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Economic Impacts of Water Law - State Law and Water Market Development in the Southwest

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ABSTRACT

Western state statutes, case law and administrative procedures significantly affect the economic benefits and costs associated with market transfers of water rights. State laws define the uses to which water rights can be applied and the conditions that must be satisfied to change the point of diversion place or purpose of use. Administrative procedures for transferring water rights can involve substantial costs to the transferor and become a significant factor in determining whether a potential transfer can profitably be implemented. Laws and policies that are changing or ambiguous add an additional element of risk to the transfer process and can affect market activity by failing to clarify the conditions under which a transfer may or may not take place. This paper reviews and contrasts key elements in water policies of the southwestern states, focusing on the economic implications of these policies for market transactions.

INTRODUCTION

Market transfers are already an important water allocation mechanism in some areas of the Southwest and are likely to become more significant in the future. Much of the policy-oriented literature on water markets focuses on identifying institutional arrangements that would be ideal for market development.[1] This focus on potential and hypothetical legal structures needs to be complimented by an examination of the existing legal setting for water transfers.

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1. Examples may be found in R.T. Smith, Trading Water: A Necessary Legal Framework for Water Marketing (paper presented at Council of State Planning Agencies Water Marketing Workshop, Phoenix, Ariz.) (June 19, 1987); Tom L. Anderson, Oscar R. Burt I. & Donald T. Fractor, Privatizing Groundwater Basins: A Model and Its Application in Water Rights: Scarce Resource Allocation, Bureaucracy and the Environment, 223, Torry Anderson ed. (1983) ("Water Rights"); J. W. Eheart & R.M. Lyon, Alternative Structures for Water Rights Markets, 19 Water Resources Res. 887 (1983); B.D. Gardner, Institutional Impediments to Efficient Water Allocation, 5 Policy Studies Rev. 353 (1985).

Western state statutes, case law and administrative procedures significantly affect the economic benefits and costs associated with market transfers of water rights. State laws define the uses to which water rights can be applied and the conditions that must be satisfied to transfer rights to new locations or purposes of use. Administrative procedures for transferring water rights can involve substantial costs to the transferor and become a significant factor in determining whether a potential transfer can profitably be implemented. Policies that are changing or ambiguous add an additional element of risk to the transfer process and can affect market activity by failing to clarify the conditions under which a transfer may or may not take place. This paper reviews and contrasts key elements in water policies of the southwestern states, focusing on the economic implications of these policies for market transactions and for allocation and use of water resources.

It must be emphasized that policies which restrict market activities and make transactions more costly are not necessarily wasteful or inefficient. They are an expression of the concerns that members of society and policy makers have about reallocating water through market processes and they provide protection for third-parties who may be impacted by water transfers.

This article focuses on one important determinant of the institutional environment for market transfers—water law of the six southwestern states; Arizona, California, Colorado, Nevada, New Mexico and Utah. However, it should be understood that state laws and policies are only one part of the complex institutional environment within which markets operate. Federal policies and policies of local organizations also play a significant role in determining the nature and extent of market transactions. State laws provide an overall framework within which market participants operate, but the decisions of individual water right holders and the policies of local water user organizations determine the way in which water markets actually develop and function.

This article begins by defining water markets and the economic conditions necessary for transactions to occur and then reviews the various forms of property rights in water that are recognized in the Southwest. Six themes in western state water law which have an impact on market activity are outlined, along with a description of current policies in the southwestern states related to each theme and a discussion of the economic implications of each theme.

WATER MARKETS—WHAT ARE THEY AND WHY DO THEY DEVELOP?

The following characteristics may be said to distinguish market transfers from other water transfer processes and from transfers of other property rights:

1. Water's value is recognized as distinct from the value of land and improvements. Water is bought and sold for its own sake, not merely as an incidental part of a land transfer.[2]
2. Buyers and sellers agree to reallocation voluntarily, believing it is in their own best interest given the alternative opportunities available to them.
3. Price and other terms of transfer are negotiable by the buyer and the seller and are not constrained to be "not for profit" or "at cost."

The term "water markets," as used in this discussion, refers to transactions which satisfy these three conditions. Such transactions may include sale or lease of fee titles, water use permits, conservancy district shares and project contract rights; conditional water leases for drought year use; or even exchanges of water rights with varying priority dates and arrangements to use conserved water. Water resources which have been involved in market transactions include groundwater, native and imported surface water, artificially recharged and recovered water, effluent and conserved water.[3]

The motivating force behind market development is the mutual perception by potential buyers and sellers that economic gains may be captured by transferring water to a location, season or purpose of use in which it generates higher net returns than under existing use patterns. Three conditions must be satisfied for a buyer and seller to consummate a water transfer:

1. The seller must receive a price offer that equals or exceeds the return he gives up and that covers any costs he has incurred in transferring the water. A farmer, for instance, must consider the net returns to water in irrigation, any decreases in the value of his land, improvements and equipment due to reduced water available for irrigation, and expected appreciation in the value of the water right over time.
2. The buyer must expect the returns from the water right purchase (which may be contributions to some production process, investment returns or returns to real estate development) to exceed all costs associated with the purchase including the price paid to the seller, water storage, treatment and conveyance costs, and legal costs to implement the transfer.
3. The buyer must view a market purchase of water rights as an economically attractive method of obtaining water relative to other

2. In Arizona, for instance, where irrigation rights may only be transferred if the buyer purchases the irrigated land to which the rights are appurtenant, land acquisition is often incidental to the real purpose of the transaction, which is acquisition of water rights.

3. A description of market transactions in the southwestern states is provided in Bonnie C. Saliba, David B. Bush, William E. Martin & Thomas C. Brown, Do Water Market Prices Appropriately Measure Water Values?, 27 Nat. Res. J. 617 (1987).

possibilities—such as contracting for public project water or hooking up to a water service organization.

Recent studies of market transactions in the western states suggest that more market transfers are occurring, and in more areas, in the 1980s than occurred in the 1970s or 1960s.[4] Data on applications filed for water rights transfers in seventeen western states over the years 1963 to 1982 indicate a substantial increase in transfer applications over that twenty year period.[5] While many of these applications either were not approved or did not involve market transactions, the data do support the notion that interest in water transfers is growing. Given the conditions necessary for a market transaction, there are several reasons why the level of market activity may be increasing.

The southwestern states have experienced rapid rates of population and economic growth since the Second World War. Concurrent with this growth, there has also been a significant structural change in regional economies. While irrigated agriculture remains the predominant water use in the Southwest, the nonagricultural sectors of the economy now employ all but a fraction of the work force and generate a large proportion of income. The construction, manufacturing, service, and government sectors of the economy are competing successfully for land and water resources once devoted to agriculture. These economic trends make it more probable that the first condition for a market transaction will be satisfied—that there are net benefits to be gained in transferring water to a new use.

Historically, water for new users in the West has been provided through appropriating water rights to which no previous claims had been established and through constructing water development projects to capture, store and transport water for areas where local supplies are perceived as inadequate. The costs of such projects were subsidized heavily by the federal government. During this era there was little incentive to purchase water rights from existing users because appropriation of unclaimed water and subsidized or relatively inexpensive supply development were attractive alternatives to market transfers. Surface water supplies are now fully appropriated in many areas; however, states have set limits on new groundwater pumping so that it is no longer an inexpensive and easy

4. F. Lee Brown, Brian McDonald, J. Tyseling & Charles DuMars, Water Reallocation Market Proficiency and Conflicting Social Values, in Water and Agriculture in the Western U.S.: Conservation, Reallocation, and Markets. Gary Weatherford, ed. 191 (1982) ("Water Allocation"). See also, H.J. Vaux & R.E. Howitt, Managing Water Scarcity: An Evaluation of Interregional Transfers, 20 Water Resources Res. 785 (1984). See also, Bonnie C. Saliba & David B. Bush, Water Markets in Theory and Practice: Market Transfers, Water Values and Public Policy (1987).

5. R.K. Higginson & J.A. Barnett, Water Rights and Their Transfer in the Western United States (Report to the Conservation Foundation, Salt Lake City) (1984).

matter to appropriate new water rights. The costs to project beneficiaries of water development have risen for several reasons: the best reservoir sites have been used, environmental considerations and conflicting water claims have prompted litigation resulting in project delays and costly impact studies, and in recent years the federal government has been less willing to subsidize project costs. These changes make it more likely that the second condition for a market transaction will be satisfied—that market transfers will be an attractive means of obtaining water supplies relative to other alternatives.

