AGRICULTURAL TO URBAN WATER TRANSFERS IN COLORADO: AN ASSESSMENT OF THE ISSUES AND OPTIONS

by

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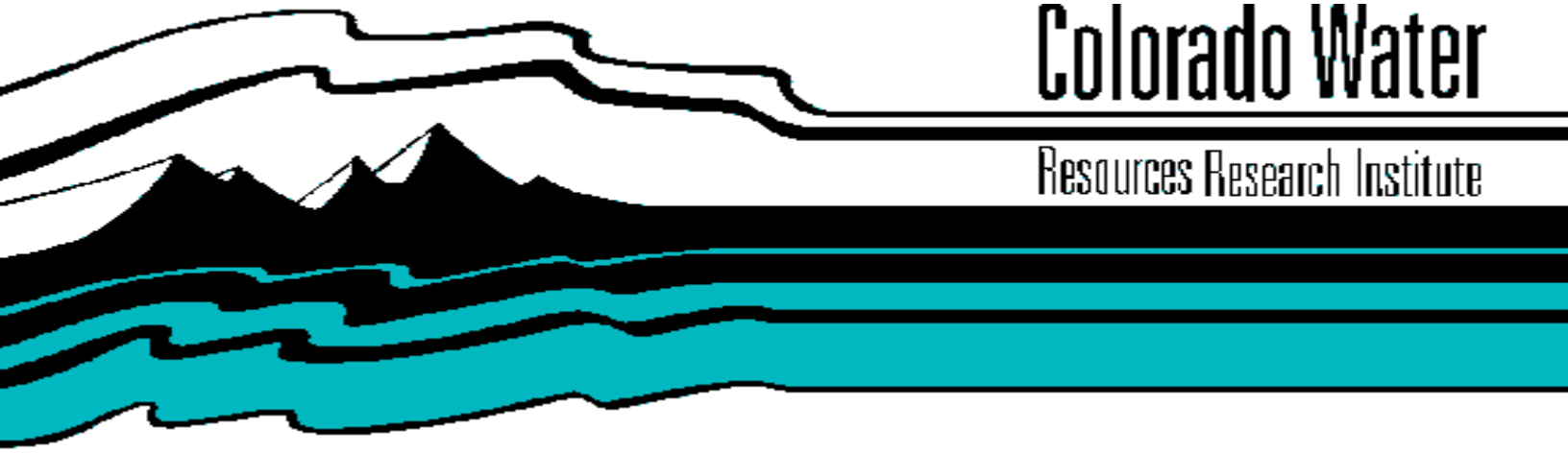

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AGRICULTURAL TO URBAN WATER TRANSFERS IN COLORADO: AN ASSESSMENT OF THE ISSUES AND OPTIONS

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ABSTRACT

With constraints on the additional development of water supplies and in the face of growing urban demands for water cities have increasingly been turning to the water transfer process as a means of expanding their supplies. Urban encroachment onto formerly irrigated croplands long has caused the use of irrigation water to change to urban use. Now cities are reaching out greater distances to find agricultural water that can be transferred to urban use. To make the transfers economically warranted the size of the transfers tends to be large. This transfer of large quantities of water from often rural areas with little alternative economic opportunity is prompting many western states to revisit their water transfer laws.

This report examines approaches taken in the western states to both better facilitate the water transfer process and better address so-called third party effects. The report focuses initially on water transfer law and procedure in Colorado and notes that Colorado emphasizes a single kind of transaction--one in which there is a permanent purchase of a water right and a consequent total cessation of the associated activity (most commonly, irrigation).

The report then provides a detailed evaluation of a variety of approaches used in other western states involving (1) conditioning water transfers, (2) requiring reduced water use, (3) providing incentives to conserve, and (4) facilitating short-term transfers.

Finally recommendations are made for changes in Colorado law and procedure providing incentives to save water, establishing water banks, and addressing third party effects.

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SECTION 1: INTRODUCTION

The major source of new demand for consumptive use of water in the West today comes from the growing urban sector. The population of the West long has been concentrated in its urban areas, but the dominant demand for the additional development of water until recently has been for irrigation use. Even now, 80 percent of all water withdrawals in the West from both surface water and groundwater go to agricultural uses.

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. Concern about protection of remaining undeveloped streamflows and about mining of groundwater limits the ability of these sources to meet new demands. Increased attention has turned to 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 value of the water in urban uses. Moreover, the cost of developing new supplies of water has increased to a point that transfers of agricultural water are likely to be less expensive in many cases. Cities generally 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 Colorado (apparent also in other parts of the West): (1) cities are purchasing water rights used on agricultural lands 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). Transfers have moved from a gradual, incremental process of change to—in some cases—highly visible,

sometimes rather dramatic transactions.

The implications of large-scale, long distance water transfers are prompting review of state water transfer policies. This completion report begins with a brief summary of water rights transfer experience in Colorado and a discussion of Colorado law applying to transfers. It summarizes approaches found in the western states addressing agricultural to urban water transfers. These approaches are discussed under four broad headings: (1) Conditioning Water Transfers; (2) Regulatory Approaches to Reducing Agricultural Use; (3) Providing Incentives to Conserve; and (4) Short-Term Transfer Approaches. Finally, we offer several recommendations for consideration in Colorado.

SECTION 2: WATER TRANSFERS IN COLORADO

2.1 Transfer Experience

An 1891 case presented the Colorado Supreme Court with the question of whether an irrigation water right could be transferred with its original priority to urban use from land outside the urban area.[1] The City of Colorado Springs needed to improve and expand its water supply from Fountain Creek and intended to do so by purchasing senior agricultural water rights and transferring their use to the city. The court explicitly supported the right of the city to separate the use of the water right from the land on which it had been applied and to move it for use within the city.

Since this decision more than 100 years ago (if not before) water rights in Colorado have shifted from agricultural to urban use with some regularity. Most of these transfers have occurred in the rapidly urbanizing Front Range of the state. The rate with which this was occurring in the 1960s and 1970s caused some observers like Raymond Anderson to sound the alarm. Anderson and other colleagues at Colorado State University carefully researched the transformation of agricultural lands in the northern part of the Front Range at this time and noted the loss of high quality agricultural lands

[1] Strickler v. City of Colorado Springs, 16 Colo. 61, 26 P. 313 (1891).

and the weakening of the agricultural economy.[2]

The South Park area of Colorado, referred to by some as Colorado's Owens Valley[3], is probably the earliest example in this state of cities buying up large areas of distant agricultural lands to be able to transfer the water rights to urban uses. A high mountain valley averaging 9,000 feet in elevation, South Park contains the headwaters of the South Platte River which, on its way eventually to the Platte and Missouri Rivers, passes through Denver and other Colorado Front Range metropolitan centers. In the 1930s Denver began the process of buying large cattle ranches in South Park and transferring the irrigation water used to grow alfalfa and other pasturage to its urban water supply. In the 1970s and 1980s Aurora and Thornton acquired most of the remaining ranches and water rights. Irrigated acreage in South Park declined from 35,000 acres in 1969 to less than 4,000 acres in 1991.[4]

Transfers of agricultural water from the Lower Arkansas Valley in Colorado have captured considerable attention in recent years. Agriculture continues to be a central part of the economy of this part of the state, but the loss of sugar beet processing facilities in the 1960s and 1970s (and thus the demand for production of sugar beets) noticeably weakened the agricultural economy in the area. Major purchasers of agricultural water rights in the Lower Arkansas have been the City of Pueblo and Pueblo West Metropolitan District, located upstream on the Arkansas River; the City of Colorado Springs, located upstream on a tributary to the Arkansas; and the City of Aurora, located east of Denver in the South Platte drainage.

Perhaps the most dramatic effects of agricultural to urban water transfers can be

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[2] R.L. Anderson, N.I. Wengert, and R.D. Heil, "Physical and Economic Effects on the Local Agricultural Economy of Water Transfers to Cities," Environmental Resources Center Completion Report No. 75, Colorado State University, October 1976.

[3] The movie "Chinatown" dramatized the purchase of water from the remote Owens Valley in the early part of the century to support the rapid growth of the City of Los Angeles. See also William L. Kahrl, Water and Power (Berkeley: U. of California Press, 1982).

[4] Lawrence J. MacDonnell, Charles W. Howe and Teresa A. Rice, "Transfers of Water Use in Colorado," Chapter 3, in The Water Transfer Process as a Management Option for Meeting Changing Water Demands, Vol. II, Natural Resources Law Center (April 1990).

seen in Crowley County. Construction of the Colorado Canal in the 1890s made possible the irrigation of much of the land in this area. Unfortunately, the water rights associated with the canal are relatively junior in priority on the Arkansas River, and the supply of water to those holding shares in the Colorado Canal varies dramatically from year to year. Most of the shares now are owned by Colorado Springs and Aurora, and irrigated acreage in Crowley County has declined from 68,000 to 4,000 acres.

The purchase and transfer of a majority of the shares in the Rocky Ford Ditch serving land near Rocky Ford, Colorado to Aurora provoked an aggressive response by other water users in the Lower Arkansas. Most of these shares had been owned by the American Crystal Sugar Company and were sold to a Canadian investment company after the sugar company closed its processing facility in Rocky Ford in 1977. As a condition of changing the water right Aurora agreed to establish a natural ground cover on all lands to be taken out of irrigation.

