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Replacing Riparianism in the Twenty-First Century

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Riparianism has been the universal water law of the East for two centuries. The doctrine has served the region well largely because the demand on the water resource has rarely exceeded supply. However, the East is now facing both unprecedented demand and changing climatic conditions that will cause chronic water shortages. Riparianism lacks a reliable method of allocating water uses in times of shortage. Therefore, a search for alternatives to the venerable doctrine must begin. This Article is the final part of a trilogy[1] that outlines the need for a radical departure from riparianism. It proposes to replace riparianism with a hierarchical permit-based water rights system that features transferable permits. The new system will function both in times of ample water supply and in times of water shortage.

I. Rejecting Prior Appropriation and Existing Eastern Administrative Systems

Before presenting the proposed permit system, the inappropriateness of two other water allocation methods as alternatives to riparianism, prior appropriation and administrative permit systems, must be briefly discussed to show that a better alternative is needed. In the arid West, where water shortages are common, prior appropriation replaced riparianism and became the dominant water law. Riparianism's rules of sharing in times of shortage did not

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1. The first part of the trilogy briefly traced the history of riparianism to demonstrate that past changes in Eastern water law are explained by an instrumentalist theory of law. The Article also presented factors leading to a decline in Eastern water supplies in the next thirty to fifty years, including the impact of the greenhouse effect. Abrams, *Charting the Course of Riparianism: An Instrumentalist Theory of Change*, 35 Wayne L. Rev. 1381 (1989) [hereinafter *Instrumentalist Theory*]. The second Article discussed and dismissed existing permit systems as adequate alternatives to riparianism. *See* Abrams, *Water Allocation by Comprehensive Permit Systems in the East: Considering a Move Away from Orthodoxy*, 9 Va. Envtl. L. Rev. (forthcoming 1990) [hereinafter *Comprehensive Permit Systems*].

offer a sufficiently secure right to water use. To overcome this insecurity, Western water law developed a temporal appropriation system ("first in time, first in right") that erected a quantifiable set of annual usufructuary rights that were far more precise than the rights granted under riparianism. Thus, one might suppose that prior appropriation could successfully replace riparianism in any region facing water shortfalls because its allocative system was designed for water-short areas.

Beyond security of right, two additional aspects of prior appropriation are particularly attractive: (1) its doctrinal promise to avoid waste and promote conservation; and (2) its ability to permit marketing of the water rights that results in the transfer of water from low value uses to high value uses. Both of these features foster efficient use of the water, allowing maximum utilization.[2] Under scrutiny, the expected failure of riparianism on these two counts is not total, nor is the expected exemplary performance of prior appropriation patent.[3] These findings challenge the supposition that prior appropriation is the cure for riparianism and sparks the search for still better alternatives.

Waste avoidance and conservation are vital to water-short regions, and the governing water law doctrines must reflect the importance of these practices. Riparianism views a wasteful use as unreasonable, and therefore enjoinable, if it harms another user. More important, in the ad hoc nature of riparian decisionmaking, the presence or absence of conservation efforts can be used to determine whether an otherwise reasonable riparian use is being undertaken in a reasonable fashion during a time of shortage. Prior appropriation guards against waste as a facet of the beneficial use inquiry. Only the amount of water put to a beneficial use is protected; for example, in an irrigation application, water that is applied in excess of the amount needed for the crop can be allocated to another user. In virtually all prior appropriation states,

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2. Under the instrumentalist theory developed earlier in the trilogy, *see Instrumentalist Theory*, *supra* note 1, at 1381-1400, riparianism achieved the same maximization until shortages posed "hard cases" that could not be resolved under its flexible contours. *Id.* at 1400-05. These cases are the predicate for seeking alternatives to riparianism. Thus, the ability of other legal regimes to maximize water utilization is of considerable importance in evaluating their desirability for adoption by Eastern states.

3. For an extensive discussion suggesting that the allocation of shortage by shutting off the most junior in time user is itself wasteful and inefficient, see Freyfogle, *Water Justice*, 1986 U. ILL. L. REV. 481, 510-14; Gaffney, *Economic Aspects of Water Resource Policy*, 28 AM. J. ECON. & SOC. 131, 139-40 (1969).

however, the waste doctrine is not strictly applied. One commentator noted that "[prior appropriation] actually encouraged the development of inefficient techniques in areas where greed and speculation were commonplace; the greater the appropriation, the greater the water right claimed. . . . Only in cases of extreme wastefulness have courts required that irrigation appropriations conform to customary practices of the region."[4]

The second claimed attraction of prior appropriation systems as an improvement on riparianism is the transferability of the water rights. Riparianism's penchant for trying to accommodate competing users through sharing of the shortage offers little promise to a user in a water-short area that water use will continue without diminution. The user cannot increase the certainty of continued water by purchasing additional water rights because none of the coriparians can exclude others from the use of the water. Each riparian will sell the usufructuary right of withdrawal for whatever price it will bring. Low value and high value water users alike have correlative rights, and there is no guarantee that in time of shortage the uses curtailed will be the low, rather than the high, value uses. Riparianism thus impedes the creation of a meaningful water market.[5]

In contrast, prior appropriation offers the user an opportunity to purchase a senior water right, thereby ensuring more secure water receipt. This buying and selling of water rights leads to the possibility of creating a functioning water market in which the price of water not only measures the cost of its provision, but also reflects its value as a productive scarce resource. Unfortunately, prior appropriation's record of fostering water transfers

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4. Shupe, *Waste in Western Water Law: A Blueprint for Change*, 61 OR. L. REV. 483, 486 (1982). Conformity to local custom is hardly a standard that inspires extensive conservation efforts. *See, e.g.*, Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist., 3 Cal. 2d 489, 45 P.2d 972 (1935) (condoning transmission loss of almost half of diverted water as consistent with custom).

5. Only in the setting of a public utility clothed with the right of eminent domain can riparianism support a form of water marketing. In times of shortage, the condemned water users will be without the right to insist that the water utility share the shortage. The utilities can pass on the cost of the purchased security of right as part of the price of the water delivered to their customers, but there is little evidence that those water suppliers use their power to charge a price to spur conservation. *See* Center for Great Lakes, *Reassessing Water*, 6 GREAT LAKES REP. July-Aug. 1989, at 1. By the same token, in times of water abundance, water supply organizations are unlikely either to ration, refuse water to potential customers, or promote conservation, for fear of angering the public they serve and the regulatory authority that oversees their operations.

that move scarce water to more valuable uses merits only faint praise. Appropriative water rights, despite creating a quantified set of usufructuary priorities capable of supporting efficiency-enhancing transfers, are not readily marketable commodities that can be transferred easily to their highest use.[6] The doctrine has always permitted transfers, but the transfers are limited by the "no harm on transfer" rule, which requires deference to the security of the rights of downstream junior water users who depend on making use of water that is withdrawn, but not consumed, by upstream seniors.[7] The no harm rule limits transfers to those in which the disparity in values of the water to the transferee and transferor is sufficiently great to overcome what are almost always very high transaction costs.

Beyond the false promises of efficient water use and marketing of water rights, a final objection to importing prior appropriation to the East is the doctrine's neglect of instream uses, a systemic weakness that is of particular concern in the Eastern United States. The doctrinal insistence that a usufructuary right could only be perfected by a physical diversion of water from the watercourse, and thereafter applying the diverted water to a beneficial use, made it impossible to obtain rights to protect instream flows needed to support recreation or fish and wildlife habitat.[8] Within the last two decades, this shortcoming of appropriation law has been addressed by state governments with statutes that protect instream flows.[9] These statutes mark a departure from appropriation toward a managerial system that accommodates the broader spectrum of interests in ways that are more nearly riparian in flavor.[10] Thus,

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6. One economist observes that "markets do not work as efficient allocators even in theory if certain resource characteristics are in evidence. Water is a fugitive, reusable, stochastically supplied resource which has many of the characteristics of a common property resource and a public good." D. GIBBONS, THE ECONOMIC VALUE OF WATER. 3 (1986).

7. *See generally* Ellis, *Water Transfer Problems: Law*, in WATER RESEARCH 233 (A. Kneese & S. Smith eds. 1966).

8. Even when instream uses were admittedly beneficial, as with a resort that relied on the attraction of a scenic waterfall, the instream uses failed in competition with offstream uses that could satisfy the diversion requirement. *See* Empire Water & Power Co. v. Cascade Town Co., 205 F. 123 (8th Cir. 1913).