While market transactions are primarily a response to economic incentives, legal arrangements play a central role in market development. State policies define the conditions under which transfers may occur and affect the transaction costs incurred by market participants in transferring water. Transaction costs are incurred in searching for trading partners; in identifying legal and hydrologic characteristics of water rights (priority date, return flow obligations, etc.); in negotiating price and arranging financing and other terms of transfer; and in satisfying state laws and transfer approval procedures.[6] Buyers will not undertake a transfer unless returns to water in their intended use outweigh both the price paid to the seller and all transaction costs borne by the purchaser. Sellers will not agree to a transfer unless the price they receive compensates them for the stream of future profits sacrificed by giving up their water rights plus any out-of-pocket transaction costs borne by the seller. Transaction costs influence the profitability of a given transfer and can, therefore, affect the level of market activity. State laws impose transaction costs on market participants in the form of transfer approval requirements such as court hearings, title searches and hydrologic studies to determine transfer impacts.

State policies provide a basis for market exchanges by defining property rights in water. These rights determine how the risks of supply shortfalls are distributed and serve as the starting point for water right transactions that redistribute risk. Prospects for increasing net returns to water use may be the driving force behind markets but the legal setting affects water right holders' incentives to sell or lease water rights, the third-party impacts that must be considered when a transfer is negotiated and the transaction costs incurred in implementing a transaction.

6. A detailed discussion of transaction costs associated with New Mexico water transfers is provided in Rahman Khoshakhlagh, F. Lee Brown and Charles DuMars, Forecasting Future Market Values of Water Rights in New Mexico (final report, New Mexico Water Resources Research Institute, Project No. 3109-209) (July 1977). For additional discussions of transaction costs see J.P. Crouter, Hedonic Estimation Applied to a Water Rights Market, to be published in Land Economics (1987); R.A. Young, Why Are There So Few Transactions Among Water Users?, 67 Am. J. Agric. Econ., 1141 (1986).

Property Rights in Water—An Overview

One of the most basic functions of state water law, as far as markets are concerned, is to define property rights.[7] Property rights define and limit the rights of members of society with respect to water resources and allow right holders to form secure expectations regarding benefits stemming from their rights. A water right does not simply give a right holder access to a specific water resource. It also defines the duties of other possible claimants and water users with respect to the right holder. A surface water diversion right, for instance, is meaningful because it imposes duties on other water users to behave in a way that does not impair that right.

Water law, by defining the rights and duties of water users relative to one another and to the rest of society, provides a basis for market exchanges. In order for market participants to estimate the value of a water right they must be able to form expectations about the benefits associated with owning the right and the degree to which the right is protected from impairment by others. When property rights in water are ambiguous, buyers and sellers cannot ascertain the nature of the privileges and duties that are being transferred. Although well-defined property rights in water and unambiguous policies regarding transfers are important for market development, market transfers do occur even when there are significant uncertainties. When economic gains from a transfer are large, it can be worthwhile for the transactors to clarify legal uncertainties surrounding the transfer. Tregarthen, for instance, describes the uncertainty and high cost of determining the transferable quantity of appropriative surface water rights in Colorado.[8] In spite of the uncertainty and expenses associated with Colorado water court proceedings, water transfers occur routinely.

There are five basic types of water rights in the West: riparian rights, appropriative rights, use permits, allotments, and mutual stock. While each of these five categories has general distinguishing characteristics,

7. While primary responsibility for defining property rights in water rests at the state level a number of federal policies may affect water rights recognized under state law. Controversies over reserved rights associated with federal and native American lands create uncertainty for water users, and quantification of these rights may have a profound impact on the seniority and quantity of existing rights. Tarlock argues that both the Endangered Species Act and the Clean Water Act create de facto regulatory water rights that have the potential to generate considerable uncertainty for water users holding state-created property rights in water. A. Dan Tarlock, The Endangered Species Act and Western Water Rights, 20 Land & Water L. Rev., 1–30 (1985). For further discussion of the federal role in western water policy, see Frank J. Trelease, Uneasy Federalism—State Water Laws and National Water Uses, 55 Washington L. Rev. 751 (1980); L.J. MacDonnell, Federal Regulatory Rights in Water (paper presented at Natural Resources Law Center Short Course, Univ. of Colo., Boulder, June 1987); Charles F. Wilkinson, Western Water Law in Transition, 56 Uni. Colo. L. Rev. 317 (1985); Steven J. Shupe, Emerging Forces in Western Water Law, Resource Law Notes Newsletter 2–8 (publication of the Natural Resources Law Center, Univ. of Colo., Boulder) (1986).

8. Timothy D. Tregarthen, Water in Colorado: Fear and Loathing of the Marketplace 119 (cited in note 1), Water Rights.

water rights are difficult to classify unambiguously because water administration varies from one state to another. This classification of water rights therefore is somewhat arbitrary but gives a flavor of the diverse forms that property rights in water have taken in the Southwest.

Under the riparian system, rights to use water reside with the owners of land adjacent to a watercourse, the water is available for use only on those lands and generally may not be transferred to other lands. Appropriative rights evolved to serve the needs of water users in arid and semiarid environments, where water often must be transported considerable distances from the source to the place of use. Priority of use for appropriative rights generally is established by the date when the user initially appropriates water—the earlier the date, the higher the priority of the water right. Use permits are granted in some states to recognize appropriative water rights. In addition, some states issue use permits for groundwater withdrawals. Allotments divide a water resource among various users according to a formula established through interstate compact, interagency negotiations, or by the governing board of a water service organization. The basis of the allotment system is a contractual agreement to deliver a certain quantity of water per unit of time. Mutual stocks, like allotments, represent claims to water supplied by an organization. Each share of stock represents a fixed proportion of the total water service obligation of the organization. The more stock a water user holds, the more water the user has a right to receive.

Water rights sometimes exhibit aspects of more than one basic category. Mutual irrigation company stock, for example, typically represents a bundle of collectively owned and managed appropriative water rights. When the water is used for its originally decreed purpose (for example, irrigation) and remains within the company's service area, the rights "behave" like mutual company stock, subject primarily to the rules and regulations of the water purveyor. If, however, the company's water is transferred outside the service area or its use is changed from that specified in the original decree, then the transfer is governed by state laws applicable to appropriative rights. Transfers of appropriative rights are a concern of the state water authority, which monitors beneficial use of water rights and protects the interests of other right holders.

Each of the five broad classifications of property rights in water are found in one or more of the southwestern states. While riparian rights to surface water are recognized in California and Utah, they apply to only a small fraction of each state's water resources. All six southwestern states have adopted the prior appropriation doctrine as the prevailing system of water rights for surface water. Arizona manages groundwater withdrawals in its Active Management Areas under a use permit system. Allotments are a common means of allocating water from publicly funded

water projects. Examples include contracts to receive water from the Central Arizona Project, and the Central Valley Project and State Water Project in California. Rights to use water managed by irrigation districts and multiple purpose water service organizations in Utah and Colorado are often in the form of mutual stocks. The transferability and market value of each form of water right varies depending on local economic conditions and the legal setting for water transfers in each state.

Water Rights and Risk-Sharing

The way in which property rights in water are defined affects how risks of water shortages are shared among right holders. The prior appropriation system operating on the "first in time, first in right" principle places the risk of water supply shortfalls on junior right holders. Junior appropriators and new water users desiring increased reliability of supplies may buy senior water rights, or may negotiate options to exercise senior rights in dry years, or may develop storage and delivery systems to reduce the variability of flows available to junior right holders.

Howe contrasts the risk-sharing arrangements of the prior appropriation system with those of a proportional rights system in which water users share available water supplies based on the proportion of water rights held.[9] Holding 5 percent of the water rights in a proportional rights system would entitle the holder to 5 percent of the available water supplies each year. Mutual stocks are a form of proportional rights. A water user in a mutual water company who wishes increased protection against supply uncertainty can purchase more shares of company stocks. Tregarthen argues that mutual water companies evolved as a response to the risk of supply shortfalls in Colorado.[10] Many high priority rights there are held by mutual water companies and since sale and rental of company stocks do not require water court proceedings, exchanges that redistribute risk can take place without large transaction costs. Howe observes that a proportional rights system allows low cost sharing of risk among homogenous water users (that is, irrigators), but argues that the priority system is advantageous when heterogeneous users are involved (such as, irrigators, cities and industries) because senior rights can be transferred to those sectors which place the highest value on reliable water supplies.[11]

Market transactions allow water users to buy more protection against supply shortfalls than provided by their current water rights holdings. One of the dominant motivations for water transfers in the southwestern states is risk management. Urban water purveyors throughout the South-

9. Charles W. Howe, D.R. Schurmeier and W.D. Shaw, Jr., Innovative Approaches to Water Allocation: The Potential for Water Markets, 22 Water Resources Research 439 (1986).