In December 1991, a company wholly owned by Houston-based Coastal Corporation offered shareholders in the Fort Lyon Canal Company about $2,200 per share of canal company stock on condition that it must acquire a majority interest in the canal company. Transfer of this amount of shares would mean the dry-up of at least another 48,000 acres of irrigated land in the Lower Arkansas—close to the total of 56,000 acres taken out of irrigation in the Lower Arkansas since the 1950s. The company's offer was unsuccessful, but it heightened awareness of the concerns raised by such transfers.

Finally, the City of Thornton's purchase of 47 percent of the shares of the Water Supply and Storage Company in the Poudre Basin in northcentral Colorado prompted a strong reaction from water users in this area. Thornton purchased shares through private brokers who did not inform the sellers of the actual purchaser. Thornton is located 50-60 miles to the southeast of the lands irrigated by Water Supply and Storage, and the new water use will require construction of a pipeline to move the water out of the Poudre to the city. The change of water right proceeding involved 17 weeks of trial at a substantial cost to all parties.

Changes of water rights involving a change from irrigation to other types of use are common in Colorado. Between 1975 and 1984, 858 applications were filed seeking a

change of water use. About 67 percent of this total involved a proposed shift in water use from primarily agricultural to primarily non-agricultural purposes. Another ten percent involved new uses within the agricultural sector. As of July 1988, 689 of the applications had been approved by state water administrators or the court.[5]

Though agricultural to urban water transfers are not unusual, they are nevertheless controversial in Colorado as in other parts of the West. Colorado law governing transfers is summarized in the following section. In general, policy in Colorado supports the ability of a water right owner to sell that right to another and to make changes of use of the right, subject only to the condition that no other water rights are thereby injured.

2.2 Colorado Transfer Law

A water right, under Colorado law, is a property right and, more specifically, a priority right to the use of water. Based in part on this view of water rights as property rights, in the late 1800s Colorado courts ruled that a water right can be transferred and changed, including a change in the point of diversion and place of use, so long as there is no injury to other water rights holders.[6] The court adopted the position that the right to sell the priority to the use of water was comparable to the right of possession and use of the water.[7] In 1899, these concepts were recognized in a statute authorizing a change in the point of diversion.[8]

Appropriative water rights contain a number of elements, most of which may be

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[5]Lawrence J. MacDonnell and others, The Water Transfer Process as a Management Option for Meeting Changing Water Demands, Vol. I, Natural Resources Law Center (April 1990), at page 26.

[6]Strickler v. City of Colorado Springs, 16 Colo. 61, 26 P. 313 (1891); Fuller v. Swan River Placer Mining Co., 12 Colo. 12, 19 P. 836 (1888). Much of the material in this section of the report was adapted from Lawrence J. MacDonnell, Charles W. Howe and Teresa A. Rice, "Transfers of Water Use in Colorado," Chapter 3, in The Water Transfer Process as a Management Option for Meeting Changing Water Demands, Vol. II, Natural Resources Law Center (April 1990); and Lawrence J. MacDonnell, "Changing Uses of Water in Colorado: Law and Policy," 31 Ariz. L. Rev. 783 (1989).

[7]Strickler, 16 Colo. at 70, 26 P. at 316.

[8]Act of April 6, 1899, ch. 105, 1899 Colo. Sess. Laws 235.

changed under Colorado law. Generally, there is a specific point of diversion. There is a specific rate of diversion in the case of direct flow rights and a volumetric quantity of water in the case of storage rights. Water rights are characterized by specified types of use and have an implied or express time and place of use. By statute, change may be made in the point of diversion, in the type, place, or time of use, or between direct flow and storage rights.[9]

2.2.1 Standards Imposed in Defining the Right to be Transferred

As a threshold matter in transfer proceedings, Colorado courts may consider the scope of the original water right, and how that right has been historically exercised. In many of the early decrees the elements of the water right were not clearly specified. Direct flow rights are commonly described in terms of a maximum flow rate with no volumetric limitation. Similarly, there is often no specified time of use, although a time of use might be implied by the type of use. For example, an irrigation water right is generally limited to the usual irrigation season in the area of use whereas domestic water use is assumed to be year-round. Where water rights are decreed for multiple types of use, which is not unusual in Colorado or other areas of the West, establishing a time, place, and quantity of use becomes more problematic, and will depend on actual use.

Historic use patterns provide a potential limitation on the transfer of a water right. In considering how much water might be changed or transferred, courts look behind the decree to the historical practice of diversion and beneficial use of the water.[10] Many of the early decrees provided rates of diversion well in excess of the water actually diverted and used. To allow an enlarged use of water based on the decreed amount might result in injury to subsequent appropriators. As a result, Colorado courts during transfer or change proceedings during the first half of this century considered whether the unused quantity—the difference between the decreed amount and the amount

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[9]Colo. Rev. Stat. § 37-92-103(5) (1990 & Supp. 1992).

[10]Eg., Green v. Chaffee Ditch Co., 150 Colo. 91, 371 P.2d 775 (1962); Weibert v. Rothe Bros., 200 Colo. 310, 618 P.2d 1367 (1980); May v. U.S., 756 P.2d 362, 371 (Colo. 1988).

historically used—had been abandoned.[11] In 1962, the Colorado Supreme Court clarified the characterization of this unused water in concluding that, regardless of the decreed diversion rate or amount, a water right exists only to the extent of actual beneficial use. Therefore, the unused quantity of water should not be called "abandoned" because it had never been legally perfected.[12] Regardless of how it is characterized, water decreed but not historically used may not be transferred.

Another consideration during review of change requests is how much water is sufficient for the purpose for which the appropriation was made. This is called the "duty of water" and, under Colorado water law, diversions are limited to this amount even if this is less than the decreed rate of diversion.[13] Duty of water, a term in use in several western states, has been defined by the Colorado Supreme Court as "that measure of water, which, by careful management and use, without wastage, is reasonably required to be applied to any given tract of land for such period of time as may be adequate to produce therefrom a maximum amount of such crops as ordinarily are grown thereon."[14] While the duty of water can work as a ceiling in calculating the transferable quantity of water, historic use could actually be less than the duty, in which case the amount historically used would become the ceiling.[15]

2.2.2 Additional Limitations on Transfers

Once the water right is more completely defined, considering historic use and the duty of water, other provisions of Colorado law may further affect the amount of water that can be transferred, or otherwise condition the proposed new use of the water right.

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[11]Fort Lyon Canal Co. v. Rocky Ford Canal, Reservoir, Land, Loan & Trust Co., 79 Colo. 511, 519-20, 246 P. 781,789 (1926); Farmers' Reservoir & Irr. Co. v. Town of Lafayette, 93 Colo. 173, 24 P.2d 756 (1933).

[12]Green v. Chaffee Ditch Co., 150 Colo. 91, 371 p.2d 775 (1962).

[13]Rominiecki v. McIntyre Livestock Corp., 633 P.2d 1064, 1067 (Colo. 1981).

[14]Farmers' Highline Canal & Reservoir Co. v. City of Golden, 129 Colo. 575, 584, 272 P.2d 629, 634 (1954).

[15]*See* Weibert v. Rothe Bros., 618 P.2d 1367, 1371-72 (Colo. 1980); Orr v. Arapaho Water and Sanitation Dist., 753 P.2d 1217, 1223-24 (Colo. 1988).

The most fundamental of all requirements is that the change not injuriously affect the owner of, or persons entitled to use water under, a water right.

The issue of injury to other water rights is the most commonly disputed aspect of changing or transferring a water right. Injury can occur if the change of use of a water right causes an increase in depletion of the stream or a change in the timing of stream flows relied on by other water rights. Injury is inevitably a question of fact, and extensive engineering analysis may be involved in making such a determination.

While Colorado courts have often equated no injury with continuation of stream conditions at the time of other users' initial appropriation, any change in the point of diversion or the place, time or type of use is likely to alter stream conditions on a highly appropriated stream. Since 1954, Colorado courts have instead characterized the injury analysis in a way that has been described as "an exercise in balancing depletions."[16] This approach seeks to keep the stream intact by ensuring that the depletion of the stream from the new use does not exceed the depletion of the stream caused by the original use to the detriment of other water rights. To make this determination, courts will consider both the amount of water diverted and the amount of return flow to the stream. Historic use under this analysis, therefore, is measured by the depletion resulting from the use.[17]

Injury to other appropriators may also occur as a result of a change to water quality resulting from a transfer. For proposed transfers involving a plan for augmentation, water quality issues may be considered during the transfer process.[18] Changes to water quality resulting from a transfer generally will be allowed unless the changed quality renders the water unacceptable for existing downstream uses.[19]

A recent decision by the Division One Water Court explicitly requires, in a

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[16]Leonard Rice and Michael White, Engineering Aspects of Water Law 78 (1987).

[17]Danielson v. Kerbs Ag., 646 P.2d 363, 373 (Colo. 1982); also applied to storage rights in S.E. Colo. Water Cons. Dist. v. Ft. Lyon Canal Co., 720 P.2d 133 (Colo. 1986).

[18]Colo. Rev. Stat. § 37-92-305, (5) (1990). Plans for augmentation are discussed infra at Section 2.2.3.

[19]See Lawrence J. MacDonnell, "Water Quality and Water Rights in Colorado," Natural Resources Law Center Research Report, July 1989, at pages 18-25.

change-of-water right proceeding, protection of groundwater supplies relied on by those holding groundwater rights.[20] Thus, if irrigation return flows have supplied water through percolation to a tributary groundwater aquifer and a groundwater appropriator relies on this recharge, a change of an irrigation water right will be conditioned on providing replacement water in a manner that parallels—in amount, time, and location—the previously percolated return flows.