9. *See generally* J. SAX & R. ABRAMS, LEGAL CONTROL OF WATER RESOURCES 318-19, 328-29 (1986). The judicial reception of these laws into the body of prior appropriation law is at times somewhat grudging. *See, e.g.*, State Dep't of Parks v. State Dep't of Water Admin., 96 Idaho 440, 530 P.2d 924 (1974) (dissenting opinions of McQuade, J. & McFadden, J.).

10. *See generally* Dunning, *State Equitable Apportionment of Western Water Resources*, 66 NEB. L. REV. 76 (1987).

what is sensibly under consideration as an alternative to riparianism, although flying the banner of prior appropriation, is instead a potpourri of appropriation and regulation. This raises the question of whether it would be preferable to build a replacement for riparianism on a regulatory platform that grows out of riparian, rather than appropriation, traditions.

A more attractive path for improving riparianism is to overlay some government regulation on the traditional pattern of unbridled private decisionmaking and common-law judicial review that has determined water use patterns in the Eastern United States. Two riparian states, Iowa and Florida, have adopted far-reaching permit systems;[11] sixteen other riparian jurisdictions have supplemented their common law with some kind of regulatory system.[12] Although their standards for permit issuance are linguistically similar to the common-law doctrine,[13] these systems typically require some form of administrative issuance of permits for the allocation of surface waters. The systems are thus a significant departure from riparianism because the permit applications are reviewed prospectively before the use is initiated. States can therefore avoid user conflicts before they arise by refusing a permit, conditioning a permit grant, or taking actions that reduce the overall demand for water. These systems are more sensitive than prior appropriation because the permitting agency is empowered to consider the impact of the permit on competing uses, including instream uses of the water,[14] and can control the duration of the permit.[15] Permits, like other

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11. IOWA CODE ANN. §§ 455B.261 to 455B.280 (West Supp. 1989); Florida Water Resources Act of 1972, 1972 Fla. Laws, ch. 72-299 (codified at FLA. STAT. ANN. § 373 (West 1988 & Supp. 1989). The second Article in the trilogy, *see supra* note 1, reviews these two comprehensive permit systems and concludes that although they offer advantages over riparianism as an allocative mechanism, vocal political opposition and resistance to regulation have prevented their widespread adoption. *See Comprehensive Permit Systems*, *supra* note 1, at n.51. Even when adopted, their performance has been a subject of some doubt. *Id.*

12. Sherk, *Eastern Water Law*, 1 NAT. RESOURCES & ENV'T, Winter 1986, at 7, 9-10; *See also* Ausness, *Water Rights Legislation in the East: A Program for Reform*, 24 WM. & MARY L. REV. 547 (1983) (review and critique of all Eastern permit systems).

13. Dellapenna, *Owning Surface Water in the Eastern United States*, in PROC. OF THE SIXTH ANN. INST. E. MIN. L. FOUND. 1-35 (1985); *see also* O'Connell, *Iowa's New Water Statute—The Constitutionality of Regulating Existing Uses of Water*, 47 IOWA L. REV. 549, 615 (1962).

14. *See, e.g.*, FLA. STAT. ANN. § 373.223 (West 1988).

15. *See, e.g.*, Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 KY. L.J. 191, 256-62 (1977).

methods that quantify uses, allow easy introduction of price-induced conservation methods such as a withdrawal and/or consumption fee on a per unit basis. However, most states have been slow to adopt such fees.[16]

Three evident drawbacks of a standard permit system are its rigidity, its tendency to overregulate, and its lack of articulated policy objectives. Permits in the typical Eastern systems are user specific and are not transferable separate from the land that is benefitted by the use. The system is hyperactive—even users who are not part of the allocation problem are forced to participate in government regulation. Finally, the existing systems offer little guidance to state agencies. Administrative decisions, like their riparian common-law forebearers, continue to be made on an ad hoc basis with little regard for integrated water system management.[17]

The foregoing critique of prior appropriation systems and the bulk of the current permit systems has tried to show that in many ways those systems do not effectively manage the water resource. Neither pose so attractive an alternative to riparianism that adoption is imminent. If a better alternative can be fashioned, the time to act is now, for "damages can be lessened if societies utilize a strategy of proactive risk management rather than one of reactive crisis management."[18] Ideally, integrated intergovernmental long-range water planning might well be the optimal initial proactive step. Comprehensive planning, however, is both a lengthy and expensive process that too often fails to yield the definitive guidance needed to support a coherent resource management system. The need is for a mechanism that is less cumbersome to implement, yet has the capacity to respond to escalating pressure on the water resource. The instrumentalist theory of water law comes to the fore by identifying the principal objective sought—giving legal protection to the most important uses of the water.[19]

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16. Almost no examples are to be found. Kansas has recently imposed per-unit "protection fees" of $.03/1000 gallons (almost $10.00/acre-foot) on selected municipal, industrial, and stock watering uses. *See* Kansas S.B. 398 (1989).

17. *See Comprehensive Permit Systems*, *supra* note 1.

18. Hrezo, Walker & Mullins, *Water Allocation During Water Shortages*, in LEGAL AND ADMINISTRATIVE SYSTEMS FOR WATER ALLOCATION AND MANAGEMENT: OPTIONS FOR CHANGE VIII-1, VIII-6 (1983) [hereinafter *Legal and Administrative Systems*]. *Cf.* Maloney & Ausness, *A Modern Proposal for State Regulation of Consumptive Uses of Water*, 22 HASTINGS L.J. 523 (1971) (arguments favoring comprehensive regulation).

19. *See Instrumentalist Theory*, *supra* note 1, at 1384-86.

II. Hierarchical Preference Based Permits

Establishing a workable system is a deductive process that has three steps. First, it identifies the most critical human uses of the water; second, it determines how those uses are effected physically; and finally, it considers what law will secure them. The mere choice of this methodology dictates one aspect of a workable system. Once different water uses are perceived as qualitatively separable in importance, those qualitative differences should be manifested by the legal regime's preferred treatment of those uses. A direct means of reflecting those determinations is the creation of a permit system that is based on hierarchical preferences.

A. Preferences

A system of preferences does not *a priori* need a permit system as an operational platform. Preferences could be assigned and disputes could be resolved as they arose, saving the considerable expense and inconvenience of establishing an administrative body to review and pass on the vast universe of water uses. As a general matter, however, a permit system has substantial advantages over ad hoc resolution of water shortage disputes. A permit system can prospectively review contemplated water uses. This review can avoid costly dislocations that occur when water supplies are unexpectedly withdrawn by limiting the aggregate set of water use claims to a sustainable level. It also can avoid dislocations by warning permittees that not only is their use subordinate to the uses of others in time of shortage, but it is likely that their use will be displaced. The artful use of permit conditions offers the potential to maximize use of the water resource in a manner reminiscent of riparianism's ad hoc adjustments of individual water uses. Permit systems also can provide informational and managerial opportunities by serving as a vehicle for the collection of accurate data about water usage, or as a tollhouse for the imposition of water use fees intended to spur conservation. Finally, depending on the design of the system, the permits may be transferable, creating an opportunity for higher valued uses to buy out lower valued uses, either in a market transaction, or assisted by the power of eminent domain.

Although the preference concept is yet to be widely embraced, it does exist in riparian states' water law, in permit systems already in place in the region,[20] and in the

20. Iowa and Florida, the two earliest entrants in the permit field, initially

West.[21] Riparianism's reasonable use doctrine has always supported a narrow preference in favor of domestic use, sometimes referred to as "natural use," which permits a single riparian to exhaust the entire flow to the detriment of coriparians.[22] Similarly, a few modern regulatory systems have already turned in this direction. In these systems, the operation of a somewhat broader set of preferences was built into the governing statute, usually triggered by an executive declaration of water shortage or emergency.[23]

B. Concentrated Populations and Instream Flows

The support of concentrated populations is the most critical use of water in the Eastern United States.[24] In a hierarchical preference system, that use can be protected legally by granting it a preference over all other uses. The domestic needs of concentrated populations consume very little water, even though the sewage needs of a large population can require significant levels of water withdrawal.[25] In general, these characteristics indicate that

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failed to come to grips with allocative preferences. *See* Hines, *A Decade of Experience Under the Iowa Water Permit System* (pts. 1 & 2), 7 NAT. RESOURCES J. 499, 548 (1967), 8 NAT. RESOURCES J. 23, 70-71 (1968); Earl & Ankersen, *Slicing the Water Supply Pie: Competing Applications Under Florida's Water Resources Act*, FLA. B.J., June 1987, at 87, 90; *Comprehensive Permit Systems*, *supra* note 1. Iowa has since adopted an elaborate preference system. *See* IOWA CODE ANN. § 455B.266(2) (West Supp. 1989).

