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Moving Agricultural Water to Cities: The Search for Smarter Approaches

Lawrence J. MacDonnell and Teresa A. Rice***

I. Introduction

Look at California and see the future, it is often said. Increasingly, it seems, this is being said in the context of a future that others should seek to avoid. With respect to water, one of the things that California's experience teaches us is that the massive commitment of this relatively scarce resource to agriculture that occurred throughout the West will yield as necessary to provide the demands of growing, wealthier urban areas. California, of course, is not unique in this respect, and, indeed, in many ways, the California experience is not necessarily very representative of the transition occurring in many other parts of the West, as developed water moves from irrigation to urban use. As usual, California is at once "different" than the rest of the West and yet provides an example that is closely watched by others.

Urban water needs are the primary source of new demand for out-of-stream water use in the West today. While the population of the West long has been concentrated in its urban areas,¹ urban water demands historically were dwarfed by those for irrigation. Even today, roughly eighty percent of

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1. See RICHARD WHITE, "IT'S YOUR MISFORTUNE AND NONE OF MY OWN": A HISTORY OF THE AMERICAN WEST 415-16 (1991).

all withdrawals of water from both surface and ground water resources are for irrigation use.²

The traditional solution to meeting new water demands in the West was to enlarge the usable supply either by building water storage projects or by tapping groundwater sources. Today, concern about protection of remaining undeveloped streamflows and about mining of groundwater limits the ability of these sources to meet new demands. Increased attention now focuses on purchasing rights to water used in irrigation and transferring the water to urban uses.

From a purely economic perspective such transfers make good sense. The dollar value of water used in agriculture is generally much lower than the dollar value of the water in urban uses. Moreover, the cost of developing new supplies in the few locations where this is still possible has increased to a point that transfers of agricultural water are likely to be less expensive in many cases. Cities usually have the revenue-generating capacity to be able to afford the cost of acquiring additional water supplies from either source.

Experience with agricultural to urban water transfers in recent years highlights both the benefits and the problems with these transfers. Commonly, such water transfers occurred in the past when urban growth expanded onto agricultural land. Either formally or informally, water used for irrigation became part of the urban water supply. The land use and the water use shifted simultaneously and incrementally so the effects were perhaps less noticed and raised fewer concerns.

In the past several decades there have been two important differences in the pattern of water transfers: (1) cities are purchasing water rights used on agricultural lands sometimes far removed from their boundaries, and (2) the purchases are of larger blocks of water rights (and often, the land on which the water is used). Water transfers have moved from a gradual, incremental process of change to, in some cases, highly visible, sometimes highly controversial transactions.

Once again, California was ahead of the West – this time by about 60 years. Purchases of agricultural lands in the Owens Valley and the associated water rights by the City of Los Angeles earlier in this century, provoked so much controversy that it essentially ended water marketing as a way of meeting urban water demands in California until the last ten years. The preferred solution to meeting water demand in California became the enlargement of the usable water supply through the construction of massive water storage and delivery facilities, such as of the Central Valley Project and the State Water Project. Slowly but surely the aversion to water marketing is disappearing in California. Led by efforts of the Metropolitan Water District of Southern California, creative approaches for shifting

2. WAYNE B. SOLLEY ET AL., U.S. GEOLOGICAL SURVEY CIRCULAR 1004, ESTIMATED USE OF WATER IN THE UNITED STATES IN 1985 (1988).

agricultural water to urban uses are becoming a primary means of meeting urban water needs.

This paper examines approaches that are being used in California and other western states to facilitate the movement of a portion of the water historically dedicated to irrigation use, to urban demands. More specifically, it examines the increasingly rich set of options that are developing to provide ways for cities to expand or make more secure their water supply, while avoiding the need to permanently eliminate irrigated agriculture from an area. To some degree, this expansion of options is policy-induced; state requirements protecting agriculture prompt their development. In large part, however, the expansion reflects the maturing of the water transfer process. There are good reasons for maintaining a viable agricultural economy, especially in rural parts of the West. Water can be moved out of agriculture in ways that could be supportive of this objective. One possibility is to transfer water out of the more marginal uses within an area, while bringing in capital that could be invested in improving the more profitable parts of the agricultural economy. The traditional transfer model of purchasing a sufficiently large block of water rights in an area and permanently drying up those lands is only one of the possible ways to obtain agricultural water. As would-be purchasers better appreciate the problems raised by such transfers, they have been exploring and developing a larger menu of choices. These approaches still produce water at an acceptable cost, but create less adverse impact on irrigated agriculture. Increasingly, state laws are being enacted that support and encourage such transfer approaches.

We look first at the protections that are imposed as part of the state review process for making a change of a water right and give special attention to state requirements affording some kind of special protection for irrigated agriculture. Next we turn to state requirements aimed directly at reducing agricultural water use. We then examine state efforts to voluntarily encourage reduced agricultural water use. Finally we explore several different types of transfer mechanisms now being used to facilitate agricultural to urban water transfers, particularly involving short-term commitments of water. Finally, we summarize the approaches that are most promising in our view and talk briefly about the role that changes in state law can play to further facilitate these approaches.

II. State Protections Against Injury

Much has been written about water transfer law in California and other western states, and we will not repeat that discussion here.³ For our purposes, it is enough to note that, generally, a water right is regarded as a property right;

3. Brian E. Gray, *A Primer on California Water Transfer Law*, 31 ARIZ. L. REV. 745 (1989); See also Other Articles In This "Water Transfer Symposium" Issue; Lawrence J. Macdonnell, *THE WATER TRANSFER PROCESS AS A MANAGEMENT OPTION FOR MEETING CHANGING WATER DEMANDS* (1990).

that it can be bought or sold; that it can be changed in manner of use subject to the fundamental requirement that the change not injure the holder of another water right; and that the states review all proposed changes of water rights to ensure that such injury does not result. Within these broadly accepted principles, western states' laws and procedures governing transfers of water rights vary considerably. To some extent, the differences reflect the degree of policy support at the state level for water marketing.

A consistent object of state protection in change-of-water-right proceedings has been other water rights. California courts were the first explicitly to hold that the use of a water right could be changed without loss of the priority of the right.⁴ California courts were also the first to clarify that such changes could occur only when they do not cause "injurious consequences" to the rights of others.⁵ At the time these cases were being decided, the "rights" of concern were, unsurprisingly, property rights. Soon it became clear that water rights were being protected as property rights. Since then, state review of proposed changes of water rights has focused almost exclusively on protection of other water rights. Because most water uses are for irrigation, the no injury rule is a key protection for irrigated agriculture in some respects. In its most straightforward form, the no injury rule requires that the change of use not impair stream conditions relied on by appropriators to obtain the water legally provided by the appropriation.

The State of Colorado has a long history of water transfers, and its water courts have been called on many times to consider the question of injury to other water rights.⁶ The understanding reached in Colorado is that a proposed transfer should be considered in terms of its net depletive effects on the stream and on the manner in which it would change the timing of flows.⁷ A reduction in the historical availability of water to another appropriator, either because of increased depletion by the new use or because the new use changes the timing with which the water is available to other appropriators, will be regarded as an injury to those appropriators and will not be permitted.

A. Protection of Other Users in a Shared Water Delivery System

This protection also is afforded to other water users within a shared water delivery system. Transfers reducing the amount of water that is delivered through a ditch may reduce the head of water (the volume and surface elevation of water flowing in the ditch) so that some users' water no longer reaches their farm or, if it does reach the farm, cannot be taken out by the user's original diversion structure.

4. *Mearis v. Bicknell*, 7 Cal. 261 (1857).

5. *Kidd v. Laird*, 15 Cal. 179 (1860); *Davis v. Gale*, 32 Cal. 26 (1867).

6. Lawrence J. MacDonnell, *Changing Uses of Water in Colorado: Law and Policy*, 31 ARIZ. L. REV. 783 (1989) [hereinafter Colorado Transfer Law].

7. *Id.* at 791.

A transfer may also affect evaporation and seepage losses by, for example, reducing the velocity of water in the ditch. And, in general, the costs of operating and maintaining the system are not proportionately reduced when water is transferred out of the system. In fact, average costs may increase as a result of a transfer of a portion of water out of a ditch system. One obvious change is that, there are fewer parties to share ditch costs. Second, overall operating costs may increase because, for example, seepage losses are proportionately greater when there is less water in the ditch.⁸ Because of these concerns, several states now explicitly protect the remaining water rights holders within a shares system when a transfer is proposed.

In a few states, including Colorado and Nevada, the obligation to consider these types of water delivery impacts rests with the state entity charged with administering water transfers. Colorado law protects remaining shareholders in a mutual ditch company from assuming an additional burden for increased evaporation and seepage losses caused by the transfer. The transferring shareholder may be required to leave in the ditch some portion of the water, otherwise transferable, in order to compensate for these losses.⁹ Nevada law, like that of Colorado, *may* also require the transferee to monetarily compensate the remaining shareholders for any increased costs caused by the transfer.¹⁰

Colorado cases have upheld the right of mutual ditch companies to impose restrictions and even prohibitions against transfers of shares out of the ditch.¹¹ Idaho and Arizona take a somewhat different approach to protect water delivery systems. Both states *require* that the water supply organization consent to the transfer. In Idaho, no water right represented by shares of stock in a corporation may be changed or transferred without the corporation's consent.¹² Standards governing what may and may not be considered by the corporation in denying or conditioning a transfer have not been developed by case law or administrative rules. The only case dealing with the issue, dating back to 1949, agreed with the decision of the corporation to withhold consent because the new place of use was at a location that "could not be served by the irrigation system of the corporation" and such use "would tend to disrupt the unity of the corporation and to impair the very purpose for which the same was formed."¹³ Whether the corporation has any obligation to allow the shareholder to offer economic or other types of mitigation prior to blocking the proposed transfer is

8. Kathleen A. Miller, *The Right to Use Versus the Right to Sell: Spillover Effects and Constraints on the Water Rights of Irrigation Organization Members*, 23 WATER RESOURCES J. 2166, 2173 (1987).

9. See Colorado Transfer Law, *supra* note 6, at 793.

10. Nev. Rev. Stat. § 533.370 (Michie Supp. 1991). This provision states that the state engineer shall approve change applications if, among other conditions, the proposed change, if within an irrigation district, "does not adversely affect the cost of water for other holders of water rights in the district or lessen the district's efficiency in its delivery or use of water." *Id.*

11. See Colorado Transfer Law, *supra* note 6, at 809.

12. IDAHO CODE § 42-108 (1990).

13. *Johnston v. Pleasant Valley Irrigation Co.*, 204 P. 2d 434, 438 (1949)..

not clear under current law. Similar to Idaho's consent requirement is an Arizona law requiring prior approval and written consent by the water organization for all transfers of water rights from lands within irrigation districts, agricultural improvement districts, or water user associations.¹⁴ Moreover, transfers from the watershed or drainage area that provides for a water supply organization's irrigation water are subject to the organization's approval.¹⁵ Similarly, Wyoming law requires a party requesting a change of the point of diversion and means of conveyance to have the consent of the "other owners" of the ditch associated with both the old and new use.¹⁶

While Utah statutory law does not require consent of the water supply organization for proposed transfers, such consent was required in a recent Utah Supreme Court case at least for mutual ditch companies. The court held that a shareholder in a mutual ditch company has no standing before the state engineer to seek a change in the point of diversion of its portion of the company's water right.¹⁷ The court concluded that the company holds the legal title to divert the water, thus, only the company may initiate a change to the water right. The proper course for the shareholder to follow, according to the Utah Supreme Court, is to "bring its request for change application" to the company's board of directors. If the request is unreasonably denied, the shareholder may seek judicial relief.¹⁸ In reaching this conclusion, the court found that the company has a duty to manage its affairs in the interest of its shareholders as a whole and, as a result, the company "clearly has an interest in reviewing the [change] application to determine whether it is in the best interests of the company and its shareholders."¹⁹

The ditch company may also object to the transfer of shares of its water in the transfer proceeding itself. New Mexico law provides that "[a]ny person, firm or corporation or other entity" has standing to object to a transfer.²⁰ In a recent New Mexico case, two ditch associations filed protests to the proposed transfer of shares of their irrigation water supply to a large-scale commercial and residential development.²¹ The New Mexico State Engineer denied the transfer because of injury to other water rights.

14. ARIZ. REV. STAT. ANN. § 45-172 (1987).

15. *Id.* The organization must approve or reject the proposal within 45 days or the proposal is deemed accepted. *Id.*

16. WYO. STAT. § 41-3-114 (Supp. 1993).

17. *East Jordan Irrigation Co. v. Morgan*, 860 P. 2d 310 (1993).

18. *Id.* at 321.

19. *Id.* at 315.

20. N.M. STAT. ANN. § 72-13-3(D) (Michie 1994). Other western states have similar provisions. *See* WASH. REV. CODE §§ 90.03.380, -.015 (1990); NEV. REV. STAT. § 533.365-.345-.010(1986); UTAH CODE ANN. § 73-3-7, -3 (1989).

21. Findings and Order *in re* Application of the El Prado Water and Sanitation Dist. File No. 057, 0932, 0933, at 9 (N.M. St. Engineer, April 30, 1992) The State Engineer must

In 1993, California legislators considered a proposal to address issues raised when individual water users seek to transfer their allocated water for use outside of a district's service area. The proposal, known as Assembly Bill 97, would authorize water suppliers (including districts) to establish a "water user-initiated transfer program."²² Any user wishing to transfer all or a portion of its allocated water supply would submit a request to the water supplier. Following specific criteria set out in the bill, the water supplier would then determine the amount of water available for transfer. In addition, water suppliers would be able to condition or deny the transfer request only on specified bases, including, impacts (1) to water quantity and quality; (2) on the ability of the supplier to meet delivery obligations; (3) on the supplier's finances, such as increased costs for providing water service; (4) on the supplier's ability to meet state permit and license conditions; (5) on the appropriate maintenance of fallowed land (not defined; and (6) in general, on the supplier and its users' economic, operational or water supply status. Decisions by providers regarding approval, denial or conditioning of the proposed transfer would be subject to judicial review, under an accelerated process.²³

Regardless of which approach is taken by the states, either requiring the state administrator to consider harm to water delivery systems or leaving that decision to the district or company, many states now specifically seek to protect the original water delivery systems from a range of adverse effects that might result from an out-of-system transfer. At one level, such protection makes eminent good sense; transfers ought not to leave other water users in the same system worse off. A perverse consequence of this rule, however, is to encourage those seeking to transfer water to attempt to buy controlling interest in the system, thus weakening the position of the irrigation interests.

B. Public Interest Protections

In addition to protection of water rights, several western states now address a variety of non-water right interests such as harmful economic or environmental effects during the water transfer process. These types of conditions fall under the general "public interest" or "public welfare" heading; they are intended to protect public values and address public concerns as opposed to preventing injury to individual water rights.

Typically, state statutes provide little guidance to administrators in determining public interest. For example, a Nevada law requires the state engineer, in considering applications for changes of water rights, to determine whether the proposed change "threatens to prove detrimental to

consider the proposed transfer's impacts on the conservation of water and the public welfare even absent a protest, but may rely on ditch company protestors to establish these elements. *See* discussion of this case *infra* at section 3.1.3.3.