10. Tregarthen, in Water Rights at 131–32 (cited in note 8).

11. Howe, Schurmeier & Shaw, 22 Water Resources Res. at 439 (cited in note 9).

west are acquiring senior irrigation rights to protect current and future water users in their service areas against supply fluctuations.

Once property rights in water are established, the market mechanism provides buyers and sellers with incentives to make water use and transfer decisions in their own best interest. The market process ensures that the benefits accruing to the buyer exceed the benefits foregone by the seller in transferring water rights. Public policy need not be concerned with balancing these private gains and losses. Instead, state water transfer policies focus on transfer impacts on third-party water right holders and on the public interest—which is defined differently (if defined at all) in each western state. If state policies do not cause buyers and sellers to account for external values that may be affected by a transfer, then a proposed transfer may be beneficial to the buyer and seller even though it is actually inefficient from an overall social perspective. The possibility that private and social interests regarding water use and transfer may diverge has been recognized by western state policymakers. Laws that attempt to reconcile private and social interests in water are described in the next section.

State Water Policies and Their Impact on Water Markets

Six themes in western state water policies are identified as playing an important role in water market development. Some are important because they provide incentives for water transfers to occur. These include beneficial use and forfeiture statutes, and policies on transfer of conserved water. Other themes are important because they define the conditions under which transfers may take place, what state authorities must consider in approving transfer proposals and the costs of implementing transfers. These themes include protection of vested water rights, area of origin considerations, public interest provisions and instream flow protection. Each theme's influence on market development and activity is discussed. Relevant statutes and case law for each of the six states are summarized. Laws that apply specifically to interstate transfers are omitted because interstate reallocations of water rights have thus far been implemented through legislative and judicial processes rather than through market transfers.

Beneficial Use and Forfeiture/Abandonment Provisions

Requirements that water rights be put to some beneficial use and provisions that make rights subject to forfeiture after a period of non-use are found in the water law of most southwestern states, though they do not apply to all water rights in each state. These laws are relevant to water markets for several reasons. First, "beneficial use" defines those water

uses for which a water right may be granted. Uses which have not been declared "beneficial" and for which a water right may not be granted—instream flow maintenance in some states, for instance—cannot be represented in market transfers of water rights. Beneficial use provisions distinguish between those purposes for which water rights can be purchased and those for which a right will not be recognized. Beneficial use, therefore, serves as an "entry point" into the market process. Second, the beneficial use doctrine implies an obligation on the part of right holders to apply water beneficially. Forfeiture and abandonment laws make the retention of a water right contingent upon exercising the right. These requirements can provide water right holders with an incentive to sell or lease their rights rather than not use them and risk forfeiture, although their impact on incentives to sell or lease varies with state implementation and enforcement procedures. Weatherford and Shupe argue that forfeiture and abandonment provisions may be more rigorously enforced as local competition for water grows.[12]

Arizona law states that the quantity of surface water that may be used is limited to the amount necessary for beneficial use and lists domestic, municipal, irrigation, stock watering, water power, recreation, wildlife and mining as uses for which surface water may be appropriated.[13] A surface water right ceases and the water reverts to the public and is again subject to appropriation after five successive years of non-use.[14] Groundwater is not subject to the appropriation doctrine in Arizona though statutes require that groundwater which has been withdrawn shall not be allowed to waste.[15] The groundwater rights formalized following Arizona's 1980 Groundwater Management Act need not be exercised regularly and are not subject to forfeiture for non-use.[16]

California codes do not purport to list all recognized beneficial uses but do list domestic, irrigation, frost protection, power, municipal, mining, industrial, recreational, fish and wildlife protection and enhancement, stock watering and water quality maintenance as beneficial uses.[17] Appropriative rights are limited to the amount of water reasonably required for the use to be served and this quantity is determined on a case-by-case basis by the state's Water Resources Control Board (WRCB).[18] An appropriative right can be forfeited in whole or in part if the water is not put to beneficial use for a period of five years.[19] The California constitution

12. G.D. Weatherford & S.J. Shupe, Reallocating Water in the West, 78 Am. Water Works A. J., 63–71 (Oct. 1986) ("Reallocating Water").
13. Ariz. Rev. Stat. Ann. §§45-141(A)–181 (1986).
14. Id. at §45-89(A).
15. Id. at §45-602.
16. Id.
17. Cal. Adm. Code, Title 23, §661-66.85.
18. Id.
19. Annot. Cal. Water Code, §1241 (West 1988).

prohibits waste, misuse or unreasonable use of any water rights recognized under California law.[20]

The limit and measure of water rights in Colorado is based on beneficial use, though specific beneficial uses are not listed in Colorado statutes. Colorado case law and statutes recognize an obligation to maximize beneficial use of appropriative water rights, including tributary groundwater.[21] Abandonment in Colorado requires both non-use and intent to abandon and the State Engineer regularly brings abandonment proceedings when periodic investigations indicate some portion of a water right has not been beneficially used.[22] There is no specific provision for water rights forfeiture in Colorado.

Nevada statutes state that stock watering, recreation, energy and heating are beneficial uses.[23] Wildlife uses are implied by statutory language[24] and administrative policies consider other customary uses (domestic, municipal, mining, milling, irrigation, industrial, power) as beneficial uses. Water rights are based on the quantity required for beneficial use. Groundwater rights may be forfeited after five years of non-use.[25] To establish abandonment for surface water rights, continuous non-use for five years must be accompanied by intent to abandon.

New Mexico statutes require beneficial use for both groundwater and surface water rights.[26] Beneficial uses are those uses which do not result in waste and the State Engineer has statutory authority to prevent waste. Water rights are subject to forfeiture proceedings after four consecutive years of non-use if water was available during each of those four years.[27]

Utah does not define specific beneficial uses statutorily, although domestic use, stock watering, irrigation, mining, municipal and power are all mentioned.[28] State statutes and case law specify that the quantity of an appropriative right is based on the extent of beneficial use of the water.[29] A water right may be forfeited after five consecutive years of non-use.

Use and Transfer of Salvaged or Conserved Water

Water users may be able to reduce the water diverted for beneficial uses as water use patterns and technologies change over time. Brown

20. Cal. Const. art. 10, § 2.
21. Colo. Rev. Stat. § 37-92-102(1) (1987).
22. State of Colorado Response, Western Governors Association 1985 Questionnaire on Water Use, at 1–2 ("Western Governors Questionnaire").
23. Nev. Rev. Stat. §§ 533.490, 533.490–.030.
24. Id. at 533.637.
25. Western Governors Questionnaire at 2 (cited in note 22).
26. N.M. Stat. Ann. §§ 72-1-2 -8-4 (1985).
27. Id. at § 72-12-18 -5-28.
28. Utah Code Ann. § 73-1-5 (1980).
29. Id. at § 73-1-3.

discusses the example of an irrigator who holds a quantity of water rights that enable him to produce a particular combination of crops.[30] Adoption of a water conserving technology (lining of irrigation ditches or investing in sprinkler irrigation, for instance) would be a more attractive proposition to the farmer if the water conserved could be used to expand his irrigated acreage, applied to nonirrigation uses on his property or sold to another water user. State policies that permit application of conserved water to new land and new uses and that allow conserved water to be leased or sold would reward water conservation efforts and could also reduce disincentives for water conservation generated by the "use it or lose it" aspects of forfeiture and abandonment laws. Such policies could provide an important incentive for water market transactions, even allowing water right holders to finance water conservation investments by selling and leasing conserved water. However, laws in the southwestern states on use and transfer of salvaged or conserved water vary considerably.