21. Prior appropriation law has long recognized a limited "preference" doctrine under which a preferred use, such as domestic or municipal use, could condemn and pay to displace a lower priority user. *See* Trelease, *Preferences to the Use of Water*, 27 ROCKY MTN. L. REV. 133, 133 (1955). At times, uses have been made expressly subordinate, as in a Montana statute that declared the export of water for use in a coal slurry pipeline to be nonbeneficial, and therefore a use for which no appropriative right could be perfected. *Compare* MONT. CODE ANN. § 85-2-104 (repealed 1985) *with* § 85-2-10-2(2) (1989).

22. *See, e.g.*, D. GETCHES, WATER LAW IN A NUTSHELL 30 (1984).

23. *See, e.g.*, N.Y. PUB. HEALTH LAW § 1125 (Consol. Supp. 1989): N.J. STAT. ANN. § 58:1A-4 (West 1982); Sherk, *supra* note 12, at 53.

24. *See generally Instrumentalist Theory*, *supra* note 1, at 1433. The support of dispersed populations is likewise critical, but it is a low volume use that is of relatively little concern here. Typically, dispersed household use in the Eastern United States relies on low volume groundwater withdrawals, or at times, small surface water diversions. The most significant possibilities for user conflict in these settings are from large volume pumping causing well interference, or from upstream diversion of the surface watercourse. In either case, it is seldom difficult to assure the adversely affected rural domestic user of a replacement water supply as a condition of permitting the high volume use to continue.

25. *Id.*

the grant of the penultimate priority to this particularly high value use will raise few obstacles to the continuation of other water uses in the region.

The key elements in providing essential water service to concentrated populations are relatively narrow. "Effective operation of a public sewage system . . . requires using large quantities of water for waste treatment, while the public's drinking needs generally cannot be met responsibly without storing water for future use."[26] Thus, beyond the naked grant of the highest preference to water rights that support concentrated populations, a satisfactory governing water law will include legally secure storage rights.[27]

A similar line of argument can be made in favor of recognizing instream flow protections. The work of the Second National Water Assessment (Second Assessment) proved that instream flows are a vital economic resource because they maintain fish and wildlife habitat, which in turn support important recreation and harvesting economies.[28] Instream flows are nonconsumptive to an even greater extent than the support of concentrated populations. Therefore, they only infrequently stand as an impediment to other productive uses of the water.[29] Perhaps most important, even major segments of the regional economies not directly dependent on instream flows have nevertheless located their plants and operations with reference to the availability of water. The continuation of historic patterns of water flows avoids disruption of long-standing general expectations about water availability.

The factors just listed suggest setting a high level preference for instream flows. Instream flows, however, do not fit into a permit system with the same facility as water rights to support

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26. Butler, *Allocating Consumptive Water Rights in a Riparian Jurisdiction: Defining the Relationship Between Public and Private Interests*, 47 U. PITT. L. REV. 95, 157 (1985). Professor Butler does not explain fully the reference to storing water for future use. In context, it appears to refer to the need of cities to have adequate reservoir capacity to respond to short-term decreases in supply or peaks in demand. It may, however, refer to reservation by municipal suppliers of sufficient water to meet long-term increases in water demand associated with future population growth. *See id.* at 165-66. Both issues are important. Adequate reservoir capacity is treated as an imperative, requiring legal action, *see infra* text accompanying notes 31-32, while the question of accommodating future growth is canvassed later in this Article. *See infra* text accompanying notes 43-50.

27. *See infra* text accompanying notes 32-37.

28. *See Instrumentalist Theory*, *supra* note 1, at 1407-08.

29. The cases of potential conflict are most often demands for upstream, offstream consumptive use, such as irrigation. The number of these cases is likely to increase, but irrigation is a low value use of water.

concentrated populations. While the ultimate beneficiary class of both uses is dispersed, the needs of concentrated populations are well-served by a water utility that can act as a permit applicant and as an advocate for the needs of the beneficiary class. Instream flow rights, in contrast, have no natural focal point. A system would have to rely on government water planning agencies responsible for water management, and perhaps interested citizens, to seek permits favoring instream flows.

In addition to the lack of more traditional advocates for instream flow rights, there is a limited array of well-adapted legal means available for protecting this water use. The basic options rely either on a user activated system, in which parties benefitted by the flow can challenge parties depleting it, or on a prescriptive system of administrative decisionmaking to establish minimum streamflow levels, circumscribed more or less tightly by legislative standards and judicial review.[30] The latter can be adapted for use in a hierarchical permit system by requiring the permitting agency to protect instream flows by recognizing them as a limiting condition on the grant of all permits.

The minimum flow assignments method, which does not rely on the issuance of specific permits to protect instream flows, requires perhaps greater planning and a better working grasp of the streams' inputs and outputs, but does seem to be the proactive device that will best serve the needs of the region. Likely conflicts between flow and consumption will be identified in advance. On that basis, the permitting agency can refuse or limit the grant of permits to those water users whose activites threaten an undesirable impact on instream flows.

In terms of instream flow level setting, how protection can be coordinated with the preference system is the first order of business in ensuring that instream flow protection does not compromise the sewage and drinking water needs of concentrated populations. Initially, the possibility of a conflict between instream flow protection and a right that supports a concentrated population is slight. To the extent that both are largely nonconsumptive, the instream protection will simply reinforce the right of the population center to have water flow to it. Virtually all Eastern cities are located on rivers or lakes having a flow or size substantial enough to have made it a factor in the original founding of the community.

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30. Market systems fail to account for the widespread benefits associated with multiple concurrent *in situ* uses of the water and therefore are unsuitable.

As a quantitative measure, in many parts of the Eastern United States the volume of water needed to support sewage and drinking water supply could be assured by adapting as minimum flow requirements the instream flow approximations (IFAs) calculated by the Second Assessment. Although those IFAs were calculated primarily to protect fish and wildlife habitats, and not with human uses in mind, granting instream flow protection on this broader basis ensures that important environmental values will not be overlooked.[31] Using the reworked IFAs will avoid the burdens of quantifying population center needs because the instream flow needed to support fish and wildlife (and navigation where appropriate) will be well in excess of the sewage and drinking water needs of even heavily populated areas.[32] If the flows calculated under the IFA methodology fail to fully protect population center needs, specific provisions can be made. These may involve restricting upstream consumption of lower preference activities when appropriate, utilizing the groundwater sources, building and supplying reservoir and delivery systems, or fostering interbasin transfers.

The second order of business is security of storage for drinking water supplies. The existing law in the Eastern United States, albeit indirectly, protects the security of storage water in surface watercourses, including reservoirs. Municipal water suppliers are invariably clothed with the power of condemnation, under which they can eliminate any legal claims of right that would compromise their use of the water,[33] or the land that is inundated in storing the water.

In contrast to surface water storage, the Eastern legal rules governing storage of groundwater do not provide sufficient security. This is an important concern for a variety of reasons, including the increasingly central role groundwater plays as a source of municipal water supply and the comparative characteristics of surface and aquifer storage:

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31. Professor Butler argues that these values should be protected to ensure acceptance of a comprehensive water allocation system. Butler, *Defining a Water Ethic Through Comprehensive Reform: A Suggested Framework for Analysis*, 1986 U. ILL. L. REV. 439, 468-79 (1986).

32. The principal exception to instream flow protection serving as a de facto sewage and drinking water supply arises in relation to coastal cities. For those areas, the surface rivers and streams are influenced by the ocean's salt water, necessitating more elaborate upstream reservoir and delivery systems.

33. *See, e.g.*, Town of Purcellville v. Potts, 179 Va. 514, 19 S.E.2d 700 (1942).