22. 1993 Cal. Sess. Laws, Assembly Bill No. 97.

23. *Id.*

the public interest."²⁴ Factors to be considered in defining the public interest are often lacking, as was critically noted in a recent district court order:

The existence of unappropriated water and a conflict with existing rights are, more or less, objectively verifiable criteria. Conversely, detriment to the public interest is, by nature, significantly more subjective. Moreover, determining detriment to the public interest begs the question of which factors are to be considered in defining the "public interest." Unfortunately, our legislature has not provided any guidance on this issue.²⁵

By comparison, Idaho law requires that transfers of a water right be approved, only if, in addition to finding no injury to other water rights:

- (1) the change is in the local public interest, defined in § 42-203 A(5) as the affairs of the people in the area directly affected by the proposed use; and
- (2) a change in the nature of use from agricultural use would not change the agricultural base of the local area.²⁶

Idaho and Nevada are two of ten western states that require, by statute, case law, or administrative procedure, some type of public interest review for proposed water transfers (see Table 1). The types of concerns embodied by these provisions vary from state to state, but include: (1) local economic impacts; (2) net benefit to the state; and (3) environmental impacts. In those jurisdictions requiring that transfers be conditioned or denied to protect the public interest, conditions have been as varied as the range of interests protected under this standard. States may require the transferor to submit data on the economic impacts of a proposed transfer. Transfer applications could be denied altogether if harm to the public interest cannot be adequately mitigated.

Increasingly, public interest concerns are raised during transfer proceedings.²⁷ But, as the following examples illustrate in fact very few

24. NEV. REV. STAT. ANN. § 533.370(3) (Michie Supp. 1993).

25. *Pyramid Lake Paiute Tribe of Indians v. R. Michael Turnipseed*, Case No. CV91-2231, CV91-2232, CV91-2245. Consolidated Dep't No. 5, Second Judicial District, Washoe County, Order dated August 31, 1992.

26. IDAHO CODE § 42-222 (1994).

27. E.g., Telephone Conversation with Larry Holman, Chief, Water Rights Bureau, Montana Dep't of Natural Resources (Mar. 19, 1993); Telephone Conversation with Andy Sawyer, Att'y, California State Water Resources Control Board (Mar. 8, 1993); Telephone Conversation with Paul Saavedra, New Mexico State Engineer's Office (Mar. 17, 1993); Telephone Conversation with Eric Gronlund, Water Rights Division, South Dakota Dep't of Env't & Nat. Resources (Mar. 16, 1993).

agricultural to urban transfers have been conditioned or denied for public interest reasons. Many of the public issues that are raised during transfer proceedings are not expressly incorporated into the final order approving or denying the application. Moreover, some public concerns may be addressed through outside negotiations that do not become a part of the transfer record. In the end, a court or state water administrator may base a decision to deny or condition a proposed transfer on the more traditional "no injury to water rights" standard. To a decisionmaker, the no-injury standard, in applicable, may provide a more legally defensible, and thus less likely to be challenged, foundation for conditional approval or outright denial of a transfer application. Administrative and court decisions to date may not accurately reveal the extent to which public interest factors are considered in agricultural to urban water transfers.

Table 1 Public Interest Review for Proposed Water Transfers

Sources	Standard for Review ²⁸
CA Cal Water Code § 386	does not unreasonable affect fish, wildlife, or other beneficial uses . . . does not unreasonable affect the overall economy of the area
ID Idaho Code § 42-222(1),-203(A)(5)	must be in local public interest (defined); change cannot be approved if would significantly affect the agriculture base of the area
KS H.B. 2070 (1993)	can't reduce water available to meet present of future needs in area, unless net benefit to state/emergency; factors to determine net benefit: current and future use (including instream), economic, health/welfare impacts ²⁹
NB Neb. Rev. Stat. §§46-289, 46-294	interbasin and interbasin transfers must be in public interest, but interbasin approved only if net benefit to state and receiving basin greater or equal to adverse impacts to state, basin of origin; relevant factors include net economic, environmental, other benefits, any adverse impact
NV Nev. Rev. Stat. Ann. §§533.370(3)	cannot be detrimental to public welfare
NM N.M. Stat. Ann. §72-12-7(a)	cannot be detrimental to public welfare
UT Bonham v. Morgan, 788 P.2d 500	must not prove detrimental to public welfare; if state engineer believes will unreasonably affect current beneficial uses, including public recreation, natural stream environment, must withhold approval pending investigation ³⁰
WA Rev. Code Wash. Ann. §§90.54.020; 90.02.005; DOE Stand. Oper. Rules PRO-1000, B.3	must consider several public impacts for new appropriations; AG advised DOE same applies to transfer reuqets; includes water quality, instream and other environmental impacts; favors regional systems over private; sepearate provision requiring maximum benefits to state ³¹
WY Wyo. Stat. §41-3-104(a)(i,ii)	must consider all facts pertinent to transfer including economic loss to community, state; extent to which such loss will be offset by new use; availability of other sources.

1. Pacific Power and Light in Wyoming

Under a 1973 Wyoming statute, the Wyoming State Board of Control (hereinafter WSBC) must consider, in addition to issues of injury to other water rights, the following:

- (1) The economic loss to the community and the state if the use from which the right is transferred is discontinued;
- (2) The extent to which such economic loss will be offset by the new use;
- (3) Whether other sources are available for the new use.²⁸

The law may provide authority also for the WSBC's consideration of other factors affecting the public interest.²⁹ Transfer applicants must provide data on the economic effect of a proposed water transfer, whenever economic impact is a concern. If data is not provided, the application may be denied.³⁰

The 12-year history of Pacific Power and Light Company's efforts to make water available for its Dave Johnson Power Plant near Glenrock provides an example of how the WSBC approaches water transfers. In 1980, Pacific Power filed an application to transfer irrigation water rights from the North Platte River, and one of its tributaries near Saratoga, to its power plant, 223 miles downstream. In 1981, the WSBC rejected Pacific Power's transfer application.³¹ While the WSBC seemed most disturbed by the great distance the water right was to be moved, denial of the application was based on several reasons, including: (1) the lack of adequate evidence to determine the transfer's impact (including those caused by the generation of electricity for possible out-of-state use) on the economy of Carbon County; and (2) an inadequate showing by Pacific Power that it had considered sources of water supply closer to the power plant.³²

Eleven years later, Pacific Power was before the Board on a different transfer application, again involving a change of water rights from irrigation use to industrial use and, once again, involving a proposed use at the Dave

28. WYO. STAT. § 41-3-104(a) (1994).

29. The statute begins with broad language that requires the WSBC to consider "all facts it believes pertinent to the transfer which may include..." WYO. STAT. § 41-3-104(a) (1977); see George A. Gould, *Water Rights Transfers and Third-Party Effects*, 23 LAND & WATER L. REV. 11, 19 (1988); Mark Squillace, *Water Rights Transfers in Wyoming*, in 2 THE WATER TRANSFER PROCESS AS A MANAGEMENT OPTION FOR MEETING CHANGING WATER DEMANDS, chap. 6 at 9 (1990).

30. See Petition of Pacific Power and Light, Docket No. 1-80-4-5 (Wyo. Bd. Of Control 1981).

31. Squillace, *supra* note 33, at 9 n.90; *supra* note 32.

32. Squillace, *supra* note 33, at 9-10. The WSBC is specifically required to consider "[w]hether other sources of water are available for the new use." WYO. STAT. § 41-3-104(iii) (1994).

Johnson Power Plant. The water rights in this proposal were from the Douglas Canal in Converse County, much closer to the power plant. As proposed, the diversion point would be moved from the canal 10.7 miles upstream to the intake system for the power plant. Notice was sent to all parties diverting water at one of the eight headgates located between the Douglas Canal and the power plant intake, and no one appeared to protest at the public hearings. The applicant submitted an economic evaluation of the transfer, as required by state law. The report concluded "water is significantly more valuable to the area's economy if used for power production at the Dave Johnson Steam Power Plant than in its present agricultural use."³³ Further, the report found that the state would receive an indirect, but no less relevant, financial benefit from the proposed transfer. More coal would be extracted from a nearby mine for use at the power plant, increasing state severance tax revenues.³⁴

The WSBC approved the Douglas Canal transfer with little discussion of the economic impacts, merely setting out statutory requirements regarding economic impact and concluding that "[t]he Board in reviewing the testimony given and exhibits submitted determined that the petitioner satisfied this requirement of the change of use statute."³⁵ Contemporaneous with the Douglas Canal transfer proceeding, Pacific Power submitted a petition for an exchange plan involving the Douglas Canal water rights.³⁶ The exchange plan, as approved by the State Engineer, considered only injury to other water rights, and was conditioned only to avoid or mitigate such injury.

2. The Sleeper Case and Public Welfare in New Mexico

A 1985 decision of a district court in New Mexico rejected a water transfer application because of the economic impact the transfer might have on a northern New Mexico community. The applicant, Tierra Grande Corporation, had purchased land and water for the purpose of creating a recreational lake as part of the development of a large ski resort near Enseñada, New Mexico. The new use would have required the retirement of approximately 78 acres of previously irrigated land. An irrigation user organization, the Enseñada Land and Water Association, protested the transfer, claiming that the proposed

33. James T. Jacobs & Chris T. Bastian, *Economic Evaluation of Change in Use of a Portion of the Mortons Incorporated Appropriation, Converse County, Wyoming*, CANYON LAND AND LIVESTOCK at 7 (March 1992).

34. *Id.*

35. Order Record No. 40, at 412 P17 (Wyo. Bd. Of Control 1992). In Wyoming, no other transfer from irrigation to municipal and industrial uses has been denied by the WSBC where the applicant has provided an economic evaluation. Telephone Conversation with Allan Cunningham, Board Analyst, Wyoming State Board of Control (March 19 and May 17, 1993).

36. WYO. STAT. § 41-3-106 (Supp. 1994).

transfer would impair existing rights and would be contrary to the public interest. The State Engineer approved the transfer.

In *In re Sleeper*,³⁷ the district court focused on the impact the transfer would have on the local community and reversed the State Engineer. The Association had introduced evidence of various community and cultural impacts that would result from the transfer. Further, agricultural lands would be permanently dried up, and the remaining water users along the ditch would be burdened with an increased financial obligation for maintenance. Evidence offered by the applicant attempted to show that the local economy would actually be better off, although it would be changed from one based on agriculture to one based on tourism. The Association countered that the resort economy, while providing some menial jobs, overall would provide little economic benefit to the local residents. The court concluded that the living culture of the northern New Mexico region possessed significant value not expressed in monetary terms, and rejected applicant's assumption that increased economic benefits are better than preserving a cultural identity.

The New Mexico Court of Appeals reversed the decision on the grounds that state water law in effect at the time of the application did not allow the court to consider any public interest factors during a transfer application proceeding.³⁸ Transfers of water out of agricultural use are subject to the 1985 amendments to New Mexico water law requiring the State Engineer to consider public welfare.³⁹ In 1992, the State Engineer denied an application to change surface irrigation water rights to groundwater rights for domestic, commercial, and municipal uses.⁴⁰ His decision rejects the idea, however, that the state engineer should consider cultural impacts, as was suggested by the district court in the *Sleeper* case:

Whether a given area is to be preserved for traditional uses, such as agriculture, or converted to new uses such as subdivisions and commercial enterprises is more appropriately decided by local governmental entities charged with land zoning and development activities.⁴¹

Protection of local communities should be addressed in forums considering level use and economic growth, not in water rights proceedings, in New Mexico.

37. 760 P.2d 787 (N.M. 1988).

38. N.M. STAT. ANN. § 72-5-7 (Michie 1978).

39. In 1985, New Mexico amended its laws, requiring the State Engineer to consider public welfare in water rights transfer proceedings. 1985 N.M. Laws, Ch. 201 § 4 (amending N.M. STAT. ANN. § 72-5-7). See Timothy DeYoung, *Protecting New Mexico's Instream Flows*, INSTREAM FLOW PROTECTION IN THE WEST (rev. ed. 1993).

40. Public welfare considerations are raised as a basis for the decision.

41. 760 P.2d 789; See *supra* note 42.

3. Honey Lake Valley in Nevada

In 1992, the Nevada State Engineer considered a set of applications to change the point of diversion and place of use of agricultural groundwater rights intended to provide water for urban use. The ultimate plan of the applicant, pursued in separate stages, was to consolidate groundwater rights in Honey Lake Valley Basin and export the water 35 miles for municipal use in the rapidly-growing Reno-Sparks metropolitan area.⁴² Numerous parties filed protests to the change applications, claiming injury to water rights and impairment of water quality among other things. The water quality concern was based on the high salinity levels of the Honey Lake Basin water.⁴³ Finding that the "Nevada Legislature has not offered any guidance on this issue,"⁴⁴ and that public interest is a matter within the State Engineer's discretion, the State Engineer looked to "public interest considerations. . . found throughout" Nevada water laws.⁴⁵ Among these are the "policy of the state to encourage efficient and non-wasteful use of these limited supplies," the prohibition of the "pollution and contamination of underground water," the recognition of "the use of water for wildlife, including the establishment and maintenance of wetlands and fisheries," and the declaration that recreation is a beneficial use of the state's waters.⁴⁶ Considering these and other statutory statements, the State Engineer concluded that the "[l]egislature had provided substantial guidance as to what it determines to be in the public interest."⁴⁷ Thirteen "principles" are set out that "should serve as guidelines in determination of what constitutes 'the public interest.'"⁴⁸ Most of the principles reflect traditional considerations—for example, that the proposed use be beneficial and that the applicant demonstrate the economic ability to complete the project. In general, the principles are directed towards promoting the beneficial use of water, protecting declining water tables, ensuring water for financially stable development, and avoiding speculation and waste.

Applying these principles to the Honey Lake Valley transfer proposal, the State Engineer approved the transfer. He noted the high demand for water yet virtual lack of available surface supplies in the Reno-Sparks are

42. See *Pyramid Lake Paiute Tribe of Indians vs. R. Michael Turnipseed*, Case No. CV91-2231, -2232 and -2245, Consolidated Dep't No. 5, Order Reversing State Engineer Ruling Nos. 3786 and 3787 (Aug. 31, 1992).

43. In re Ruling No. 3787A, Supplemental Ruling on Remand, *in re* Applications 53407 et al., at 17-18 (Nevada State Engineer Oct. 9, 1992). The State Engineer's Supplemental Order on Remand was affirmed by the District Court September 27, 1993.

44. *Id.* at 9.

45. *Id.*

46. *Id.* at 10.

47. *Id.* at 11.

48. *Id.* at 11-13.

and concluded "it is in the public interest to facilitate augmentation of the Reno-Sparks water supply as well as to augment the supply in some of the valleys north of Reno-Sparks that have declining water tables so long as the other public interest values are not compromised or can be mitigated."⁴⁹

While the State Engineer noted that "it would threaten to prove detrimental to the public interest to allow the water to be used in such a manner as to violate any water quality or discharge standards of water discharging into the Truckee River or to further impair any threatened or endangered species," he did not find evidence of such impacts from the proposed transfer.⁵⁰ In other words, such factors are relevant though apparently not dispositive in this case.