To encourage transfers of water rights, Colorado law specifically provides that injury to other water rights may be offset by imposing terms and conditions upon the transfer.[21] Several types of terms and conditions are suggested in the statute including setting parameters on the new use of water, relinquishing part of the right being changed or a related water right, and imposing limitations on the period of diversion.[22] In recognition of the fact that the effects of a proposed transfer may not be known until implementation, Colorado law also requires that all transfer decrees provide for retained jurisdiction by the court for reconsideration on the question of injury for some specified period determined necessary or desirable.[23] Transfer applicants must submit a proposed decree to the water court setting out a plan for preventing injury to other water rights in any case in which a statement of opposition has been filed. This requirement is intended to encourage discussions between the applicant and opponents prior to any formal hearing on the merits of the application.[24]

Colorado law also protects water users from injury to their water delivery system in situations where the users share common water facilities and water is to be removed from the system for use elsewhere. In general, established patterns of use may not be

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[20]Concerning the Application for Water Rights for the City of Thornton, Memorandum of Decision, Division One Water Court, August 15, 1993.

[21]Colo. Rev. Stat. § 37-92-305(3) (1990 & Supp. 1992).

[22]Id., § 305(4, 4.5).

[23]Id., § 304(6)(1990).

[24]Id., § 37-92-305(3) (1990 & Supp. 1992).

altered to the detriment of other shareholders.[25] The water court can use its general authority to impose terms and conditions on the transfer to protect the remaining shareholders. For example, a shareholder in a mutual ditch company proposing a water rights transfer may be required to relinquish a portion of his water right to compensate for ditch losses resulting from the transfer.[26] And the party seeking to sever his ditch company water right from his irrigated lands may be required to dry up his lands and take them out of the ditch company's system.[27] These water delivery protections are not uncommon in western states, and are discussed more fully in Section 3.1.2 of this report.

Furthermore, under Colorado law, mutual ditch companies can impose reasonable restrictions on transfers in their by-laws, such as requiring transfer approval by the companies' Board of Directors, and limitations on the manner, type and place of use.[28] For example, The Rio Grande Canal Water User's Association in southern Colorado limits the use of water to irrigation purposes, and makes the water appurtenant to the land.[29] Other companies, like the San Luis Valley Irrigation District, allow transfers of water only to other lands within the district, and even then, subject to the approval of the Board of Directors.[30] These types of restrictions will be upheld by a court unless they are found to be unreasonable or against public policy.[31]

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[25]See Lawrence J. MacDonnell, "Changing Uses of Water in Colorado," 31 Ariz. L. Rev. 783, 809 (1989), citing Great Western Sugar v. Jackson Lake Reservoir and Irrigation Company, 681 P.2d 484 (Colo. 1984).

[26]Boulder v. White Rock Ditch & Reservoir Company v. City of Boulder, 157 Colo. 197, 201, 402 P.2d 71, 74 (1965).

[27]MacDonnell, supra note 25, at page 809, citing Matter of Application for Water Rights of Certain Shareholders in the Las Animas Consolidated Canal Company, 688 P.2d 1102 (Colo. 1984).

[28]Colo. Rev. Stat. § 37-92-304(3.5) (1990).

[29]Articles of Incorporation, Rio Grande Water User's Association (1987), at Article IX.

[30]Rules and Regulations of the San Luis Valley Irrigation District, Article 1, Section 3, as amended March 6, 1990.

[31]Model Land and Irrigation Company v. Madsen, 87 Colo. 166, 285 P. 1100 (1930); see also Zoller v. Mail Creek Ditch Company, 31 Ct. App. 99, 498 P.2d 1169 (1972); Costilla Ditch Company v. Excelsior Ditch Company, 100 Colo. 433, 68 P.2d 448 (1937).

2.2.3 Conditions to Protect the Local Area

When water is removed from agricultural lands, the impact on the land can be severe. Weeds can replace valuable crops and threaten a neighbor's productive fields. Additionally, in many parts of the West, exposed soils may be blown away, wearing down the topsoil of the land and possibly creating problems for adjacent farms and houses. For this reason, the Colorado Legislature recently enacted provisions authorizing the water court to require the revegetation of lands from which irrigation water is removed.[32] Revegetation is defined as "the establishment of a ground cover of plant life demonstrated to be, without irrigation, reasonably capable of sustaining itself under the climatic conditions, soils, precipitation and terrain prevailing for the lands."[33] Since, generally, a portion of the water to be transferred is used to accomplish the revegetation, the water court retains jurisdiction over the transfer until the revegetation requirement is satisfied. At any time, the applicant may request a final determination from the court that no additional water must be applied to satisfy the revegetation condition.

2.2.4 Plans for Augmentation

Colorado water law contains a unique provision authorizing the adjudication of plans for augmentation. An augmentation plan is defined as:

> a detailed program to increase the supply of water available for beneficial use in a division or portion thereof by the development of new or alternate means or points of diversions, by a pooling of water resources, by water exchange projects, by providing substitute supplies of water, by the development of new sources of water, or by any other appropriate means.[34]

These plans originally were intended primarily as a way of integrating existing appropriations of tributary groundwater (closely linked hydrologically to surface water) into the priority system applicable to surface water appropriations. The major use,

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[32]Colo. Rev. Stat. § 37-92-305(4.5) (Supp. 1992).

[33]Id.

[34]Colo. Rev. Stat. §37-92-103(9)(1990).

however, has been to allow new, out-of-priority uses of tributary groundwater to proceed so long as "augmentation" measures are taken to protect existing water rights.[35] New development and use of tributary groundwater in fully appropriated areas are made possible through the replacement of all stream depletions resulting from the new use. Generally, this is accomplished through the retirement of existing consumptive water rights and, consequently, many changes of water rights in Colorado occur in connection with plans for augmentation. Other sources of replacement water are effluent from the use of imported water, and nontributary groundwater. Although there have been some concerns about the hydrologic uncertainties and the complexity in administration associated with many augmentation plans, experience to date has been generally positive.

2.2.5 Temporary Changes of Water Rights

Parties taking water from the same stream may, under Colorado law, temporarily loan or exchange water.[36] However, the only valid purposes for an exchange or loan under this statutory provision is to save crops or for using water in a more economical manner.[37] While a court decree is not needed to implement such a temporary change, written notice must be given to the division engineer which must include the duration of the change.[38] Other water users may challenge the temporary change on the basis of water rights injury. In the event of such a challenge, the proponent of the temporary change must show that no injury will result.[39]

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[35]See Lawrence J. MacDonnell, "Colorado's Law of 'Underground Water': A Look at the South Platte and Beyond," 59 U. Colo. L. Rev. 579 (1988).

[36]Colo. Rev. Stat. § 37-83-105 (1990).

[37]Id.

[38]Id.

[39]Bowman v. Virdin, 40 Colo. 247, 90 P. 506 (1907); see generally, MacDonnell, supra note 25, at pages 797-98.

2.2.6 Transfers Involving Special Categories of Water

Colorado law distinguishes several legal categories of water. The ability to transfer, and the rules that may condition or limit this ability, differ somewhat among the categories. For example, if groundwater is within one of eight designated groundwater basins within the state, it is legally classified as "designated groundwater," and its transfer must initially be authorized by the state ground water commission.[40] Another category of water in Colorado, imported or foreign water, is water that is introduced into a stream system from another, unconnected system. Because this water is not part of the native flows relied upon to fulfill in-basin water rights, it may be used and reused to extinction, providing an unusually flexible and therefore valuable source of water for transfer.[41] In evaluating a potential water transfer in Colorado, the impact of such legal categories must be considered.[42]

SECTION 3: WESTERN STATE APPROACHES TO TRANSFER AND REALLOCATION OF AGRICULTURAL WATER

In the West, a water right is a property right that, in general, can be sold and transferred from one use or place of use to another. Within this broad framework that allows water to move, however, western states vary in the manner in which they encourage or deter the transfer process, and the factors considered in deciding whether and under what conditions to allow such transfers or reallocations to occur. For example, Wyoming requires an evaluation of the impact a proposed transfer may have on the local economy, and may condition or deny a transfer based on this impact. Additionally, some states' laws encourage or mandate the conservation of irrigation water that is then available for reallocation to another use. Finally, many western states allow

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[40]See MacDonnell, supra note 25, at page 799, citing W-Y Ground Water Management District v. Goeglein, 196 Colo. 230, 233, 585 P.2d 910, 911 (1978).

[41]MacDonnell, supra note 25, at page 801.

[42]Other legal categories that are important to a transfer of water in Colorado are salvaged water, conditional water rights, contract water, interstate water and tribal water. For a discussion of these categories in relation to water transfers, see generally, MacDonnell, supra note 25, at pages 798-808.

for the short-term movement of water from irrigation to non-irrigation use. This section of the report will look at (1) conditions that may be imposed on agricultural to urban water transfers; (2) state laws and programs that mandate a reduction in agricultural water use; (3) state laws and programs that, through incentives, encourage a reduction in agricultural water use; and (4) state laws and programs that allow for short-term transfers of water from agricultural to other uses.