In Arizona, while there are no specific statutes on the issue of transferring conserved water, case law establishing the appurtenancy of water rights to land appears to preclude transfers of salvaged or conserved water to lands other than those to which the water right was originally assigned. In *Salt River Users' Association v. Kovacovich,* the Arizona Court of Appeals ruled that irrigators who lined their ditches could not apply "saved" water to irrigate adjacent land.[31]

California codes, on the other hand, specifically provide that conserved water may be sold, leased, exchanged or otherwise transferred subject to state law applicable to transfers.[32] In addition, appropriative water rights that are not fully exercised because reclaimed water is being used instead, or because of water conservation efforts, are not subject to forfeiture.[33]

In Colorado, legislation allowing use of salvaged water has been introduced several times but has not been passed.[34] Under current statutes, an individual who reduces the quantity of water needed for a beneficial use may apply to water court seeking permission to use or sell salvaged water. Court approval is required even when salvaged water will be used on the same land to which the water right is applicable.[35] The applicant bears the burden of demonstrating that existing rights will not be impaired, and proceedings are costly and impractical for small amounts of water. If a water user delays in applying for permission, he risks having the

30. Water Reallocation at 191 (cited in note 4).

31. Salt River Valley Water Users' Association v. Kovgcovich, 3 Ariz. App. 28, 411 P.2d 201 (1966).

32. Annot. Cal. Water Code §§ 1011–1010 (West 1988).

33. Id.

34. Western Governors Questionnaire at 4–5 (cited in note 22).

35. Id.

quantity of the water right diminished to the post-conservation consumptive use quantity.[36] Colorado case law specifically holds that actions taken to reduce water consumption by phreatophytes (deep rooted plants such as cottonwoods) will not be regarded as producing salvaged water available for sale or for use on other lands.[37]

Nevada takes the position that "since beneficial use is the limit and extent of a right, a water user has no right to his inefficiencies."[38] Conserved water is considered unappropriated and any applicant may file to appropriate it.[39] Nevada statutes declare that water transfers are a valid course of action when it becomes impracticable or uneconomical to use the water beneficially on the land to which it is appurtenant.[40] However, this has not been interpreted as allowing transfer of conserved water and the State Engineer has consistently denied applications to transfer conserved water.[41]

In New Mexico, salvaged water may be transferred if the applicant can demonstrate clearly that there is no impairment to other water right holders, including junior appropriators.[42] In Utah, use of conserved or salvaged water cannot result in extension of the water right to other land or in increased consumptive use. Conserved water may be considered unappropriated, as in Nevada.[43] As in the other southwestern states, Utah case law implies that the primary consideration in determining whether transfer of conserved water shall be allowed is injury to other perfected rights.[44]

As irrigation technologies, water costs and crop prices change over time, farmers face new incentives to conserve water in agriculture. State laws that encourage water-conserving technology by allowing sale or lease of conserved water could promote more efficient water allocation by making conserved water available for non-agricultural uses. However, improved irrigation efficiency typically reduces return flows and thus policies that allow transfer of the entire portion of the water right no longer used due to conservation could impair downstream users relying on historical return flow patterns. The Oregon legislature addressed this concern in 1987, when it authorized the sale, lease or other use of con-

36. Id.

37. Southeastern Colorado Conservancy District v. Shelton Farms, Inc., 187 Colo. 181, 529 P.2d 1321 (1974).

38. Western Governors Questionnaire at 4 (cited in note 22).

39. Id.

40. Nev. Rev. Stat. § 533.040 (1986).

41. Personal communication with George Benesch, Deputy Attorney General Division of Water Resources, Nevada Dep't of Conservation and Natural Resources (May 1987).

42. Water Reallocation at 219 (cited in note 4).

43. Western Governors Questionnaire at 4 (cited in note 22).

44. Water Allocation at 218 (cited in note 4).

served water that would have been irretrievably lost for other beneficial uses.[45] Examples of irretrievable losses that could be conserved and transferred include excess field evaporation and deep percolation to unused aquifers.

Policies that allow transfer of conserved water, with provisions for compensation and mitigation of damages to other right holders, make economic sense. However, the difficulty involves integrating these policies into state laws and administrative procedures in a manner that protects third parties and does not impose high costs on those desiring to transfer conserved water.

Protection of Third Party Water Right Holders

While all six southwestern states require that water rights shall not be impaired by transfers, implementation of this policy varies greatly. Procedures to protect the rights of third party water users against impairment resulting from transfers are a primary source of transaction costs associated with market transfers. Costs of demonstrating nonimpairment to state authorities typically are borne by the applicant for the transfer and often include engineering and hydrologic studies and legal counsel. When such costs are high relative to the value of water being transferred they can prevent transfers from being implemented. Transfer approval procedures to protect other right holders thus can affect the level of market activity.

Arizona statutes require that the amount of water diverted or used after a transfer shall not exceed the vested rights existing at the time of the transfer.[46] Regulations as to the spacing of wells seek to protect groundwater users from the impact of changes in nearby pumping activity,[47] but no statute specifically addresses the possibility that changes in groundwater pumping resulting from a transfer may impair surface water rights. Arizona statutes do, however, recognize the possibility that interbasin transfers of groundwater may impair other water users and an exporter of groundwater potentially is liable for damages to affected individuals in the basin of origin.[48] This provision appears to be affecting market transactions in Arizona. City governments and businesses who purchase land in remote basins to import groundwater pumped from beneath those lands to the Tucson and Phoenix areas are concerned about damage claims and some buyers plan to buy out all existing groundwater users in the basin of origin in order to forestall litigation and compensatory payments, and to control groundwater depletion in the basin of origin.[49]

45. Or. Sen. Bill 24 (1987). See also Water Market Update at 5 (Apr. 1987); Water Market Update at 4 (June 1987).

46. Ariz. Rev. Stat. Ann. § 45-172 (1987).

47. Id.

48. Id. at §§ 45-544–545.

49. Personal communications with Arizona water brokers, city officials and developers (Jan. through May 1987).

The California water code requires that water transfers must not operate to the injury of any lawful user, and the petitioner for the transfer must demonstrate nonimpairment to the satisfaction of the Water Resources Control Board (WRCB).[50] For appropriative rights initiated before 1914, a transfer may be made without prior approval of the board and a party challenging the transfer has the burden of demonstrating that vested rights have been impaired.[51] For appropriative rights initiated after 1914, an applicant for transfer must obtain the approval of the WRCB.[52] Criteria for approval and disapproval have not been clear, but new transfer approval procedures and criteria are in the process of being developed.[53] California codes allow for a trial period before transfers will be regarded as final so that effects of the transfer on other right holders can be recognized and accounted for.[54]

In Colorado, water rights may be transferred so long as vested water rights are not injured.[55] Transfers of appropriative rights are accomplished through water court proceedings. These proceedings can be expensive as third party right holders may raise objections and parties typically are represented by attorneys and other experts.[56] The transferable quantity of a right is determined by the court based on historic beneficial use and prevention of injury to other rights.[57] Tregarthen and Brown describe court cases demonstrating the difficulties that may be encountered and the costs that may be incurred in quantifying transferable rights in the Colorado water court system.[58] Return flows are very important in Colorado's water economy because the majority of the state's water use relies on surface water sources. Protection of right holders relying on return

50. Annot. Cal. Water Code § 1702 (West 1971). Cal. Adm. Code Title 23 § 733 (1987).

51. B.C. Driver, The Effect of Western Water Law on Water Transfers, S. Shupe, ed., in Water Marketing 2.1–.12 (1986).

52. Id.

53. For a discussion of the uncertainties that transfer applicants have faced, see M.M. Curie, A Distinct Policy Which Forms a Market Within the California State Water Project, 21 Water Resources Res. 1717–20 (1985). For a discussion of plans to develop transfer approval criteria, see J.T. Markle, Facilitating Voluntary Water Transfers in California (June 1986) (presentation at Western Water: Expanding Uses/Finite Supplies Conference, Nat. Res. L. Center, School of Law, Univ. of Colo., Boulder). A California Department of Water Resources Water Transfers Committee was formed in 1986 to develop new procedures for reviewing transfer proposals. The Costa-Isenberg Water Transfer Act of 1986 directs the Department of Water Resources to facilitate voluntary exchanges of water (Annot. Cal. Water Code § 480 (West 1988)), and the department expects to issue a water transfer guide in 1988.

