N.W. J. ENVTL. L. & POL’Y 325 (2000) (arguing in favor of water markets, at least in context of preserving instream flows); 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, 184 (1999) (arguing in favor of water markets, at least in the context of “building the market for in-stream water rights in Oregon, and by example, through-

harms that they inflict.²⁰ A third area of scholarship does not oppose water markets, but doubts whether true water markets actually exist under western prior appropriation,²¹ or even can exist under eastern riparianism.²² In addition, a few commentators challenge the desirability of water markets.²³ Rather than enter the debate as to the value of western water markets, this article simply notes their overlap with water transfers.

C. *Bottled Water Compared*

The water bottling industry has expanded dramatically over the past few decades. By 2003, bottled water was second only to carbonated soft drinks in volume of commercial beverage sales in the United States.²⁴ By 2005, the average American was drinking more than twenty six gallons of bottled water annually, repre-

out the West"); Ray Huffaker et al., *Institutional Feasibility of Contingent Water Marketing to Increase Migratory Flows for Salmon on the Upper Snake River*, 33 NAT. RESOURCES J. 671 (1993) (arguing for a resolution of "the potential institutional and legal obstacles to superimposing a dry-year option (contingent) water market between irrigators and hydropower utilities"); Paul R. Williams & Stephen J. McHugh, *Water Marketing and Instream Flows: The Next Step in Protecting California's Instream Values*, 9 STAN. ENVTL. L.J. 132, 134 (1990) (arguing in favor of "utiliz[ing] the state's increasing use of 'water marketing' to [affect] reallocation of water from diversionary to instream uses").

20. See, e.g., Joseph L. Sax, *Understanding Transfers: Community Rights and the Privatization of Water*, 1 WEST-N.W. J. ENVTL. LAW POL'Y THOUGHT 13, 16 (1994) (arguing that states must recognize legitimate, third-party community claims in water transfers, and must "institutionalize [these claims] . . . as part of the price of water, rather than letting all the benefits flow to the formal owners of water use rights and to the buyers of the water"). See also Robert Glennon, *The Quest for More Water: Why Markets are Inevitable*, Perc Reports (Sept. 2006), at 7, www.perc.org.

21. See Joseph A. Dellapenna, *The Importance of Getting Names Right: The Myth of Markets for Water*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 317, 327 (2000) (arguing that "true markets for water [have] been rare" and that "certain administrative regimes . . . have been misdescribed as 'markets'").

22. Joseph A. Dellapenna, *Special Challenges to Water Markets in Riparian States*, 21 GA. ST. U. L. REV. 305, 308 (2004) (arguing that "[w]hen a market works, it is the most efficient mechanism for allocating resources to particular uses," but concluding that "certain special challenges . . . will make it difficult or impossible to use markets as a water management tool in a riparian jurisdiction").

23. See, e.g., Clifford J. Villa, *California Dreaming: Water Transfers from the Pacific Northwest*, 23 ENVTL. L. 997, 1000 (1993) (expressing desire that comment will "lay to rest any serious enthusiasm or concern for future proposals to transfer water from the Pacific Northwest"); Robert C. Gavrell, Note, *The Elephant Under the Border: An Argument for a New, Comprehensive Treaty for the Transboundary Waters and Aquifers of the United States and Mexico*, 16 COLO. J. INT'L ENVTL. L. & POL'Y 189, 224-25 (2005). See generally sources cited in Part III *infra*.

24. International Bottled Water Association, *Statistics: 2006 Market Report Findings*, <http://www.bottledwater.org/public/marketing.html> (last visited Mar. 20, 2007)

senting an increase from 2004 of more than 10%.²⁵ Increasingly, bottlers have added sweeteners, coloring, flavoring, vitamins, protein, calcium, electrolytes, and juices to bottles of water. They have even added additional oxygen to a compound already composed of one part oxygen to two parts hydrogen. This doctored water has been marketed under labels such as “vitamin water,” “fitness water,” “flavored water,” or “enhanced water.”²⁶ Such products may cost almost five thousand times more than ordinary municipal tap water.²⁷

Bottled water raises many of the same issues and concerns as transbasin diversions. With respect to the basin of origin, both have a consumptive use of one hundred percent, as water is removed from its source through pipes or in bottles. Moreover, in the case where watershed and bottling facility are located in separate basins, the bottling process itself requires a transbasin diversion of raw water prior to the extra-regional transport connected with the sale of the finished bottled product. Of course, many other bottled products incorporate water—including soft drinks, beer, household and beauty products, and even baby food. However, only bottled water has a readily available, lower-cost alternative: municipal tap water delivered directly to the home in numerous communities. As a result, it can be argued that in many cases bottled water is a mere convenience that needlessly removes water far from its local source. As such, the case of bottled water serves as one useful bellwether to gauge social reaction to a highly visible emblem of transbasin diversions.²⁸

(listing volume and producer revenues of U.S. bottled water market 2001-2006). Rival beverages include beer, soft drinks, and fruit beverages. *Id.*

25. *Id.* (listing volume of 2005 U.S. bottled water market as 7.5 billion gallons, representing a 10% increase from the previous year, and listing 2005 average annual per capita consumption as 26.1 gallons).

26. Nicki Britton, *Bottled Water Makes a Splash With Flavors, Colors and Nutrients*, HOUSTON CHRONICLE, Mar. 12, 2007.

27. *Id.* (comparing Kellogg's Special-K20 at \$1.50 per 16-ounce bottle to Houston tap water at approximately .25 cents per gallon).

28. The bottled water industry has been a flashpoint for protests over out-of-basin water uses. See, e.g., Christine A. Klein, *The Environmental Commerce Clause*, 27 HARV. ENVTL. L. REV. 1, 20 (2005) (describing public protest in Michigan over proposed Perrier/Nestlé Waters bottling facility).

III.

THE CRITIQUE

“If the unrestrained engineering of water was original sin, it was essentially a sin of scale. Anyone who wants to live in the west has to manage water to some degree.”

Wallace Stegner²⁹

The next two parts of this article offer, respectively, a critique of the current reliance upon transbasin diversions and a suggested alternative paradigm. The perspective aims to be realistic and prospective. For the western states, this entails an acknowledgement that it would be virtually impossible—and likely undesirable—to go back and de-engineer existing transbasin infrastructure.³⁰ In the east, however, numerous states continue to write on relatively clean slates in terms of both law and actual practice. These states can learn from the past, and choose a future course less reliant on large-scale transbasin diversions. Furthermore, eastern states can choose to retain public ownership over water resources, offering only renewable permits in place of absolute water rights.³¹

This will have several consequences for the related area of water markets. If states retain ownership of their water resources, then pervasive eastern water markets will be less likely to develop. Instead, allocations in excess of need will return to the state for reallocation to other uses (developmental or environmental).³² This will arguably produce at least three desirable impacts. First, it will eliminate the redundancy of so-called free markets in water, which are arguably nothing more than government regulatory programs disguised beneath a thin veneer of privatization.³³ Second, it will eliminate private market profiteering, including water broker/middlemen and ordinary users who acquire water rights for free and sell them at a profit.³⁴ Fi-

29. WALLACE STEGNER, *THE AMERICAN WEST AS LIVING SPACE* 36 (1987), cited in Lora Lucero & A. Dan Tarlock, *Water Supply and Urban Growth in New Mexico: Same Old, Same Old or a New Era?*, 43 NAT. RES. J. 803, 803 (2003).

30. *But see* Christine A. Klein, *On Dams and Democracy*, 78 ORE. L. REV. 641 (1999) (considering appropriate cases for dam demolition, potentially impacting the infrastructure necessary for transbasin diversions).

31. *See, e.g.*, Fla. Stat. § 373.236 (providing for the issuance of 20-50 year renewable consumptive use permits).

32. *See, e.g.*, *infra* notes 140-45 and accompanying text.

33. *See generally* Dellapenna, *The Importance of Getting Names Right*, *supra* note 21.

34. *Id.*

nally, it will allow states to make efficient use of their existing water allocation machinery by applying it to both initial allocations and subsequent reallocations of water. State personnel are already well acquainted with their water laws and public interest criteria, and may be better able to reallocate water to new uses than any profit-driven market system.