3.1 Conditioning Water Transfers

Traditionally, western states have uniformly protected other water rights while considering a request for a change of use of an existing water right. Beyond this, many states examine impacts on water users sharing the same delivery system as that of the transferor. Other potential consequences of a transfer, such as degradation of water quality or effects on the local economy, typically were not considered during the transfer proceeding. State laws, however, have been changing, in recognition of these third party impacts. Increasingly, states are requiring that both injury to water rights and impacts on other values be addressed as a condition of water transfers. In addition, a few states are taking a more comprehensive view of potential impacts of water transfers, and have adopted, or are considering adoption of, a statutory scheme that sets out these broader concerns.

3.1.1 Protection of Water Rights Generally

As discussed in Section 2.2 under Colorado transfer law, conditions are commonly imposed on water transfers in order to protect other water rights from injury. In general, appropriators have a right to the continuation of stream conditions existing at the time of appropriation.[43] Colorado law is perhaps more developed regarding protection of other water rights than any other western state.[44]

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[43]See discussion supra at Section 2.2.2.

[44]Compare descriptions of the water transfer laws of six western states (Arizona, California, Colorado, New Mexico, Utah, and Wyoming) in articles appearing in 31 Ariz. L. Rev. No.4 (1989).

3.1.2 Water Delivery Protections For Water Users Sharing Common Systems

In the West, where water sources are far apart and supplies often scarce, water supply systems have developed to move the water from where it is found to where it is needed. These systems, managed by a variety of public and private organizations, may involve an intricate web of canals radiating out from the main stream or source, and from these canals many water users take water, including agricultural users who divert water for use on their farms.

Water supply systems have developed so that the users in the system are necessarily linked. Collectively they are responsible for the cost of maintaining the system. They also share the water costs, in terms of evaporation and seepage losses, incurred in getting the water from its source to their farms. In situations where a low volume flow of water in a ditch or lateral would quickly dissipate or evaporate, they rely on the larger flow related to the many users in the system to create an adequate "head" to carry water along the ditch to the headgates.

Because of this interconnectedness, transfers of water both within and out of the system raise concerns for the remaining water users. Reducing the amount of water that is delivered through a ditch may reduce the head of water 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 structures. A transfer may also affect evaporation and seepage losses, for example, where the velocity of the ditch or stream is significantly reduced by the transfer. And, in general, the costs of operating and maintaining the system are not proportionately reduced. In fact, average costs may increase as a result of a transfer and resulting change in patterns of delivery. Such average-cost increase results from two facts. First, there are fewer parties to share ditch costs. Second, overall operating costs may increase, for example, because seepage losses are proportionately greater when there is less water in the ditch.[45] As a result, although the transfer of a water right in appropriation states has been traditionally limited only by the no-injury rule, several

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[45]Kathleen A. Miller, "The Right to Use Versus the Right to Sell: Spillover Effects and Constraints on the Water Rights of Irrigation Organization Members," Water Resources Research, Vol. 23, No. 12, pp. 2166-73 (1987).

states now explicitly protect the remaining water rights holders 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, as discussed in Section 2.2.2, 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 some portion of the water otherwise transferable in the ditch to compensate for these losses.[46] 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.[47]

Colorado cases have upheld the right of mutual ditch companies to impose restrictions and even prohibitions against transfers of shares out of the ditch (see Section 2.2.2).[48] 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.[49] 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, upheld 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

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[46]See discussion supra at Section 2.2.2.

[47]Nev. Rev. Stat. § 533.370 (Michie Supp. 1991). This provision reads 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."

[48]See discussion supra at Section 2.2.2.

[49]Idaho Code § 42-108 (1990).

corporation and to impair the very purpose for which the same was formed."[50] 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 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.[51] Moreover, transfers from the watershed or drainage area that supplies a water supply organization's irrigation water are subject to the organization's approval.[52] 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.[53]

While Utah statutory law does not require the 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 their portion of the company's water right.[54] 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.[55] 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

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[50]Johnston v. Pleasant Valley Irrigation Co., Ltd., 69 Idaho 139, 145, 204 P.2d 434, 438 (1949).

[51]Ariz. Rev. Stat. § 45-172 (1987).

[52]Ariz. Rev. Stat. § 45-172 (1987). The organization must approve or reject the proposal within 45 days or the proposal is deemed accepted. Id.

[53]Wyo. Stat. § 41-3-114 (Supp. 1993).

[54]East Jordan Irrigation Co. et al. v. Morgan, No. 920125, 1993 LEXIS 108 (Utah Sup. Ct. Aug. 5, 1993).

[55]Id. at page 20.

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."[56]

The ditch company may 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.[57] 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.[58] The New Mexico State Engineer denied the transfer because of injury to other water rights.

California legislators in 1993 are considering 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." 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 in the statute, the water supplier would then determine the amount of water available for transfer. In addition, water suppliers may 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

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[56]Id. at 15.

[57]N.M. Stat. Ann. § 72-12-3(D) (1985). 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).

[58]In re Application of the El Prado Water and Sanitation District, File No. 057, 0932, 0933, State of New Mexico, Findings and Order of the State Engineer, dated April 30, 1992, at 9. The State Engineer must 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 protestants to establish these elements. See discussion of this case infra at Section 3.1.3.3.

subject to judicial review, under an accelerated process.[59]

Regardless of which approach is taken by the states—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.

3.1.3 Protecting the Public Interest

Several western states now address potential impacts, aside from injury to other water rights, during the water transfer process. Legislatively or through case law they have developed limits on water transfers for the purpose of protecting a variety of non-water right interests such as harmful economic or environmental effects. These types of conditions all 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 the public interest."[60] 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

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[59]1993 Cal. Sess. Laws, Assembly Bill No. 97.

[60]Nev. Rev. Stat. Ann. § 533.370(3) (Michie Supp. 1991).

issue.[61]

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 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.[62]

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 3.1). 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.

3.1.4 Practical Application of Public Interest Considerations

Given the legal authority to condition or deny transfers to protect public values, how have state water administrators exercised this authority to condition or deny requests to change water from agricultural to urban use? Several state administrators report that public interest concerns are increasingly raised during transfer

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[61]Pyramid Lake Paiute Tribe of Indians, et al v. R. Michael Turnipseed, Case No. CV91-2231, CV91-2232, CV91-2245, Consolidated Dept. No. 5, Second Judicial District, Washoe County, Order dated August 31, 1992.

[62]Idaho Code § 42-222 (1990).

TABLE 3.1. PUBLIC INTEREST REVIEW FOR PROPOSED WATER TRANSFERS

State	Source	Standard[1]
CA	Cal Water Code §386	does not unreasonably affect fish, wildlife, or other beneficial uses...does not unreasonably 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 ag base of the area
KS	H.B. 2070 (1993)	can't reduce water available to meet present or future needs in area, unless net benefit to state/emergency; factors to determine net benefit: current and future use (including instream), economic, environmental, public health/welfare impacts[2]
MT	Mont. Code Ann. §85-2-402	must prove overall change is reasonable use of water, determined by existing/ projected state demands (including instream flow), net benefits to state; if transfer out of state, must not be detrimental to public welfare
NB	Neb. Rev. Stat. §§46-289,-294	interbasin and intrabasin 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), - .345	cannot be detrimental to public interest
NM	N.M. Stat. Ann. §§72-12-7, -5-23	cannot be detrimental to public welfare

[1]In addition to these standards, four states consider the availability of alternative water supplies (MT,NB, KS, WY) and three consider the use of conservation practices (ID, KS, NM) in deciding on applications for transfers of water rights, Mont. Code Ann. § 85-2-402(1)(b)(iii) (1991); Neb. Rev. Stat. § 46-289 (1988); H.B. 2070 (Kansas), enacted 1993; Wyo. Stat. § 41-3-104(a) (1977); Idaho Code § 42-222(1) (1990); N.M. Stat. Ann. §§ 72-12-7 (applies only to wells), and 72-5-23 (Michie 1978 & Supp. 1992).

[2]This standard applies only to transfers greater than 2,000 cfs per year, and to be transferred over 35 miles.

TABLE 3.1 continued

UT	*Bonham v. Morgan*, 788 P.2d 497	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[3]
WA	Rev. Code Wash. Ann.§§90.54.020; 90.02.005; DOE, Stand.Oper.Rules PR O-1000, B.3	must consider several public impacts for new appropriations; AG advised DOE same applies to transfer requests; includes water quality, instream and other environmental impacts; favors regional systems over private; separate provision requiring maximum benefits to state[4]
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

[3]Utah's standard applies only to permanent transfers; different language applies to temporary transfers and does not include public welfare considerations.

[4]Telephone conversation with Fred Rajala, Water Resources Program, Washington Department of Ecology (Oct. 21, 1993).

proceedings.[63] But, as the following examples illustrate, in fact very few 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, if 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. For whatever reason, 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.

3.1.4.1 Pacific Power and Light in Wyoming

Under a 1973 Wyoming statute, the Wyoming Board of Control 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.[64]

The law may provide authority also for the Board's consideration of other factors affecting the public interest.[65] Transfer applicants must provide data on the economic

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[63]E.g., telephone conversations with Larry Holman, Chief, Water Rights Bureau, Montana Dept. of Natural Resources (Mar. 19, 1993); Andy Sawyer, Attorney, California State Water Resources Control Board (Mar. 8, 1993); Paul Saavedra, New Mexico State Engineer's Office (Mar. 17, 1993); Eric Gronlund, Water Rights Division, South Dakota Dept. of Environment and Natural Resources (Mar. 16, 1993).

[64]Wyo. Stat. § 41-3-104(a) (1977).