54. Annot. Cal. Water Code §§ 1735–40 (West 1980).

55. Western States Water Council 1986 Questionnaire at 2.

56. Id.

57. Id.

58. Water Reallocation at 191 (cited in note 4), refer to Green v. Chaffee Ditch Co., 150 Colo. 91, 371 P.2d 775 (1962), a complicated case involving transfer of irrigation rights to the City of Fort Collins. Tregarthen refers to Metro. Denver Sewage Disposal Dist. v. Farmers Reservoir and Irrig. Co., 179 Colo. 36, 499 P.2d 1190 (1972) and Southeastern Colorado Water Conservancy Dist. v. Huston, 79-CW-1, Arapahoe, Colo. (1981), in Water Rights at 124, 128 (cited in note 8). These cases illustrate uncertainties that can arise in implementing transfers of appropriative rights. Tregarthen also cites at 127 an observation by Colorado Assistant Water Division Engineer Kenneth Cooper that legal costs for water hearings often exceed several hundred thousand dollars.

flows is an important issue, but the adversarial nature of Colorado water court proceedings makes transfers of appropriative rights complicated and costly.

Nevada, New Mexico and Utah statutes require that existing water rights must be protected when a transfer is evaluated and the applicant has the burden of proving noninjury. Parties wishing to transfer water rights must file an application with the State Engineer. If the transfer is approved, a permit is issued indicating the new location and/or use.[59]

State transfer approval procedures designed to protect third parties are a major cost of implementing a water transaction and these costs may be large enough to make it unprofitable to implement otherwise economically beneficial transfers. While economic efficiency requires that all impacts of water transfers be accounted for in market decisions, there are tradeoffs between policies that protect third parties and water right transferability. Transaction costs and transfer restrictions imposed by policies to protect third parties can prevent water from moving to higher-valued uses and locations.

Howe, Schurmeier and Shaw [60] describe tradeoffs between protecting other water users and facilitating water transfers in Colorado. Holders of rights to transmountain diversion water (such as Colorado–Big Thompson units) need not take into account the impact of water right transfers on return flows. As a result, transaction costs are lower and transfers are more easily implemented. In contrast, holders of rights to native surface flows must recognize return flow impacts of transfers and follow water court recommendations to mitigate detrimental impacts or compensate those affected. The adversarial Colorado water-court process can impose high costs on transferors to account for small losses to third parties.

Two elements of state policies to protect third party water right holders are particularly important in determining the costs of transferring water rights; resolution of protests against the transfer and determination of the quantity of water that can be transferred. Transfer procedures should encourage timely and low-cost resolution of protests filed against the transfer application. Administrative procedures which initially bring the applicant and protestants together informally to negotiate compromises and compensation allow lower cost water transfers than those procedures which require a formal hearing and presentation of evidence.

Quantification of the transferable portion of a water right is a costly

59. Western Governors Questionnaire at 4 (cited in note 22); Nev. Rev. Stat. § 533.345 (1986); Personal communication with Larry Reynolds, Legal Counsel, Dept. of Conservation and Natural Resources, State of Nevada (Mar. 1987); personal communication with David N. Stone, Water Rights Division, State Engineer's Office, Santa Fe, New Mexico (Feb. 1987). Utah Code Ann. § 73-3-3 (1987), 73-1-10–1-11 (1980).

60. C.W. Howe, D.R. Schurmeier & W.D. Shaw, Innovative Approaches to Water Allocation: The Potential for Water Markets, 22 Water Resources Res. 431 (1986).

and uncertain process when undertaken on a case-by-case basis with applicants and protestants each bringing in experts, as is done in Colorado. The approach employed in New Mexico for transfers of irrigation rights and in Arizona for transfers of groundwater rights within Active Management Areas is simpler because the transferable quantity is fixed by the state administrative agency.[61] Reliance on a standard transferable quantity of water per acre of irrigated land reduces expenses incurred by applicants and protestants for hydrologic and engineering experts, saves state agency staff time preparing for and participating in hearings, and creates more certainty in the transfer process.

Area-of-Origin Protection

Water transfers can negatively affect business activities, local government fiscal capacity and the quality of public services in areas from which water is being transferred. Transfers of irrigation water rights often involve retirement of irrigated acreage with associated reductions in agriculturally-linked economic activities in the area of origin and in the property tax base. Permanent transfer of water rights may foreclose options for future economic development in the area of origin. If, in the future, economic conditions make expanded irrigated agriculture, new industrial activities, or residential development economically attractive, then water may not be available locally to pursue these opportunities. While some studies suggest that direct and indirect economic impacts of water transfers on the area of origin generally are small from the perspective of a state's economy,[62] such impacts are a significant concern to area-of-origin residents. In addition to economic impacts, concerns have also been voiced regarding the effect of water transfers on community cohesion, local traditions and cultural values, the political viability of local governments and irrigation districts, and riparian environments in the area of origin.[63]

In most western states, local government units are not involved formally in the transfer approval process. Local jurisdiction over appropriative rights is generally pre-empted by state law. In contrast to effects on vested water rights, consideration of area-of-origin impacts generally is not in-

61. Arizona Groundwater Management Act, 1980. State ex rel. Reynolds v. Niccim, 102 N.M. 330, 695 P.2d 480 (1985). This case upheld the State Engineer's use of basinwide average consumptive use figures to determine the transferable quantity of an irrigation right.

62. M.M. Kelso, W.E. Martin & L.E. Mack, Water Supplies and Economic Growth in an Arid Environment (1973), R.A. Young, Local and Regional Impacts of Water Transfers, in Water Scarcity: Impacts on Western Agriculture, Ernest A. Engelbert & A. Foley Scheuring, eds. (1984).

63. For a discussion of some of these impacts, see S.C. Nunn, H. Ingram, R. Grimes & S. Eden, Learning the Limits: Water Management in the Colorado River Basin (paper presented at Western Social Science Meetings, Reno, Nevada (Apr. 1986)). S.L. Brown & H.M. Ingram, Water and Poverty in the Southwest: Conflict, Opportunity and Responsibility (1987).

corporated into transfer approval procedures. However, there are recent indications that area-of-origin concerns are receiving more attention from state policymakers. Area-of-origin concerns have the potential of affecting the conditions under which interbasin transfers will be approved and the costs of implementing such transfers.

Recent legislative activity in Arizona indicates a growing concern with the impact on rural areas of agricultural-to-urban water transfers. Legislation passed in 1987 allows payments by cities who purchase and retire farmland in lieu of property taxes to taxing jurisdictions in the area of origin.[64] These payments add to the municipalities' costs of acquiring water rights.[65] Arizona statutes provide that "[N]o right to the use of water on or from any watershed or drainage area which supplies or contributes water for the irrigation of lands within an irrigation district, agricultural improvement district or water user association shall be severed or transferred without the consent of the governing body of such. . . ."[66] To comply with this statute, transfer applicants routinely provide evidence to the Arizona Department of Water Resources that water organizations in the watershed of origin have consented to the proposed transfer.

Early California statutes attempted to give the area of origin the legal ability to recapture specific state held water rights but this provision has not been successfully invoked.[67] Long-term water exporters in areas dependent upon imported water naturally resist recapture by the area of origin and the conditions under which recapture would be permitted are not spelled out clearly in the statutes.[68] California's Burns-Porter Act of 1959 does provide for some compensation to northern California for water transferred south through the State Water Project. Compensation is provided in the form of flood control funding, recreation and fisheries enhancement projects and loans for small water-related projects.[69]

Colorado law requires that conservancy district projects which transfer water out of a basin must protect current and future consumptive water users in the basin of origin and must not increase the cost of obtaining water in the future.[70] In practice this has caused conservancy districts

64. Ariz. Rev. Stat. Ann. §§ 45-472, 45-473 (1987).

65. The City of Mesa, Arizona, for instance, paid over $100,000 to Pinal County in 1986 to compensate for the loss in the county's tax base resulting from Mesa's purchase of over 12,000 acres of farmland. Personal communication with Karl Kohlhoff, City of Mesa Water Resources Manager (Dec. 1986).

66. Ariz. Rev. Stat. Ann. § 45-172(5).

67. Laurence J. MacDonnell, Charles W. Howe, et al., Guidelines for Developing Area of Origin Compensation, University of Colorado, Natural Resources Law Center, Res. Rep. 22-36 at 8 (Dec. 1985) ("Guidelines").