A. *The Human Drama*

Law is deeply rooted in the human experience. In the case of long-distance water diversions, the overwhelming social reaction has been that of protest: consistent, visceral, and at times violent. High drama is not uncommon, including street protests,³⁵ and even midnight dynamite parties to blow up aqueducts.³⁶ This strong sense of water protectionism is particularly remarkable when compared to other natural resources. Logging, mining, grazing, and other resource-extractive activities—although certainly subject to criticism and protest – have not triggered a comparable, consistently-negative reaction. The response to water transfers has been surprisingly uniform, whether in the past or present, in the east or the west.

For example, consider one recent conflict in the naturally water-rich state of Florida. The state enjoys an average annual rainfall of fifty-four inches, a wealth of precipitation that would be the envy of numerous other states.³⁷ Increasingly, however, that generous water supply is stretched thin by an ever-growing population, particularly in the south and southwestern portions of the state. Moreover, hydrogeologic factors place constraints upon the safe yield of aquifers, limiting the amount of groundwater that Floridians can extract without causing saltwater intrusion into freshwater sources. In 2003, an event that would have been considered minor in many western states—several sentences in an advisory report to the governor—triggered an explosion of outrage in Florida. In particular, *Improving Florida's Water Supply Management Structure* suggested that state water managers simply study “the practicality of a statewide water dis-

35. See *infra* notes 39-50 and accompanying text.

36. See *infra* note 63 and accompanying text.

37. The Florida case study is adapted from Christine A. Klein, *On Integrity: Some Considerations for Water Law*, 56 ALA. L. REV. 1009, 1037-40 (2005).

tribution system” that would “enable[] water distribution from water-rich areas to water-poor areas.”³⁸

Reading between the lines, citizens and legislators from northern Florida feared that their water would be exported to growing urban areas in the southern and southwestern parts of the state, including Miami, Tampa, and St. Petersburg. The response was a bipartisan, grass-roots protest that divided north from south. One newspaper reported “public outrage in water-rich but development-poor North Florida,”³⁹ prompting some one thousand citizens to attend public hearings by “pil[ing] into pickup trucks, church buses and vans . . . driven by the one issue that unites them all: water.”⁴⁰

Furthermore, when state senators held a series of public hearings across the state, they found few if any supporters for the water transfer idea. The last hearing, at rural Chiefland High School, drew an estimated 1,000 people, some wearing T-shirts declaring, “Our Water is Not for Sale,” and toting signs that proclaimed, “Not one damn drop!” One commissioner attending the meeting reported, “There are people in [north Florida] right now getting shotguns and buckshot.”⁴¹

Three years later, the threat of transbasin diversions from north to south continued to generate political heat. Campaign flyers for the 2006 state elections focused on the protection of north Florida’s water resources, warning that, “South Florida is growing beyond [its] means and needs our water resources to support [its] development problems. And they have the dominant political clout in the Legislature to take what they want.”⁴²

38. Florida Council of 100, *Improving Florida's Water Supply Management Structure*, Sept. 2003, at 23 (recommendations 4 and 5), available at <http://www.fc100.org/documents/waterreportfinal.pdf> (last visited Mar. 28, 2008). The Council of 100 describes itself as a “private, non-profit, non-partisan association whose members represent a cross-section of key business leaders in Florida.” *Id.* at 2. See also Craig Pittman & Julie Hauserman, *North Has It, South Wants It*, ST. PETERSBURG TIMES, Aug. 10, 2003; *Sounding the Water Alarm . . . Again (Opinion)*, Ocala.com, Jan. 11, 2007.

39. Craig Pittman & Lucy Morgan, *Fierce Outcry Sidelines Water Distribution Plan*, ST. PETERSBURG TIMES, Jan. 22, 2004.

40. Amy Wimmer Schwarb, *North vs. South: Plan to Transfer Water Meets Sea of Protest*, ST. PETERSBURG TIMES, Nov. 21, 2003, at B1.

41. Pittman & Morgan, *supra* note 39.

42. Fall 2006 campaign flyer paid for and sponsored by the Republican Party of Florida (supporting three candidates for State Senate and State Representative) (on file with author). Another flyer asked,

Why are South Florida Power Brokers Meddling in North Florida Primary Elections? Could it have something to do with helping South Florida get access to

What does it all mean? How should this innate human aversion to transbasin diversions be incorporated into the law, if at all? Florida's experience with transbasin diversions is not an isolated example: similar protests have taken place in numerous other states, including California,⁴³ Colorado,⁴⁴ Georgia,⁴⁵ Michigan,⁴⁶ New Hampshire,⁴⁷ Nevada,⁴⁸ North Carolina,⁴⁹ and Texas.⁵⁰ At the very least, this human drama should give us

North Florida's fresh water? They're pouring money in, attacking candidates with a solid record of protecting North Florida's natural resources. Why? We have water. South Florida wants it!

Fall 2006 electioneering communication paid for by the Republican Party of Florida (urging citizens to demand that south Florida organizations "keep [their] South Florida water rustlers out of North Florida elections!") (on file with author).

43. See *infra* notes 58-69 and accompanying text.

44. See *States Face Flood of Water Issues*, Topix.net, Jan. 2, 2007, available at <http://www.topix.net/content/newest/1508943627146191807826282704793396840689> [last visited Jan. 28, 2007] (noting that "Western Slope governments have spent the last decade vigorously defending their water supplies from the ever-growing Front Range communities"); Theo Stein, *West Slope Offers Plan to Ease Water Disputes*, DENVER POST, at A-01, May 27, 2005 (describing "decades of bickering across the Continental Divide that has soured relationships between Colorado's big cities and its scenic tourist spots").

45. See generally Stephen E. Draper, *Sharing Water Through Interbasin Transfer and Basin of Origin Protection in Georgia: Issues for Evaluation in Comprehensive State Water Planning for Georgia's Surface Water Rivers and Groundwater Aquifers*, 21 GA. ST. U. L. REV. 329 (2004).

46. See Klein, *The Environmental Commerce Clause*, 27 HARV. ENVTL. L. REV. 1, 18-23 (2003) (describing protectionist response in the Great Lakes region to proposed water bottling operation). See also Amy Lee, *Michigan Is Ground Zero in Groundwater War: Residents Fear Lower Water Levels as Nestle Taps into Western Michigan Watershed*, DETROIT NEWS, Jan. 29, 2007.

47. David A. Fahrenthold, *Bottlers, States, and the Public Slug It Out in Water War*, WASHINGTON POST, at A3, June 12, 2006 (describing water bottler's victory over local towns and activists). Upon winning a lawsuit to enjoin its bottled water operation, USA Springs celebrated its victory:

By the time the [New Hampshire] state Supreme Court weighed in last month, handing a victory to USA Springs, the fight had become so bitter that the company's attorney issued a one-sentence statement: 'Veni. Vedi. Vici.' The middle Latin word was misspelled, but the reference to Julius Caesar was clear—in this battle, the bottler felt it had finally conquered. *Id.*

48. See Glen Martin, *Vegas Water Wars*, THE SAN FRANCISCO CHRONICLE, at 4, July 17, 2005 (describing Las Vegas as a "desperately thirsty town" and noting that its search for new sources of water had made an enemy of ranchers).

49. Eric C. Deines, *Last Interbasin Water Transfer Meeting Draws More Opposition*, INDEPENDENT TRIBUNE (Charlotte, North Carolina), Sept. 20, 2006 (describing recent round in Catawba River water war, with public meeting at "Charlotte high school, filling the 1,000 capacity gymnasium" and featuring "signs of opposition, reading 'No' [that] were held high when any speaker in favor of the proposal approached the podium").

50. Carlos Guerra, *Latest Aquifer Pumping Skirmish Could Lead to Major Water War*, SAN ANTONIO EXPRESS-NEWS, Jan. 4, 2007 (describing conflict over legislative proposal to raise pumping limits on the Edwards Aquifer by 22 percent).

pause, prompting a search for the roots of such unrest. Certainly, little weight should be given to baser impulses—such as parochial protectionism⁵¹ or the hoarding of water for merely speculative future uses. But after stripping away suspect rationales, the remaining motivations may serve as valuable signposts to guide the formation of water diversion policy that is consonant with the deep and heartfelt human connection with watersheds.