As the foregoing examples illustrate, many western states provide some mechanism whereby potential impacts from water transfers can be considered and, in some cases, mitigated. In contrast to the traditional no-injury standard, however, these types of considerations are often subjective, guided by few or no standards, and may be time consuming to identify and evaluate. For these reasons and others, many state water administrators and judges remain hesitant to base water transfer decisions on public welfare considerations.

C. Comprehensive Administrative Review

Still another strategy, employed by a few western states, is to subject water transfers to a comprehensive administrative review. The examples of Kansas and California are presented here.

The Kansas provisions, initially adopted in 1983 and amended in 1993, set out several requirements that must be met before a transfer application may be approved. Generally, the Kansas Chief Engineer must ascertain whether the benefits to the state from the transfer outweigh the benefits to the state if the transfer is *not* approved. No transfer may be approved unless the transfer applicant has adopted and implemented (for at least 12 months) conservation measures consistent with the guidelines established by the Kansas Water Office. Applicants providing a public water supply must also have implemented a rate structure determined to be effective in encouraging the efficient use of water.⁵¹

While the conservation requirements are an important tool for encouraging the efficient use of water, the "benefits to the state" analysis, as explained in the statute, contains broad language mandating a comprehensive review that includes, but is not limited to, the effectiveness of conservation measures. In

49. *Id.* at 14.

50. *Id.* at 20. The ruling requires that a monitoring plan be implemented to, among other matters, determine water quality changes. *Id.* at 21.

51. 1993 Kan. Sess. Laws. Ch. 219.

weighing the benefits to the state, the water administrator must consider all relevant matters, including:

- any current beneficial use being made of the water;
- any reasonably foreseeable future beneficial use of the water;
- the economic, environmental, public health and welfare and other impacts of approving or denying the transfer;
- alternative sources of water available to the applicant and present or future users for any beneficial use;
- whether the applicant has taken all appropriate measures to preserve the quality and remediate any contamination of water currently available for use;
- the proposed plan of design, construction and operation of works or facilities used in conjunction with carrying the water from the point of diversion;
- the effectiveness of conservation plans and practices adopted and implemented by the applicant and any other entities to be supplied water by the applicant;
- the conservation plans and practices adopted and implemented by any persons protesting or potentially affected by the proposed transfer; and
- applicable management program, standards, policies and rules and regulations of a groundwater management district.

This new law has yet to be tested. At a minimum, transfer applications in Kansas may be more costly for the applicant, and may take a longer period of time for resolution. At the same time, the final decision will reflect broad-based regard for the potential impacts from the transfer.

California law, which applies the same criteria to transfers as govern new appropriations, requires a similar comparison of both present and proposed water uses as well as consideration of alternative supplies. The SWRCB must, at the request of any party or on its own motion, "identify and evaluate the benefits and detriments, including but not limited to economic and environmental factors, of the present and prospective uses of the water involved and alternative means of satisfying or protecting such uses."⁵² In a draft guide to water transfers produced by the Department of Water Resources in 1989 and not yet finalized, the potential effects of water transfers, which "must be fully and carefully considered," include environmental and social consequences, include the following: water quality and energy resources (e.g. decreases in power generation or demand); compliance with environmental laws and regulations, such as the California Environmental Quality Act; effects on groundwater supplies; and economic and financial considerations, such as loss of jobs or income or a reduction in property values.⁵³

52. CAL. WATER CODE § 1058 (West 1971); CAL. CODE REGS. tit. 23, § 756 (1987).

53. CALIFORNIA DEP'T OF WATER RESOURCES, A GUIDE TO WATER TRANSFERS IN CALIFORNIA, (Draft 1989).

Both California and Kansas have taken a comprehensive, "big picture" view of water transfers. With some provisions, like those addressing conservation practices, these states are evaluating whether the transfer applicant in fact *needs* the water requested. With others, the provisions instead assume the water is needed, and focus on whether the social, economic and environmental consequences on balance are acceptable, considering the welfare of the state as a whole.

While states like Kansas are attempting to encourage water conservation in the context of water transfers, other states are moving to directly mandate more efficient use of water.

III. Agricultural Water Use Efficiency

Most agricultural water uses were established long ago. In some cases these uses involve a larger diversion or withdrawal of water than may be necessary to obtain good crop yields. There is a growing recognition among western states that water resources must be available for a broad and expanding set of uses. Irrigation accounts for about 90 percent of western water consumption and 80 percent of all withdrawals from streams and aquifers. More efficient use of irrigation water could reduce this major source of demand. Under western water law, established water rights must be based on beneficial use, which incorporates the notion that the use must be reasonable and without waste. These concepts—"reasonable use" and "waste"—traditionally are measured by local custom and practice. A use is reasonable, and therefore not wasteful, if the method and quantity of use follows local custom. But, in many areas of the West, highly inefficient irrigation practices have been sanctioned and perpetuated under this standard. Some states are now reconsidering their *laissez faire* approach to water use practices.⁵⁴

Waste can be defined as any amount of water diverted or withdrawn from a source in excess of the minimum quantity that can be delivered to the field and used to produce maximum expected crop yields.⁵⁵ Some of the "excess" diversions return to the stream system as return flows. In many

54. See Steven J. Shupe, *Wasted Water: The Problems and Promise of Improving Efficiency Under Colorado Water Law*, TRADITION, INNOVATION AND CONFLICT: PERSPECTIVES ON COLORADO WATER LAW 73, 75 (Lawrence J. MacDonnell ed., 1986); Steven J. Shupe, *Waste in Western Water Law: A Blueprint for Change*, 61 OR. L. REV. 483, 489 (1982).

55. In defining waste, consideration must be given to the amount of water that will produce the maximum *physical* yield of crops. Application of water to crops beyond this amount causes productivity to decrease. The optimum *economic* yield incorporates such additional factors as the farmer's cost for water, supplies and services as well as the price he can expect to receive for the crop produced. At a minimum, any amount of water applied in excess of what is needed for the maximum physical yield of the crop is clearly waste, and consideration of economic factors is likely to further reduce the "optimum": amount of water to be diverted or withdrawn.

locations in the West, these return flows are relied upon by downstream irrigators, and the additional water applied to the lands may be valuable in flushing harmful salts from the soils. It may be possible to require that at least some portion of the return flows never be diverted. In many cases, however, this would necessitate improvements in diversion and delivery systems—perhaps at considerable expense.

Another part of the excess may be consumptively lost to the system through evaporation, transpiration, and deep percolation. This water appears to be a good candidate for regulatory control. Yet such water may be the source of phreatophytes and wetlands providing valuable habitat. Legal, policy, and technical questions remain but, nevertheless, states are beginning to revisit assumptions about existing water rights. In some cases, states are adopting programs and requirements to reduce agricultural water requirements, thereby making water available for other uses.

States have taken different approaches to accomplish such a reduction in agricultural water use. Laws and programs that provide voluntary incentives to encourage users to reduce their water use are described in the next section of this paper. This section focuses on state laws and programs that, in effect, *require* a reduction in agricultural use. These types of laws and programs generally impose a penalty, in terms of money or water, for failure to reduce use. For example, states may establish a duty of water for irrigation based on assumptions regarding efficient use of water. Any portion of water rights held by the user over this duty would be subject to possible loss or forfeiture. Arizona has taken this type of approach in managing its groundwater. In California, state law definitions of waste and beneficial use, and enforcement of these provisions, have forced some irrigation organizations to seek improvements leading to more efficient use of water. Oregon is considering adopting a duty of water for agricultural use, which would likely also require reductions of agricultural water use in at least some areas of the state.

Supporters of a regulatory approach to promote water conservation believe most water users will not change historical practices, or invest in system improvements, unless mandated by law. Additionally, supporters argue, efficiency requirements can provide irrigation organizations with the justification they need, legally or politically, to make efficiency types of improvements. The following examples describe several of the regulatory approaches taken today by western states for the purpose of reducing agricultural water use.

A. Reasonable Use in California

Both California statutory law and the state's constitution prohibit waste and unreasonable use of water.⁵⁶ The concept of reasonable use is not defined by statute, and court cases have indicated that whether or not a use

56. CAL. CONST. Art. X, § 2; CAL. WATER CODE § 100 (West 1971).

is reasonable depends on the facts of a particular case.⁵⁷ These situational facts, however, must be considered in light of statewide concerns, including the increasing need to conserve water.⁵⁸

California law also imposes an affirmative duty on the Department of Water Resources [hereinafter DWR] to prevent misuse of water, and sets out a procedure for investigating misuse and for notifying the water provider of findings under this process:

The [DWR] and [the SWRCB] shall take all appropriate proceedings or actions. . .to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water in this state.⁵⁹

Any party can submit complaints to the SWRCB pursuant to DWR regulations establishing a procedure for investigating allegations of misuse of water.⁶⁰ Downstream water users may have an interest in pursuing this avenue because under California law, water that is wasted or unreasonably used is considered unappropriated and subject to appropriation by others.⁶¹ Parties who claim to be impacted by the alleged misuse of water can obtain relief if the Board orders the water provider to prevent or terminate the misuse, and these orders are subject to enforcement procedures.⁶²

Finally, California courts have ruled that a water user may be required to spend a reasonable amount of money for improvements, or to endure some amount of inconvenience, for the overriding public policy of preventing waste and unreasonable use of, and maximizing the beneficial use of the state's water resources.⁶³ The following examples, involving the Imperial Irrigation District, the El Dorado Irrigation District and the Yuba County Water Agency, illustrate how these requirements have been implemented.

57. Memorandum from V. Dong, SWRCB, to Files 262.0(09-18-27); A-22782; A-24240; A-28255 (Nov. 19, 1991) [hereinafter V.Dong Memorandum]; *Tulare irrigation Dist. V. Lindsay-Strathmore Irrigation Dist.*, 3 Cal. 2d 489 (1935).

58. *Joslin v. Marin Mun. Water Dist.*, 67 Cal.2d 132 (1967); *Environmental Defense Fund, Inc. v. East Bay Mun. Util. Dist.*, 26 Cal. 3d 183 (1980).

59. CAL. WATER CODE § 275 (West Supp. 1993).

60. CAL. CODE REGS. Tit. 23, § 4000; Misuse of Water by Imperial Irrigation Dist., Decision 1600, at 20 (Cal St. Water Resources Control Bd. June 21, 1984) [hereinafter Decision 1600].

61. CAL. WATER CODE §§ 1202, 1225 (West 1971 & Supp. 1994).

62. Decision 1600, *supra* note 64, at 4.

63. *People ex. Rel. State Water Resources Control Bd. V. Forni*, 54 Cal. App. 3d 743, 751-52 (1976); V. Dong Memorandum, *supra* note 61, at 18.

I. Imperial Irrigation District

The Imperial Irrigation District [hereinafter IID] provides irrigation water to about 460,000 acres within a service area encompassing over one million acres in Imperial County, California, and stretching from the south side of the Salton Sea to the Mexican border. In addition to irrigation water, used primarily to grow alfalfa, wheat, cotton, sugar beets and lettuce, IID serves municipal, industrial and domestic users in the Imperial Valley. The sole source for IID's water supply is the Colorado River, diverted at Imperial Dam and carried by gravity flow along 1,760 miles of conveyance and distribution facilities. In addition, IID collects irrigation return flows through a network of drainage canals that drain into the New and Alamo Rivers and then into the Salton Sea.⁶⁴

IID's Colorado River diversions averaged 2,855,000 acre feet annually between 1965 and 1980. An estimated 1,036,446, or over one-third of the diverted amount, entered the Salton Sea as irrigation return flows. These return flows accounted for about 71 percent of all water entering the Salton Sea during this time. Water entering the Salton Sea is not available for subsequent beneficial use. Consumptive use within IID, identified as the amount of water lost to crop evapotranspiration, averages about 1,700,000 acre feet annually, or approximately 66 percent of the water delivered to farmers. The balance of water carried through the system, about 34 percent of the amount diverted from the Colorado River, is attributed to tailwater, leachwater, and canal spills.⁶⁵

Prompted by a 1980 petition filed by a farmer owning land adjacent to the Salton Sea, the DWR investigated IID's water storage, delivery and use practices. The farmer claimed that excessive amounts of Colorado River water were reaching the Salton Sea and flooding the farmer's adjacent land, as a result of IID's wasteful and unreasonable operational practices. The SWRCB, following hearings, concluded that IID's failure to implement practical, available measures to reduce losses of water was unreasonable and constituted a misuse of water under the state's constitution.⁶⁶

After losing its appeal of this SWRCB decision, IID was ordered by the SWRCB to develop, within about four months, "a specific written plan of implementation containing a definite schedule for implementing additional water conservation measures" sufficient to conserve a minimum of 100,000 acre feet of water annually by January 1, 1994.⁶⁷ Facing the possible forfeiture of its water rights, IID entered an agreement with the Metropolitan

64. Decision 1600, *supra* note 64, at 24.

65. *Id.*

66. Brian E. Gray, *Water Transfers in California: 1981-1989*, 2 THE WATER TRANSFER PROCESS AS A MANAGEMENT OPTION FOR MEETING CHANGING WATER DEMANDS, chap. 2, at 34-35 (1990).

67. Order to Submit Plan Implementation Schedule for Water Conservation Measures, Order WR 88-20, at 44 (Cal. St. Water Resources Bd. Sept. 7, 1988).

Water District of Southern California [hereinafter MWD] just days before the deadline for submitting a written conservation plan. MWD agreed to fund system improvements in the IID system, and IID agreed to transfer the saved water to MWD. While IID was pressured into the agreement with MWD, IID was also permitted to transfer water saved by improvements even though the Board had determined that such water was being wasted.⁶⁸

2. El Dorado Irrigation District

El Dorado Irrigation District [hereinafter EID] is a rural district serving part of El Dorado County in northern California. Crawford Ditch is part of EID's delivery system and supplies water for irrigation and domestic use. The ditch, dating back to the 1850s, has been repaired and upgraded over the years, but much of the original earthen structure remains, interspersed with pipe house in wooden trestles on steep or rocky terrain where ditch failures have occurred.

In 1980, anticipating growth and development in the county, EID filed an application with the SWRCB for water right permits under the proposed South Fork American River Project [hereinafter SOFAR]. In its 1982 order issuing permits for SOFAR, the SWRCB, finding excessive losses in the district's conveyance system, required EID to initiate a water conservation and system improvement program:

Prior to any consumptive use under this permit, permittee shall demonstrate . . . that permittee has reduced its annual loss of water by 2,000 acre-feet (AF). The annual loss may be reduced through system improvements, reduction in consumptive demand, or both.⁶⁹

The order mandated additional savings of 2,000 AF (up to a total of 12,000 AF in savings) with the use of each additional 5,000 AF of consumptive use of water under the permit. In compliance with this order, EID spent about \$5.4 million dollars to improve the Crawford Ditch system, resulting in water savings of about 2,800 AF annually along a 16-mile section of the ditch.⁷⁰

68. See Decision 1600, *supra* note 64; Smith & Vaughn, *Taking Water to Market*, CIVIL ENGINEERING 70-73 (1987); *Let's Make A Deal: The IID/MWD Water Conservation Agreement*, WATER STRATEGIST 5, 15 (1989).