[65]The statute begins with broad language that requires the State Board of Control 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); and Mark Squillace,

effect of a proposed water transfer, whenever economic impact is a concern. If data is not provided the application may be denied.[66]

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 Wyoming Board of Control 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 Board rejected Pacific Power's transfer application.[67] While the Board 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.[68]

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 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

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"Water Rights Transfers in Wyoming," Chapter 6, in The Water Transfer Process as a Management Option for Meeting Changing Water Demands, Vol. II, Natural Resources Law Center (April 1990).

[66]See Petition of Pacific Power and Light, Wyoming Board of Control Docket No. I-80-4-5 (1981).

[67]Squillace, supra note 65, at 9, n.90; Wyoming State Board of Control Order, Docket No. I-80-4-5 (1981).

[68]Id. at pages 9-10. Wyo. Stat. § 41-3-104(iii) (1977) specifically requires the Board to consider "[w]hether other sources of water are available for the new use."

for power production at the Dave Johnson Steam Power Plant than in its present agricultural use."[69] 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.[70]

The Board 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."[71] Contemporaneous with the Douglas Canal transfer proceeding, Pacific Power submitted a petition for an exchange plan involving the Douglas Canal water rights.[72] The exchange plan was approved by the State Engineer, considering only injury to other water rights, and was conditioned only to avoid or mitigate such injury.

3.1.4.2 Box Elder Creek in Utah

Prior to a 1989 court decision, the only basis under Utah's change statute and existing case law for rejecting or conditioning change applications was impairment to other vested water rights.[73] In *Bonham v. Morgan*,[74] the Utah Supreme Court held that the State Engineer must apply the broader statutory criteria required for new

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[69]James T. Jacobs and Chris T. Bastian, for Canyon Land and Livestock, "Economic Evaluation of Change in Use of a Portion of the Mortons Incorporated Appropriation, Converse County, Wyoming" (March 1992), at page 7.

[70]Id.

[71]Wyoming State Board of Control, Order Record No. 40, page 412, para. 17 (Nov. 27, 1992). In Wyoming, no other transfer from irrigation to municipal and industrial uses has been denied by the Board 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).

[72]Wyo. Stat. § 41-3-106 (Supp. 1993).

[73]Utah Stat. § 73-3-3(1989); Salt Lake City v. Boundary Springs Water User Assn., 270 P.2d 453, 455 (Utah 1954); Craft v. Hansen, 667 P.2d 1068, 1070 (Utah 1983).

[74]788 P.2d 497 (Utah 1989).

appropriations when considering change applications. In this case, an irrigation company and a water conservancy district filed a joint application to change a portion of the company's water rights to the district's water treatment plant. The transfer required modification to the water collection system, already under construction when the application was filed in 1984. Heavy runoff during this construction resulted in damage to property below the collection system. During the transfer application proceedings, this property owner filed a protest, claiming that the construction of the new collection facilities increased the risk of flood damage to his property, and thus was contrary to the public welfare.

The Utah Supreme Court's ruling in this case significantly expands the considerations that apply when reviewing applications for changes in point of diversion or place and nature of use. Since *Bonham* was decided, no applications involving a change of water rights from agricultural to urban use, and raising public welfare concerns, have been submitted to the State Engineer, but a recent application to change a diversion point illustrates how public interest factors may be applied in future transfer proposals.

A few years ago, Brigham City sought to move a point of diversion for a municipal and industrial water right. The change was needed because of a road realignment proposed by the Utah Department of Transportation. The City's water right had been changed prior to *Bonham* from irrigation to power and municipal use. During the more recent change proceedings, the State Division of Wildlife expressed concern that the proposed change would dry up the fishery in Box Elder Creek, a tributary to Bear Lake. As a result, the City was required to submit data that included flow recommendations for protection of the fishery in the creek.

Following three public meetings, a permit was issued subject to two conditions imposed to protect the fishery and public recreation. First, the applicant must establish a wetland area as a replacement for an area that would be lost by the change, and must maintain a .5 cubic feet per second (cfs) flow from Mantua Reservoir to this area. Second, the applicant must maintain a 2 cfs minimum flow at the confluence of Box Elder and Big Creeks. Third, the City must submit at the end of five years (1) proof that the water has been put to beneficial use; and (2) data on streamflows. With this

information, the Department of Water Resources may then impose additional or different permit conditions if determined necessary to protect the fishery or public recreation.[75]

3.1.4.3 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 require the retirement of approximately 78 acres of previously irrigated land. Before the State Engineer, an irrigation user organization, the Enseñada Land and Water Association, protested the transfer, claiming that the proposed transfer would impair existing rights and be contrary to the public interest. Despite the Association's protest, the State Engineer approved the transfer at the recommendation of the hearing officer who found that the transfer would not impair existing water rights. The Association appealed the State Engineer's decision to the state district court.

In *Sleeper v. Enseñada Land and Water Association*,[76] the district court focused on the impact the transfer would have on the local culture, rather than a strict balancing of economic benefit, and reversed the State Engineer. The Association had introduced evidence of various community and cultural impacts that will 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,

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[75]Telephone conversation with Kent Jones, Assistant State Engineer for Appropriation, Utah Department of Water Resources (May 17, 1993).

[76]No. RA 84-53(C), slip. op. (N.M. Dist. Ct. April 16, 1985), reversed, 107 N.M. 413, 759 P.2d 200 (1988).

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 is recognized as possessing significant value that cannot be expressed in monetary terms, and rejected applicant's assumption that increased economic benefits are better than preserving a cultural identity.

Reversing the district court, the New Mexico Court of Appeals found 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. The only valid consideration under the controlling statute was injury to other water rights.[77] Since the transfer would not harm existing water rights, the application could not be denied.[78]

More recent cases involving the transfer of water out of agricultural use are subject to 1985 amendments to New Mexico water law allowing the State Engineer to consider public welfare.[79] In 1992, the State Engineer denied an application to change surface irrigation water rights to groundwater rights for domestic, commercial and municipal uses. The water rights, once changed, were to be an integral part of the proposed Las Sierras development project, which included residential subdivisions and commercial enterprises. In denying the application, the State Engineer found that the amount of water that could be transferred would be less than the amount required for the full development of the project, and ruled that the "public welfare is not well served by approval of only a portion of the water supply required for a proposed planned

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[77]N.M. Stat. Ann. § 72-5-7 (Michie 1978).

[78]This case is discussed in F. Lee Brown, Charles DuMars, Michelle Minnis, Sue Anderson Smasal, David Kennedy and Julie A. Urban, "Transfers of Water Use in New Mexico," Chapter 4, in The Water Transfer Process as a Management Option for Meeting Changing Water Demands, Vol. II, Natural Resources Law Center (April 1990), at pages 20-21.

[79]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," in Instream Flow Protection in the West, revised edition, Natural Resources Law Center (1993).

development project in which the ultimate water requirements are known."[80] The order seems to strain, however, to link this reason to injury to water rights, as it goes on to state "[u]ltimate cumulative effects to existing water rights resulting from the use of water within the proposed Las Sierras development project are not known and therefore a determination cannot be made as to whether those effects would not constitute impairment."[81] Interestingly, the findings in this case clarify that New Mexico water law does not recognize preferential beneficial uses of water, and rejects the idea 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.[82]

Fleshing out the meaning of New Mexico's public welfare criteria is thus left to future decisions.

3.1.4.4 Honey Lake Valley in Nevada

The Nevada State Engineer recently considered a set of applications to change the point of diversion and place of use of agricultural groundwater rights. The ultimate plan of the applicant, pursued in separate stages, was to consolidate groundwater rights in Honey Lake Valley Basin and export the water for municipal use in Washoe County. Honey Lake Valley is located about 35 miles northwest of the Reno-Sparks metropolitan area, where there is a high demand for water for municipal use.[83] Numerous parties

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[80]In re Matter of the Application of the El Prado Water and Sanitation District, File No. 057, 0932, 0933 et al, New Mexico State Engineer, April 30, 1992, at page 9.

[81]Id.

[82]Id. at findings number 42 and 43.

[83]See Pyramid Lake Paiute Tribe of Indians vs. R. Michael Turnipseed, Case No. CV91-2231, -2232 and -2245, Consolidated Department No. 5, Order Reversing State Engineer Ruling Nos. 3786 and 3787 (Aug. 31, 1992).

filed protests to the change applications, claiming water rights and other types of injuries under the proposed changes. The Pyramid Lake Paiute Tribe and the cities of Reno and Sparks, among other concerns, argued that the importation of Honey Lake Basin water, which has high salinity levels in some parts of the basin, would degrade the quality of the Truckee River. The Tribe asserted that the lower quality imported water would eventually alter the quality of water at Pyramid Lake (the terminal lake for the Truckee River) to the detriment of certain threatened and endangered fish species. The cities argued that the imported water would cause the discharge from the Reno-Sparks Wastewater Treatment Plant to violate discharge permit standards.[84]

Finding that the "Nevada Legislature has not offered any guidance on this issue,"[85] 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.[86] 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.[87] 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."[88] Thirteen "principles" are set out that "should serve as guidelines in ... determination of

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[84]In re Applications 53407 et al, Ruling No. 3787A, Supplemental Ruling on Remand, Nevada State Engineer (Oct. 9, 1992), at pages 17-18. The State Engineer's Supplemental Order on Remand was affirmed by the District Court September 27, 1993. The applicant has proposed to address Truckee River and Lake water quality concerns by agreeing to import Honey Lake Valley water only into basins other than Truckee Meadows. Telephone conversation with Peggy Tweed, Assistant Attorney General, State of Nevada (Oct. 21, 1993).