B. *The Myth of “New” Water*

The default presumption of traditional water managers can be characterized as “moving water to the people.” Under this supply-side view, water officials believe they have a duty to overcome virtually any obstacle in order to support consumer demand and continued growth. As that demand grows—and it inevitably does—providers have looked to increasingly distant sources for additional water supplies, referring to them in casual shorthand as “new water.”⁵² Such speech has alchemical overtones, belying a sobering reality:

There is essentially the same amount of freshwater on the planet today as there was 2,000 years ago. Yet this supply, which was then shared by no more than 300 million people, today must sustain a population of over 5.7 billion that is projected to grow to almost 10 billion by 2050.⁵³

51. See Christine A. Klein, *The Law of the Lakes: From Protectionism to Sustainability*, 2006 MICH. ST. UNIV. L. REV. 1 (2006) (discussing potential protectionist thrust of regional agreement).

52. See, e.g., John E. Thorsen et al., *Dividing Western Waters: A Century of Adjudicating Rivers and Streams*, 9 U. DENV. WATER L. REV. 299, 462 (2006) (discussing conflict between Colorado irrigators and Ute Indian tribes, culminating in a settlement involving “[n]ew water, seemingly pulled out of Colorado’s thin air”); *Answering a Call on the Colorado River Compact*, 8 U. DENV. WATER L. REV. 732, 735 (2005) (reporting conference proceedings during which speaker “noted that reuse of trans-mountain diversions will be an important aspect in long-term municipal water planning because it reduces the amount of ‘new’ water that an agency must import to meet increasing demands”); Gavrell, *supra* note 23 (noting risk that water markets . . . create only temporary solutions that could have the effect of staving off essential reforms in water-use patterns for too long, by creating the illusion of ‘new’ water sources in a region that is rapidly using too much already”); Peter D. Nichols & Douglas S. Kenney, *Watering Growth in Colorado: Swept Along by the Current or Choosing a Better Line?*, 6 U. DENV. WATER L. REV. 411, 413 and 420 (2003) (suggesting that “trans-basin cooperation can make additional supplies of new water available to meet urban Front Range growth [in Colorado], at least where the basin of origin has unmet needs”).

53. Pamela LeRoy, *Troubled Waters: Population and Water Scarcity*, 6 COLO. J. INT’L ENVTL. L. & POL’Y 299 (1995). See also Timothy O’Neill, *Water and Freedom: The Privatization of Water and Its Implications for Democracy and Human Rights in the Developing World*, 17 COLO. J. INT’L ENVTL. L. & POL’Y 357, 358 (2006) (“While

Reference to “new” water lends subtle credence to the notion that somehow more water can be created, defying the actual limits of the earth’s finite water supply. As a result, water managers and politicians are reluctant to impose water-based limits on regional growth,⁵⁴ thereby reinforcing the supply-side mentality.

C. *Feeding an Addiction*

Semantics aside, continued reliance upon “new” water or sources may provide a type of water security that is more illusory than real.⁵⁵ History suggests that there can never be enough water to satisfy unfettered demand, at least where users do not bear the full costs of their water use. As an analogy, consider another supply and demand problem: reducing traffic congestion to acceptable levels. Today, transportation planners generally agree that “we cannot build our way out of congestion.”⁵⁶ That is, as new roads are built, more drivers use the new roads until traffic is moving no more quickly than before the construction. In addition, new roads attract new development, which in turn attracts more traffic.⁵⁷ Likewise, water managers have begun to recognize that they cannot “build” their way out of water

people continue to believe there is an infinite supply of fresh water on our planet, such an assumption is tragically mistaken. . . The amount of water on the planet, fresh or otherwise, is finite, yet the demands made upon that supply are ever increasing.”).

54. Nichols & Kenney, *supra* note 52, at 416 (asserting that “municipal and industrial growth decisions are rarely based on water availability”).

55. See Denise D. Fort, *Keep Your Money: Let the West Pay for Its Own Water Projects*, 27 PUB. LAND & RESOURCES L. REV. 15, 19 (2006) (arguing that federal subsidies for additional water supplies “lead people to use water as though it were freely available, to move to areas where there isn’t sufficient water, and to plan for future growth, lulled into a false confidence that water supplies are sustainable”); A. Dan Tarlock & Sarah B. Van de Wetering, *Western Growth and Sustainable Water Use: If there are No “Natural Limits,” Should We Worry About Water Supplies?*, 27 PUB. LAND & RESOURCES L. REV. 33, 38-39 (2006) (noting that “water supply has seldom been a factor in local government land use planning” which “reflects both the longstanding assumption that humans can and should overcome any natural constraints on progress and the availability of large blocks of stored, cheap federal water to buffer cities in times of shortage”).

56. See, e.g., *Testimony on Peak-Hour Traffic Congestion Before the Senate Committee on the Environment and Public Works* (Anthony Downs, Senior Fellow, Brookings Institution), May 19, 2002, <http://www.anthonydowns.com/peakhourtestimony.htm> (last visited April 1, 2007); but see Peter Samuel, *How to “Build Our Way Out of Congestion”: Innovative Approaches to Expanding Urban Highway Capacity*, Reason Public Policy Institute (1999), <http://www.rppi.org/ps250.html> (last visited April 1, 2007) (advancing challenge to conventional wisdom).

57. *Testimony on Peak-Hour Traffic Congestion, supra* note 56.

shortages by developing new infrastructure and new water supplies, but this recognition is far from universal.

Los Angeles, for example, has exhibited an insatiable thirst for water.⁵⁸ To satisfy the water demands of Los Angeles and the state as a whole, California has engineered what a New York Times article described as something that “might have been invented by a Soviet bureaucrat on an LSD trip.”⁵⁹ In the early twentieth century, realizing that its water supply would soon become insufficient, the growing city reached across the Sierra Nevada Mountains to the remote Owens Valley. There, city officials stealthily purchased water rights and options for land, pretending to be ranchers and farmers.⁶⁰ Completing a 233-mile transmountain aqueduct through the Mojave Desert in 1913, Los Angeles transported Owens Valley irrigation water across the mountains for municipal use.⁶¹ As a result, the city drained Owens Lake, exposing an area more than three times the size of Manhattan.⁶² By 1924, bitterness in the Owens Valley had escalated into violence, as dozens of valley residents dynamited the spillway gate of the aqueduct and armed protesters took over one of the intake valves.⁶³ Even before the aqueduct had finished draining Owens Lake, it became apparent that Los Angeles would require more water.⁶⁴ In response, the city returned to the Owens Valley in 1941, this time extending the aqueduct some fifty miles northward to the Mono Lake Basin.⁶⁵ Seeking yet more water, Los Angeles completed a second Owens Valley aqueduct in 1970—this time, 177 miles in length—to suck up ad-

58. See generally NORRIS HUNDLEY JR., *THE GREAT THIRST: CALIFORNIANS AND WATER, A HISTORY*, rev. ed. (University of California 2001).

59. Brian E. Gray, *Dividing the Waters: The California Experience*, 10 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 141, at 141 (2004) (quoting Peter Passell, *Economic Scene: Greening California*, N.Y. TIMES, Feb. 27, 1991, at D2).

60. Los Angeles Dep't of Water & Power, *Los Angeles Aqueduct Facts*, <http://wsoweb.ladwp.com/Aqueduct/historyoflaa/aqueductfacts.htm> (last visited Mar. 18, 2007). See also Louis Sahagun, *In Owens Valley, Water Again Flows*, LOS ANGELES TIMES, Dec. 7, 2006, at B1 (asserting that the “stealth and deception became grist for books and movies that portrayed the dark underbelly of Los Angeles’ formative years”).