> [A] municipality seeking an appropriate local reservoir site for the storage of imported water may find underground storage considerably less costly because it avoids the need for a major land acquisition for the reservoir site. . . . [E]vaporation losses from a surface reservoir increase the amount of water that must be obtained for import in order to provide the desired water for the end users. In turn, these increased initial amounts of water require that the project be built on a larger scale which inevitably renders the project more expensive to build. Finally, surface run-off into the reservoir may threaten pollution problems due to the leeching of materials and maintenance problems due to siltation.[34]

Unlike riparianism, which is the universal surface water law throughout the Eastern United States, there is no single dominant legal doctrine governing groundwater. The riparian states adhere to the following three common law doctrines: the absolute ownership rule, the reasonable use rule, and the Restatement (Second) of Torts Section 858 version of the reasonable use rule.[35] Two of these doctrines provide no security of deposit for water stored in aquifers. The absolute ownership rule is an unabashed rule of capture, giving the right to water to whomever pumps it, without regard to the source of the water or the effects on others of removing the water from the aquifer. The reasonable use rule allows the withdrawal of water without liability for any use that is a "reasonable use" on the overlying tract. The Restatement provides limited security of deposit in that it adds "an attempt to balance equities and hardships among competing users"[36] by requiring that the reasonableness of the use on the overlying tract be judged with reference to its adverse effects on other users of the resource. It is arguable, but not certain, that the harm to a municipal storage project caused by pumping the water deposited in the aquifer by an overlying owner, other than the municipality, for any less preferred purpose is unreasonable under Section 858. The narrow solution to the security concerns of water providers is to legally protect imported stored groundwater by codifying the

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34. J. SAX & R. ABRAMS, *supra* note 9, at 870.

35. *See* Getches, *Controlling Groundwater Use and Quality: A Fragmented System*, 17 NAT. RESOURCES LAW. 623, 623 (1985) and cases cited therein.

36. D. GETCHES, *supra* note 22, at 242.

several common-law doctrines to recognize an importer's superior interest in all water imported and stored.[37]

C. *Quantification of Preferred Uses*

Beneath the veneer of simplicity of preferring population supporting uses and instream flows, loom far more challenging questions about the workings of a hierarchical preference system. How much water should a user be granted? What provision, if any, should be made presently for the water needs of future population growth? How much security against competition and curtailment of water use is carried by a permit grant? What other qualitative distinctions can be made in building the hierarchy of uses that will benefit from subsequent preferences? Are there other systemic changes that should be made to insure that Eastern waters are available for use in a way that facilitates the well-being of the region? Analyzing the first two of these questions, in the "easy case" of initial permit allocations of water[38] to support concentrated populations, helps frame answers to these vitally important questions.

The calculation of how much water is necessary to accomplish the purposes for which the preference was granted has a familiar ring to the ears of Western water lawyers, for that exact inquiry

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37. Subsidiary issues of importation and storage, such as the right of the importer to recapture and reuse seepage waters attributable to the use of the imported water, are not discussed in this Article. For an examination of these issues, *see, e.g.*, Jensen v. Department of Ecology, 102 Wash. 2d 109, 685 P.2d 1068 (1984) (importer should be granted control over seepage to internalize benefits of importation). *See infra* text accompanying notes 73-81 for consideration of the broader question of whether to bring all water sources under the instrumentally derived body of water allocation rules.

38. Choosing the initial distribution of permits means that there are no other preexisting permits to be considered and integrated into an overall accommodation of users. To the extent that a new permit system restricts current water users when it becomes operational, they are constitutionally entitled to receive compensation. Riparians not making a present use of the water may not be entitled to compensation. *See, e.g., In re* Willow Creek, 74 Or. 592, 144 P. 505 (1914). In any event, the claims of nonusers can be minimized by giving them a relatively short temporal window in which to initiate a use that would be compensable if curtailed. *See, e.g., In re* Adjudication of the Water Rights of the Guadalupe River Basin, 642 S.W.2d 438 (Tex. 1982). A fund for the payment of constitutionally required compensation can be raised through water use charges. *See* UTAH CODE ANN. § 73-3-3(2)(b) (1953 & Michie Supp. 1989); Aikins v. Arizona Dep't of Water Resources, 154 Ariz. 437, 743 P.2d 946 (1987); *see also infra* text accompanying notes 58-59.

is made in quantifying reserved water rights. Reserved water rights exist in federal law and spring into existence outside the bounds of the state law prior appropriation doctrine. Reserved rights arise when the United States withdraws land from the public domain and reserves it for a specific federal purpose, such as an Indian reservation or a national park. Water that has not yet been appropriated under the state law doctrine is impliedly reserved to effect the purposes for which the federal government is reserving the land. A seminal United States Supreme Court decision enunciated the controlling rule that only the water "necessary to fulfill the very purposes for which a federal reservation was created" and not water that "is only valuable for a secondary use"[39] is the amount available for use on the reserved lands. Although federalism concerns militated in favor of a narrow reservation, the Court also recognized water scarcity in crafting this narrow approach to determining the intent of Congress in reserving water that would be allocated outside the usual prior appropriation system: "If water were abundant, Congress' silence would pose no problem. In the arid parts of the West, however, claims to water for use on federal reservations inescapably vie with other public and private claims for the limited quantities to be found in the rivers and streams."[40]

The identical premises of scarcity and competition animate the move away from the reign of traditional riparianism. Those factors that weighed in favor of guarding the quantity of water reserved in the Western context should do the same in the East, which now faces conditions of scarcity and competition. In the Eastern permit system proposed as a replacement for riparianism, the amount of water for which a preference is granted should be constrained by an awareness of increasing demands and dwindling supply. Quantifying the domestic and sewage water needs of cities to support population requires minimizing the amount of water covered by this most favored preference. Although the minimization requirement seems harsh, it must be remembered that cities can obtain additional water supplies to support other activities, but without the benefit of the highest preference.[41]

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39. United States v. New Mexico, 438 U.S. 696, 702 (1978).

40. *Id.* at 699.

41. Much additional water obtained by municipal suppliers that exceeds what is necessary for population support almost certainly would be classed with water for industrial and manufacturing use, proposed later as the next most privileged classification. *See infra* text accompanying notes 51-53. Water for less favored purposes carried on in cities (e.g., lawn watering) would have to compete with other disfavored uses to obtain supplies.

Municipal needs are, in comparison to the flow of the region's major river systems, small volume needs that can be quantified easily. Sewage and drinking water uses are well-defined and understood uses that do not vary much from locality to locality, or over time. The limits of use are knowable, as are the potential reductions in use that can be made through water pricing strategies, installation of conservation hardware, and recycling of effluent water. The goal in quantification is not to understate the need, but to guard against extravagant claims in a water-scarce area. Therefore, the amount of water allowable in this preference class should reflect reasonable conservation and recycling efforts. If reuse of effluent water in the sewage system is feasible, it should be required.[42] Likewise, there should be no absolute protection of either the point or method of diversion. If aquifer storage is feasible and less consumptive than reservoir storage, the first priority right should be drawn with the more water efficient practice as its basis.

As a matter of policy, predicted population growth is the most difficult variable to account for in quantifying the population supportive preference. The uncertainties inherent in water demand forecasting[43] give rise to a credible fear that too much water will be claimed to support future growth, inhibiting present lower preference users from beginning or expanding water dependent activities. As a counterpoint, water suppliers should be encouraged to plan for their future needs by being granted permits that take into account the suppliers' good faith efforts to anticipate the water demands of their service area.[44] Permits issued on this basis may grant a preference for a significant quantity of water for which there is no present use. This must be done because the needs of the water utility are not served adequately by granting a series of ever-increasing permits as incremental population growth occurs. While approximations of the actual need for water may be very

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42. *Cf.* Environmental Defense Fund, Inc. v. East Bay Mun. Util. Dist. (EBMUD), 52 Cal. App. 3d 828, 125 Cal. Rptr. 601 (1975) (EBMUD's right to appropriate denied because recycling water could supply all water EBMUD could apply to beneficial use for which additional appropriation sought), *aff'd*, 20 Cal. 3d 327, 142 Cal. Rptr. 904, 572 P.2d 1128 (1977), *rev'd on other grounds*, 26 Cal. 3d 183, 161 Cal. Rptr. 466, 605 P.2d 1 (1980).

43. For a sketch of the science of water demand forecasting, see *Instrumentalist Theory*, *supra* note 1, at text accompanying notes 205-20.

44. *See, e. g.*, Saleba, *Water Demand Forecasting*, in PROC. OF THE ANN. CONF. OF THE AM. WATER WORKS A. SEMINAR ON DEMAND FORECASTING AND FIN. RISK ASSESSMENT 21, 21-22 (1985).

nearly a linear function in which water needs increase as a function of population, the realities of building water supply and delivery systems are nonlinear. A water utility does not bring new water sources on line incrementally with each new person requiring service. Rather, it achieves economies of scale by adding capacity to its system in relatively large pieces.