69. Decision 1587 (Cal. St. Water Resources Control Bd. Nov. 1984).

70. Letter from W. Robert Alcott, District Manager, EID to W. Don Maughan, Chairman, SWRCB (Dec. 13, 1991) (investigation of complaint regarding EID's diversion of water into Crawford Ditch in El Dorado Country). Note that the "EID spent approximately \$5.43M to improve the [Crawford] ditch in order to conserve 8,500 AF of water." V. Dong Memorandum, *supra* note 61, at 23.

The EID believed that, under California law, any water saved by these improvements would be available to the EID for beneficial use or transfer. Subsequent developments have cast doubt on EID's rights to any saved water. When an environmental document prepared in connection with these improvements was released to the public, three complaints were filed with the SWRCB alleging that EID's diversion of water into Crawford Ditch amounted to wasteful or unreasonable use of water and was harmful to the fishery. Two complaints were from downstream water users and one was filed by the State Department of Fish and Game. Additionally, the SWRCB staff has taken the position that any water saved through the district's improvements does not belong to EID for transfer. The staff report distinguishes conservation measures that reduce the use of water previously put to beneficial use from improvements that reduce historic waste or unreasonable use. Because the water saved by EID had previously been wasted in the staff's view, it should revert to the state and be subject to appropriation.⁷¹ Nothing has yet been resolved, and there is still disagreement over the need for instream flows and rights to the saved water.

3. Yuba County Water Agency

Serving an area near the foothills of the Sierra Nevada in northern California, the Yuba County Water Agency [hereinafter Yuba] provides water for irrigation, domestic, and hydroelectric use. Anticipating future growth in the county, in the 1960s Yuba developed a water storage project, the Yuba River Development Project. A primary feature of this project is the New Bullards Bar Dam which has a capacity of nearly one million acre feet. Much of the storage water has not been applied to beneficial use within the agency's service area for several reasons, including a lack of funds to complete diversion, conveyance and delivery systems.⁷² This may be the result of less growth than anticipated, and consequently less money to pay for the facilities. Under its state water rights permits, the agency has until the year 2010 to perfect its water rights by applying the water to beneficial use.

Unable to use all of its storage water, knowing that drought conditions were hitting other areas of the state harder than their service areas, and consequently presented with an opportunity to increase its revenues, the agency, in 1987, began transferring surplus water to water-short areas of the

71. See Letter from Edward C. Anton, Chief, Division of Water Rights, SWRCB, to Mr. Robert Alcott, District Manager, EID et al. (Dec. 5, 1991) (investigation of complaint regarding EID's diversion of water into Crawford Ditch in El Dorado County); V. Dong Memorandum, *supra* note 61 at 23.

72. Paul M. Bartkiewicz, *Water Transfers: Addressing Concerns of Agricultural Communities*, 1 LAND USE FORUM 331 (Fall 1992) (Mr. Bartkiewicz is the attorney for Yuba County Water Agency).

state. From 1987 through 1991, Yuba sold the use of over 800,000 acre feet of stored water.

As of 1993, the agency, and the districts within the agency, have received \$30 million for the water transferred. About a third of this money has gone to local water conservation, flood control, water quality, and water distribution and conveyance projects. Additionally, local farmers received over \$8 million for contributing about 92,000 acre feet to the 1991 California State Water Bank, using groundwater in lieu of the transferred surface water.⁷³

The SWRCB investigated whether the transfers represent waste or an unreasonable use of water under applicable state water law and constitutional provisions. Investigations were triggered by a request from the State Department of Fish and Game to consider protection of public trust resources on the lower Yuba River. In an earlier complaint filed with the SWRCB, a coalition of fishery groups alleged that water diversions from the Yuba were negatively impacting the river's fishery. The 1991 SWRCB staff report questioned whether surplus water, defined as water appropriated in excess of actual need, could be transferred by a water user, or whether the use of such water should be controlled by the state.⁷⁴ The staff report suggested that Yuba may have forfeited a portion of its water rights by not putting them to beneficial use within its service area. Yuba's attorney rejoined that the SWRCB's position is contrary to state law which is intended to encourage water transfers by stating that the transfer of water may not be used as evidence of waste or unreasonable use.⁷⁵ There has been no final determination of the SWRCB, but the investigation caused Yuba to forgo water transfers in 1992.⁷⁶

California has taken a hybrid approach to achieve a reduction in water use, combining a regulatory approach with conservation incentives. As the IID case illustrates, irrigation districts with inefficient storage, distribution and delivery systems may be required to implement conservation improvements or risk the loss of all or a portion of their water rights. At the same time, California law also gives the holder of the water right control over the disposition of any water saved through these conservation efforts, as also occurred in the IID case. The apparent inconsistency between allowing IID to benefit from its water conservation while not giving the El Dorado Irrigation District similar benefits may be explained by the fact that IID's waste was permanently lost to other water users (return flows in the

73. *Id.*; Telephone Conversation with Donn Wilson, Engineer-Administrator, Yuba County Water Agency (July 22, 1993).

74. DIVISION OF WATER RIGHTS OF THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD, STAFF REPORT: LOWER YUBA RIVER, at 43 (1991).

75. Bartkiewicz, *supra* note 74, at 332-33; CAL. WATER CODE §§ 1011(b), 1233 (West Supp. 1993).

76. Bartkiewicz, *supra* note 74, at 333.

valley going into the Salton Sea become unusable) while EID's waste returned to the stream and was available for other uses. The final outcome in the Yuba County situation will clarify the status of stored water never directly applied to a beneficial use.

B. Arizona Groundwater Management

Arizona's Groundwater Management Act⁷⁷ [hereinafter Act] represents an attempt by the Arizona legislature to conserve the state's groundwater supplies. The people of Arizona are heavily dependent on groundwater for their water supply, and in many basins the level of withdrawal greatly exceeds the rate of recharge.⁷⁸ Viewing this situation as a threat to the State's economy, the legislature invoked its police powers to "prescribe which uses of groundwater are most beneficial and economically effective."⁷⁹

The general approach under the Act is to reduce the rate of groundwater mining by first freezing groundwater withdrawals at existing rates in critical areas and then, over a period of 45 years, gradually reducing both agricultural and municipal withdrawals. Active Management Areas [hereinafter AMAs] have been established in four critical areas of the state Phoenix, Tucson, Prescott, and Pinal and groundwater use is regulated in these areas to reduce such use over time.⁸⁰

Within the AMAs, management plans and goals are directed towards this gradual reduction in the amount of groundwater use. These plans and goals, set for incremental ten-year periods from 1980 to 2025, establish an irrigation water duty for each farm unit and require conservation measures to be adopted by both irrigation and non-irrigation users. The irrigation water duty is the amount of water in acre feet per acre that is reasonable to apply to irrigated land as determined by the Director of the Arizona Department of Water Resources for each AMA.⁸¹ This amount, which assumes the adoption of conservation methods, is reduced as new goals and additional conservation measures are required with each new ten-year

77. ARIZ. REV. STAT. ANN. §§ 45-401 to 45-655 (1987 & Supp. 1992).

78. *Id.* § 45-401(A).

79. *Id.* The decision to regulate groundwater use was significantly influenced by the provisions of federal law authorizing the construction of the Central Arizona Project (CAP). Delivery of CAP water could not be made to any area that did not have adequate measures to control expansion of irrigation from aquifers in the CAP area. 43 U.S.C. § 1524(c) (1988).

80. Telephone Conversation with Beverly Bedell, Arizona Department of Water Resources (July 13, 1993). San Pedro petitioned for designation, but the department turned down the request, and has been assisting San Pedro with the development of a local management plan.

81. ARIZ. REV. STAT. ANN. § 5-465 (Supp. 1992).

term.⁸² In addition to reduction of existing uses, all new development (residential, commercial, and industrial) within AMAs must prove that they have an assured 100-year water supply which must, at least in part, be from surface supplies.⁸³ Finally, a pumping fee of up to five dollars per acre foot may be imposed, and the monies collected used for administration, enforcement, augmentation of the water supply, conservation project assistance, and the purchase and retirement of grandfathered rights.⁸⁴

While conservation requirements have been established in these AMAs, variances may be granted. In fact, holders of irrigation grandfathered rights within some areas of the Phoenix AMA are exempt under the Act from irrigation water duties for the first, second and third management periods, or until 2010.⁸⁵

The 1980 Act also called for the identification of irrigation "non-expansion" areas where the number of acres under irrigation may not be expanded.⁸⁶ Outside of AMAs, existing groundwater rights are preserved as "grandfathered groundwater rights," but their use may not be expanded and their transfer is restricted.⁸⁷

C. Water Duties in Oregon

In 1990, the Oregon Water Resources Department [hereinafter Department] proposed the establishment of a duty of water for agricultural use. It was anticipated from the start that one effect would be to require some agricultural water users to reduce the amount of water historically used. Predictably opposition from agricultural water users was strong.

Nevertheless, the Department, while not actively pursuing implementation at this time, plans to do so in the future and has been working with Oregon State University [hereinafter OSU] on the technical data. The proposal is to establish, by region and by crop type, an amount of

82. *Id.* § 45-564 to 45-569 (1987 & Supp. 1992). Similar measures are required for non-irrigation uses. *Id.* § 45-564(A). Reasonable conservation methods for irrigation include ditch lining, pumpback systems, land leveling, and efficient application practices but do not include converting from flood irrigation to drip or sprinkler irrigation.

83. *Id.* § 45-576.

84. *Id.* § 45-611. "Grandfathered rights" is a statutory phrase describing the right to withdraw or receive and use groundwater pursuant to ARIZ. REV. STAT. ANN. §§ 45-462 to 45-482 (1987 & Supp. 1992).

85. *Id.* § 45-411.01(A).

86. *Id.* § 45-434.

87. *Id.* §§ 45-463, 45-464, 45-465. Two non-expansion areas were established by the Act, Joseph City and Douglas; one additional area, Harquala, attached to the Phoenix AMA, has been added by the Arizona Department of Water Resources. Telephone Conversation with Beverly Bedell, Arizona Department of Water Resources (July 13, 1993).

water that is deemed reasonable to consumptively use over a season. The Department will rely largely on figures provided in a water requirements study recently completed by the Agricultural Engineering Department at OSU that outlines water requirements by region and by crop type. The proposal will be prospective, applying only to new permits and is a duty on the crop rather than the water right. Therefore, while the quantity of use recognized in a water right may exceed the duty, actual use exceeding established duties will be deemed wasteful, subjecting such excess use to existing waste enforcement measures.⁸⁸

The proposal has been set aside because of limited staff time and the need to implement other parts of the state's conservation program viewed as necessary prerequisites to establishing a water duty. Currently, the Department is focusing on finalizing rules, developed pursuant to the Oregon Water Resources Commission's statutory responsibility to reduce waste, that will require irrigation water suppliers to implement conservation and management plans. As presently drafted, the rules will initially apply to districts that supply water to 10,000 acres or more, but this threshold will gradually be lowered over time. Similar rules are being developed for municipal water providers. Another prerequisite to establishing a duty of water is the development of an on-line water measuring system. The Department expects to move forward on the duty of water proposal before 1997.⁸⁹

What standard might a state interested in requiring more efficient water use follow? The Arizona model suggests establishing a maximum duty of water and then requiring phased reduction in the duty over time as more efficient water delivery and use systems are developed. This is essentially a technology-forcing approach like that employed in some environmental laws. California's approach is more ad hoc, where reasonable use will be evaluated on a case-by-case basis. While the approaches are different, and results uncertain, these states are moving in the direction of requiring more efficient use of water resources.

IV. Voluntary Water Conservation

A number of western states have now adopted laws and programs directed towards encouraging existing water users to reduce the amount of water used. These voluntary programs, often referred to as water conservation or water salvage programs, contrast with the regulatory approaches described in the preceding section. Yet they may be seen as complementary to these approaches, to the degree they provide an option to the mandated reduction in water use. While reducing agricultural water

88. Telephone Conversation with Becky Kreag, Deputy Director, Resource Management Division, Oregon Department of Water Resources (July 13, 1993).

89. *Id.*

use is an intended result of this approach, the broader policy objective is to continue productive and beneficial agricultural use of water at reduced amounts, while making the saved amount available to provide other benefits.

How is a reduction in irrigation water use accomplished so that production is maintained? The primary method of reduction under these incentive-based approaches is through improvements to water storage, diversion, delivery, and return flow systems. As discussed, many agricultural water uses were established long ago, and may be diverting or withdrawing more water than is needed to achieve the same or better crop yields. Through public and private investment in efficiency improvements, water may be made available for another use while allowing the agricultural use to continue.

What is conserved or saved water, and how does it differ from salvaged water? This paper uses the term "salvaged" water to refer to a reduction in consumptive use, making available water previously lost to the system by evaporation, transpiration, or nonrecoverable deep percolation.⁹⁰ Under this meaning, salvaged water would be measured by the amount of water consumptively used before and after improvements. This definition originally was used by the Oregon Legislature in adopting their conservation program, but has since been replaced with a broader definition\ more akin to conserved or saved water.⁹¹ This broader definition measures the amount of water saved as the reduction in the amount diverted, absent injury to other appropriators. Potential water saving measures under this broader meaning would include improvements in water delivery systems, improvements in farm water distribution and use, and the enhancement and management of return flows. In effect, water conservation may be broadly defined to include any legally allowable improvements that increase the flow of water in a stream system, including the removal of water-loving plants. Thus, Montana law (unfortunately using the term "salvage" rather than "conserved" or "saved") authorizes making water available for beneficial use from an existing valid appropriation "through the application of water-saving methods."⁹²

With any of these definitions, states wishing to encourage conservation have modified water laws so that concepts of waste or beneficial use will not apply to water saved by conservation efforts and, in some cases, give the holder of the right some control over the saved water.

90. Transpiration is the same process as evaporation (water changes to a vapor from a water surface like a lake or from a moist soil surface) except that, with transpiration, the vapor escapes from the surface of leaves or other plant parts. See LEONARD RICE & MICHAEL D. WHITE, *ENGINEERING ASPECTS OF WATER LAW*, 2, 6, 115 (1987). A useful discussion of these definitional and conceptual issues can be found in STEVE MILLER, *AN ANALYSIS OF WATER SALVAGE ISSUES IN COLORADO* (1992).

91. H.B. No. 2155, 1993 Or. Law ch. 641, *amending* OR. REV. STAT. § 85-2-102 (1991).

92. MONT. CODE ANN. § 85-2-102 (1991).

For example, California law provides that no forfeiture of a water right shall occur as a result of a reduction in the use of water through water conservation efforts.⁹³ Oregon water law explicitly recognizes a right to sell or lease a portion of the amount of water saved through conservation improvements and gives a priority date to the saved water of one minute junior to the original right. Thus those investing in the improvements needed to produce the saved water can benefit from their investment.⁹⁴ Washington has established a state program to make conservation improvements and to determine additional uses of saved water. Washington law states that provisions concerning relinquishment or forfeiture of water rights do not apply to water made available under its "trust" water rights program.⁹⁵

The following examples describe incentive-based programs adopted in Washington, Oregon, and Montana.