61. *Id.*

62. Randal C. Archibold, *In Los Angeles, Trying to Atone for Water Sins*, N. Y. TIMES, Jan. 1, 2007, at A1.

63. Gray, *Dividing the Waters*, *supra* note 59.

64. Archibold, *supra* note 62.

65. *Id.*

ditional volumes of water from the valley.⁶⁶ Meanwhile, Los Angeles had been developing additional water supplies from the Colorado River. In 1925, the city approved a two million dollar bond for construction of the necessary infrastructure to tap the river.⁶⁷ By the end of the century, California (including Los Angeles) drew so heavily from the Colorado River that in most years the river “end[ed] in a puddle in the Mexicali Desert.”⁶⁸ By that time, the state had developed “a massive water supply and distribution infrastructure that enables water managers to move water from almost every region in the state to almost any other region in California.”⁶⁹

The Los Angeles saga should provide a cautionary tale against a single-minded focus upon increasing water supply through transbasin diversions, rather than taming demand. In retrospect, Los Angeles’s (and California’s) twentieth-century water grab was—at best—an inefficient approach, incorporating elements that would later have to be “undone” at great expense and effort. For example, California came to rely upon the use of more than its share of the Colorado River, as determined through federal legislation and negotiations with Mexico and with the six other states through which the river passes.⁷⁰ By the end of the century, political and environmental factors forced the state to relinquish some of its water supply to other states and to the natural

66. See Los Angeles Dep’t of Water & Power, *Water Past & Present: History of Water in LA*, <http://www.ladwp.com/ladwp/cms/ladwp000453.jsp> (last visited Mar. 19, 2007); Los Angeles United School District, *Los Angeles Water Time Line*, http://www.lausd.k112.ca.us/Reseda_HS/Waterweb/aquillarwtr/lawaterpg.html (last visited Mar. 19, 2007); American University, Trade & Env’t Database (TED), *TED Case Studies: The Los Angeles Aqueduct and the Owens and Mono Lakes (Mono Case)*, <http://www.american.edu/ted/mono.htm> (last visited Mar. 19, 2007); National Audubon Society v. Superior Court (“Mono Lake”), 658 P.2d 709 (Cal.), *cert. denied*, 464 U.S. 977 (1983). For additional 20th century proposals to import water into California, see Villa, *supra* note 23, at 997.

67. *Id.*

68. Gray, *supra* note 59, at 141-42.

69. *Id.* at 145. As Professor Gray observes,

[California’s water infrastructure] make[s] it possible today . . . for businesses in the Silicon Valley to produce computer chips using the runoff from Mount Lyell in the Yosemite back country, for Budweiser to brew beer in the San Fernando Valley with groundwater from the Eastern Sierra Nevada, and for the residents of San Diego to drink water that originated as snowfall outside of Pinedale, Wyoming.

Id. at 141-42.

70. See United States Dep’t of the Interior, Bureau of Reclamation, *The Law of the River*, <http://www.usbr.gov/lc/region/g1000/lawofrvr.html> (last visited April 1, 2007) (explaining that the Boulder Canyon Project Act of 1928, *inter alia*, “apportioned the lower basin’s 7.5 maf [million acre feet] among the states of Arizona (2.8 maf), California (4.4 maf) and Nevada (0.3 maf)”).

environment. In 2003, for example, the state agreed under political pressure to wean itself from the Colorado River water that it had been consuming in excess of its legal entitlement.⁷¹ Three years later, the city agreed to return water to the Owens Valley, initiating a \$24 million river restoration project.⁷²

Despite the lessons provided by the Los Angeles experience, other cities refuse to learn from Los Angeles's mistakes. Instead, growing communities today continue to look to distant watersheds for potential new sources of water as at least partial solutions to projected water shortages. Particular hotspots are Douglas County, Colorado (just south of Denver) and Las Vegas, Nevada—two of the fastest growing areas of the nation. Between 1970 and 2004, the population of Douglas County grew from 12,000 to 200,000; by 2030, the population is projected to double to 400,000.⁷³ The county relies upon groundwater, “mining” the 6,700 square-mile, 10,000 year-old Denver Basin aquifers at a rate that far exceeds the pace of recharge.⁷⁴ As a result, aquifer levels in some areas are dropping by up to thirty feet annually, leading to predictions that the area will run out of economically-recoverable water within several decades.⁷⁵ By then, those who profitably developed homes and strip malls will likely be unavailable to help remedy the situation, leaving surprised homeowners and government regulators with a difficult and expensive water supply problem. For example, one report proposes to meet the shortage with measures that include conservation and a three billion dollar network of pipes and reservoirs to import surface water from Denver to the north.⁷⁶

Las Vegas also refuses to learn from the experiences of cities such as Los Angeles. Las Vegas faces an imminent water crisis,

71. See Gale A. Norton, Secretary of the Interior, *Remarks at Formal Signing Ceremony: The California Colorado River Water Agreement*, Oct. 16, 2003, <http://www.doi.gov/secretary/speeches/hover.html> (last visited April 1, 2007) (describing the Colorado River Water Delivery Agreement as “mark[ing] an historic turning point for California and the Basin States” by requiring California to “honor the commitment it made in 1929 by adopting specific, incremental steps to gradually reduce its use of Colorado River water over the next 14 years to its basic annual allotment of 4.4 million acre feet”).

72. *Id.*

73. *Western Aquifers Under Stress: The Dwindling Denver Basin*, GEOTIMES, May 2004, http://www.geotimes.org/may04/feature_westernaq.html (last visited Mar. 28, 2008).

74. *Id.*

75. *Id.*

76. *Id.*

with projections that growth will stop by as early as 2013 unless new water supplies are secured.⁷⁷ In a scenario reminiscent of Los Angeles at the turn of the twentieth century, the general manager of the regional water authority has looked two hundred miles to the north, advancing a plan to pipe groundwater to the city from rural White Pine County.⁷⁸ This unsustainable search for new supplies of water is not confined to the west. The states of Florida⁷⁹ and Georgia,⁸⁰ among others, have begun to explore the possibility of finding new water sources to support their most rapidly-developing areas by importing water from less-developed areas of the state.

D. *Winners and Losers*

Transbasin diversions impose significant social, economic, and environmental costs upon communities in addition to any benefits they may generate. According to an old adage, “water flows uphill toward money” (and, one might add, toward voters and taxpayers). Relatively wealthy, urban communities have a disproportionately greater influence upon decision-makers than their poorer, less populated rural counterparts. As a result, invariably cities and development interests are the “winners,” and agricultural communities,⁸¹

77. Launce Rake, *Is Las Vegas Out of Water Options?*, DESERET MORNING NEWS, Aug. 27, 2006.

78. *Id.* (describing plan to pipe 200,000 acre feet annually from rural sources such as White Pine County).

79. *See supra* Part III.A.

80. *See* Draper, *supra* note 45, at 340 (2004) (observing that “Georgia’s largest and most densely populated region is in North Georgia’s headwaters region where the State has the least amount of source water. The consequence of 50 years of recent urban growth in this region presents the challenge of how that growth can continue without augmenting the region’s source water supply”).

81. *See generally* Study: *Climate Change Could Bring New U.S. Dust Bowl*, CNN.com, April 6, 2007, <http://www.cnn.com/2007/TECH/science/04/06/dust.bowl.ap/index.html> (citing lead author of article published in *Science* on April 5, 2007 for proposition that southwestern water will likely be reallocated from rural to urban use); UNITED STATES GENERAL ACCOUNTING OFFICE, FRESHWATER SUPPLY: STATES’ VIEWS OF HOW FEDERAL AGENCIES COULD HELP THEM MEET THE CHALLENGES OF EXPECTED SHORTAGES, GAO-03-514 (2003); Teresa A. Rice, *Moving Agricultural Water to Cities: The Search for Smarter Approaches*, 2 HASTINGS W.-N.W. J. ENVTL. L. & POL’Y 27 (1994); Wayne B. Solley et al., U.S. GEOLOGICAL SURVEY CIRCULAR 1004, ESTIMATED USE OF WATER IN THE UNITED STATES IN 1985 (1988) (stating that approximately 80% of all withdrawals are applied to irrigation use). *See also supra* notes 17-19 (listing scholarship favoring the marketing of water, generally involving the transfer of water from agricultural to urban uses).

economically impoverished communities,⁸² and natural ecosystems⁸³ are the “losers.”