The inhibiting effect of granting permits to meet future needs on present development depends in part on the rights of a permit holder to transfer the permit. Nontransferable permits inhibit present use only modestly, because water that a supplier fails to withdraw and use is physically available for use by other developers. Transferable water permits allow potential present users to purchase excess water from the present right holder. This fosters immediate use of the water without detriment to the policy reasons that auger in favor of the present grant premised on future needs.[45] There may be some inhibiting effects on low valued immediate uses that stem from a grant to preferred users of rights in excess of present use.[46] These are not so much an evil as they are a reflection of the smooth operation of regional planning. Inhibiting the movement of presently unused water into a less preferred use that would be displaced when the projected growth matures into an actual use avoids dislocations surrounding the termination of the displaced use. To argue that the future displacement is speculative and that present development is therefore more important forgets that the premise for mounting the new system is that shortages requiring water allocation among competing users will materialize.

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45. If, in this hypothetical, permits are transferrable as to the quantum of water involved *and* as to their preference (i.e., the transferor's use, not the transferee's use, determines the level of preference accorded to the right in the hands of the transferee), then the purchaser of the present right will have an unusually secure right that will be defeasible on whatever terms are agreed to in consummating the transfer. This prompts present use of the water in the hands of a transferee.

46. If the water supplier is unwilling to transfer the current right to the unused water, the existence of the permit deters initiation of present uses that would be curtailed if the full amount of water granted by the permit was put to use by the supplier. Rational permit holders with rights in excess of immediate needs should be expected to transfer the excess on terms that fully protect their interest. If the quantum is transferable but the preference is not transferable, the transfer of the currently unused portion of the permit has the same impact on present and potential users as the grant of a permit at the preference level associated with the use being made by the transferee. *See infra* text accompanying note 58.

In granting a present permit that covers future use of water, the permitting agency still needs to strike a balance between present and future users. The most obvious standard to guide agency action is a requirement that the water covered by the permit be necessary to effect a use to which the preference applies. This will force consideration of the amount of water awarded by the permit, including a reduction of the amount needed by use of conservation or other strategies. The second standard for agency action is consistency with any independent long-term regional planning and/or water planning being conducted. In the simplified case of initial rights distribution to the highest preference users, a logical third question, that of water availability, is largely moot. There is no need to consider what impact the grant of additional permit rights will have on existing permittees precisely because there are as yet no other permittees.[47] As sketched out previously, there is little possible conflict between these first priority permits and instream flow protection because the flow protection often assists in satisfying the first priority uses.[48] In other contexts, water availability, or the amount of permit rights granted in relation to the anticipated total level of supply, will be a far more important question.[49] Exaggerated claims can be deflated by the established procedure of allowing preissuance challenges by interested parties, and then subjecting the agency decision to judicial review on the basis of the record compiled before the agency.[50]

D. Additional Preferences and Security of Right

Moving from the example of how the permit process might work in an easy case toward the complexities entailed in a large permit system populated by several classes of water users, the two most significant remaining issues are those of additional preference

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47. The only possible conflict over water availability that could arise in this setting is between two first preference users for allocation of an inadequate source.

48. *See supra* text accompanying notes 24-32. In the event of conflict, the drinking water needs of the population would, either by virtue of holding the highest priority or by being even more important than instream flow protection, prevail, and the flow would not be protected.

49. *See infra* text accompanying notes 58-59.

50. *See, e.g.*, Administrative Procedure Act, 5 U.S.C. § 706 (1988). The standard of review may be important. Something more searching than allowing the agency decision to stand so long as it is not an abuse of discretion should be employed. One possible standard is insistence that the agency decision be supported by "substantial evidence contained in the record." *See, e.g.*, Universal Camera Corp. v. NLRB, 340 U.S. 474, 488 (1951).

classifications and security of right. Precise resolution of the question of additional preference classifications should reflect the perceived needs of the enacting riparian state, but some speculation is possible.

In theory, there is no limit to the number of different preference levels that could be established. In practice, it would seem that introducing more than four or five classifications would introduce qualitative distinctions where none exist. After differentiating water use into human and ecosystem life cycle support (drinking water, sewage, and instream flow protections), high value economic uses (commercial and industrial), middle value economic uses (possibly mining and/or energy production), and low value economic uses (agricultural), it is hard to see what other distinctions are necessary. As a general proposition, the key consideration in granting a high or low preference is the answer to the following question: in time of shortage, would a disinterested Platonic guardian discontinue use *A* before or after use *B*? The precise placement of uses into categories reflecting their relative importance within a state ought to reflect local economics. Data from various regions within the Eastern United States attests to striking differences in water usage.[51] To the extent that there is uncertainty about how to classify a particular use, the instrumentalist theory would tend to call for according greater legal protection to high value uses of water.[52] For example, agricultural use is a notoriously low value water use. Thus, even in a state where agriculture is an important industry, this low value would place agriculture in a position subordinate to industrial uses at least to the extent that the industrial uses are carried on in a water conserving fashion.[53]

Security of right in a preference-based permit system encompasses four general issues.[54] At a minimum, a permitted water right must allow a rights holder within a preference class to receive water ahead of rights holders in less preferred classes if supplies are inadequate to satisfy all permit holders. Second, to provide sufficient security of right, a legal system must specify the rights

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51. *See Instrumentalist Theory*, *supra* note 1, at text accompanying notes 184-97.

52. *See generally* D. GIBBONS, *supra* note 6.

53. Politics tend to distort this process. In Iowa, when preferences were legislated, livestock use came ahead of power production and industrial use. *See* IOWA CODE ANN. § 455B.266(2) (West Supp. 1989).

54. *Cf.* Putt, *Allocation of Supplies Among Competing Offstream Users*, in LEGAL AND ADMINISTRATIVE SYSTEMS, *supra* note 18, at II-29 (delineating qualities of administrative regime that allocate water to changing class of users).

of permittees within a preference class *inter sese* in the event that uses among them must be curtailed. A third subsidiary issue, but one of the utmost practical importance, is the basis on which to issue additional rights in a higher class, or in the same class, subsequent to the initial distribution of permits. Finally, security of right implicates the issues of the duration, renewability, and revocability of permits.

The first form of security of right is the most straightforward when viewed from the position of the superior rights holder. That permit holder knows that in times of shortage, the superior use will be continued ahead of a lower preference use. For example, in a four-tier preference system like the one suggested above,[55] in times of shortage an industrial user knows that irrigators would be forced to discontinue their use if it would prevent the industrialist from receiving the permitted quantity of water. Similarly, the industrialist's use is always at risk relative to the preferred municipal use during shortage periods. If desired, the administrative system can be manipulated to cushion the financial hardship to less preferred users not receiving water during these periods. Dislocation compensation from reserve funds, built up through the collection of water withdrawal and water consumption charges, could mitigate these effects. The adverse financial impact of discontinued use would thus be minimized, and if the permit system does not grant permit rights far in excess of the water that is likely to be available, the total compensation cost will be reasonable.[56]

The second aspect of security of right involves the rights of permit holders within a single classification relative to each other in times of shortage. The potential resolutions of this problem fall into the following two general categories: (1) prospectively assigning which users in the class will bear the burden of a shortage; or (2) leaving that difficult problem to a postshortage determination. There are several prospective options, including pro rata reductions, use of an intraclass priority system, perhaps borrowing priority in time from prior appropriation doctrine, or using subclasses to determine who must relinquish their permit rights first. Another option is to take advantage of the fact that permits are issued prospectively and can be granted subject to specifications that determine the order of shutoff in the event of shortage. In any event, these prospective devices all make it clear to the permit

55. The system has four tiers if instream flows calculated by an IFA-like process are treated as other than a preference category.

56. *See infra* text accompanying notes 58-59.

holders that their permits are subject to administrative suspension, according to announced rules in the event of a water shortage emergency.[57]

A second method for allocating the shortfall might be to have users of water within a class bid for the right to continue to receive water. Those willing to pay a greater premium would continue to receive water, and the premiums collected could help to fund compensation for those who are outbid. The bidding system could operate prospectively by holding an annual bid even before the extent of possible shortages is known. This would have a revenue advantage because many users for whom security of supply is particularly important presumably would pay the premium even in years when shortages do not materialize, thus creating surplus funds that can compensate suspended users in future shortage years. This bidding system, especially if coupled with a market for the transfer of water rights, has the additional advantage of tending to push the price of water upward, spurring conservation measures.