68. Id.

69. Id.

70. Lawrence J. MacDonnell & Charles W. Howe, Area-of-Origin Protection In Transbasin Water Diversions: An Evaluation of Alternative Approaches, 57 Univ. Colo. L. Rev. 527, 537 (1986).

which import water to build "compensatory storage" facilities in the basin of origin. As a part of negotiations concerning the Windy Gap Project, a ten million dollar escrow fund was set up by the importing conservancy district for use by the basin of origin to plan and construct water projects.[71] Colorado statutes also provide that when an action of statewide concern is proposed in a county, that county commissioners may hold hearings on the proposed action and issue or deny a permit to allow the proposal to be implemented.[72] Eagle County commissioners have invoked this statute in order to obtain permitting authority over the Homestake II transmountain diversion project which would provide water for the cities of Aurora and Colorado Springs.[73] Water court proceedings generally are not a forum in which area-of-origin concerns can be addressed because harm to vested water rights is the only criterion that Colorado water courts are required to routinely consider in evaluating transfer proposals.[74]

Nevada requires that county commissions be notified of transfers across county lines and the commissioners may make nonbinding recommendations to the State Engineer regarding transfer approval.[75]

New Mexico statutes provide for reserving a share of a basin's water supply for use in the basin of origin, although criteria for determining what share should be reserved are not well defined.[76] Area-of-origin issues have been raised in New Mexico in response to a number of proposed transfers. The impacts on local culture of water transfers out of traditional acequia irrigation to nonagricultural uses are a key issue in the *Sleeper* decision in Rio Arriba County.[77] *Sleeper* is discussed further in the following section on public interest considerations. The rights of irrigation districts to block transfers of water out of their service area were examined by New Mexico courts in the *Cox* case, but no definitive conclusion was reached on the jurisdiction of irrigation districts. In *Cox*, the Middle Rio Grande Conservancy District in the Albuquerque area sued to prevent the Cox family from transferring water rights outside district boundaries. However, the Coxes' water right predated the creation of the District and the District's jurisdiction over transfer of those rights was unclear.[78] Ir-

71. Id.

72. Colo. Rev. Stat. 524-65.1-501 (repl. vol. 1982). The permits, known as "1041 permits," were authorized in 1974 by House Bill 1041 codified at Colo. Laws, ch. 80, § 1 (1974).

73. Personal communication, Charles Howe, Dept. of Economics, University of Colorado, Boulder (May 1987).

74. *Western Governors Questionnaire* at 5 (cited in note 22).

75. Nev. Rev. Stat. § 533.363 (1987).

76. Guidelines at 11–12 (cited in note 67).

77. In re Howard Sleeper, et al., No. RA 84-53(C) (N.M. 1st Judicial District, ___, 19___), rev. Ensenada Land & Water Assoc. v. Sleeper, No. ___ (N.M. Ct. App. Mar. 1, 1988).

78. Middle Rio Grande Conservancy Dist. v. Cox, No. 6745 (N.M. 13th Judicial District ___, 19___), aff'd No. 7145 (N.M. Ct. App. ___, 19___). The case is discussed by Brown, McDonald, Tyseling & DuMars, Water Reallocation at 230 (cited in note 4).

rigation district jurisdiction over rights initiated after the creation of a district is not entirely clear either. The State Engineer takes the position that rights perfected prior to the creation of an irrigation district may be transferred without the approval of the district, but that transfers of water rights initiated as a result of the formation of a district and held in the name of the district require approval by district authorities before a transfer may occur.[79]

Neither Utah statutory law nor case law addresses directly the impact of water transfers on the area of origin even though Utah has an active and viable farm economy dating from the early years of Mormon settlement. Concern with the impact of transfers on the agricultural sector have arisen in the context of energy development.[80] Area-of-origin concerns in Utah appear to have been addressed through negotiation and litigation on a case-by-case basis rather than through legislation.

The heart of area-of-origin concerns with markets lies in the tension between individual and community interests. Conflicts arise between the autonomy of individual right holders to lease or sell water to the highest bidder and rural community preferences for predictability and stability. Individual farmers have an incentive to negotiate satisfactory prices for their water rights on their own behalf, but have little incentive to consider community impacts associated with water transfers out of a rural area.

Impacts of water transfers on economic activity and local government fiscal capacity in the basin of origin raise complicated equity issues. There is little consensus regarding whether or how public policy should be concerned with these spillover effects on local governments and businesses. MacDonnell[81] poses the question in the following manner:

> Why should the export of water be treated differently from the export of any natural resource? . . . Local areas are not compensated for the removal of coal or ores beyond the royalties paid directly to resource owners . . . Why is water viewed differently?

The authors go on to argue that water exports are different because, while exports of timber or minerals provide a continuing source of local jobs, income and tax base, water exports typically do not. In addition, they point out, when area-of-origin interests are injured by transfers intended to benefit others, transfers over which the area-of-origin had little control, it seems reasonable that the area-of-origin should be compensated so as to be no worse off than before the transfers. MacDonnell et al. caution that compensation must be limited to the actual damages imposed and that the process of identifying injured parties and determining a fair

79. Personal communication, David N. Stone, Water Rights Division, State Engineer's Office, Santa Fe, New Mexico (Feb. 1987).

80. Water Reallocation at 237–39 (cited in note 4).

81. Guidelines at note 59 (cited in note 67).

level of compensation is difficult and expensive.[82] This underscores the tradeoffs which arise whenever public policies regarding water transfers are considered. Policies can protect values that would otherwise be neglected in market decisions yet at the same time they impose costs on market participants and on public agencies implementing the policies.

Public Interest and Public Trust Considerations

Many western states explicitly include a public interest or public welfare clause in their statutes referring to water rights appropriations and sometimes in their statutes referring to water transfers. However, with few exceptions, the public interest is not statutorily defined; instead, definition of the public interest has evolved gradually in case law. Wilkinson notes that public interest considerations are becoming better defined and are playing a more prominent role in western water policy.[83] While acknowledging that application of public interest criteria to water transfers is still in the early stages of development, Wilkinson argues that future transfer proposals increasingly will be required to account for a wide range of public interest concerns, in addition to the usual concern for protecting other water right holders.[84] These views are echoed by other observers who see evidence in recent court decisions and policy initiatives that public interest considerations will play a key role in water market development and transfer approval procedures.[85] As public interest considerations become integrated the state water transfer approval procedures, an increasing range of third-party and environmental impacts will need to be addressed by transfer applicants, raising the costs of implementing a transfer. Policies that increase the costs of transferring water may result in a lower level of market activity, since buyers will only consummate transfers if their expected benefits outweigh all costs they incur, including the costs of satisfying state policies. A lower level of market activity is not necessarily undesirable if the reason for fewer transfers is implementation of policies that actually protect public interest values in water.

Arizona includes public interest language in its statutes regarding appropriation of water but the terms "public interest" and "welfare" are not defined statutorily.[86] Case law and administrative policy have thus far construed them as including impacts on groundwater recharge in Active

82. Id.

83. Charles F. Wilkinson, Public Interest Constraints on Water Transfers, in Water Marketing, at 2.13–2.24, S. Shupe, ed. (1986).

84. Id.

85. Reallocating Water (cited in note 12); Thorson, Public Rights at the Headwaters, 78 Am. Water Works Assoc. J., 72–78 (1986); Driver, Effect of Western Water Law (cited in note 51).

86. Ariz. Rev. Stat. Ann. §45-153 (1987).

Management Areas (AMAs), where groundwater overdraft is a central policy concern.[87]

California was the first state to constitionalize public interest principles by requiring, in 1928, that all water development and use be in the interest of the people and for the public welfare.[88] Public welfare is not statutorily defined, but a recent California court decision, *National Audubon Society v. Superior Court,* construed public interests as those protected by the Public Trust Doctrine, including rights to fish, hunt, boat, and swim, as well as preservation of trust lands and waters to serve as ecological units for scientific study, open space, fish and wildlife habitat and scenic resources.[89] The emphasis on public interest considerations in water use and transfer has been reinforced by a 1986 California court decision that interprets the public interest as encompassing water quality.[90]

In Colorado, public interest language is not explicitly included in statutes related to appropriation or transfer of water rights. However, state appropriation of water rights for maintaining instream flows is one manifestation of public interest considerations in Colorado water policy.[91]

Nevada statutes require rejection of transfer applications if the transfer threatens to prove detrimental to the public interest.[92] What constitutes the public interest is not statutorily defined and the public interest criterion is applied to transfer applications by the State Engineer on a case-by-case basis.[93]

New Mexico statutes for surface water appropriations have always contained a public interest clause, and the groundwater code passed in the 1930s was amended in 1983 to include public interest considerations for groundwater use.[94] In 1985 amendments to the surface water and groundwater codes explicitly extended public welfare considerations to water transfers.[95] Public welfare, while not statutorily defined, is one of the criteria the State Engineer must consider in evaluating transfer applications. The New Mexico Supreme Court ruled as early as 1910 that

87. Arizona Game & Fish Dept. v. Arizona State Land Dept., 24 Ariz. App. 29, 535 P.2d 621 (1975); Reinhard v. Arizona Dept. of Water Resources, No. 11594 (Ariz. Sup. Ct., Cochise County, Mar. 17, 1986).