In the case of transbasin diversions associated with the sale of water rights, “losers” may also include third parties not associated with the buyer or seller.⁸⁴ The scope of the win-loss divide depends, in part, upon the ability of the beneficiary to accurately predict the consequences of such diversions, and upon the beneficiary’s willingness to provide compensation for all losses imposed upon the basin of origin and upon third parties. In one closely-watched case, for example, Colorado front-range cities—including Aurora and Colorado Springs—bought up at least one-third of the agricultural water rights from Rocky Ford, a farming community renowned for its melons.⁸⁵ Observers feared that the entire community would dry up along with its farmland.⁸⁶ The result was forestalled only by the cities’ willingness to mitigate the adverse impacts of their purchase of water rights.⁸⁷ In other cases the farming communities may not be as fortunate, or the proffered mitigation measures may be mere short-term band-aids that do not fully compensate for the associated harms.

82. See WESCOAT ET AL., *WATER, POVERTY, EQUITY, AND JUSTICE IN COLORADO* (2001) (analyzing conceptual framework for low-income water problems related to water quantity and water quality).

83. See *infra* Part III.E.

84. Such third-party impacts are well-documented by the existing literature. 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 (2000); Joseph L. Sax, *Understanding Transfers: Community Rights and the Privatization of Water*, 1 WEST-N.W. J. ENVTL. L. POL’Y THOUGHT 13, 14 (1994) (arguing that “to treat water purely as a commodity, and transfers as two-party transactions only, is to depart from a very deeply rooted tradition in the water field and from consistent intuitions about water as a community resource”); George A. Gould, *Water Rights Transfers and Third-Party Effects*, 23 LAND & WATER L. REV. 1 (1988) (suggesting methods to deal with third-party effects and to promote water transfers).

85. See Joey Bunch, *The Water is Much, Much, Much More Valuable Than the Land: Cities’ Water Needs Uprooting Colorado Farms*, DENVER POST, July 11, 2004, at A1 (noting fears that water sales “will hasten the erosion of whole farming communities,” and observing that “when farmers sell their water rights, take their money and retire their land from agriculture, local tax bases and businesses don’t share the wealth”).

86. *Id.*

87. See Todd Hartmann, *Rocky Ford Finds an Unlikely Savior: Thirsty Aurora Helps Town Famous for Growing Melons*, ROCKY MOUNTAIN NEWS, Sept. 26, 2005, A4 (discussing initiatives by city of Aurora to “cushion the economic blow in the Arkansas River Valley” including “leasing water instead of buying it as a way to keep fields in farming, replacing dried-up cropland with native grasses, shoring up Rocky Ford’s property tax base and installing high-efficiency irrigation systems”).

Certainly no resource allocation system promotes perfect equality in terms of results (or process), and a certain amount of inequality is inevitable in even the most perfectly-designed system. However, unequal patterns of water distribution should be accorded less tolerance when they result from political pressure, rather than from a rational discussion of the long-term public welfare.⁸⁸ There are many well-organized, but easily overlooked, coalitions that stand to benefit from technology-intensive water-transporting infrastructure. For example, the New Mexico Ground Water Association operates under the slogan, *We Water New Mexico!*⁸⁹ The New Mexico state governor declared 2007 the “year of water,” launching initiatives to conserve water resources, preserve the natural environment, maintain local water supplies, use water efficiently, and maintain water quality.⁹⁰ In response, the New Mexico Ground Water Association vowed to oppose legislative efforts to limit ground water use, urging its members to make donations and to contact state legislators.⁹¹ One advertising campaign, for example, asked readers to “urge [the] Governor . . . and your elected officials to learn the truth about domestic wells before they push to deny you the right to own and use one.”⁹² An even more blatant political attempt to capture the benefits of water use—including long-distance water transfers—occurred in Florida. In connection with a multi-billion dollar effort to restore the Everglades, a subsidiary of the failed Enron Corporation lobbied the state governor with an unusual proposal, essentially offering to buy vast quantities of water

88. See, e.g., Fort, *supra* note 55, at 19 (observing that the “politics of pork are that the costs of uneconomical water projects are born by the taxpayers of the country as a whole, but the benefits are limited to a discrete interest group or region”).

89. New Mexico Ground Water Association, *Membership Page*, <http://www.nmgwa.org/Membership/Membership.htm> (last visited Mar. 20, 2007) (listing as eligible group members contractors who drill wells, install pumps, or conduct repair work; manufacturers of equipment or materials used in the water well industry; suppliers who sell water handling equipment; and hydrologists, geologists, and engineers involved in teaching, research, consulting, and government services).

90. See Consuelo Bokum and Lauren Ketcham, *Commentary: Assured-Supply Rule Crucial to 2007 Year of Water*, REDORBIT NEWS, <http://www.redorbit.com/modules/news/tools/php?tool=print&id=702592> (last visited Mar. 18, 2007) (commentary written by members of environmental groups, *100 Friends of New Mexico* and *Environment New Mexico*) (asserting that “New Mexico’s population is expected to grow 15.4 percent by 2030” and that “[o]ver-pumping [wells] has left some of New Mexico’s aquifers in serious decline,” with groundwater levels dropping at a rate of 1.3 to 2 feet per year in some parts of Albuquerque).

91. New Mexico Ground Water Association, <http://www.nmgwa.org/HOT%20TOPICS/2007%20WATER.htm> (last visited Mar. 18, 2007).

92. *Id.* at *Citizen Alert: Your Right to Own a Domestic Well is in Jeopardy*.

in a state that does not recognize perpetual private rights in water.⁹³

Beyond political considerations, the choice to implement transbasin diversions may be skewed by market distortions. Commentators have noted that true free markets in water are rare, or even non-existent.⁹⁴ Several factors may contribute to market failure. First, pricing mechanisms are impeded by state systems that allow the first user to withdraw water at no cost, but permit the sale of water to subsequent users at significant costs.⁹⁵ Some reports, for example, cite charges of ten thousand dollars for water rights to the use of a volume of water generally sufficient to satisfy the demands of a family of four.⁹⁶ Second, transbasin diversions generate significant externalities that are difficult to identify and value. These externalities can be direct (including changes in diversion and return flow patterns and increased conveyance losses) or indirect (including environmental impacts, reduction in tax base, and job loss).⁹⁷ This valuation difficulty is even more pronounced if the market attempts to quantify long-term negative impacts and attempts to preserve

93. See Michael Grunwald, *How Enron Sought to Tap the Everglades: Water Unit Lobbied Jeb Bush on Privatization Bid, But Access Led Nowhere*, WASHINGTON POST, at A1, Feb. 8, 2002. The article reports that in 1999, “while Florida was planning the most ambitious environmental restoration in history, leaders of an Enron Corp. subsidiary called Azurix Corp. made Governor Jeb Bush an extraordinary offer: They would help pay Florida’s multibillion-dollar share of the effort to replumb and revive the Everglades—if they could then sell water captured by the project.” *Id.* (concluding that the effort “went nowhere” and that “[w]ater still belongs to the public here”).

94. See, e.g., Janet C. Neuman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENVTL. L. 919, 992 (1998) (arguing that “there simply is no smoothly functioning market in western water, and never has been”); Dellapenna, *The Importance of Getting Names Right*, *supra* note 21, at 327 (noting that “true markets for water [have] been rare” and describing reasons for this rarity).

95. Dellapenna, *The Importance of Getting Names Right*, *supra* note 21, at 327 (“In the first place, the basic core component of price is missing. No western state charges water users for water. Even when there are middlemen . . . they rarely charge for the water itself, but rather for their service and delivery systems”).

96. Charles W. Howe, Carolyn S. Boggs, and Peter Butler, *Transaction Costs as Determinants of Water Transfers*, 61 U. COLO. L. REV. 393, at 393 (1990) (reporting the sale of irrigation water rights for transfer to municipal use at \$10,000 per acre-foot in perpetuity).