None of the various possible intraclass shortage allocation rules is inherently superior. Attempting to avoid intraclass shortages by severely restricting the amount of water granted to each user under the permit system is the only device that should be summarily rejected, if the grants are so niggardly as to prevent even a reasonable level of water utilization. Prospective allocation rules have as a general advantage the ability to offer greater certainty than do after the fact allocations. Still, if after the fact systems rely on market mechanisms, these systems seem likely to promote continuance of the highest value uses. Systems relying on administrative discretion leave the greatest opportunity to accommodate competing uses to minimize the number of users forced to shut down, thus minimizing dislocation costs. A further possibility would be to adopt one of the prospective rules and simultaneously grant the administrative agency a power to add conditions in times of shortage. For example, the timing of industrial withdrawals

57. The question remains as to what basis the agency will use to determine who continues to receive water and who is shut off. If the statute contains no standards, the matter will be highly political. Presuming that permit rights are transferable, those who are denied water might seek to pay other continuing users within the class to forego their water. This will continue the more valuable uses, but it may create an unintended windfall for users who were lucky enough to avoid curtailment, even though the water was less valuable to them than to their vendee.

might be orchestrated by administrative orders that protect instream flows at their minimum levels, or irrigators having cropping choices might be allotted only enough water to support the crop demanding the least water. If the administratively spurred savings are not sufficient, then the selected prospective shortage allocation rule would take over.

The third general security of right issue relates to how new uses are phased into the system. Each new permit increases the set of water entitlements in existence, thereby changing the security of all permittees. For example, if a new municipal drinking water supply permit is issued for a particular source of supply, all lower class users of the supply have been subordinated to the new higher preference user. All class one users have been threatened with increased intraclass competition that may, depending on the intraclass shortage rules, deprive them of water.

As a managerial matter, water allocation systems should be wary of granting new permits that undercut older permits. Prior appropriation, in which older rights, by virtue of temporal priority, are always superior to newer rights, is the penultimate example of avoiding displacement of prior rights.[58] As the hypothetical grant of a new water right in a preferred category illustrates, a preference system that continues to issue permits after the initial distribution of rights cannot match the purity of prior appropriation in protecting current users against competition from new entrants. A preference system can limit the occasions on which the new permittees displace the old by "underpermitting," that is, by granting permit rights to less water than is likely to be used, but this defeats the vital purpose of having the permit system manage the allocation of water in time of average or abundant supply as well as in time of shortage.

Designing an operational preference system that grants new security-impairing permits requires a sensitivity to the equity claims of existing permittees. The equity claim of an existing permittee is supported by the justifiable expectation that investment in a water-dependent beneficial use will not be lost through the grant of additional permits to newer entrants before a reasonable period in which to recoup that investment has run. This equity claim is different and stronger than a claim to be free of a shortage-induced curtailment of water rights. Here, the basis of the com-

58. Even so, prior appropriation doctrine limits the creation of new junior rights by the requirement that there be unappropriated water available to the newest claimant.

plaint is the permitting agency's deliberate act of adding to the pool of superior or equal claims to the resource. In the simple shortage setting, nature and the inexorable fact that the shortage must be allocated temper any perceived unfairness. The permittee has foreknowledge that the right to receive water was not absolute in the event of inadequate supply.

The addition of a temporal dimension to the scope of permitted rights can protect a permittees' justifiable expectations to a reasonable period of enjoyment unhindered by greatly increased competition from new permit holders. For example, in a mature permit system[59] the agency can decide against granting new permits that would impair the security of existing permits during their first five years (or other statutorily designated period) of operation. This policy could take effect by establishing the following two rules: first, an intraclass allocation rule that protects the newest permittees from curtailment; and second, an interclass rule that requires full compensation by the agency in the event that satisfaction of newly granted rights in a higher preference class forces curtailment of an older right in a lower class within the statutory protection period. This favoritism for new entrants might prove politically unworkable because the established water user base will likely have far more political strength than the group of new users.

A more realistic system politically, and one that stresses planning for future growth, could be based on a requirement that the permitting agency not increase the total amount of rights in any preference category by more than a specified percentage in a relatively long period, perhaps ten or fifteen years. The needs of development, which require that some water rights be available at any given time, could be met by the allowable growth built into the planning process. Should even more water be demanded, new entrants could always purchase or retire existing uses.[60]

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59. The term "mature" describes a permit system that has been in operation for a long enough period for the initial set of permits to have been issued. In granting the initial set of permits, the agency may lack sufficient data to be certain of the total magnitude of the use allowed by permits issued to the initial applicants. Therefore, the agency cannot reliably limit the quantum of rights superior to those granted to any single permittee. Likewise, in an initial distribution, equity claims based on priority of use are far weaker or perhaps nonexistent.

60. This is much like the requirement that air pollution offsets be obtained by emitters seeking to locate in areas where the present set of emissions equal or exceed the total allowed under national ambient air quality standards. *See* Clean Air Act, 42 U.S.C. § 7475 (1982).

The final aspect of security of right is the lifespan of permits. Permits of unlimited duration deny the agency important leverage with which to influence the behavior of permit holders, particularly in regard to inducing permit holders to make a more efficient use of water through increased conservation or recycling. A permit holder facing the prospect of a renewal hearing before a permitting agency will respect that agency's suggestions about improved efficiency of use. This is especially true if renewal of the permit is conditioned on a permittee's past record of conservation and recycling.

Renewal authority complements the other management powers of the agency. One important facet of this type of power is the ability of the agency to increase the overall security of right provided by the system. If the agency can obtain improved conservation and recycling efforts from existing permit holders, the system can achieve water-dependent growth without a proportionate increase in actual water use. In this way, new entrants pose less of a threat to existing users' security of right. The new water users will obtain water by de facto transfer from the conserving permittees. If it is desirable to free the "transferor" of all or part of the cost of conservation, the "transferee" (new entrant) could be required to pay compensation to help defray the expense. In a system not allowing transfers, the permittee could relinquish the conserved part of the right to the agency that can then allocate it to a new permittee.[61] In a related manner, the potentially devastating effects of denying water to permit holders in times of shortage can be made less widespread if the agency can threaten renewal difficulties to "persuade" some large volume users to voluntarily forego a portion of their entitlement in crisis situations.

Beyond being of limited duration, permits should be revocable under a very limited set of circumstances. Water shortage would not be such a circumstance because the permits already represent only a qualified right to receive water in times of shortage. Also, as long as permits are of limited duration, there is no need to revoke or alter permits in the event of either nonuse or a change in use.[62] The impetus to revoke in the nonuse situation is abhorrence of waste or nonuse. In this setting nonuse is not waste—some less preferred water user will get to use the water. The limited

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61. If substantial withdrawal or consumption fees are charged, rights holders will have an incentive to reduce actual water use.

62. Change of use is analytically similar to transfer of rights in this system. *See infra* text accompanying notes 63-64.

duration of permits insures that wasteful uses will not be allowed to continue. An ill-used permit will not be renewed on the same basis. So too, the intraclass shortage allocation rules can require the agency to deny water to wasteful permit holders—a sanction, short of revocation, sufficient to protect the public interest. Thus, rather than allocational and efficiency concerns, the grounds for revocation and alteration of permits ought to be very straightforward, such as nonpayment of withdrawal and consumption fees, failure to make required reports, or fraud in the application for, or taking of, water.

E. Transfer of Water Rights

In detailing the operation of a hierarchical preference system, it is apparent that transfers of water rights represented by permits play a role. Up to this point, the possibility, and in some places the desirability, of transferability has been tacitly assumed, but relatively little has been said about the impact of transfers on the water rights they represent or on the water rights of other permittees. The example of a change in use to a less preferred use poses issues about transferability that are more challenging than the issues surrounding nonrenewal or revocability for failing to use the allotted water as originally permitted.

After water is dedicated to a less preferred use, either by transfer or by a change in the operations of the original permittee, the question of the preference level of the permit for the less preferred use arises. Either the permit will maintain its old preference, or it will be downgraded to match the new use. The downgrading of the permit puts the water rights in parity with the water rights of others making the same use, subject to intraclass allocation rules at the lower—and more likely to be curtailed—preference level. This avoids drawing distinctions of right among water users within a particular class, but it is not clear that the absence of distinctions created by the users, rather than by the permitting agency, is desirable. Efficiency reasons not to downgrade the preference classification of the permit may exist. For example, if a marginally profitable industrial user were to transfer a water right to an agricultural user, that agricultural user, by outbidding other potential purchasers of the right without regard to their intended use, has demonstrated that the right is more valuable in that agricultural use than it is in the other uses. If the preference is not downgraded, the agricultural user has purchased the security to remain in operation without fear of curtailment of water supplies in the event that the agricultural preference class,

but not the industrial preference class, is curtailed due to shortage.