[85]Id. at page 9.

[86]Id.

[87]Id. at page 10.

[88]Id. at page 11.

what constitutes 'the public interest.'"[89] 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.

In 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 area, 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 declined so long as the other public interest values are not compromised or can be mitigated."[90]

What were the "other public interest values" considered in this case? Tribal concerns for the effect of the transfer on plant life, wildlife and wetlands were for the most part rejected. Evidence persuaded the State Engineer that wildlife and plant life would not be impacted, and while some wetland loss was acknowledged, "there is an overriding public interest value to put this water to its highest and best use by allowing for the export of 13,000 acre feet annually for municipal use." Regarding concerns for endangered and threatened fish species and for water quality impacts, the State Engineer found that it is not in the public interest to impair endangered and threatened species at Pyramid Lake or to degrade the quality of the Truckee River. 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.[91] In other words, such factors are relevant—though apparently not deciding in

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[89]Id. at pages 11-13.

[90]Id. at page 14.

[91]Id. at page 20. The ruling requires that a monitoring plan be implemented to, among other matters, determine water quality changes. Id. at 21.

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.

3.1.5 Comprehensive Administrative Review of Transfer Benefits and Costs

A few states explicitly provide for a comprehensive administrative review of proposed water transfers. Strategies adopted by California and Kansas 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.[92]

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

- any current beneficial use being made of the water;

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[92]1993 Kansas Sess. Laws. ch. 219.

- 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 State Water Resources Control Board 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."[93] 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

[93]Cal. Water Code § 1058 (1971); Cal. Code Regs. tit. 23, § 756 (1987).

consequences, such as 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.[94]

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.

3.2 Regulatory Approaches to Reducing Agricultural Water Use

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. More recently, 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

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[94]"A Guide to Water Transfers in California," Draft, California Dept. of Water Resources (June 1989).

and perpetuated under this standard. Some states are now reconsidering their laissez faire approach to water use practices.[95]

Waste could 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.[96] Some of the "excess" diversions return to the stream system as return flows. In many 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 and, in some cases, 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 report. This section focuses on state laws and programs that, in effect, *require* a reduction in

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[95]See Steven J. Shupe, "Wasted Water: The Problems and Promise of Improving Efficiency Under Colorado Water Law," in Tradition, Innovation and Conflict: Perspectives on Colorado Water Law 73, 75 (Lawrence J. MacDonnell, ed. 1986); and Steven J. Shupe, "Waste in Western Water Law: A Blueprint for Change," 61 Or. L. Rev. 483, 489 (1982).

[96]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.

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 efficient use of water, and 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 adoption of a duty of water for agricultural use, which would likely also require reductions of agricultural 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, will not 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.

3.2.1 Prohibition Against Waste and Unreasonable Use in California

Both California statutory law and the state's constitution prohibit waste and unreasonable use of water.[97] The concept of reasonable use is not defined by statute, and court cases have indicated that whether or not a use is reasonable depends on the facts of a particular case.[98] These situational facts, however, must be considered in light of state-wide concerns, including the increasing need to conserve water.[99]

California law also imposes an affirmative duty on the Department of Water

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[97]Cal. Const. art. X, § 2; Cal. Water Code § 100 (West 1971).

[98]V. Dong, Div. of Water Rights, SWRCB Memo to Files 262.0(09-18-27); A-22782; A-24240; A-28255 (Nov. 19, 1991)[hereinafter V. Dong Memorandum]; Tulare Irrigation District v. Lindsay-Strathmore Irrigation District, 3 Cal.2d 489, 45 P.2d 972, 1007 (1935).

[99]Joslin v. Marin Municipal Water District, 67 Cal.2d 132, 429 P.2d 889 (1967); Environmental Defense Fund, Inc. v. East Bay Municipal Utility District, 26 Cal.3d 183, 161 Cal.Rptr. 466 (1980).

Resources (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 department [of Water Resources] and [State Water Resources Control] [B]oard 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.[100]

Any party can submit complaints to the Board pursuant to DWR regulations establishing a procedure for investigating allegations of misuse of water.[101] 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.[102] 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.[103]

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.[104] 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.

3.2.1.1 Imperial Irrigation District

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[100]Cal. Water Code § 275 (West Supp. 1993).

[101]Cal. Code Regs. tit. 23, §§ 4000 et seq.; and California State Water Resources Control Board, Decision 1600, Decision Regarding Misuse of Water by Imperial Irrigation District (June 21, 1984)[hereinafter Decision 1600], at page 20.

[102]Cal. Water Code §§ 1202, 1225 (West 1971 & Supp. 1993).

[103]Decision 1600, supra note 101, at page 21.

[104]People ex re. State Water Resources Control Board v. Forni, 54 Cal.App.3d 743, 751-52; 126 Cal.Rptr. 851 (1976), and V. Dong Memorandum, supra note 98, at page 18.

Imperial Irrigation District (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 the 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.[105]

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.[106]

Prompted by a 1980 petition filed by a farmer owning land adjacent to the Salton Sea, the Department of Water Resources 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 State Water Resources Control Board (SWRCB), following hearings, concluded that IID's failure to implement practical, available measures to reduce losses of water was unreasonable and constituted a misuse

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[105]Decision 1600, supra note 101, at pages 5-7.

[106]Id.

of water under the state's constitution.[107]

After losing its appeal of this Board decision, IID was ordered by the Board 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.[108] Facing the possible forfeiture of its water rights, IID entered an agreement with the Metropolitan Water District of Southern California (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 SWRCB had determined that such water was being wasted.[109]

3.2.1.2 El Dorado Irrigation District

El Dorado Irrigation District (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 housed in wooden trestles on steep or rocky terrain or where ditch failures have occurred.

In 1980, anticipating growth and development in the county, EID filed an application with the State Water Resources Control Board (SWRCB) for water right permits under the proposed South Fork American River Project (SOFAR). In its 1982

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[107]Brian E. Gray, "Water Transfers in California: 1981-1989," Chapter 2, in The Water Transfer Process as a Management Option for Meeting Changing Water Demands, Vol. II, Natural Resources Law Center (April 1990), at pages 34-35.

[108]California State Water Resources Control Board, Order WR 88-20, Order to Submit Plan and Implementation Schedule for Water Conservation Measures (Sept. 7, 1988), at page 44.

[109]See California State Water Resources Control Board, Decision D-1600 (Sept. 1988); Smith and Vaughn, "Taking Water to Market," Civil Engineering 70-73 (March 1987); and "Let's Make a Deal: The IID/MWD Water Conservation Agreement," Water Strategist 5, 15 (Jan. 1989).

order issuing permits for SOFAR, the Board, 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.[110]

The order mandated additional savings of 2,000 acre feet (up to a total of 12,000 acre feet in savings) with the use of each additional 5,000 acre feet 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 acre feet annually along a 16-mile section of the ditch.[111]

The District believed that, under California law, any water saved by these improvements would be available to the District 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 State Water Resources Control Board alleging that EID's diversion of water into Crawford Ditch amounted to a waste 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

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[110]California State Water Resources Control Board, Decision 1587 (Nov. 1987).

[111]Letter from W. Robert Alcott, District Manager, El Dorado Irrigation District, to W. Don Maughan, Chairman, California State Water Resources Control Board re: Investigation of Complaint Regarding El Dorado Irrigation District's Diversion of Water Into Crawford Ditch in El Dorado County (Dec. 13, 1991). Note that the V. Dong Memorandum, supra note 98, at page 18 states "EID spent approximately $5.43M to improve the [Crawford] ditch in order to conserve 8,500 AFA of water."

revert to the State and be subject to appropriation.[112] Nothing has yet been resolved, and there is still disagreement over the need for instream flows and rights to the saved water.

3.2.1.3 Yuba County Water Agency

Serving an area near the foothills of the Sierra Nevada in northern California, the Yuba County Water Agency (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.[113] 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 area, and consequently presented with an opportunity to increase revenues to the agency, the agency, in 1987, began transferring surplus water to water-short areas of the state. From 1987 through 1991, Yuba sold the use of over 800,000 acre feet of stored water.

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.

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[112]See Letter from Edward C. Anton, Chief, Division of Water Rights, State Water Resources Control Board, to Mr. Robert Alcott, District Manager, El Dorado Irrigation District, et al, re: Investigation of Complaint Regarding El Dorado Irrigation District's Diversion of Water Into Crawford Ditch in El Dorado County (Dec. 5, 1991); and V. Dong Memorandum, supra note 97.

[113]Paul M. Bartkiewicz, "Water Transfers: Addressing Concerns of Agricultural Communities," Land Use Forum, Vol. 1, No. 5 (Fall 1992), at page 331 (Mr. Bartkiewicz is the attorney for Yuba County Water Agency).

Additionally, local farmers received over $8 million for contributing about 92,000 acre feet to the 1991 water bank, using groundwater in lieu of the transferred surface water.[114]

The State Water Resources Control Board (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 State Board, 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—can be transferred by a water user or whether the use of such water should be controlled by the state.[115] 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 Board'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.[116] There has been no final determination of the Board, but the investigation caused Yuba to forgo water transfers in 1992.[117]

California has taken a hybrid approach to achieve a reduction in water use, combining a regulatory approach with conservation incentives. 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, as illustrated in the Imperial Irrigation District (IID) case discussed above. At the same

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[114]Id.; and telephone conversation with Donn Wilson, Engineer-Administrator, Yuba County Water Agency (July 22, 1993).