88. Wilkinson, Public Interest Constraints at 2–14; Cal. Const., art. X, § 2.

89. National Audubon Society v. Superior Court of Alpine County, 33 Cal. 3d. 419, 189 Cal. Rptr. 346, 658 P.2d 709 (1983). This decision, referred to as the Mono Lake case, is discussed in more detail by Wilkinson, Public Interest Constraints (cited in note 83).

90. United States v. State Water Resources Control Board, 182 Cal. App. 3d 82, 227 Cal. Rptr. 161, 170 (1986).

91. Colorado Response to Western States' Water Council 1986 Questionniare, at 1 (cited in note 55).

92. Nev. Rev. Stat. § 533.370(3) (1986).

93. Nevada Response, to Western Governors Questionnaire, at 5 (cited in note 22).

94. N.M. Laws 1983, ch. 2, § 2, codified at N.M. Stat. Ann. § 72-12-3 (Repl. pamp. 1985).

95. N.M. Laws 1985, ch. 201, §§ 5, 8, codified at amendments to N.M. Stat. Ann. §§ 72-5-23, -12-7 (Repl. pamp. 1985).

the State Engineer (then a territorial engineer) should consider benefits to the public in weighing the merits of alternative water allocations.[96] The State Engineer must exercise his discretion in determining the relevancy of public interest considerations on a case-by-case basis.

Recent court decisions have led to some new interesting debates on what constitutes the public interest in New Mexico water transfers. A 1985 New Mexico state district court found that a proposed transfer of agricultural water rights to a resort project not only impaired the rights of other agricultural water users but also was contrary to the public interest.[97] Judge Encinias, who wrote the opinion overturning the State Engineer's approval of the transfer, said:

> . . . It is simply assumed by the Applicants that greater economic benefits are more desirable than the preservation of a cultural identity. This is clearly not so . . . This region of northern New Mexico and its living culture are recognized at the state and federal levels as possessing significant cultural value, not measurable in dollars and cents. The deep-felt and tradition-bound ties of northern New Mexico families to the land and water are central to the maintenance of that culture. . . . I am persuaded that to transfer water rights, devoted for more than a century to agricultural purposes, in order to construct a playground for those who can pay is a poor trade, indeed.[98]

In March 1988 the New Mexico appellate court overturned Encinias' decision. Among the reasons given for the reversal of the district court ruling was a finding that "the trial court's decision incorporates a broader view of the public interest than in our judgement the legislature contemplated in enacting the controlling statute."[99] The case, if appealed, will go to the New Mexico Supreme Court. Regardless of the outcome of any subsequent appeal, future water transfer proponents will have to recognize that water transfers away from agriculture may encounter strong local opposition and substantial transaction costs in the form of court proceedings.

Utah statutes allow the State Engineer to consider the public interest or public welfare in evaluating applications to appropriate water, but again these terms are not statutorily defined.[100] Early Utah case law establishes that water appropriations must be in the best interest of the public.[101] Utah statutes also require the State Engineer to reject applications for

96. Young & Norton et al. v. Hinderlider, 15 N.M. 666, 110 P.1045 (1910).

97. In re Howard Sleeper, et al., No. RA 84-53(C) (N.M. 1st Judicial District 1985), rev., Ensenda Land & Water Assoc. v. Sleeper, No. ___ (N.M. Ct. App., Mar. 1, 1988).

98. Id.

99. Ensenda Land & Water Assoc. v. Sleeper, No. ___ (N.M. Ct. App., Mar. 1, 1988).

100. Utah Response to Western Governors Questionnaire at 3 (cited in note 22).

101. Tanner v. Bacon, 103 Utah 494, 136 P.2d 957 (1943).

water rights appropriations which will "unreasonably affect public recreation or the natural stream environment."[102] The public interest provision is not applied routinely, however, in evaluating applications for appropriation or transfer.[103]

Public interest statutes and case law differ markedly among the western states. One of the primary economic effects of public interest criteria can be to create substantial uncertainty and additional risk for water market participants. This is particularly likely when public interest language is included in state statutes regarding water transfers but no definition of what constitutes the public interest is provided. The lack of specific public interest criteria makes transfer applicants vulnerable to unpredictable difficulties and costs in implementing a transfer. A few states, notably Idaho, have statutorily provided detailed public interest criteria for use in evaluating proposed transfers.[104]

On the positive side, from an economic perspective, public interest provisions can be used to ensure that the "hidden costs" of market transfers are not ignored in the transfer approval process. For instance, in areas where urban interests have purchased and retired irrigated lands so that water may be transferred to municipal uses, concerns have arisen over the environmental impact of abandoned farmland. Dust, weeds and insects can proliferate on retired lands, creating a nuisance to neighboring property owners. Colorado front-range municipalities have purchased water rights from farmers in the Arkansas River Basin and these transfers involve the retirement of over 10,000 acres of irrigated lands. Front-range cities and area-of-origin representatives are negotiating over a revegetation program to restore retired lands for livestock grazing and a wildlife habitat. Municipal representatives estimate the costs of such a program could exceed $200 per acre.[105] The fate of irrigated land retired as a result of rural-to-urban water transfers has also generated much controversy in Arizona, where over 10,000 acres have already been retired and thousands of additional acres will be retired as recent transfers are implemented.[106]

Water markets can partially account for these and other "hidden costs" of transfers if public interest criteria give environmental and rural community interests input into the market process. This input could take several forms. Third party and rural community values could be represented by direct participation in market transactions if private and public agencies can purchase water rights for instream flow maintenance, pro-

102. Utah Code Ann. § 73-3-8 (Cumm. Supp. 1987).

103. Utah Response Western Governors Questionnaire at 3 (cited in note 22).

104. Idaho Code § 42-203. See also *Shokal v. Dunn*, 109 Idaho 330, 707 P.2d 441 (1985) which analyzes the local public interest criteria in Idaho statutes.

105. Colorado's Front Range Cities and the Arkansas Valley: What Happens When the Water is Gone? Water Market Update (Feb. 1987).

106. Ariz. House Bill 2257 (1986), codified at Ariz. Rev. Stat. Ann. §§ 9-404(C) (Cumm. 1987) requires tumbleweed control on lands retired to obtain water rights.

tection of riparian ecosystems or maintenance of rural economies. Environmental values would be better protected if state laws require transferors to bear costs associated with environmental impacts of transfers. Examples include requiring buyers to provide pest control on retired irrigated lands, or requiring mitigation in the form of money and minimum stream flows to protect fish and wildlife.[107] Such requirements raise transaction costs for market participants, but also force buyers and sellers to consider the rural and environmental consequences of transfer decisions.

Instream Flow Protection. Water transfers can affect recreational, ecological and environmental values associated with instream flows. While all states protect water rights, protection of instream flows that are not relied upon by water right holders is not a routine consideration in transfer approval proceedings. Only a few western states allow a private party to hold a water right for the purpose of maintaining instream flows for recreation, wildlife or aesthetic purposes. Generally, water rights for instream flow maintenance are few in number relative to rights for consumptive uses, and most instream flow rights are recent appropriations and have low priority relative to other water rights. Free flowing waters not protected by a water right have no legal recognition and thus create no legal basis for protesting transfers which will have adverse impacts. Many states, however, recognize instream flow maintenance for recreation and wildlife as a beneficial use sufficient to give rise to an appropriative water right. Additionally, in some states public agencies are authorized to purchase water rights to maintain flows.