More generally, as seen in the discussion of the difficulty of creating truly marketable water rights in a prior appropriation system,[63] transfers threaten to affect the rights of other permit holders to the extent that the changed use is more consumptive or involves different points of diversion or return flow. The prior appropriation system, in providing security based on seniority, is obliged to enforce a "requirement of noninjury [to] protect the vested rights of junior appropriators to the continuation of stream conditions existing at the time of their respective appropriations."[64] Transfers under a hierarchical preference system will not be strangled by an equivalent restriction. In a permit system that does not make even the lesser pledge to hold existing water rights inviolable against subsequently initiated uses (e. g., new permits of equal or higher preference), there is no logically compelling reason to require that changes in existing uses (e. g., transfers of existing permits) satisfy a no harm rule.

To conclude that a no harm on transfer rule is not a necessary part of the hierarchical system does not mean that an inquiry into harm on transfer is not appropriate. The managerial interest of having a system that provides maximum security in conjunction with the desired flexibility allowed by new and changed uses suggests that permit transfers ought to be subject to control by the permitting agency. The agency can protect against unacceptably severe third party effects by limiting the amount of water transferred, placing operational conditions on the transfer, or by disapproving the transfer altogether. However, the enforcement standard is not the restrictive no harm rule of prior appropriation law. Instead, the standard is a much more open-ended one in which third party effects are but one part of the inquiry.

III. Transitional Strategies

To complete the sketch of how a hierarchical preference permit system would replace riparianism, several central matters related to introducing and designing an effective permit system remain for discussion.[65] Foremost among these are sensitive political issues

63. *See supra* text accompanying notes 6-7.

64. *In re* May, 756 P.2d 362, 371 (Colo. 1988) (citations omitted).

65. For a sketch of a much more limited type of permit system that anticipates shortages being only intermittent and not widespread, see D. Grubbs & H. Cohen, Legislative Framework for Water Resources Management in Alabama (1973).

that will affect the willingness of a state to adopt a system before riparianism's ill-suited legal doctrines turn a serious water shortage into a major economic crisis. Of greatest concern are matters of phasing in the new system, limiting as much as possible the new regulatory burdens it places on the water-using community, and framing a policy on explosive issues such as the extent to which interbasin transfers of water will be allowed or promoted by the new system, and the protections, if any, provided to the originating region. Another important operational issue is the unification of surface water and groundwater into a single management system.

A. Avoiding Taking and Overregulation

The switch from riparianism to comprehensive regulation need not be painful. The following constitutionally safe formula has been proposed: existing water users must be allowed to continue their uses without material change for a reasonable period of time, and nonuser riparians can be given some opportunity to initiate uses that would put them on a par with the present water users.[66] Operationally, this means that all current users must be able to trade their present unregulated riparian right of use for a permit of limited duration that does not materially diminish the quantity of water allocated to the user.[67] If the changeover is attempted before absolute water shortages have become severe, there will be relatively few cases in which a current user, by virtue of receiving a permit that carries a low preference level, will be denied water by operation of the permit system. For current users who receive permits but no water because their use is curtailed by the operation of the preference system, compensation is not required, but may nonetheless be appropriate.[68]

The latter implementing strategy, which allows riparians a prospective opportunity to initiate uses, may not be necessary for

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66. *See supra* note 37 and text accompanying notes 58-59.

67. Initial changeover permits could require that some conservation be undertaken without being deemed to materially diminish the existing "water right." The conservation demands would be most valuable to the state in achieving maximal use of the water and most appropriate—not to mention least vulnerable to a takings claim—in water basins where some absolute shortage problems already exist.

68. Compensation is not required because on an overburdened stream, no riparian owner is assured of receiving water. All are subject to being shut off if their use is unreasonable. In this instance, through the policy judgments implicit in the preference system, the curtailed use is found to be unreasonable upon shortage.

a statute to survive constitutional attack as a taking of property, but its inclusion is advisable on two grounds. First, it wholly vitiates the possibility that the destruction of unexercised riparian rights could be held to be a taking. Second, it eliminates the aura of unfairness that attends the sudden elimination of the formerly unfettered right of a riparian proprietor to initiate a water use. This window of opportunity puts holders of unexercised riparian rights on par with the well-protected existing user class—both can obtain initial water use permits free of the "water availability" scrutiny that would be given to a new applicant in a mature permit system.[69]

Another valuable implementing strategy is limiting the scope of coverage of the permit system. This strategy provides a dual benefit if small volume users are granted an exemption from the permit system and the geographical operation of the permit system is restricted to those basins having present shortages, or shortages that are foreseeable within a few years. Exempted small volume users will not view the permit system as another unnecessary form of government harassment because they are free from the expense and travail of being dragged into the bowels of a complex regulatory system.[70] At the same time, limiting the number of permits to be processed guards against waste of what are certain to be scarce agency personnel resources. Identical benefits are gained by exempting even large volume users in nonstressed watersheds, again without compromising the effectiveness of the permit system, because the predicate for imposing the system, chronic shortage, is not present. The dual nature of the regulation—stringent in water-short areas and relaxed in water-sufficient areas—parallels the most sophisticated systems of Western groundwater management.[71] It is already a dichotomy used in some Eastern permit systems.[72]

B. Interbasin Transfers

Among the most acrimonious issues in water planning are interbasin transfers of water. A long history of extensively litigated

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69. *See supra* text accompanying notes 58-59.

70. The water uses of small volume users should be reported to complete the water use data base, but this can be accomplished by a simple informational submission that recites the point of diversion, the usual dates of diversion, the amount of water diverted, and the use of the water.

71. Several Western groundwater protection schemes have implemented an "active management area" concept. *See, e.g.*, ARIZ. REV. STAT. ANN. §§ 45-411 to -637 (1987); NEB. REV. STAT. §§ 46-656 to -674.20 (1986).

72. *See, e.g.*, N.C. GEN. STAT. § 143-215.13 (1988).

disputes between water importers and representatives of the basin of origin can be found in the water law of both the East and the West.[73] To clothe the administrative permitting agency with the power to approve interbasin transfer proposals entails political risks for the initial acceptance of the system, and for the agency in operating the system. Interbasin transfers need not be a most-favored option in addressing subregional undersupply, but in spite of the political risks the power must be granted to the agency. Otherwise, the new permit system will fail to serve the instrumentalist imperative of allocating water in a way that supports important economic and development needs.

Certain devices, including area of origin compensation,[74] can temper the political backlash that permitting interbasin transfers may engender, limiting the damage to the permit system's operation. First, to deflect the political strain on the agency, legislative ratification of transfers over a threshold volume of water could be required. Second, as just suggested, interbasin transfers can be disfavored in comparison to options such as requiring vigorous conservation. Operationally, the agency could apply a presumption that large volume interbasin transfers will be used only after a finding of necessity for the water in the importing region. A more interesting addition is for the agency to also require a finding of "relative availability" of water in the area of origin. To promote acceptance of the regulatory system, the agency could offer a presumption of "lack of availability" to regions that elect, by local vote or other process, to be subject to the full operation of the permit system. Thereafter, any importer would have the burden of rebutting the presumption that there is no water available for interbasin transfer.

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73. The fight over the out-of-basin diversion of Great Lakes water resurfaced in the summer of 1988, prompting a maelstrom of debate between the Great Lakes congressional delegation (except for the Illinois contingent, which favored export) and the delegation representing downstream Mississippi River states. The diversion at Chicago has always been controversial. *See, e.g.*, Wisconsin v. Illinois, 388 U.S. 426 (1967); Wisconsin v. Illinois, 281 U.S. 179 (1930); Sanitary Dist. of Chicago v. United States, 266 U.S. 405 (1925). The controversy surrounding out-of-basin transfers continues; the United States Supreme Court recently ruled on a small part of the battle over the westward diversion of Missouri River water waged between South Dakota and its downstream coriparians. *See* ETSI Pipeline Project v. Missouri, 108 S. Ct. 805 (1988).

74. *See generally* L. MACDONNELL, C. HOWE, J. CORBRIDGE & W. AHERNS, GUIDELINES FOR DEVELOPING AREA-OF-ORIGIN COMPENSATION (1985).