97. George A. Gould, *A Westerner Looks at Eastern Water Law: Reconsideration of Prior Appropriation in the East*, 25 U. ARK. LITTLE ROCK L. REV. 89, 112-13 (2002).

opportunities for future generations.⁹⁸ Third, this difficulty in quantification has led some to conclude that it is not practicable to provide compensation for third-party impacts, which in turn triggers hostility toward water markets.⁹⁹ Finally, even if markets can accurately value negative externalities and design appropriate mitigation measures, they will suffer from enormous transaction costs in the process.¹⁰⁰

E. *Deconstructing Watersheds*

As a final argument against transbasin diversions, they are capable of deconstructing watersheds both literally and figuratively. In actual physical terms, removing water from its basin of origin can have devastating environmental consequences. As the National Academy of Sciences has documented, both aquatic and terrestrial environments may be affected. With respect to the former, aquatic degradation includes harm to instream flows, wetlands, water quality, riparian habitat, and aesthetic qualities.¹⁰¹ Perhaps one of the most striking examples has occurred in the Florida Everglades. In the name of flood control, for over half a century the state has diverted vast volumes of freshwater from the Everglades basin to the ocean, choking off the lifeblood of the Everglades.¹⁰² As a consequence, a staggering 90% of the shorebird population has been destroyed, decimating flocks of birds once so dense that their flight temporarily blocked out the sun.¹⁰³ Likewise, the Owens Valley experienced serious environ-

98. See Draper, *supra* note 45, at 351 (observing that “[p]arties seldom consider intergenerational justice when justifying interbasin water transfers, but preserving opportunities for future generations is an important value”).

99. See Howe, *supra* note 17, at 357, 360-61:

Unfortunately, it is frequently not practicable to compensate the losers from water transfers due to difficulties in identification and their potential existence in different legal jurisdictions. The real and perceived existence of significant uncompensated losses in areas-of-origin has stimulated resistance to large (and especially out-of-basin) water transfers generally, and to the water market process in particular.

100. See, e.g., Nichols & Kenney, *supra* note 52, at 420; Gould, *supra* note 97, at 114; Stephen E. Draper, *The Unintended Consequences of Tradable Property Rights to Water*, 20 NAT. RES. & ENV'T 49 (2005) (observing that “[t]ransaction costs can severely distort the economic efficiency of private water allocation markets”).

101. NATIONAL RESOURCE COUNCIL, NATIONAL ACADEMY OF SCIENCE, WATER TRANSFERS IN THE WEST: EFFICIENCY, EQUITY, AND THE ENVIRONMENT 38-39 (1992).

102. See Klein, *supra* note 37, at 1015-17 (discussing history and consequences of flood control in Florida Everglades).

103. See generally Draper, *Sharing Water*, *supra* note 45, at 351 (describing “significant or even catastrophic” long-term effects of interbasin water transfers).

mental degradation as a result of decades of plundering by Los Angeles.¹⁰⁴ The exposed Owens lakebed developed into a source of toxic air pollution. As one journalist reported, “[t]he lake’s salty, mineral-laced basin has been the largest single source of particulate pollution in the country. It looks so other-worldly that it doubled as a desolate planet in the movie ‘Star Trek V: The Final Frontier’.”¹⁰⁵

Terrestrial environments also suffer, leading to soil erosion, blowing dust, and tumbleweeds.¹⁰⁶ Moreover, in the case of groundwater export, portions of the earth’s surface may simply give way:

In simple terms: The buoyancy of water underground helps hold up the sand and clay subsurface—a liquid hand pressing upward. When the water is gone, so is a key part of nature’s underpinning, not to mention nature’s glue—the moisture in the ground that holds loose soils together.¹⁰⁷

This phenomenon of “subsidence” has caused the earth’s surface to drop by nearly thirty feet in some locations.¹⁰⁸

Transbasin diversions may also do violence to widely-shared, deeply-rooted beliefs—from spiritual to self-serving, from philosophical to pragmatic—that the integrity of watersheds should be maintained.¹⁰⁹ Transbasin diversions and water markets “deconstruct” watersheds in an intellectual sense by supporting the notion that water is simply a fungible market good that should be freely moved to the highest bidder.

104. See *supra* notes 58-69 and accompanying text.

105. Sahagun, *supra* note 60.

106. See NATIONAL RESOURCE COUNCIL, *supra* note 101, at 38-39 (describing impacts of the sale of agricultural water rights and the concomitant retirement of irrigated lands).

107. See Robert King, *Grounds for Concern*, ST. PETERSBURG TIMES, July 21, 2001, at B1.

108. S.A. Leake, *Land Subsidence From Ground-Water Pumping*, <http://geochange.er.usgs.gov/sw/changes/anthropogenic/subside/> (USGS report). See also UNITED STATES GEOLOGICAL SERVICE, LAND SUBSIDENCE, <http://water.usgs.gov/ogw/subsidence.html> (last visited Mar. 28, 2008) (stating that “[m]ore than 80 percent of the identified subsidence in the Nation is a consequence of our exploitation of underground water” and reporting that “more than 17,000 square miles in 45 states, an area roughly the size of New Hampshire and Vermont combined, have been directly affected by subsidence”); Katie Carter, *Big Concerns: Subsidence Expert Warns Area Residents of Water Overuse*, HOUSTON CHRONICLE, May 3, 2001, at 1 (citing predictions that groundwater usage in parts of Texas may cause the land to subside by as much as five feet by 2030).

109. See generally Klein, *On Integrity*, *supra* note 37.

IV.

THE ALTERNATIVES

A. *Changing the Default Presumption*

The current default presumption—moving water to the people and supporting growth at all costs—is no longer viable.¹¹⁰ Nevertheless, it is a pervasive mentality. For example, even as former Secretary of the Interior Gail Norton issued her 2003 warning of an impending water crisis in the western United States, she asserted, “We take growth as a given and try to determine how to proceed.”¹¹¹ Similarly, New Mexico continues to drill up to eight thousand new wells annually and to plan for thousands of new homes, even though aquifer levels are dropping up to two feet each year in some parts of the state.¹¹² The presumption can be understood as a relic of the past; an offshoot of the old manifest destiny doctrine that relies upon the hope that “new” water will be endlessly available and that new growth can and should continue indefinitely.¹¹³ The current default dishonors the affection of communities for their watersheds and pits farm against city, rich against poor.¹¹⁴ It turns living rivers into dry ditches and transforms lakebeds into toxic dustbowls.¹¹⁵

As this article has argued, the default presumption has outlived its usefulness, and has failed to achieve its goal of providing communities with secure water supplies. Relying upon trans-basin diversions for roughly a century, many cities draw upon water supplies whose security is more illusory than real.¹¹⁶ There is still not enough water, at least in the places and at the times that we demand it. The next two subsections argue that the default presumption should be replaced with a new demand-side strategy that encourages communities to temper consumption so they can live within their means and nourish their living rivers.

110. See *supra* Part III.

111. Deborah Frazier, *Norton Warns of Water Crisis*, ROCKY MT. NEWS, May 3, 2003.

112. Bokum & Ketcham, *supra* note 90. The authors argue, “To ensure a viable water future, New Mexicans need to live within our means and balance water use with a renewable supply. One way to do this is to focus growth where there is sustainable, long-term supply of water and to monitor and plan for our current and future use.” *Id.*

113. See *infra* Parts III.B and C.

114. See *infra* Parts III.A and D.

115. See *supra* note 105 and accompanying text.

116. See *infra* Parts III.B and C.

Before considering such an alternative paradigm, an initial objection should be addressed: If we do not continue to increase the supply delivered to the people, it can be argued, then the people will surely come to the water. There is little benefit, the argument continues, in denying northern California's water to Los Angeles or San Diego, or in denying north Florida's water to Tampa or Miami. The people will simply migrate to the water, the argument concludes, bringing the same environmental and social harms to wet regions that have historically been experienced in drier areas. This argument falls short in at least two critical respects. First, it assumes that encouraging settlement in more hospitable regions is bad policy; to the contrary, recognizing regional variations in carrying capacity might facilitate more efficient resource use. Second, the argument posits a false dichotomy under which we must either move water to the people, or the people will move to the water. It ignores a factor other than population growth (whether from increased birth rates, increased immigration, or shifting domestic population patterns) that contributes to water scarcity: increased per capita consumption (triggered by inefficient use and waste). Thus, reducing demand may be an important third alternative to moving either water or people to more propitious locations.