A. Trust Water Rights in Washington

With the express intent of facilitating the voluntary transfer of water to meet current and future water demands, the Washington State Legislature in 1991 directed the Department of Ecology [hereinafter DOE] to develop a state "trust water rights" program [hereinafter Trust Program].⁹⁶ The statute authorized a test program to be applied by DOE to a limited number of areas identified by the agency. Two regional pilot planning areas were identified in the legislation: the Dungeness-Quilcene and the Methow. Up to eight additional areas with critical water supply problems were to be identified by the DOE for potential inclusion in the Trust Program, but in 1993 the legislature rendered this step unnecessary by extending the Trust Program statewide.⁹⁷

Under the program, holders of an appropriative water right may voluntarily transfer all or a part of their water right to the state, to be managed in trust by the DOE. Only water "that has been beneficially used in a reasonable manner" will be considered for transfer.⁹⁸ The program applies

93. CAL. WATER CODE §§ 1011(b), 1244 (West Supp. 1992).

94. OR. REV. STAT. §§ 537.455 to -485 (1991), *as amended by* 1993 Or. Sess. Laws. H.B. 2155-B.

95. *See* WASH. REV. CODE ANN. § 90.42.040 (6) (West 1992).

96. *Id.* § 90.42.010 to 90.42.900 (West 1992).

97. Substitute House Bill No. 1787, (adopted April 8, 1993). *See* Letter from Hedia Adelman, Program Manager, Water Resources, Washington St. Dep't of Ecology, to Interested Citizens et al. (Feb. 8, 1993); WASH. REV. CODE ANN. § 90.42.010(2) (West 1992). A separate law enacted two years earlier applied a similar concept to the Yakima basin. WASH. REV. CODE ANN. § 90.38.040 (West 1992).

98. WASHINGTON ST. DEP'T OF ECOLOGY, Pub. No 92-88, TRUST WATER RIGHTS PROGRAM GUIDELINES 10 (1992) [hereinafter TRUST GUIDELINES]. Beneficial use is

to both surface and groundwater, and to municipal and industrial uses, as well as agricultural uses.⁹⁹As mentioned, the transferred water right [hereinafter Trust water right] will maintain its original priority date, and is not subject to relinquishment or forfeiture.

Additionally, Trust water rights acquired through the funding of water conservation projects are not subject to the statutory requirements applicable to water rights transfers in general, such as the need to file a separate application with the Department, and the need to obtain irrigation district approval for transfers within a district or for transfers between irrigation districts.¹⁰⁰ However, statutory provisions governing Trust water rights contain similar conditions that must be met prior to the exercise of a Trust water right.¹⁰¹ Once a water right is changed to a Trust water right, the Department may allocate the water right to one or more beneficial uses, including instream flows, irrigation and municipal uses.¹⁰²

What are the incentives to transfer water to the state under this program? One motive may be to obtain financial assistance from the state for system improvements. Transfers of conserved irrigation water, for example, may occur as a result of improved irrigation efficiency without any reduction in the amount of irrigated acreage. Under the Trust Program, loans and grants are available to an applicant for making improvements to water delivery systems that will result in a savings of water. There is no shortage of funds for improvements proposed by public entities – about \$25 million is available under Referendum 38, a general obligation bond adopted by voters in 1980 that provides funding for improving water supply systems. However, under Referendum 38 regulations adopted in 1991, there is a limit on the percentage of costs that can be covered by a grant. If the improvement will result in water savings, up to 30 percent in grant money

defined broadly in Washington to include use for domestic water, irrigation, fish, shellfish, game and other aquatic life, municipal, recreation, industrial water, generation of electric power, navigation, stockwatering, commercial, mining, thermal power, preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state. *See* WASH. REV. CODE ANN. § 43.27A.020, -020(1), 90.14.031(2) (West 1992).

99. *See* TRUST GUIDELINES, *supra* note 102, at 3-7.

100. WASH. REV. CODE ANN. § 90.42.040(7) (West 1992) (referring to § 90.03.380). District approval is not required for transfers for use outside an irrigation district.

101. For example, prior to the exercise of a Trust water right, the DOE must find that neither existing water rights nor the public interest will be impaired. WASH. REV. CODE ANN. § 90.42.040(4) (West 1992). Additionally, the state cannot enter a contract to acquire an irrigation district water right without the approval of the board of directors of the irrigation district. District disapproval must be factually based, a requirement not applicable to non-trust water transfers. WASH. REV. CODE ANN. § 90.42.030(6) (West 1992).

102. WASH. REV. CODE ANN. § 90.42.030(1), (2) (West 1992).

can be awarded. If no water savings are likely, up to 15 percent grant money is available. With the balance available as a loan, up to 90 percent funding may be provided.¹⁰³ The state constitution prohibits the issuance of grants or loans to individuals.¹⁰⁴

Another approach under the program is the payment of direct compensation for not using a water right. A water rights holder may be paid to temporarily or permanently stop irrigating specific lands. Funds to purchase water rights, unlike improvement grants and loans, must be allocated by the legislature specifically for that purpose and no funds have yet been made available.¹⁰⁵ The saved water, an amount determined by many factors on a case by case basis, would be transferred into the Trust Program.¹⁰⁶

Finally, there is the potential incentive under the Trust Program that a portion of the water saved under the program could be given back to the holder of the water right. This option, not clearly allowed by program statutes or guidelines, has been raised by some water users but has not been actively pursued to date. Presumably, the portion of saved water turned over to the water rights holder would be represented by a certificate as a distinct water right. If this option is allowed, it is possible that the water right holder's portion of the saved water could be used for spreading (increasing the acreage under irrigation) or for transfer to another use.¹⁰⁷

Once a water rights holder, attracted by such incentives, decides to approach the state for participation in the Trust Program, what procedure is

103. Referendum, 38, passed in conjunction with the trust legislation, authorizes grants for up to 30 percent of water conservation project cost. DOE can make loans up to 90 percent. Financial assistance can be a partial loan or partial grant, but likely will be some combination of the two sources. *See* REFERENDUM 38 REGULATIONS, TRUST GUIDELINES, *supra* note 102, at 14-15; *see also* Telephone Conversation with Cynthia Nelson, Environmental Planner, Water Resources Program, Washington St. Dep't of Ecology (Aug. 9, 1993); Telephone Conversation with George Krill, Irrigation Specialist, Water Resources Program, Washington St. Dep't of Ecology (Aug. 16, 1993). The TRUST GUIDELINES describe potential "public benefits" that affect consideration for state financial assistance. These include restoration of streamflows, implementation of regional water plans and critical water supply remedies. TRUST GUIDELINES, *supra* note 102, AT 23.

104. WASH. CONST. art. 8, § 5.

105. *See* WASHINGTON ST. DEP'T OF ECOLOGY, TRUST WATER RIGHTS PROGRAM, COMMENT SUMMARY 5 (1992) [hereinafter COMMENT SUMMARY].

106. TRUST GUIDELINES, *supra* note 102, at 4, 6-7.

107. Current trust law and regulations do not provide for a separate water right for a portion of the saved water, but the issue is likely to arise in the near future. Telephone Conversation with George Krill, Irrigation Specialist, Water Resources Program, Washington State Department of Ecology (Aug. 16, 1993); *see* COMMENT SUMMARY, *supra* note 109, at 3 (on the notion of using trust water for spreading).

followed? Whether the proposal is for a temporary or permanent transfer of a water right, DOE undertakes a threshold evaluation to assess the validity of the water right.¹⁰⁸ Next, a more detailed analysis is conducted to determine the net quantity of water available for transfer. The reduction in the amount of water diverted, called the "gross water saved" is the starting measurement of saved water. The transferable amount, however, will be less. For most water rights, there will be a reduction representing return flows. Additionally, only the amount of water that has historically been put to use through "reasonably efficient practices" may be transferred. Potential third party effects including injury to the public interest will also be considered, and the transferable amount may be reduced to address these types of concerns. Notice to third parties of any proposed acquisition by the state is provided through local newspapers.¹⁰⁹ DOE may require mitigation of any potential impacts, or may reject the proposal altogether.¹¹⁰

A water right permanently transferred to the DOE as a Trust water right is represented by a certificate of water right issued in the name of the DOE, and may be authorized for a wide range of beneficial uses.¹¹¹ As mentioned above, the use of purchased Trust water is left to the discretion of the DOE, with a few caveats. If the Trust water is donated, the donor may limit the type of use. And, if a regional pilot plan has been adopted that establishes a priority among uses, the state's allocation of Trust water rights must be consistent with the plan. Finally, contrary to the law for non-Trust water rights, a Trust water right could potentially be used to irrigate additional acres through "spreading."¹¹²

As yet, no transfers have occurred under the program, although several parties have expressed interest. One problem appears to be an understandable resistance to the idea of conveying water rights to the state. It is hoped that through pilot projects, the benefits of the program can be demonstrated and some concerns alleviated.¹¹³ As mentioned, Washington's constitution generally prohibits the lending of state money to individuals and, consequently, Referendum 38 provides funds only to public entities such as irrigation districts.¹¹⁴ Another potential problem in implementation

108. TRUST GUIDELINES, *supra* note 102, at 9.

109. WASH. REV. CODE ANN. § 90.42.040(5) (West 1992).

110. TRUST GUIDELINES, *supra* note 102, at 10-13; COMMENT SUMMARY, *supra* note 109, at 2.

111. WASH. REV. CODE ANN. § 90.42.040(1), (2) (West 1992).

112. COMMENT SUMMARY, *supra* note 109, at 3.

113. Telephone Conversation with Cynthia Nelson, Water Resources Program, Washington St. Dep't of Ecology (June 9, 1993). The DOE is currently talking to the Chelan County Conservation District in the Wenatchee basin about identifying one orchard in the District for a pilot project.

114. See WASH. CONST., art. 8, § 5; COMMENT SUMMARY, *supra* note 109, at 4-5. Moreover, the Trust program statute requires that funds to purchase water rights

is protection of downstream water users. The Trust program statute may impose a higher standard on the transfer of water rights into the Trust program than is imposed on water transfers generally in the state.¹¹⁵ Under the Trust program, DOE must consider and, if necessary, mitigate *all negative third party effects* caused by the transfer to the state of Trust water rights.¹¹⁶ Other types of proposed water rights transfers, in contrast, may be approved as long as there is no injury to existing water rights and as long as the proposed use is not detrimental to the public interest.¹¹⁷

B. Oregon's Water Conservation Law

Under the Oregon approach to encourage conservation, conserved water is defined as "that amount of water that results from conservation measures, measured as the difference between: (a) The smaller of the amount stated on the water right or the maximum amount that can be diverted using the existing facilities; and (b) The amount of water needed after implementation of conservation measures to meet the beneficial use under the water right certificate."¹¹⁸ Prior to implementing efficiency improvements, a water conservation proposal must be submitted to the State Water Resources Commission [hereinafter Commission] for approval. The proposal must include:

- a description of the proposed conservation measures,
- a description of the existing diversion facilities and an estimate of the amount of water that can be diverted at the facilities,
- the amount of water that will be needed to supply the existing rights after completion of the conservation measures,
- the amount of water expected to be saved as a result of the conservation measures,
- the proposed allocation and use of the conserved water, and
- the intended use of any water allocated to the applicant.¹¹⁹

State water transfer laws requiring the filing of a request for transfer are expressly waived for water conservation proposals.¹²⁰

must be allocated by the state legislature and, as yet, no moneys have been allocated for this purpose.

115. COMMENT SUMMARY, *supra* note 109, at 3.

116. *Id.* (emphasis added); TRUST GUIDELINES, *supra* note 102, at 11-13.

117. REV. CODE WASH. ANN. § 90.54.020 (West 1992); WASHINGTON ST. DEP'T ECOLOGY, WATER RESOURCES PROGRAM, STANDARD OPERATING PROCEDURES, PRO-1000, B.3.

118. OR. REV. STAT. § 537.455(2) (1991), as amended by 1993 Or.Laws, H. B. 2155-B.

119. OR. REV. STAT. § 537.465 (1991), as amended by 1993 Or.Laws, H.B. 2155-B.

120. OR. REV. STAT. § 537.470(5) (1991), as added by 1993 Or. Laws, H.B. 2155-B (referring to requirements set out in § 540.520 (1991)).

Following a public comment and protest period, the Commission must find that the proposed plan is feasible, will produce conserved water, will not cause injury to existing water rights, and will not adversely affect the public interest. Of the quantity of saved water, some may be required to mitigate the effects of the proposal on other water users. The Commission is required to allocate 25 percent of the balance of the conserved water to the state and 75 percent to the applicant, unless the applicant proposes that a higher percentage go to the state. The conserved water is given a priority date of one minute after the original priority, and the Commission is directed to issue a new water right certificate reflecting the changes to the original right.¹²¹

As originally drafted, the Oregon conservation statute created a difficult burden for applicants to meet by narrowly defining conservation as "the reduction of the amount of water consumed or *irretrievably lost in the process of satisfying* an existing beneficial use achieved either by improving the technology or method for diverting, transporting, applying or recovering the water or by implementing other approved conservation measures."¹²² This strict standard was intended to avoid potential harm to other water users.¹²³ Indeed, very few proposals were submitted during the first six years of the program. In 1993, however, the definition was changed to "the reduction of the amount of water *diverted to satisfy* an existing beneficial use."¹²⁴ This new standard may encourage greater participation in the program.

C. Montana's Salvage Statute

Similar to the Oregon approach but without the 25 percent dedication to the state, Montana in 1991, adopted a salvaged water program to encourage conservation and full use of water. Holders of appropriative water rights who salvage water may retain the right to use that water.¹²⁵ Montana law defines "salvage" as making water available for beneficial use from an existing valid appropriation through the application of water-saving methods.¹²⁶

Salvaged water can be leased or sold, and the use changed, subject to the approval of the Montana Department of Conservation and Natural Resources. To change the purpose or place of use, the appropriator must prove the following: (1) the proposed use will not adversely affect the water rights of others; (2) the proposed means of diversion, construction, and

121. OR. REV. STAT. § 537.470 (1991), as amended by 1993 Or. Laws, H.B. 2155-B.

122. OR. REV. STAT. § 537.455(1) (1991) (emphasis added).

123. See Becky Kreag, *Transferring Conserved Water: The Oregon Experience*, MOVING THE WEST'S WATER TO NEW USES: WINNERS AND LOSERS (1990).

124. OR. REV. STAT. § 537.455 (1991), as amended by 1993 Or. Laws, H.B. 2155-B (emphasis added).

125. MONT. CODE ANN. § 85-2-419 (1991).

126. *Id.* § 85-2-102.

operation of the appropriation works are adequate; (3) the proposed use is a beneficial use; and (4) the applicant has a possessory interest, or consent of the person with such interest, in the property where the water is to be put to beneficial use.¹²⁷ Changes involving 4,000 AF of water or more, and 5.5 cfs or more require the applicant to also prove that the proposed change is reasonable, under guidelines set out in the statute.¹²⁸

All of the foregoing examples of incentive- based approaches to water transfer are relatively new; they have enjoyed only limited implementation. Nevertheless, they hold promise, in conjunction with other programs, of enhancing the use of water resources while improving the efficiency of historical agricultural uses.