While Arizona statutes do not explicitly recognize appropriations for instream flow maintenance, a 1976 court case noted that surface water may be appropriated for instream recreation and fishing.[108] The Arizona Department of Water Resources (ADWR) issued the first two permits to appropriate water for instream flow to the Nature Conservancy in 1983.[109] As of mid-1987, over twenty-five minimum instream flow permit applications were pending before ADWR and an Instream Flow Task Force had been appointed to assist ADWR in formulating new criteria and procedures for granting permits.[110]

In California, the courts have ruled against appropriation where there is no diversion or other physical control over the water.[111] However, instream uses are declared to be reasonable and beneficial and the State

107. MacDonnell et al., Guidelines (cited at note 67). Negotiations over Colorado's Windy Gap Project resulted in an agreement by project proponents to pay $550,000 to the U.S. Fish and Wildlife Service for work to protect endangered fish species in the affected watershed and an agreement to provide minimum streamflows in order to mitigate adverse impacts on fish species.

108. McClellan v. Jantzen, 26 Ariz. App. 223, 547 P.2d 494 (1976).

109. Arizona Response to Western Governors Questionnaire at 6 (cited in note 22).

110. Arizona Department of Water Resources, 1987.

111. Fullerton v. State Water Resources Control Board, 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979); California Trout, Inv. v. State Water Resources Control Board 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).

Board must consider impacts on instream uses in approving new appropriations and transfers.[112]

In Colorado, the Colorado Water Conservation Board (CWCB) may appropriate water for instream flow and lake level maintenance. Private entities are not authorized to appropriate water for instream flow protection but may dedicate water rights to the CWCB for instream flow maintenance.[113] Appropriations by the board typically have been junior rights and thus do not guarantee minimum flows.[114] The CWCB has made appropriations on over 2,500 miles of streams and more than 500 lakes since the enabling legislation was passed in 1973.[115] The CWCB also has standing to file objections to water transfers which may impair instream flow rights.[116]

Appropriations for instream flow and storage in lakes without a physical diversion have been granted in Nevada in specific instances. Instream flow appropriations must be acquired through the same process as any other appropriation.[117] In 1987, a county district court held that the federal government, representing public interests, can hold instream rights under Nevada law, but rejected an application by the Bureau of Land Management for instream rights to water livestock and wildlife on public lands.[118] Both decisions are being appealed to the Nevada Supreme Court.[119]

New Mexico has no statutes pertaining to appropriation of water for instream flow maintenance, though recognition of instream flow rights has been considered in recent legislative sessions.[120] Case law and decisions by the State Engineer imply that diversion is necessary for water right appropriations.[121] There is, as of yet, no case law and no administrative precedent for considering impacts on instream flow levels (other than those which affect vested water rights) in evaluating a transfer proposal.[122]

A Utah statute enacted in 1986 allows the State Division of Wildlife Resources to acquire established water rights to maintain flows for fish

112. Cal. Water Code § 1243 (Cumm. 1988).

113. Colo. Rev. Stat. §§ 37-92-102(3), 37-92-103(4) (Cumm. Supp. 1987).

114. Colorado Response to Western States Water Council 1986 Questionnaire at 2 (cited in note 55).

115. Water Allocation at 235–36, 1 Water Market Update, 10 (Mar. 1987).

116. Water Reallocation at 235–36 (cited in note 4).

117. Nevada Response to Western Governors Questionnaire at 5 (cited in note 22); Western States Water Council 1986 Questionnaire at 2 (cited at note 55).

118. The decisions by Judge McDaniel of Nevada's Elko County District Court are discussed in 3 U.S. Water News, at 4 (June 1987).

119. Id.

120. Instream flow legislation was introduced in several recent legislative sessions, including the 1987 session, but no instream flow measures were passed.

121. State ex rel. Reynolds v. Miranda, 83 N.M. 443, 493 P.2d 409, 3 E.R.C. 1983 (1972).

122. Personal communication with David N. Stone, Water Rights Division, State Engineers' Office, Santa Fe, New Mexico (Feb. 1987).

habitat.[123] The division must have legislative approval to acquire a water right for instream flows.[124]

Urban population growth in the Southwest has resulted in not only increased demand water for municipal water supplies but also increased demand for recreational opportunities and aesthetic amenities which rely on water remaining instream.[125] As social values increasingly incorporate the importance of flowing waters, instream flow considerations will have a greater impact on market transfers. Groups interested in protecting instream flows may choose to purchase senior appropriative rights rather than to acquire a junior right through a new appropriation. Where instream flow maintenance is recognized as a beneficial use so that water rights may be held for that purpose, market acquisitions could become an important means of protecting instream flows.[126]

While instream flow protection may provide a motivation for market transactions, it could also make transfers more complicated and costly to implement. Conflicts of interest between consumptive water users desiring to transfer water rights and interest groups seeking to protect instream flows can be significant. Shupe [127] notes that since instream flow rights typically are year-round rather than seasonal, and since they often extend along a stretch of a stream rather than being diverted at a single point, they are particularly constraining for new water development and for water transfers.

Even in states which recognize instream flow maintenance as a beneficial use, individuals wishing to protect stream flow levels do not have access to markets on the same terms as farmers, cities and industry since most western states do not allow a private party to hold a water right for the purpose of maintaining instream flows. Markets could do a better job of reflecting instream flow values if state laws permitted appropriation, purchase and seasonal leasing of rights for instream flow maintenance by both public and private organizations.

SUMMARY

Policies of the southwestern states play a critical role in defining the institutional setting for market transfers. State water law provides a basis

123. Laws of Utah, ch. 40, § 1 (1986), codified at Utah Code Ann. § 73-3-3 (Cumm. Supp. 1987), Utah Response to Western States' Water Council 1986 Questionnaire at 2.

124. Utah Code Ann. § 73-3-3(7)(d) (Cumm. Supp. 1987).

125. Marie L. Livingston & Thomas A. Miller, A Framework for Analyzing the Impact of Western Instream Water Rights on Choice Domains, 62 Land Econ. 269 (1986).

126. The Nature Conservancy and other groups have acquired rights for instream flow maintenance in Arizona, Colorado, Hawaii and other western states. See Terry L. Anderson, The Market Alternative for Hawaiian Water, 25 Nat. Res. J. 893, 907–08 (1985).

127. Steven J. Shupe, Emerging Forces in Western Water Law, Resource Law Notes Newsletter 2 (1986) (Publication of the Univ. Lab. Natural Resources Law Center).

for market activity by defining, allocating and enforcing property rights in water. State-created water rights determine how the risk of supply short falls are distributed among right holders and reallocation of such risk is a primary motivation for market transfers. Beneficial use defines those water uses for which a water right will be recognized and thus distinguishes those water uses which can and cannot be represented in market transactions. Forfeiture and abandonment provisions can provide incentives for right holders who do not exercise their water rights regularly to lease or sell water. Policies that allow transfer of conserved water reward water conservation efforts and provide opportunities for market exchanges. State policies protecting vested water rights affect the procedures that market participants must follow to obtain approval of transfers and the transaction costs incurred in implementing transfers. Finally, area-of-origin, public interest and instream flow considerations are all emerging areas of state water policy that have the potential to affect significantly the conditions under which transfers may occur, the costs of transferring water, and the frequency and nature of water market transactions in the Southwest.

Water markets are functioning throughout the West where economic incentives for water transfers outweigh costs associated with market transactions. In order to prevent impairment of water rights while minimizing transaction costs for transferors, state laws and administrative procedures should facilitate informal resolution of conflicts between transfer applicants and protestants, and provide a well-defined, low-cost process for determining the transferable quantity of a water right. State laws that encourage transfer of conserved water could promote more efficient water use; the key policy issue would be the criteria used to determine the transferable quantity of conserved water.

Area-of-origin and environmental concerns with water transfers can be partially addressed through public interest statutes. Such statutes will better protect public concerns and create less uncertainty for transferors if criteria for evaluating transfer applications relative to the public interest are clearly specified. The value of instream water is increasingly recognized as growing urban populations demand outdoor recreation opportunities and aesthetic amenities. Instream values would be better reflected in market processes if both public and private entities could appropriate, purchase, and lease rights to maintain instream flows.

Markets can increase the benefits generated by existing water supplies, reduce the need for costly development of new supplies and facilitate economic development by providing water to new users while fully compensating sellers. On the other hand, market transactions can impose significant costs on other water users, rural communities and the envi-

ronment. State water policies must seek a balance between unrestricted markets which can result in high third party costs and market restrictions which reduce third party impacts, but make transfers more expensive to implement and may prevent net economic gains associated with water transfers from being realized.