[115]California State Water Resources Control Board, Division of Water Rights, Staff Report, Lower Yuba River (Aug. 1991), at page 43.

[116]Bartkiewicz, supra note 113, at pages 332-33; Cal. Water Code §§ 1011(b) and 1244 (West Supp. 1993).

[117]Bartkiewicz, supra note 113, at page 333.

time, California law also gives the holder of the water right control over the disposition of any water saved through these conservation efforts, also as 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 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.

3.2.2 Arizona Requirement to Reduce Groundwater Use

Arizona's Groundwater Management Act[118] 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.[119] 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."[120]

The general approach under this 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 (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.[121]

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[118]Ariz. Rev. Stat. Ann. §§ 45-401 to 45-655 (1987 & Supp. 1992).

[119]Id. at § 45-401(A).

[120]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).

[121]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

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.[122] 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 term.[123] 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.[124] 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.[125]

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.[126]

The 1980 Act also called for the identification of irrigation "non-expansion" areas

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[122]Ariz. Rev. Stat. Ann. § 45-465 (Supp. 1992).

[123]Ariz. Rev. Stat. Ann. §§ 45-564 through 45-569 (1987 & Supp. 1992). Similar measures are required for non-irrigation uses, § 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.

[124]Id. at § 45-576.

[125]Id. at §§ 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 -482 (1987 & Supp. 1992).

[126]Id. at § 45-411.01(A).

where the number of acres under irrigation may not be expanded.[127] Outside of AMAs, existing groundwater rights are preserved as "grandfathered groundwater rights," but their use may not be expanded and their transfer is restricted.[128]

3.2.3 Oregon's Proposed Duty of Water

A few years ago, the Oregon Water Resources 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, and 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 (OSU) on the technical data. The proposal is to establish, by region and by crop type, an amount of water that is deemed reasonable to consumptively use over a season. The Department of Water Resources 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.[129]

The proposal is not dead, but it 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

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[127]Id. at § 45-434.

[128]Id. at §§ 45-463, 45-464 and 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 Department. Telephone conversation with Beverly Bedell, Arizona Department of Water Resources, July 13, 1993.

[129]Telephone conversation with Becky Kreag, Deputy Director, Resource Management Division, Oregon Department of Water Resources (July 13, 1993).

focusing on finalizing rules, developed pursuant to the 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 preliminary matter 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.[130]

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.

3.3 Providing Incentives to Conserve

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 use is an intended result of this approach, the broader policy objective is to continue productive and beneficial agricultural use of water but 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

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[130] Id.

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 report 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.[131] 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.[132] This broader definition would measure 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 on-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

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[131]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 and Michael D. White, Engineering Aspects of Water Law (John Wiley & Sons, New York 1987), at pages 2, 6 and 115.

A useful discussion of these definitional and conceptual issues can be found in a report prepared by Steve Miller of the Colorado Water Conservation Board, "An Analysis of Water Salvage Issues in Colorado," dated January 1992.

[132]H.B. No. 2155, 1993 Oregon Laws Ch. 641 (1993), amending Or. Rev. Stat. § 85-2-102 (1991).

existing valid appropriation "through the application of water-saving methods."[133]

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. 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.[134] 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.[135] 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.[136]

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

3.3.1 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 (DOE) to develop a state "trust water rights" program (Trust Program).[137] 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

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[133]Mont. Code Ann. § 85-2-102 (1991).

[134]Cal. Water Code §§ 1011(b) and 1244 (West Supp. 1992). See discussion supra at Section 3.2.1.

[135]Or. Rev. Stat. §§ 537.455 to -.485 (1991), as amended by 1993 Or. Sess. Laws, H.B. 2155-B. See discussion infra at Section 3.3.2.

[136]See Wash. Rev. Code Ann. § 90.42.040 (6) (West 1992).

[137] Wash. Rev. Code Ann. § 90.42.010 - .900 (West 1992).

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 Department for potential inclusion in the Trust Program, but in 1993 the legislature rendered this step unnecessary by extending the Trust Program statewide.[138]

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.[139] The program applies to both surface and groundwater, and to municipal and industrial uses as well as agricultural uses.[140] As mentioned, the transferred water right (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.[141] However, statutory provisions governing Trust water rights contain similar conditions that must be met prior to the

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[138]Substitute House Bill No. 1787, adopted April 8, 1993. See Letter from Hedia Adelsman, Program Manager, Water Resources, Washington Department of Ecology, to Interested Citizens, et al (Feb. 8, 1993); and 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).

[139] Wash. State Dept. of Ecology, Trust Water Rights Program Guidelines, Publication #92-88 (Sept. 10, 1992)[hereinafter Trust Guidelines], at page 10. Beneficial use is 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), and 90.14.031(2) (West 1992).

[140]See Trust Guidelines, supra note 139, at pages 3-7.

[141]Wash. Rev. Code Ann. § 90.42.040(7), referring to § 90.03.380 (West 1992). District approval is not required for transfers for use outside an irrigation district.

exercise of a Trust water right.[142] 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.[143]

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 can be awarded. If no water savings is likely, up to 15 percent grant money is available. With the balance available as a loan, up to 90 percent funding may be provided.[144] The state constitution prohibits the issuance of grants or loans to individuals.[145]

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[142]For example, prior to the exercise of a trust water right, the Department of Ecology 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).

[143] Wash. Rev. Code Ann. § 90.42.040(1),(2) (West 1992).

[144] 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, and Trust Guidelines, supra note 139, at pages 14-15; also telephone conversations with Cynthia Nelson, Environmental Planner, Water Resources Program, Washington State Department of Ecology (Aug. 9, 1993), and with George Krill, Irrigation Specialist, Water Resources Program, Washington State Department of Ecology (Aug. 16, 1993). The 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. Id. at page 23.

[145]Wash. Const. art. 8, § 5.

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.[146] The saved water, an amount determined by many factors on a case by case basis, would be transferred into the Trust Program.[147]

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.[148]

Once a water rights holder, attracted by such incentives, decides to approach the state for participation in the Trust Program, what procedure is 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.[149] 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

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[146]See Wash. State Depart. of Ecology, Trust Water Rights Program, Comment Summary (Sept. 1992)[hereinafter Comment Summary], at page 5.

[147]Trust Guidelines, supra note 139, at pages 4, 6-7.

[148]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); on the notion of using trust water for spreading, see Comment Summary, supra note 146, at page 3.

[149]Trust Guidelines, supra note 139, at page 9.

water rights, there will be a reduction representing return flows. Additionally, only the amount of water that has historically 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.[150] DOE may require mitigation of any potential impacts, or may reject the proposal altogether.[151]

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 Department, and may be authorized for a wide range of beneficial uses.[152] As mentioned above, the use of purchased Trust water is left to the discretion of the Department, 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."[153]

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.[154] 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

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[150]Wash. Rev. Code Ann. § 90.42.040(5) (West 1992).

[151]Trust Guidelines, supra note 139, at pages 10-13; and Comment Summary, supra note 165, at page 2.

[152]Wash. Rev. Code Ann. § 90.42.040(1),(2) (West 1992).

[153]Comment Summary, supra note 146, at page 3.

[154]Telephone conversation with Cynthia Nelson, Water Resources Program, Department of Ecology (June 9, 1993). The Department is currently talking to the Chelan County Conservation District in the Wenatchee basin about identifying one orchard in the District for a pilot project.

as irrigation districts.[155] Another potential problem in implementation 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.[156] 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.[157] 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.[158]

3.3.2 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."[159] Prior to implementing efficiency improvements, a water conservation proposal must be submitted to the State Water Resources Commission (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

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[155]See note 144, supra; Wash. Const., art.8, § 5; and Comment Summary, supra note 146, at pages 4-5. Moreover, the Trust program statute requires that funds to purchase water rights must be allocated by the state legislature and, as yet, no moneys have been allocated for this purpose.

[156]Comment Summary, supra note 146, at page 3.

[157]Id.; and Trust Guidelines, supra note 139, at pages 11-13 (emphasis added).

[158]Rev. Code Wash. Ann. § 90.54.020 (West 1992); Washington State Department of Ecology, Water Resources Program, Standard Operating Procedures, PRO-1000, B.3.

[159]Or. Rev. Stat. § 537.455(2) (1991), as amended 1993 Or. Sess. Laws, H.B. 2155-B.

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.[160]

State water transfer laws requiring the filing of a request for transfer are expressly waived for water conservation proposals.[161]

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.[162]

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."[163] This strict standard was intended to avoid potential harm to other water

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[160]Or. Rev. Stat. § 537.465 (1991), as amended by 1993 Or. Sess. Laws, H.B. 2155-B.

[161]Or. Rev. Stat. § 537.470(5), as added by 1993 Or. Sess. Laws, H.B.2155-B, and referring to requirements set out at § 540.520 (1991).

[162]Or. Rev. Stat. § 537.470 (1991), as amended by 1993 Or. Sess. Laws, H.B. 2155-B.

[163]Or. Rev. Stat. § 537.455(1) (1991) (emphasis added).

users.[164] 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."[165] This new standard may encourage greater participation in the program.