V. Facilitating Temporary Transfers

To fill seasonal needs for water supply on a local and regional scale, many western states have enacted or modified laws and programs that facilitate the temporary or short-term movement of water from one use or location to another. From irrigation uses, water becomes available for such transfer through different means, including temporary land fallowing or participation in a government conservation reserve program, changing the types of crops grown to less water intensive crops, and substitution of alternative water supplies. Certain traditional provisions of state water law typically are changed or modified so that these transfers can occur in a relatively short time and at a minimum cost, such as provisions governing proof of no injury to others and the loss of a water right for non-use. In addition, other laws may be added to facilitate these types of changes. For example, short-term transfers may be facilitated through a water bank, usually managed by the state or another institution, as in Idaho and California. Short- term transfers also include, however, temporary agreements between private parties, such as dry-year options and land fallowing agreements, in which a water user agrees to forgo the use of water for one or more seasons under certain water supply or demand conditions. In California, for example, MWD has taken advantage of state laws that allow and facilitate these types of short-term arrangements. These and other examples of short-term water transfers are described below, although these examples do not exhaust the possible arrangements that can be worked out when water users are given the flexibility and incentive to modify traditional practices toward the goal of reducing their use of water.

127. *Id.* § 85-2-402(2).

128. *Id.* § 85-2-402(3). Large volume changes are also subject to approval by the legislature following public hearings. *Id.* § 85-2402(5).

A. Short-Term Transfers

Several western state water laws contain provisions recognizing the right to make short-term (usually one year) transfers of water.¹²⁹ The advantage of making transfers under these statutory provisions rather than under the provisions dealing with permanent changes of water rights is that, in most of these states, the approval process for short-term transfers is more streamlined. For example, California allows temporary changes in the point of diversion, place of use, or purpose of use, for up to one year. The State Water Resources Control Board must evaluate temporary change applications to determine (1) if the amount requested is no more than the amount historically consumed or stored, (2) that such use will not injure other water users, and (3) that such use will not unreasonably affect fish, wildlife, or other instream beneficial uses. If the Board finds that these requirements will be met, the temporary change is approved. A hearing is only required if the Board finds that any one of these requirements is not met by the proposed change.¹³⁰

The time period for which such changes may be granted varies from state to state. Like California—Nevada, New Mexico and Utah limit such changes to one year.¹³¹ Montana law expands the meaning of "temporary" by authorizing such changes for up to ten years, and further providing for a ten year renewal.¹³² Wyoming allows for temporary transfers of up to two years.¹³³ Colorado law merely allows transfers for a "limited time."¹³⁴

The quantity of water that can be temporarily transferred may be explicitly limited to historic consumptive use and is always subject to the no injury rule. California, as noted, also considers the impact of the change on instream flow uses which may or may not be represented by water rights.¹³⁵ Nevada has a similar limitation, requiring that such temporary transfers be "in the public interest."¹³⁶ New Mexico specifically limits the quantity of water that can be temporarily transferred to no more than three AF.¹³⁷

129. See, e.g., CAL. WATER CODE §§ 1725-1728 (West Supp 1993), COLO. REV. STAT. § 37-83-105 (1990), NEV. REV. STAT. ANN. §§ 533.345 (Michie Supp. 1991); N.M. STAT. ANN. § 72-12-7 (Michie Supp. 1993); UTAH CODE ANN. § 73-3-3 (Supp. 1993); WYO. STAT. § 41-3-110 (Supp. 1993).

130. CAL. WATER CODE § 1727 (West Supp. 1993).

131. NEV. REV. STAT. ANN. § 533.345 (Michie Supp. 1991), N.M. STAT. ANN. § 72-12-7 (Michie Supp. 1992), UTAH CODE ANN. § 73-3-3 (Supp. 1993).

132. MONT. CODE ANN. § 85-2-407(2), (3) (1993).

133. WYO. STAT. § 41-3-110(a) (Supp. 1993).

134. COLO. REV. STAT. § 37-83-105 (1990).

135. CAL. WATER CODE § 1725 (West Supp. 1993).

136. NEV. REV. STAT. ANN. § 533.345 (Michie Supp. 1991).

137. N.M. STAT. ANN. § 72-12-7(B) (Michie Supp. 1993).

Also like California, several of the states recognizing temporary transfers provide for a more limited administrative review, requiring a hearing only if this review reveals that the proposed change might injure other water rights or otherwise not comply with statutory requirements. For example, if, upon reviewing an application for a temporary transfer of water, the Nevada State Engineer determines that the change is not in the public interest or that the change may impair other water rights, the State Engineer must give notice and hold a hearing. Otherwise, the State Engineer can approve the temporary transfer without notice and a hearing.¹³⁸

A few state provisions allowing temporary changes were enacted years ago and should be updated. For example, Colorado law, enacted in 1899, authorizes the exchange or loan of water taken from the stream for the purpose of "saving crops or using the water in a more economical manner."¹³⁹ The law provides for no court or administrative review for injury or other considerations. In fact, no advance approval is necessary; the only requirement is that both parties to the exchange or loan provide notice to the division engineer indicating the duration of the arrangement. While saving crops and using water "in a more economical manner" continue to be important potential uses of temporary transfers, today other beneficial uses could also be served by this type of transfer and should be recognized.

Transfers under these short-term transfer laws are, for the most part, encouraged by limiting state review. Another approach for facilitating short-term (and sometimes permanent) transfers of water involves the use of water banks.

B. Water Banks

Water banks provide an organized procedure for making water transfers.¹⁴⁰ Banking mechanisms differ, but water banks are often characterized by some type of institutional manager and, in general, established practices or rules that govern bank operations. Often, banked water is placed in some type of surface or underground storage facility. The original water right holder usually retains the water right, merely choosing to transfer a specific quantity of water available under the right, for a specific period of time, into the bank. A primary attraction of a water bank is its potential ability to reduce the transaction costs associated with transferring uses of water.

I. The California Water Bank

Prompted by a prolonged drought, in early 1991, California established a water bank as part of a short-term emergency plan. Initially, a

138. NEV. REV. STAT. § 533-345 (Michie Supp. 1991).

139. COLO. REV. STAT. § 37-83-105 (1990).

140. For a thorough discussion of water banks, see LAWRENCE J. MACDONNELL ET AL., WATER BANKING IN THE WEST (1994).

Drought Action Team was formed by a gubernatorial executive order, and two weeks later this group reported recommendations to the Governor, that included the establishment of a water bank. The DWR was designated as the managing agency, and this agency in turn formed a Water Purchase Committee, with members representing potential sellers and buyers of water. Within two months from the initial order, 300 contracts for the acquisition of water were in various stages of negotiation.¹⁴¹

Water was acquired for the bank through contracts entered into between the state and the water rights holder. In 1991, sellers in the first year received \$125 per acre-foot. The water was made available by these holders from various sources, including the fallowing of previously irrigated lands, the substitution of groundwater for surface supplies and the tapping of unused storage supplies. During 1991, the state contracted for 821,045 acre-feet of water under 351 contracts. Fifty percent of this water came from the fallowing of irrigated lands. One-third of the water was indirectly supplied by groundwater, primarily as a result of irrigators using groundwater and selling their surface rights to the bank. A portion of the water also came from unused storage water managed by one water supply organization.¹⁴²

On the buying end, membership in the bank as a potential buyer was limited to entities with the responsibility to supply water for agricultural, municipal, industrial, fish and wildlife, or other beneficial uses. Allocation among members was based on their estimated "critical needs," which required them to meet certain criteria regarding existing water use before they were able to purchase from the bank. Generally, members had to show that they were fully utilizing all available water supplies, and had implemented stringent water conservation programs. More specifically, for municipal and industrial suppliers, total water available water supply must have been less than 75 percent of normal water demand. For potential purchasers who supply water for other types of uses—including irrigation, fish, and wildlife—members' water needs were determined on a case-by-case basis. Bank rules established priorities among types of use, with the highest priority going to drinking water, health, sanitation and fire protection, and possibly areas designated as having "urgent agricultural critical needs." In 1991, over 70 percent of the water available in the bank was purchased by three urban water providers.¹⁴³

Initial experience with the bank followed by public hearings in early 1991 revealed some weaknesses and prompted changes. Despite assurances under

141. RICHARD HOWITT ET AL., CALIFORNIA DEP'T OF WATER RESOURCES, A RETROSPECTIVE ON CALIFORNIA'S 1991 EMERGENCY DROUGHT WATER BANK (1992) [hereinafter RETROSPECTIVE], CALIFORNIA DEP'T OF WATER RESOURCES, THE 1991 DROUGHT WATER BANK.

142. RETROSPECTIVE, *supra* note 145, at 10.

143. *Id.* at 5-7.

then existing law that water rights sold through the bank would not be lost,¹⁴⁴ many water users expressed concern in early 1991 that their rights would be subject to possible forfeiture or loss, based on waste or unreasonable use, if they sold water through the bank. In response, two pieces of legislation were introduced in 1991 to encourage transfers to the bank. One bill, directed toward water supply organizations, authorized any water supplier to transfer water to the bank if the supplier determines that it is in the best interests of the water supplier to transfer the water, and if all users have been allocated the amount of water they are entitled to, or have consented to receive less.¹⁴⁵ This bill authorized the sale of water made available through conservation, through land fallowing, and through the use of alternative supplies, and, importantly, made it clear that the water transferred need not be surplus to the needs of the water users, as long as the users consented.¹⁴⁶ The second 1991 bill was directed at water users and provided that "[n]o temporary transfer of water made pursuant to any provision of law for drought relief in calendar years 1991 and 1992 shall affect any water rights."¹⁴⁷ These provisions, credited as important to the success of the bank, were made permanent provisions of California transfer law in 1992.¹⁴⁸

In addition to water users' concerns over potential challenges to their water rights, issues came up about third party impacts as a result of the first year's experiences. The use of groundwater as replacement water for surface supplies sold to the bank—further accelerating withdrawal rates already increased as a result of the drought—raised concerns about groundwater overdraft and land subsidence in Yolo County, where even in good supply years farmers get about 45 percent of their supply from groundwater. Replacement withdrawals threatened local irrigators' supplies and, in addition, added to an existing overdraft problem that already had produced widespread land subsidence.

Administrative and local solutions were adopted to monitor groundwater levels, limit the amount of water that could be pumped for replacement supplies, and impose a tax on the money received by the sellers to the bank who are using groundwater as a substitute supply.

Concerns over impacts on fish and wildlife from operation of the water bank were also raised, caused by changes in impoundments and releases,

144. See CAL. WATER CODE §§ 1101, 1244, 382-386 (West Supp. 1993).

145. 1991 Cal. Stat. ch. 1X, § 1, *discussed in* Brian E. Gray, *The 1991 Water Bank: A Legal Analysis of Water Transfers from Yolo and Solano Counties*, 32-33 (unpublished manuscript, on file with author at the University of California, Hastings College of Law, 1993).

146. Gray, *supra* note 149 (citing 1991 Cal. Stat. ch. 1X, §§ 2-3).

147. *Id.* (citing 1991 Cal. Stats. ch. 2X, § 1 (a)).

148. Assembly Bill 2897, 1992 Cal. Stat. ch. 481, § 1, (codified at CAL. WATER CODE §§ 1745.04 to .07 (West Supp. 1993)), *see* Gray, *supra* note 149, at 34-36.

diversions, and cropping patterns.¹⁴⁹ For example, the removal of grain crops from lands around the Sacramento Delta under the following contracts has caused damage to wild bird habitat and forage.¹⁵⁰ To address these concerns, the Department of Water Resources made a commitment, early in 1991, to work with the federal and state fish and wildlife agencies. However, fulfillment of that promise was not evident in 1991 operations. In 1992, however, a representative of the Department of Fish and Game was made a member of the "Water Purchase Committee," a position that allowed meaningful participation in the decision-making process.¹⁵¹ Some fish and wildlife concerns linger, however, including lack of data on water bank operations' impacts on migratory waterfowl.¹⁵²

There was no proposal for a State Water Bank in 1993, although Sacramento Basin water supplies were strong, and deliveries to CVP contractors south of the Delta were expected to be 40 percent below normal, as a result of environmental mitigation requirements in the 1992 Central Valley Project Improvement Act and on-going efforts to address endangered species and water quality problems in the Bay-Delta area.¹⁵³ Concern about reduced populations of winter-run Chinook salmon and Delta smelt during the drought has led to proposed federal and state regulations on Delta pumping operations that would further limit north-to-south market transfers of water. More generally, the DWR has prepared a draft Environmental Impact Report to address potential adverse environmental effects of future water banks, and plans to limit future department banking activity to occasional responses to emergency drought conditions.¹⁵⁴

2. The Idaho Water Bank

Idaho has a statewide water supply bank [hereinafter Water Supply Bank] run by the Idaho Water Resources Board [hereinafter Board] through the Idaho Department of Water Resources, and three local rental pools, controlled by water district advisory boards and a watermaster. All are authorized by statute which declares the purpose of the banks "to obtain the highest duty for beneficial use from water, provide a source of adequate

149. See Gray, *supra* note 149, at 76-77. Gray points out that some beneficial impacts on fish and wildlife from water bank were also noted, including cooler water temperatures for the salmon resulting from leaving more water in the reservoirs until later in the season.

150. Kathy A. Miller, Water Banking in California: The 1991 and 1992 Emergency Drought Water Banks 13 (Sept 24, 1993) (draft manuscript, available from the Natural Resources Law Center, University of Colorado).

151. Gray, *supra* note 149, at 80-81.

152. *Id.* at 81-82.

153. Pub. L. No. 102-575, § 3405 (1992).

154. Miller, *supra* note 154, at 16-18.

water supplies to benefit new and supplemental water uses, and provide a source of funding for improving water user facilities and efficiencies."¹⁵⁵

For the Water Supply Bank, the Board is authorized to purchase, lease or otherwise obtain decreed, licensed or permitted water rights to be credited to the Water Supply Bank.¹⁵⁶ Rentals of water from this bank must be approved by the Director of the Idaho Department of Water Resources, who can deny or condition proposed rentals based upon review criteria set out in the statute.¹⁵⁷ Similar to Oregon's conservation law, Idaho law provides that this review procedure substitutes for the ordinary change of water rights requirements.¹⁵⁸ The rental price is determined by the Board, and ten percent of the rental payment is credited to the "water administration account" to cover administrative costs of operating the bank. The amount to go to the owner of the water right (established in Board resolution accepting the water right into the Water Supply Bank)¹⁵⁹ is also deducted, and any remaining funds are used to improve water user facilities. Rentals may be authorized for up to five year periods, and anything longer requires Board approval.

The Board also is authorized to establish local rental pool committees. These committees must establish procedures for operating the bank as set out in the statute. The director must approve these procedures as well as the lease and rental forms developed by the local committee. Once this is done, the Board establishes the committee and reviews required committee annual reports.¹⁶⁰

The three local rental pool committees operate under somewhat different rules and types of organizations, and have experienced varying levels of banking activity. The Water District 1 rental pool covers the Upper Snake River Basin, and is operated by the Committee of Nine and managed by the watermaster. The Water District 63 rental pool covers the Boise River Basin, and is operated by a committee comprised of the watermaster and representatives of the irrigation water supply organizations in the valley. Again, the watermaster is the manager of the pool. The Water District 65 rental pool in the Payette Basin is operated by a large committee that includes one member from each geographic region within the district in addition to state and federal agency representatives.