C. Watershed Management and Conjunctive Use

The permit system need apply only to regions of the state where shortage conditions exist. In those areas where the system does operate, the scope of operation should be on a watershed-by-watershed basis, controlling all of the users dependent on the same water source. The permit system would be frustrated, for example, by allowing an unregulated upstream irrigator in an unregulated area to consume water needed to satisfy the permit rights of a downstream municipal or industrial permittee.

A variant on that same simple example demonstrates the need for managing the "conjunctive use"[75] of all hydrologically connected water, including both groundwater and surface water. Assume that the stream in question is an effluent stream that draws the bulk of its summer baseflow from a groundwater aquifer. Assume further that the upstream irrigator takes water through a high capacity well rather than by diversion of surface flows. If the resultant pumping depletes streamflow in the same manner as did the surface diversion, there can be no conclusion other than to treat the necessity of its regulation as indistinguishable from the necessity of regulating upstream surface withdrawals.

Historically, the gulf between theoretically recognizing the need to regulate hydrologically interrelated ground and surface water, and practically doing it, has been rather wide. Groundwater-surface water conflicts have been litigated for at least ninety years,[76] but only slightly more than a dozen states have reformed their water law to integrate the management of the unified resource, and the overwhelming majority of those are Western states that employ prior appropriation to govern both types of water.[77] Happily, despite the lack of extensive legal experience with conjunctive use,[78] to integrate the management of groundwater and surface water

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75. *See, e.g.*, Trelease, *Conjunctive Use of Groundwater and Surface Water*, 27B ROCKY MTN. MIN. L. INST. 1853 Ann. Proc. 1981.

76. *See, e.g.*, Smith v. Brooklyn, 160 N.Y. 357, 54 N.E. 787 (1899); *see also* Davis, *Wells and Streams: Relationship at Law*, 37 MO. L. REV. 189 (1972).

77. *See* Grant, *The Complexities of Managing Hydrologically Connected Surface Water and Groundwater Under the Prior Appropriation Doctrine*, 22 LAND & WATER L. REV. 63, 64-65 (1987); *see also* Sherk, *supra* note 12, at 56 (as of 1986 only New Hampshire had conjunctive use law). Grant notes that all 13 Western states employing appropriation for both types of water have the means to achieve integrated management, but that practical difficulties exist.

78. Professor Grant notes that "[d]espite this legal foundation, experience with integrated management under the appropriation doctrine is limited." Grant, *supra* note 77, at 65.

under the proposed permit system is no harder than to require all water users within a regulated hydrologic basin, regardless of point or method of diversion, to obtain a permit.[79] The harder part of making the conjunctive use a reality under the permit system will be amassing data that can lead to a reliable understanding of how the interrelationship of the water will manifest itself under various withdrawal scenarios.

The legal impact of the permit requirement for groundwater users is more or less significant depending on the previous governing groundwater law in the jurisdiction. In an absolute ownership jurisdiction,[80] being subject to regulation circumscribes the previous unlimited right to withdraw water. The regulation, because it provides enhanced security of right to users of a common pool resource, is assuredly a reasonable regulation of those having property rights in the resource, and not a taking.[81] Moreover, if existing groundwater users are guaranteed an initial permit, there would likewise be little reason to fear constitutional difficulties. In jurisdictions in which the right to take groundwater was already qualified by the reasonable use doctrine, or the Restatement doctrine of the same name, the reduction in right is even less significant.

D. Interstate Sharing

There remain vital issues, unrelated to the working of the permit system itself, particularly those surrounding the sharing of interstate water sources, that are beyond the competence of a single state enacting its own water management laws. States that are engaged in serious intrastate planning for water allocation need to know just how much of the shared water resource is "theirs" to use, and what must be left for others. Here both Eastern and Western experience with allocating water among states through litigation or interstate compact has been unsatisfactory.[82] There

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79. For a less optimistic view of Eastern groundwater permit systems as they have operated in the past, see Tarlock, *Supplemental Groundwater Irrigation Law: From Capture to Sharing*, 73 KY. L. REV. 695, 719-21 (1985) (role of common exemptions, such as domestic and irrigation use, in failure of groundwater permit systems).

80. *See supra* text accompanying notes 35-36.

81. *See* Tarlock, *supra* note 79, at 721.

82. *See generally* J. SAX & R. ABRAMS, *supra* note 9, at 698-750; Carver, *Interstate Water Compacts* (unpublished paper presented at Conference on New Sources of Water for Energy Development and Growth: Interbasin Transfers, held at the Natural Resources Law Center of the University of Colorado School of Law (June 1982)) (on file at *The Wayne Law Review*).

are alternatives, such as multistate political entities that could manage water on a hydrologic basis, rather than on a geopolitical basis,[83] congressional intervention, which past history indicates is unlikely,[84] or a federal planning effort that first studies water supply and demand and then allocates the water.[85]

In the end, though, the question of interstate competition for scarce water resources will not alter significantly the general dimensions of the permit system traced above. The systems adopted in the riparian East will operate as best they can, with or without the increased certainty about the level of available supply that interstate allocation could provide. It is no doubt unrealistic to think that changed water supply conditions in the East will alter the longstanding obduracy of the states and the federal government to commit themselves to a process that relieves the uncertainty regarding entitlements to use interstate waters. States that move more rapidly to establish and implement comprehensive allocation systems may find that they gain an advantage in interstate water allocation litigation. The most recent major interstate water apportionment decision of the United States Supreme Court stressed protection for existing users of a fully appropriated stream in preference to a new claim by the competing state, which "has not committed itself to any longterm use for which the future benefits can be studied and predicted."[86]

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83. The closest thing to this is found in some of the interstate compacts in which the basin commissions have substantial regulatory authority to control water users within their jurisdiction. The best example is the Delaware River Basin Commission (DRBC). *See* J. SAX & R. ABRAMS, *supra* note 9, at 747-50; Note, *Constitutional Law—Equal Protection—Delaware River Basin Commission Resolution Exempting Existing Uses from Water Charges Fails to Satisfy Rational Relation Test*, 27 VILL. L. REV. 616 (1981-82); *see also* Delaware River Basin Comm'n v. Bucks County Water & Sewer Auth., 641 F.2d 1087 (3d Cir. 1981) (reviewing management powers of DRBC).

84. Congress has apportioned only one interstate watercourse, the Colorado River. *See* Arizona v. California, 373 U.S. 546 (1963).

85. Federal efforts in this area display a long history of study unrelated to subsequent action. *See, e.g.*, NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE, FINAL REPORT TO THE PRESIDENT AND CONGRESS OF THE UNITED STATES BY THE NATIONAL WATER COMMISSION (1973).

86. Colorado v. New Mexico, 467 U.S. 310, 321 (1984). Likewise, the Court has intimated that anti-export rules stand a chance of surviving dormant commerce clause scrutiny, if the regulation aided a demonstrated need "to conserve and preserve" water to meet intrastate shortages. See Sporhase v. Nebraska, 458 U.S. 941, 955 (1982).

IV. Conclusion

This final Article in a trilogy tracing the course of Eastern water law describes what kind of legal management system can manage the allocation of water in times of shortage. Here, the instrumentalist theory forms the basis for a reverse engineering project, identifying those water uses that are quintessentially important, and working back to legal mechanisms that promote them. Society demands that the water needed to fill the most critical uses—drinking, sewage, and ecosystem maintenance—be exempt from curtailment. To protect the security of use for the most important classes of use, the legal system can grant an enforceable preference to receive the water ahead of less vital uses. To protect the economies that surround those penultimate and other water-dependent activities, the system must provide as much additional security of right as possible. An entire hierarchical system emerges as each class of use is identified in order of importance.

The scheme sketched here is assuredly not the only one that can succeed where riparianism will fail. It is a pragmatic system, one that is intended to do most directly what water law has always done—ensure that the water resource serves the most important human and societal needs. That is the thrust of the instrumentalist theory, and must be the centerpiece of riparianism's successor system. Whatever emerges will no more resemble riparianism than does the East's history of superabundant water supplies resemble its future of increasing water shortages. The details of how that system operates are of less concern than ensuring that the nature of contemporary Eastern water law dialogue is altered from musings about whether riparianism will again survive, and whether change is in order, to taking concrete steps to build a new legal system of water allocation. The evidence of subregional shortages is already common, the forecasts for the future offer no relief. The time has come for replacing riparianism.