B. *Living Within Our Means*

"Conventional wisdom to the contrary, there is no place in the United States where the physical supply of water is a limitation on growth."

Watering Growth in Colorado (2003)¹¹⁷

The new presumption should be that we can and must "live within our means," rejecting the view that never-ending growth is desirable or inevitable. Overall, the current supply-side default presumption should be replaced with a new demand-side para-

117. Nichols & Kenney, *supra* note 52, at 416. See also Tarlock & Van de Wetering, *supra* note 55, at 38-39 (asserting that the "link between water availability and urban growth is a new development in land use law" and that "water supply has seldom been a factor in local government land use planning and controls in the West and elsewhere," reflecting in part "the longstanding assumption that humans can and should overcome any natural constraint on progress"); Holly Joe Franz et al., *An Insatiable Thirst: The Impact of Water Law on Sprawl in the West*, 15 NAT. RES. & ENV'T 228, 228-29 (2001); Mary Jane Angelo, *Integrating Water Management and Land Use Planning: Uncovering the Missing Link in the Protection of Florida's Water Resources?*, 12 FLA. J.L. & PUB. POL'Y 223, 225-26 (2001).

digm that views transbasin diversions with affirmative disfavor, relegating them to a water management technique of last resort. It also questions the assumption that growth is inevitable and must be supported.¹¹⁸ In practical terms, communities should plan to rely upon the resources supplied by their own watershed—reasonability delineated in scope. Beyond that, additional growth, at least in terms of water demand and water use, simply cannot be accommodated.

This is not merely an exercise in virtuous austerity, or a self-imposed “regulatory drought.”¹¹⁹ Instead, it is a cautious, conservative approach that is firmly rooted in hydrologic reality. Furthermore, it is likely to prove a cost-effective approach, relying upon conservation as one piece of a demand-management strategy. By analogy, the energy industry has recently begun to advance this same mix of efficiency and conservation as a “fifth fuel.”¹²⁰ The industry argues that this approach can “complement coal, nuclear, natural gas and renewable energy [and] help deliver real economic and environmental benefits to consumers and utilities alike.”¹²¹ Moreover, the industry has recognized that this fifth fuel is also the least expensive.¹²² Like the conservation of energy, the conservation of water—in combination with growth limits and other demand-management tools—provides an alternative to transbasin diversions that is less costly in economic, social, and environmental terms.

118. The general manager of the Southern Nevada Water Authority announced in 2006 that the Las Vegas Valley required new water to sustain its growth, and argued that a new \$ 2 billion pipeline was necessary to import water from distant watersheds. In response, one politician wrote,

Growth is a Ponzi scheme where requirements created by past growth have to be financed with future growth. Other than for the developers and the politicians, you would be hard pressed to find many residents who feel that our quality of life has improved with the uncontrolled growth. According to Pat Mulroy, general manager of the Southern Nevada Water Authority, growth will stop in 2013 without new water. Why wait until 2013?

Bill Smith, *Pipeline is Not the Only Solution: Curbing Growth Will Fix Water Problem*, LAS VEGAS SUN, at A4, Aug. 19, 2006 (commentary by former City councilman, Boulder City, Nevada).

119. See, e.g., Gray, *supra* note 59, at 144 (describing water-shortage created by environmentally-protective regulations).

120. Duke Energy, *News Release, Duke Energy Renews Commitment to Smart Energy Use; CEO Rogers Unveils National Action Plan for Energy Efficiency*, July 31, 2006, <http://www.duke-energy.com/news/releases/2006/Jul/2006073101.asp> (last visited Apr. 7, 2007).

121. *Id.*

122. *Id.*

Philosophical antecedents have begun to emerge, suggesting that the time may be ripe to garner public acceptance for “living within our means.” In the context of water pollution, the Environmental Protection Agency (EPA) has begun an educational campaign to promote watersheds as a conceptual framework for water resource management.¹²³ The EPA asserts,

When children turn six, they learn about their place in the world—their street address, city, and zip code. But there is another important dimension to our lives that is also important to our sense of place—our watershed or ecological address. The future of the planet and the protection of the nation’s water resources depend on a universal understanding and appreciation of watersheds.¹²⁴

State legislators have begun to recognize that water sustainability may depend upon ending reliance on large-scale trans-basin diversions. Florida, for example, requires water managers to consider “local sources first.”¹²⁵ Political candidates, too, have begun to question the value of water imports. In a state senate election in Florida, for example, one candidate campaigned on a platform that promised to protect the water resources of north Florida against potential demands from the south. The candidate promised to promote the development of a statewide water resource management plan that would “replace unrestrained and political water ‘grabs’ by . . . accounting for all of the state’s

123. Benjamin H. Grumbles, EPA, Assistant Administrator, *Building Livable Communities Starts With a Watershed Address*, <http://www.epa.gov/owow/watershed/oped2007.pdf> (last visited Mar. 28, 2008).

124. *Id.*

125. Fla. Stat. § 373.016(4)(a):

[T]he Legislature recognizes the need to allocate water throughout the state so as to meet all reasonable-beneficial uses. However, the Legislature acknowledges that such allocations have in the past adversely affected the water resources of certain areas in this state. To protect such water resources and to meet the current and future needs of those areas with abundant water, the Legislature directs the department and the water management districts to encourage the use of water from sources nearest the area of use or application whenever practicable. Such sources shall include all naturally occurring water sources and all alternative water sources, including, but not limited to, desalination, conservation, reuse of nonpotable reclaimed water and stormwater, and aquifer storage and recovery.

But see id. (creating exemptions from local sources preference, including exemption favoring the bottled water industry); Fla. Stat. § 373.223(2) (permitting trans-county and transbasin diversions under specified circumstances); Fla. Stat. § 373.2295 (permitting interdistrict transfers of groundwater under specified circumstances).

water resources, and ensuring each area *lives within [its] own means*.”¹²⁶

“Concurrency” (sometimes called “wet growth”¹²⁷) is one particularly promising tool to encourage more thoughtful analysis of growth, rather than instinctively facilitating growth at all costs.¹²⁸ In essence, concurrency requires a conversation between land use planners (typically local governments) and those who allocate water resources (typically state agencies). It recognizes the essential relationship between water and watersheds, like the two “sides” of a Möbius strip.¹²⁹ In some instances, concurrency may be simply a mechanism to promote more informed decision-making. But in other instances, it may serve as an actual impediment to growth when sustainable water supplies cannot be identified.¹³⁰ Moreover, land use restrictions issued against a backdrop of water shortage are less likely to be invalidated as regulatory takings.¹³¹

C. *Nourishing Living Rivers*

“Living rivers provide clean, fresh water to quench our thirst and feed our children. [They] nourish habitat for fish and wildlife . . .

126. *Steve Oelrich for State Senate* (political advertisement paid for and sponsored by the Republican Party of Florida for distribution fall 2006) (emphasis added) (on file with author).

127. *See, e.g.,* Michael Allan Wolf, *Supreme Guidance for Wet Growth: Lessons from the High Court on the Powers and Responsibilities of Local Governments*, 9 *CHAP. L. REV.* 233 (2006); Craig Anthony (Tony) Arnold, *Is Wet Growth Smarter Than Smart Growth?: The Fragmentation and Integration of Land Use and Water*, 35 *ENVTL. L. REP.* 10152 (2005).

128. *See generally* Adam Strachuan, *Note, Concurrency Laws: Water as a Land-Use Regulation*, *J. L. RES. & ENVTL. L.* 435 (2001) (considering possibility that concurrency law could freeze development in some arid states).

129. *See* OXFORD ENGLISH DICTIONARY (10th ed.) (defining “Möbius strip” as “a surface with one continuous side formed by joining the ends of a rectangle after twisting one end through 180°”).