Each of these committees has adopted rental pool procedures that provide for leasing, set out priorities among competing uses, and describe

155. IDAHO CODE § 42-1761 (1994).

156. *Id.* § 42-1762.

157. *Id.* § 42-1763.

158. *Id.* § 42-1764.

159. Water Supply Bank Rules and Regulations, Rule 5,2 (Idaho Water Resource Bd.) (adopted Oct, 1990) [hereinafter Water Supply Bank Rules].

160. IDAHO CODE § 42-1765 (1994).

the process for setting lease payment and rental fees on an annual basis as well as the process for appealing from a committee decision. Local concerns are reflected in differences in these procedures. For example, the Upper Snake procedures condition the rental of bank water for uses outside of the traditional irrigation service area (i.e., below Milner Dam) to require the written consent of the lessor and to provide that the storage space from which the rental water comes will be the last to fill the following year.¹⁶¹

Hydrologic considerations dictate this distinction for uses below Milner Dam. As a result of irrigation development in the upper basin, the only significant flows of water below Milner Dam, today, typically occur during high spring runoff. During the summer (irrigation) months, the river is generally dry at Milner and for about a mile below. Return flows from the upstream irrigation use contribute millions of acre feet of water to the Snake River Plain aquifer, significantly raising the groundwater table and increasing discharges into the Snake River below Milner Dam at Thousand Springs. As a result, the Snake River in Idaho has been viewed and managed as two separate river systems, one above Milner and the other below.¹⁶²

All three sets of rental pool procedures give priority to irrigation use, at least during irrigation season. Water Districts 63 and 65 also provide for modified priorities during periods of drought or special conditions.

The price of rental water varies among the local rental pools and between the pools and the Water Supply Bank. The Board sets the price for water from the Water Supply Bank.¹⁶³ The 1992 price was \$3.25 per AF.¹⁶⁴ In Water District 63, the rental price is set by the committee each year, and in 1992 was \$6.50 per AF. Similarly, the committees for Water Districts 1 and 65 set the rental price annually, and 1992 prices were \$2.95 and \$2.70 per AF respectively. No price was set in 1992 for District 1 water rented for use below Milner Dam because no water was rented for such use. The 1993 price is \$5.50 per AF for uses below Milner. If the space from which this water comes fills the following spring, the lessors receive a "rebate" of \$2.00 per AF.¹⁶⁵

All local rental pools provide for one-year terms, except that, in District 1, carryover of rented water in storage may be allowed if the renter owns available reservoir space.¹⁶⁶ The Water Supply Bank rules allow the Director to

161. Upper Snake River Committee Rules, Rules 3.6, 3.7 (1991).

162. Jeffrey C. Fereday & Michael C. Creamer, *Swan Falls in 3-D: A New Look at the Historical, Legal and Practical Dimensions of Idaho's Biggest Water Rights Controversy*, 28 IDAHO L. REV. 573, 582-83 (1992).

163. Water supply Bank Rules, *supra* note 163, at Rule 4.1.

164. Interview with Glenn Saxton, Idaho Dep't of Water Resources (April 27, 1993).

165. Telephone Conversation with Ron Carlson, Water District No. 1 Water Master (Oct. 14, 1993).

166. See Water District No. 63 Rental Pool Procedures (1991); Water District NO. 65 Rental Pool Procedures (1991); Upper Snake River Committee Rules (1991).

approve rentals for terms up to five years. Applications to rent for periods longer than five years must be submitted to the Board for approval.¹⁶⁷

Activity among the state and local banks has also varied. The state bank has had very little activity during its existence. For the years 1991 and 1992 combined, District 63 had the next lowest level of activity (less than 5,000 AF) but leased all water made available to the bank. District 65 rented most of its available water (about 150,000 AF) over the same two year period.

The Upper Snake District (District 1) showed a marked difference in the level of activity between 1991 and 1992, due to a much lower water supply in 1992. In 1991, 201,300 AF of water was available with 86,140 AF rented for irrigation and 99,000 AF for hydropower and other uses. In 1992, less than 10,000 AF was available, all of which was rented for irrigation use.¹⁶⁸

C. Dry-Year Options

A relatively new concept for moving water, on a non-permanent basis, from agricultural to urban uses is the water supply option contract, or dry-year option. On a limited basis, this approach is being used to transfer irrigation water in order to provide a secure water supply to nonagricultural water users in times of water shortage. Under dry-year option contracts, the holder of the option has the right to buy water from the seller, and the seller agrees to make water available in the future under specified conditions and price. Generally, during low water supply years, water is transferred from irrigation use to a higher valued use where it is needed temporarily. The irrigator (seller) receives compensation from the buyer for the temporary use of water, yet retains his water right and the right to receive water during normal water supply years. Compared to permanent transfers, there may be fewer negative impacts on third parties.

What changes occur during the years the option is exercised? The temporary use will most likely involve a change in the place of use and, consequently, often requires a change in the point of diversion. Especially if the new use is in a different water basin, the change also may entail alteration of the return flow pattern associated with the original use. Even in the same basin, a change in the type of use (a common occurrence with dry-year options) also may affect return flows.

Dry-year options offer several benefits over out-right purchases of agricultural water rights. Harm to the local community and to the land, potentially a byproduct of water transfers when land is permanently taken out of production, can be reduced under dry-year option arrangements that keep agriculture in place in most years. Moreover, dry-year options may be a

167. Water Supply Bank Rules, *supra* note 163, at Rule 4.5.

168. IDAHO DEP'T OF WATER RESOURCES, WATER SUPPLY BANK: OVERVIEW OF LOCAL COMMITTEES (1993).

less costly mechanism for meeting some types of water supply demands than the purchase of water rights.

Of course, not all irrigation water rights are equally suited to dry-year options, and not all water supply problems can be solved with this type of arrangement. Michelsen and Young provide guidelines for evaluating the sufficiency of a proposed water option arrangement.¹⁶⁹ For example, the water right must provide a reliable water supply for the irrigation use during times of drought, and must also be sufficient for the original use during average water supply years. Another important consideration is whether the agricultural operation is capable of temporary suspension. Options are probably not appropriate for livestock operations, perennial crops or orchards. Equally important to the buyer is the total cost of the option arrangement compared to other sources of water supply, considering both the cost for gaining the legal right to exercise the option (negotiating and adjudicating the change), and the cost for physically linking the water with the buyer's system.¹⁷⁰

As yet there are a limited number of examples of dry-year option arrangements in the western states. The MWD has created these types of agreements with several organizations during the recent California drought. The following example illustrates how these options work.

1. Dudley Ridge Agreement with Metropolitan Water District

Anticipating a possible seventh year of drought, in the fall of 1992, MWD negotiated an agreement with Dudley Ridge Water District in King County for the transfer of a portion of Dudley Ridge's 1993 allocation of the State Water Project [hereinafter SWP] water supply.¹⁷¹ Dudley Ridge agreed to facilitate the sale of a portion of its 57,700 AF annual SWP water allocation to MWD for \$125 an AF.¹⁷² MWD agreed to buy all SWP water available to Dudley Ridge above the amount requested by the district's water users, if MWD received less than 50 percent of its SWP water entitlement.¹⁷³ Given the district's estimated need for permanent crop lands,

169. Ari M. Michelsen & Robert A. Young, *Optioning Agricultural Water Rights for Urban Water Supplies During Drought*, AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS (1993).

170. *Id.*

171. *See* Agreement between Dudley Ridge Water District and The Metropolitan Water District of Southern California for Transfer of 1993 Entitlement Water, Agreement No. 3849 (not dated) [hereinafter *Metropolitan Agreement*].

172. *Id.* This price would apply for water delivered at the Harvey O. Banks Delta Pumping Plant.

173. Under the SWP allocation rules, all entities receive a pro rata reduction if there is insufficient water to supply all users with 100 percent of their entitlement.

MWD figured it could purchase as much as 12,117 AF in 1993. In sum, Dudley Ridge users had no obligation to sell any of their allocated water supply, but MWD had a conditional obligation to buy water. If Dudley Ridge district farmers requested their full allocation, there would be no water available to transfer.

Assuming MWD's obligation to buy Dudley Ridge water is triggered, where would the water come from? Under the agreement, MWD committed to purchase all 1993 Dudley Ridge SWP water allocation in excess of the amount requested by district water users. Water users must make a commitment on their water requests for the season by April 1. Generally, this decision is dependent on the projected allocation of SWP water. The water users must pay for their full allocation amount, even if they receive a reduced amount due to an inadequate water supply. Therefore, at some percentage of projected water supply, a farmer or the farmer's bank may decide it is no longer economically feasible to plant certain fields or crops. A water user may decide, instead, to make his water available for purchase by MWD. If the farmer requests an amount representing his share of the projected water allocation, but then receives a greater water amount than was projected, there may be additional excess water available for transfer to MWD. Regardless of how water becomes available for sale to MWD, under the agreement, compensation is paid to Dudley Ridge District, and the district, in turn, compensates individual farmers.¹⁷⁴

What impact would a transfer to MWD have on lands within the Dudley Ridge service area? Temporary transfers have already occurred as a result of recent water shortages, and many lands in the district have been fallowed in past years. In 1992, only about 17 percent of the lands within the district's service area were irrigated. Therefore, land use changes are already occurring in response to water supply conditions.¹⁷⁵ This type of transfer may actually be viewed by the irrigators as a way to survive the drought.¹⁷⁶

Telephone Conversation with Dale K. Melville, Provost & Pritchard, Inc., Fresno, Consultants for Dudley Ridge Irrigation District (June 8, 1993).

174. Telephone Conversation with Dale K. Melville, Provost & Pritchard, Inc., Fresno, Consultants for Dudley Ridge Water District (May 27, 1993).

175. See DUDLEY RIDGE WATER DISTRICT, INITIAL STUDY FOR 1993 DUDLEY RIDGE WATER DISTRICT/ METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA WATER TRANSFER (Sept. 1992).

176. The preamble to Dudley Ridge's agreement with MWD states:

[D]ue to ongoing drought conditions, the District and its growers have suffered significant reductions in deliveries of water from the SWP in every year since 1990, resulting in significant economic loss and hardship in the District's service area; . . . because the state is predicting shortages in 1993 deliveries to the District, growers within the District anticipate increased unit water costs due to decreased supplies, resulting in further economic

MWD received 85 percent of its SWP water allocation in 1993, so the agreement with Dudley Ridge was not triggered. Under the agreement, MWD could have entered into negotiations with the District to purchase 1993 SWP allocation water, but did not do so. Dudley Ridge entered a similar agreement with the Santa Clara Valley Water District for the 1993 year, which also was not triggered because of the relatively generous SWP water allocation.¹⁷⁷

D. Land Fallowing Agreements

Land fallowing can be practiced in order to make water available for water banks, or for dry-year option contracts, but it can also be the basis for private agreements to make water available on a short-term basis. That is, a water user who has historically irrigated lands can agree to stop irrigating some or all of the lands for one or more seasons, and to transfer the water instead to another water user. In exchange, the original water user can be compensated, typically based on the number of acres fallowed. The user wants assurance that the use can be resumed once the agreed-to fallowing period has passed, with no forfeiture of the water right. In contrast to dry-year option contracts which can be triggered again and again, depending on water supply conditions, land fallowing agreements generally begin and terminate on specific dates. The following example, again involving the Metropolitan Water District, illustrates this approach.

In 1992, MWD and Palo Verde Irrigation District [hereinafter Palo Verde] entered an agreement for a two-year land fallowing program. Palo Verde landowners and lessees, under 63 separate agreements, are fallowing 20,215 acres of Palo Verde lands, for this period, in exchange for compensation from MWD. Water saved as a result of the fallowing will be stored in Lower Colorado River Basin reservoirs, for use by MWD, which has until the end of 1999 to use all saved water.¹⁷⁸

losses which could be minimized by an opportunity to sell some or all of their 1993 SWP allocations.

Metropolitan Agreement, *supra* note 175, at 1-2.

177. The agreement with Santa Clara was "stacked" on top of the Metropolitan Agreement, so that Santa Clara's option to buy water would have been triggered by an SWP water allocation of between 50 and 80 percent. Telephone Conversation with Dale K. Melville, Provost & Pritchard, Inc., Fresno, Consultants to Dudley Ridge Irrigation District (June 8, 1993).

178. Agreement for the Implementation of a Test Land Fallowing Program and Use of Saved Water (Program Agreement) by and among the United States, Palo Verde Irrigation District, Metropolitan Water District of Southern California, Imperial Irrigation District, and Coachella Valley Irrigation District (May 29, 1992) [hereinafter Land Fallowing Agreement].

Palo Verde is one of four water supply organizations with rights to Colorado River water pursuant to the Boulder Canyon Project Act [hereinafter Canyon Act].¹⁷⁹ Under the Canyon Act, the United States constructed Hoover Dam and Lake Mead, and entered water delivery contracts with Palo Verde, MWD, IID, and Coachella Valley Irrigation District. These contracts incorporate previously agreed to priorities among the four parties and, under the contracts, the three agricultural providers hold the first three priorities, with MWD holding the fourth and fifth priorities. MWD's goal in entering the land following agreement is to increase its allocation of Colorado River water. To accomplish this, Palo Verde as well as Imperial and Coachella have agreed not to use or demand the saved water.¹⁸⁰

How much water is expected to be saved? The goal is about 200,000 AF over the two years of the program. This figure is based on an assumption contained in the agreement that 4.6 AF per fallowed acre per year, less any water applied, is saved.¹⁸¹ The agreement states that 5.1 AF or more is the actual estimate of water to be saved, but that this amount has been reduced "in order to conservatively provide an assured quantity of Saved Water to MWD, potentially cover associated evaporating losses in Colorado River system storage and develop benefits to Colorado River system storage and/or to all the parties holding contracts for Colorado River water delivery and to facilitate administration of the Program."¹⁸² The agreement also establishes a measurement committee, comprised of representatives from each of the districts and the Department of Interior. The committee reviews the status of the fallowed acres, calculates the amount of saved water available to MWD, and estimates the actual water saved by the program.¹⁸³ To assure that water will be saved, the agreement includes a number of controls, including the requirement that participants develop a land management plan which must be submitted to MWD for approval, and which the participant has contractually agreed to follow.¹⁸⁴ Any water saved in excess of the 4.6 AF per acre becomes available for allocation by the Secretary of the Interior, and any of MWD's saved water not used by the year 2000 becomes available to Colorado River Basin states.¹⁸⁵

179. 43 U.S.C. § 617-619(b)(1988).

180. Land Fallowing Agreement, *supra* note 182, art. II, § 2.1.

181. *Id.* § 2.2.

182. *Id.*

183. *Id.* art. IV, § 4.3.

184. *Id.* attach. 1.

185. Jan Matussek, Asst. General Manager, Metropolitan Water District of Southern California, Presentation at Water Organizations in a Changing West, conference, Natural Resources Law Center, (June 1993).