130. *See* Joellie Hervic, *Water, Water Everywhere?*, 77 *FLA. B.J.* 49 at 49 (2003) (describing California law requiring developers to demonstrate a 20-year water supply before they can receive building permits for subdivisions of more than 500 units); *Growth Management, Concurrency and River Protections in Florida*, 367 *PLI/REAL* 403, 419-20 (1991) (describing relevance of concurrency to the issuance of building permits and to the acquisition of loans for long-term development projects).

131. Tarlock & Van de Wetering, *supra* note 55, at 67-68 (suggesting that “land use policies that link growth restraints to water availability do not raise the unfairness concerns that the Supreme Court’s recent taking jurisprudence has identified” because courts “have long recognized that the police power can be used to protect land use consumers against risks that they may not fully understand”).

Life on Earth depends on rivers, and now they must depend on us.”

*Living Rivers*¹³²

As an alternative to nourishing unsustainable growth, communities might choose to nourish their living rivers. As early as 1897, Congress recognized the value of healthy watersheds, including their surrounding forests:

The importance of [forest] conservation on the mountainous watersheds which collect the scanty supply for the arid regions of North America can hardly be overstated. With the natural regimen of the streams replaced by destructive floods in the spring, and by dry beds in the months when the irrigating flow is most needed, the irrigation of wide areas now proposed will be impossible, and regions now supporting prosperous communities will become depopulated.¹³³

Contrary to this recognition, particularly in the west, it is not uncommon to see a river “drained within an inch of its life.”¹³⁴ The fundamental paradigm shift toward living rivers—elevating the status of watershed protection from after-thought to first priority of water law—would have important pragmatic, social, and environmental consequences.

A variety of techniques could advance this goal. First, in-stream flow programs should continue to evolve.¹³⁵ In the west, for example, Colorado has allowed water managers to purchase senior water rights for instream purposes. This helps to overcome the problem that new water allocations for environmental purposes receive relatively late priority dates in states that follow the western “prior appropriation” doctrine, requiring them to wait in line until earlier-established water uses have been satisfied.¹³⁶ In the east, states such as Florida provide statutory au-

132. *Living Rivers, Mission* (explaining that “[a]lthough unique to the US, the name and concept of Living Rivers has been used in Latin America, Europe and Asia”), <http://www.livingrivers.org/mission.cfm> (last visited Apr. 10, 2007).

133. *United States v. New Mexico*, 438 U.S. 696 (1978) (quoting Senate document and recognizing the “securing of favorable water flows” as one of the two original purposes of national forests).

134. Juliet Eilperin, *Traditional Favoritism to Agricultural Interests is Challenged as Demand Increases*, WASHINGTON POST, at A3, Jan. 15, 2006.

135. See generally Charlton H. Bonham, *Perspectives from the Field: A Review of Western Instream Flow Issues and Recommendations for a New Water Future*, 36 ENVTL. L. 1205 (2006).

136. See generally Fort, *supra* note 55, at 20 (noting that “[w]estern water law encouraged the full utilization of western rivers long before the value of leaving

thority for managers to elevate watershed (or aquifer) protection to a first priority, establishing protective “reservations” that are off-limits for consumptive use.¹³⁷

Second, information disclosure and analysis requirements could educate the public as to the importance of living rivers, and to the negative consequences of degraded watersheds. One commentator in Georgia, for example, argues that interbasin transfers should not be allowed until proponents fund the preparation of an “interbasin transfer impact statement,” modeled after the “environmental impact statement” required under the National Environmental Policy Act.¹³⁸ At a minimum, the analysis must evaluate the cumulative impact of all existing transfers on the basin of origin.¹³⁹

As an additional technique for the preservation of living rivers, states should conceptualize agricultural water use in a new way. Currently, farmers and ranchers in many western states may sell their water rights to municipalities and other users.¹⁴⁰ In some cases, however, this may function as an unwarranted double subsidy. That is, many farmers receive irrigation water for free (through their own wells and surface diversions) or at rates heavily subsidized by the federal government (through infrastructure constructed by the Bureau of Reclamation),¹⁴¹ and then turn

waters in stream was recognized” and urging Congress to “assist western states by purchasing flows for instream purposes”).

137. See, e.g., Fla. Stat. § 373.223(4):

The governing board or the department, by regulation, may reserve from use by permit applicants, water in such locations and quantities, and for such seasons of the year, as in its judgment may be required for the protection of fish and wildlife or the public health and safety. Such reservations shall be subject to periodic review and revision in the light of changed conditions. However, all presently existing legal uses of water shall be protected so long as such use is not contrary to the public interest.

Florida also recognizes minimum flows in surface watercourse and minimum levels in groundwater aquifers, defined as “the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area.” Fla. Stat. § 373.042(1).

138. Draper, *supra* note 45, at 369.

139. *Id.* at 368-69.

140. See *supra* notes 17-18 and accompanying text.

141. See Mark Kanazawa, *Pricing Subsidies and Economic Efficiency: The Bureau of Reclamation*, 36 J. L. & Econ. 205 (1993), <http://links.jstor.org/> (visited Jan. 30, 2007) (observing that the “bureau’s pricing policies have been highly controversial” because they “shield farmers from the true social cost of the water”). See also Eilperin, *supra* note 134 (asserting that “[u]nder longstanding federal and state policies reinforced by farmers’ historic political clout, agriculture has laid claim to about 80 percent of those scant resources—at rock-bottom prices—on the grounds that water is critical to the survival of crops and livestock”).

around and sell portions of their water rights at a profit. As an alternative, states should consider the possibility of returning unused agricultural irrigation water to its natural source.¹⁴² This includes a rethinking of the presumption that unused irrigation rights should necessarily flow to cities through water markets. Other alternatives exist. For example, unused water could be returned to watersheds through vigorous enforcement of existing laws against waste, and aggressive use of the authority to declare unused water rights “abandoned” or “forfeited.”¹⁴³ Still other approaches ensure that at least some of the unused water will sustain the environment rather than fuel excessive urban growth. Under Oregon’s “conserved water program,” for example, a portion of all water saved through new efficiency measures returns to its source to support stream flows.¹⁴⁴ As an incentive to promote conservation, users who improve their efficiency may also keep or sell a portion of the water thus saved.¹⁴⁵

V.

CONCLUSION: WATER INDEPENDENCE

“If the wars of this century were fought over oil, the wars of the next century will be fought over water.”

Ismail Serageldin, Vice President, World Bank (1995)¹⁴⁶

During an era of unrest in Iraq, Afghanistan, and numerous other nations, Americans have become increasingly cognizant of the value of national security. Observers have begun to expand the scope of their analysis, exploring long ignored connections between homeland security and natural resources. As one political advisor asserted, “energy independence . . . [is] now the No. 1

142. See generally Fort, *supra* note 55:

A hundred years after the city of Los Angeles and San Fernando Valley farmers battled neighboring Owens Valley for control over water from the Owens River, there’s a new kind of water war in the West. From Montana to Arizona to California and beyond, alliances of environmentalists, fishermen and city dwellers are challenging the West’s traditional water barons—farmers and ranchers—who have long controlled the increasingly scarce resource.

Id. at 18-19.

143. See generally GETCHES, *supra* note 7, at 120-22, 176-79.

144. See Janet Neuman, *Sometimes a Great Notion: Oregon’s Instream Flow Experiments*, 36 ENVTL. L. 1125, 1150 (2006).

145. *Id.*

146. O’Neill, *supra* note 53, at 358 (quoting Serageldin).

national security issue.”¹⁴⁷ In this context, one natural resource remains largely overlooked—water. Unlike oil, coal, and natural gas, water has no substitute as the most essential, life-sustaining resource. This article offers an alternative to the paradigm under which water is a fungible commodity that must be moved to the people, regardless of the consequences. As the true costs of transbasin diversions become increasingly apparent, perhaps we will come to realize the wisdom articulated by John Wesley Powell over a century ago, that all life is “inextricably linked” by bounded watersheds.¹⁴⁸

147. Thomas L. Friedman, *The Energy Mandate*, N.Y. TIMES, Oct. 13, 2006 (quoting description by former Clinton campaign advisor James Carville of “the newest gut issue his polling was turning up for candidates in the 2006 elections”).

148. See Powell, *supra* note 1 and accompanying text.