The obligations of MWD under the agreement include the payment of compensation as well as a commitment to undertake administrative tasks. MWD is paying landowners and lessees \$620 per acre per year, totalling about \$25 million over the two-year period. In addition, Palo Verde will receive \$500,000 from MWD to cover administrative costs. MWD is also charged with administering, monitoring and enforcing the 63 individual fallowing agreements, and with preparing and distributing both periodic status reports and a final comprehensive report following completion of the program.¹⁸⁶

VI. Conclusions and Recommendations

We begin, here, with the premise that the movement of some water from agricultural use to urban use will continue and, properly managed, will benefit the West. Western water law does a thorough job of protecting the interests of water users but is lacking in a number of other important respects. It strongly encourages one particular type of transfer—that involving the permanent sale of a water right and the permanent dry-up of all of the land previously irrigated with that water right. However, it provides little incentive to make more efficient use of water under established water rights. Water law in many states fails to facilitate temporary transfers and it fails to consider most so-called third party concerns raised by water transfers. In this section we explore options that would help to address these deficiencies of western water law.

A. Incentives to Save Water

Efficiency has not been a primary objective of western water law and, in some important respects, prior appropriation principles actually discourage good water management.¹⁸⁷ In some circumstances it may be possible to meet existing demands supplied by a water right with less water than has been diverted and used historically and to make the saved water available for new uses. As discussed in Part III, several states now provide legal recognition of this approach.

Clarification is needed, in water law, that "saved water" can be made available for a different beneficial use and will not be regarded as "waste" or otherwise made unavailable to the owner of the water right. Incentives to the owner of a water right to take the steps necessary to make water savings would be provided by insuring that the right to use the saved water retains

186. *Id.* See Land Fallowing Agreement, *supra* note 182, attach. 1.

187. George W. Pring & Karen A. Tomb, *License to Waste: Legal Barriers to Conservation and Efficient Use of Water in the West*, 25 ROCKY MTN. MIN. L. INST. 1 (1979), Steven J. Shupe, *Waste in Western Water Law: A Blueprint for Change*, 61 OR. L. REV. 483 (1982).

the priority of the original water right and that the owner of the water right can make use of the saved water or sell the right to that use to another.

At the same time it is important to clarify the circumstances in which water may be saved and transferred to a new use. First, it should be clear that this opportunity extends only to water presently diverted and applied to use under a valid existing right and not, for example, to water consumed by cottonwood trees growing along a river.¹⁸⁸ Second, any such savings may not result in injury to existing water rights. Thus, for example, return flows relied on by downstream users would not be transferable through this process if the transfer would injure such users. Third, there should be a requirement for mitigation of wetland losses resulting from water savings.

Another option is to restrict the right to save water to a designated state agency. State funds would be used to make improvements producing water savings, and the uses of the saved water would be determined by the agency. This approach, modeled on the Trust water rights program in the State of Washington, would assure public control over efforts to change water uses through efficiency measures and would help to respond to concerns that spurious plans to save water might necessitate substantial expense by water users in reviewing and, if necessary, challenging such efforts.

B. Water Banking

Several states in recent years have instituted some kind of water banking mechanism to facilitate water transfers. Banks operate in a variety of ways, but their primary function is to help match those with water rights with those needing water. Commonly, the transactions are not for permanent transfers of rights but for rentals or leases of the right for some specific period of time. A water bank provides an organized process for making the transfer, generally more streamlined than the process for permanent transfers and changes of use, thus reducing the sometimes

188. In *Southeastern Colorado Water Conservancy Dist. v. Shelton Farms, Inc.*, 187 Colo. 181 (1974), the applicant sought to obtain a water right to "salvaged" water that would result from eliminating cottonwood trees growing along the lower Arkansas River. The Colorado Supreme Court correctly denied this claim. This decision, and the subsequent legislative provisions precluding the eradication of phreatophytes as a means of obtaining a plan for augmentation (COLO. REV. STAT. § 37-92-103(9)(1990)), do not preclude salvage of water through removal of phreatophytes growing along ditches or the borders of irrigated fields so long as the salvager uses the water within the same system. There are good policy reasons for precluding the wholesale elimination of naturally growing cottonwood trees along rivers and streams. Phreatophytes that grow because water has been diverted from these streams present more difficult questions. The policy rationale for precluding the salvage of diverted water for purposes of obtaining a plan for augmentation while a diverter may salvage and use such water within its system is less persuasive. See Michael Gheleta, *Water Use Efficiency and Appropriation in Colorado: Salvaging Incentives for Maximum Beneficial Use*, 58 U. COLO. L. REV. 657 (1988).

substantial transaction costs involved in effecting a transfer. Water rights placed in a bank are protected from forfeiture or abandonment challenges. Banks provide a means whereby the owner of a water right can make this right available for another use without permanently giving up the right. This gives the owner a choice between using the right for his own benefit or gaining some benefit from another's use.

Such an approach offers a number of possible benefits for western states. A bank might help create markets in areas of the state where such opportunities do not presently exist. Particularly attractive would be the creation of regional or local banks, perhaps operated by a committee of water organization representatives and other interests, that could utilize existing storage (including groundwater recharge) within the area to bank and make available appropriated, historically used, but currently unneeded water.

Banks might also facilitate the development of rotating land fallowing schemes and dry-year option arrangements, discussed in Part V. Thus, for example, agricultural lands served by a common water supply system could put in place a land fallowing program, rotating the acreage taken out of irrigation on a regular basis among the lands in a manner that provides a reliable annual supply of water to another user, but without the necessity of permanently ending agricultural production in the area.

A number of issues would need to be addressed in creating a bank. As with saved water, banked water could only come from valid, existing water rights in actual use. Banked water could not result in injury to other water rights. If possible, the process for evaluating injury should be simplified from that required for a permanent transfer—perhaps by the use of generalized assumptions or rules of thumb regarding such things as consumptive use that could be modified, if necessary, in specific cases. Consideration should be given to creating an expedited administrative review process for evaluating injury and other requirements for transfers of banked water. The price at which banked water would be bought and sold would need to be addressed as would be any administrative charges necessary for bank administration. Protections for third party interests also would need to be determined.

C. Recommendations

Water transfers are a valuable and necessary means of meeting water needs, but they should be utilized only to the degree that they provide real benefits to the state and that their adverse third party effects can be mitigated. We see a growing convergence of view about the values and uses that should be protected and the manner of that protection. We offer the following recommendations:

- 1. Emphasis should be placed on facilitating transfers that do not necessarily require permanent loss of agricultural activity.**

We recommend that states authorize the creation of water banks, clarify the procedure and requirements for temporary transfers, and provide

for the transfer of saved water. We need a much richer set of options for the use of water presently dedicated to agricultural use and for moving water from agricultural to nonagricultural uses in the West. In our view all of these options are potentially valuable and should be made available under appropriate conditions.

2. Water rights transfers should be subjected to specific requirements to address third party effects.

Our survey of developments in western water law suggests that proposed water transfers should be evaluated for their effects on water quality, on fish and wildlife, and on the local economy. We suggest a standard of *no net degradation* for water quality and for fish and wildlife. So long as any negative effects on these values can be avoided or mitigated, the water transfer could go forward. As a part of the change of water right process, the impacts, if any, of the transfers, would have to be identified. Then, measures to assure no net degradation would need to be developed.

Assuring that review entities factor in public values may require some guidance from legislatures. For example, legislatures could, like California, specifically mandate consideration of the proposed transfer's impact on fish, wildlife, and other public values.¹⁸⁹ Alternatively, legislatures could provide a general mandate that the "public interest" be considered, and defer to the discretion of the courts on the values encompassed by this phrase.¹⁹⁰ Lastly, legislatures could establish a New Mexico-like basin planning process to identify concerns of the residents of the area that would then be factored into water court decisions.¹⁹¹

Measuring and addressing local economic impacts are more problematic. We suggest that all transfers be subjected to a charge per acre-foot of water changed in use and that the proceeds from the assessment go into a fund available for use in the local area from which the water is transferred. The law of several states presently imposes a charge on water to be transferred for use outside the state.¹⁹² The same charge imposed on in-state transfers would help meet the requirements of the Commerce Clause of the U.S. Constitution as interpreted in *Sporhase v. Nebraska ex. rel. Douglas*.¹⁹³

189. CAL. WATER CODE § 386 (West Supp. 1994). See Table 1.

190. See e.g., NEV. REV. STAT. ANN. §§ 533.370(3), 345 (Michie 1991).

191. H.B. 337, 1987 N.M. Laws ch. 182.

192. See, e.g., COLO. REV. STAT. § 37-81-104 (1990).

193. 458 U.S. 941 (1982). To avoid running afoul of the constitutional protection for interstate commerce, state laws may not unreasonably burden such commerce. Transfer of water across state lines constitutes interstate commerce and thus laws regulating such transfers are subject to this constitutional limitation. Imposing the same

Moreover, such a charge would provide funds that could be used to address some of the local impacts that might result from the transfer. For example, monies from the transfer fund could be used to offset losses in property tax collections or to provide other kinds of offsetting benefits.

3. Out-of-basin transfers should be subjected to the additional requirements.

Out-of-basin transfers are 100 percent consumptive to the basin of origin. Transbasin diversions already exist. Additional transfers should occur only where the proposed user can demonstrate efficient use of presently developed supplies of water, can provide assurance that any additional water transferred out of the basin will be used in an efficient manner, and can show that this source of supply is the best available alternative.

Resource Guide

Arizona Law Review, *Water Transfer Symposium Issue*, 31 ARIZ. L. REV. (1989).

Symposium issue covering water transfer law in Arizona, California, Colorado, New Mexico, Utah, and Wyoming. Issues covered for each state include the legal framework, procedural aspects, and agency administration of water rights in the Western States. Articles include Brian E. Gray, *A Primer on California Water Transfer Law*, 31 ARIZ. L. REV. 745 (1989) (summary of water rights law in California, the statutory and common law rules affecting water transfers, and the legislative efforts arguably ineffective to induce water transfers) and Lawrence J. MacDonnell, *Changing Uses of Water in Colorado Law and Policy*, 31 ARIZ. L. REV. 783 (1989) (a comprehensive survey of Colorado law covering the transferability of water rights. including a detailed discussion of the law governing changes of appropriative water rights and other legal mechanisms available for changing water use. The article concludes with an overview of water supply organizations and recommendations to improve Colorado transfer law and procedure).

Jeffrey C. Fereday & Michael C. Creamer, *Swan Falls in 3-D: A New Look at the Historical, Legal and Practical Dimensions of Idaho's Biggest Water Rights Controversy*, 28 IDAHO L. REV. 574 (1992).

Provides an historical overview of the Swan Falls controversy and its effects on Idaho water policy. Focuses on how the Swan Falls statutes and the Idaho Department of Resources' rules affect both flows in the Snake River and the granting of new water rights. The author concludes that the Department is implementing the statutes with novel approaches to water law and policy that

payment requirement on intra-state transfers as exists on interstate transfers would go a long ways toward supporting the reasonableness of the burden.

are incompatible with the Swan Falls statutes, the traditional principles of the prior appropriation doctrine, and possibly with the expectations of irrigators and other appropriators whose new rights are made possible by the settlement.

Michael Gheleta, *Water Use Efficiency and Appropriation In Colorado: Salvaging Incentives for Maximum Beneficial Use*, 58 U. COLO. L. REV., 657 (1988).

Examines the need to encourage greater efficiency of water use to meet increasing regional water needs. The author addresses the effects of water conservation efforts on the agricultural sector and other appropriators. The prevailing law in the western states pertaining to increased efficiency of water use is also reviewed, specifically, the actions of the Colorado judicial and legislative authorities are analyzed.

George A Gould, *Water Rights Transfers and Third-Party Effects*, 23 LAND & WATER L. REV. 1 (1988).

Examines third-party effects and their impact on water rights transfers and water marketing. Considers the relationship between the nature of surface streams and the manner in which water rights are defined under the appropriation doctrine. Discusses the redefinition of water rights in terms of consumptive entitlement as a possible solution to third-party effects, while arguing that such redefinition is impractical. The author suggests approaches to minimize the difficulties which third-party effects create for water rights transfers.

Steven J. Shupe, *Waste in Western Water Law: A Blueprint For Change*, 61 OR. L. REV. 483 (1982).

Critically reviews western water law and attempts to develop a means for adapting it to modern needs in order to solve the problems resulting from wastefulness. The author concludes that the existing legal framework can be molded into an effective resource management tool.

West-Northwest Journal of Environmental Law, Policy, Thought, *Western Water Law*, 1 WEST-NORTHWEST (1994).

Forum on Western Water Law with a focus on California issues. Articles include Joseph L. Sax, *Understanding Transfers: Community Rights and the Privatization of*, 1 WEST-NORTHWEST 13 (1994) (examination of water transfers, third-party effects, and the rights of communities essential to successful long-term water policy), Brian E. Gray, *The Market and the Community: Lessons From California's Drought Water Bank*, 1 WEST-NORTHWEST 17 (1994) (analysis of legal issues associated with the transfer of water from users in Yolo and Solano counties to the 1991 Emergency Drought Water Bank), Richard W. Wahl, *Market Transfers of Water in California*, 1 WEST-NORTHWEST 49 (1994) (economic discussion of increased market efficiency and participation in the California Water Bank as an alternative to traditional legal solutions), and A. Dan Tarlock, *From Natural Scarcity to Artificial Abundance: The Legacy of California Water Law and Politics*, 1 WEST-

NORTHWEST 71 (1994) (historical analysis of the various legal and political changes in California water policy over the past century).

Water Transfer Law Databases

The databases listed below provide legal, technical, and scientific information on water management issues, including water transfers, and are available through Westlaw by using the cited name.

California State Water Resources Control Board Opinions (CAENV-ADMIN)
(Also on LEXIS)

Contains documents released by the California State Water Resources Control Board and the California Department of Energy Resources, Conservation and Development Commission. Each document is an order, opinion, or report prepared by the state agency concerning environmental law issues. Coverage begins in 1957 for the State Water Resources Control Board and in 1982 for the Department of Energy Resources, Conservation and Development Commission.

Environmental Bibliography (ENV-BIB)

Covers the areas of general human ecology, atmospheric studies, energy, land resources, and water resources. Citations and abstracts are included for over 300 periodicals.

Geobase (GEOBASE)

Covers the worldwide literature on geography, geology, ecology and related disciplines. Includes citations and abstracts to articles published in the journals Geographical Abstracts, Geological Abstracts Series, and Ecological Abstracts. Over 2,000 journals are covered completely with partial coverage of an additional 3,000 monographs, conference proceedings, and reports. Coverage includes 1980 to the present. Ph.D. and masters theses indexing beginning in 1989 is also included.

Pollution Abstracts (POLLUTION)

Provides citations and abstracts to environmentally related literature on pollution, its sources, and its control. Subjects covered include air, noise, and water pollution, environmental quality, pesticides, radiation, and solid wastes.

Water Resources Abstracts (WR-ABS)

Provides citations and abstracts to the collections of over 50 water research centers and institutes in the United States. Topics covered include water resources economics, ground and surface water hydrology, and metropolitan water resources planning and management.