3.3.3 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.[166] Montana law defines "salvage" as making water available for beneficial use from an existing valid appropriation through the application of water-saving methods.[167]

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 that (1) the proposed use will not adversely affect the water rights of others; (2) the proposed means of diversion, construction, and 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.[168] Changes involving 4,000 acre feet of water or more, and 5.5 cfs or more require the applicant to also prove that the proposed change is reasonable, under

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[164]See Becky Kreag, "Transferring Conserved Water: The Oregon Experience," in proceedings Moving the West's Water to New Uses: Winners and Losers, Natural Resources Law Center (1990).

[165]Or. Rev. Stat. § 537.455 (1991), as amended by 1993 Or. Sess. Laws, H.B. 2155-B (emphasis added).

[166]Mont. Code Ann. § 85-2-419 (1991).

[167]Id. at § 85-2-102 (1991).

[168]Id. at § 85-2-402(2) (1991).

guidelines set out in the statute.[169]

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.

3.4 Short-Term Transfer Approaches

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, Metropolitan Water District of Southern California 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

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[169] Id. at § 85-2-402(3). Large volume changes are also subject to approval by the legislature following public hearings. Id. at § 85-2-402(4).

traditional practices toward the goal of reducing their use of water.

3.4.1 State Laws Supporting Short-Term Transfers

Several western state water laws contain provisions recognizing the right to make short-term (usually one year) transfers of water.[170] The advantage of making transfers under these statutory provisions rather than 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.[171]

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.[172] Montana law expands the meaning of temporary by authorizing such changes for up to ten years, and further providing for a ten year renewal.[173] Wyoming allows for temporary transfers of up to two years.[174] Colorado law merely says for a "limited

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[170]See, e.g., Cal. Water Code § 1725-1728 (West Supp. 1993); Colo. Rev. Stat. § 37-83-105 (1990); Nev. Rev. Stat. Ann. § 533.345 (Supp. 1991); N.M. Stat. Ann. § 72-12-7 (Supp. 1993); Utah Code Ann. § 73-3-3 (Supp. 1993); and Wyo. Stat. Ann. § 41-3-110 (Supp. 1993).

[171]Cal. Water Code § 1725-1728 (West Supp. 1993).

[172]Nev. Rev. Stat. Ann. § 533.345 (Supp. 1991); N.M. Stat. Ann. § 72-12-7 (Supp. 1992); Utah Code Ann. § 73-3-3 (Supp. 1993).

[173]Mont. Code Ann. § 85-2-407(2) and (3) (1993).

[174]Wyo. Stat. Ann. § 41-3-110(a) (Supp. 1993).

time."[175]

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.[176] Nevada has a similar limitation, requiring that such temporary transfers be "in the public interest."[177] New Mexico specifically limits the quantity of water that can be temporarily transferred to no more than three acre-feet.[178]

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.[179]

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."[180] 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

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[175] Colo. Rev. Stat. § 37-83-105 (1990).

[176]Cal. Water Code § 1725 (West Supp. 1993).

[177]Nev. Rev. Stat. Ann. § 533.345 (Supp. 1991).

[178]N.M. Stat. Ann. § 72-12-7(B) (Supp. 1993).

[179]Nev. Rev. Stat. § 533.345 (Supp. 1991).

[180] Colo. Rev. Stat. § 37-83-105 (1990).

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.

3.4.2 Water Banking

Water banks provide an organized procedure for making water transfers. 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 these rights 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.

3.4.2.1 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 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 State Department of Water Resources 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.[181]

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[181]Richard Howitt, Nancy Moore, and Rodney Smith, "A Retrospective on California's 1991 Emergency Drought Water Bank," prepared for California Dept. of Water Resources, March 1992 [hereinafter Retrospective]; and California Department of Water Resources, brochure entitled "The 1991 Drought Water

Water was acquired for the bank through contracts entered between the state and the water rights holder. In 1991, sellers in the first year received about $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 came from unused storage water managed by one water supply organization.[182]

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 establish 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.[183]

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

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Bank."

[182]Retrospective, supra note 181, at page 10.

[183]Id. at pages 5-7.

water rights sold through the bank would not be lost,[184] 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.[185] 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.[186] 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."[187] These provisions, credited as important to the success of the bank, were made permanent provisions of California transfer law in 1992.[188]

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.

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[184]See Cal. Water Code §§ 1101, 1244, and 382-386 (West Supp. 1993).

[185]1991 Cal. Stats. ch. 1X, § 1, discussed in Brian E. Gray, "The 1991 Water Bank: A Legal Analysis of Water Transfers From Yolo and Solano Counties" (unpublished manuscript, on file with author at the University of California, Hastings College of Law, 1993), at pages 32-33.

[186]Id. citing 1991 Cal. Stats. ch. 1X, §§ 2-3.

[187]Id. citing 1991 Cal. Stats. ch. 2X, § 1(a).

[188]Assembly Bill 2897, 1992 Cal. Stats. ch. 481, § 1; codified at Cal. Water Code §§ 1745.04 to -.07 (West Supp. 1993); see Gray, supra note 185, at pages 34-36.

Replacement withdrawals were threatening 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 can 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, diversions, and cropping patterns.[189] For example, the removal of grain crops from lands around the Sacramento Delta under the fallowing contracts has caused damage to wild bird habitat and forage.[190] 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, a promise 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.[191] Some fish and wildlife concerns linger, however, including lack of data on water bank operations' impacts on migratory waterfowl.[192]

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

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[189]See Gray, supra note 185, at pages 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.

[190]Kathy A. Miller, Water Banking in California: The 1991 and 1992 Emergency Drought Water Banks, a report prepared under a study directed by the Natural Resources Law Center on "Using Water Banks to Promote More Flexible Use of Water (draft, Sept. 24, 1993), at page 13.

[191]Gray, supra note 185, at pages 80-81.

[192]Id. at pages 81-82.

to address endangered species and water quality problems in the Bay-Delta area.[193] 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 California Department of Water Resources 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.[194]

3.4.2.2 The Idaho Water Bank

Idaho has a statewide water supply bank (Water Supply Bank) run by the Idaho Water Resource Board (Board) through the Idaho Department of Water Resources, and three local rental pools, run 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 water supplies to benefit new and supplemental water uses, and provide a source of funding for improving water user facilities and efficiencies."[195]

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.[196] Rentals of water from this bank must be approved by the director of the Department of Water Resources, who can deny or condition proposed rentals based upon review criteria set out in the statute.[197] Similar to Oregon's conservation law, Idaho law provides that this review procedure substitutes for the ordinary change of

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[193]Pub. L. No. 102-575, § 3405 (1992).

[194]Miller, supra note 190, at pages 16-18.

[195]Idaho Code § 42-1761 (1990).

[196]Id. at § 42-1762.

[197]Id. at § 42-1763 (Supp. 1993).

water rights requirements.[198] 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)[199] 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.[200]

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. 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. 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 the process for setting lease payment and rental fees on an annual basis as well as the process for appealing

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[198]Id. at § 42-1764 (1990).

[199]Idaho Water Resource Board, Water Supply Bank Rules and Regulations, adopted Oct. 1990[hereinafter Water Supply Bank Rules], at Rule 5,2.

[200]Id. at § 42-1765 (Supp. 1993).

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.[201]

Hydrologic considerations dictate this distinction for uses below Milner Dam. As a result of the history 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 dried up 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.[202]

All three sets of rental pool procedures give priority to irrigation use, at least during irrigation season. Districts 63 and 65 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 Idaho Water Resource Board sets the price for water from the Water Supply Bank.[203] The 1992 price was $3.25 an acre foot.[204] In Water District 63, the rental price is set by the committee each year, and in 1992 was $6.50 an acre foot. Similarly, Water Districts 1 and 65 committees set the rental price annually, and 1992 prices were $2.95 and $2.70 per acre foot respectively. No price was set in 1992 for District 1 water rented for use below Milner Dam because no water was

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[201]Upper Snake River Committee Rules, Rules 3.6, 3.7 (1991).

[202]Jeffrey C. Fereday and 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, 582-83 (1992).

[203]Water Supply Bank Rules, supra note 199, at Rule 4,1.

[204]Interview with Glenn Saxton, Idaho Department of Water Resources (April 27, 1993).

rented for such use. The 1993 price is $5.50 per acre foot for uses below Milner. If the space from which this water comes fills next spring, the lessors will receive a "rebate" of $2.00 per acre foot.[205]

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.[206] The Water Supply Bank rules allow the Director to 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.[207]

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 acre feet) but leased all water made available to the bank. District 65 rented most of its available water (about 150,000 acre feet) 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, 205,113 acre feet of water was offered with 85,677 acre feet rented for irrigation and 99,000 acre feet for hydropower and other uses. In 1992, less than 10,000 acre feet was offered, all of which was rented for irrigation use.[208]

3.4.3 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

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[205]Idaho Department of Water Resources report, Water Supply Bank, Overview of Local Committees, March 1993; and telephone conversation with Ron Carlson, Water District No. 1 Water Master (Oct. 14, 1993).

[206]See Water District No. 63 Rental Pool Procedures (1991); Water District No. 65 Rental Pool Procedures (1991); and Upper Snake River Committee Rules (1991).

[207]Water Supply Bank Rules, supra note 199, at Rule 4,5.

[208]Idaho Department of Water Resources, Water Supply Bank, Overview of Local Committees (Mar. 1993).

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 may also 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 outright 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 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.[209] For example, the water right must provide a reliable water supply for the irrigation use during times of drought, and must additionally 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

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[209]Ari M. Michelsen and Robert A. Young, "Optioning Agricultural Water Rights for Urban Water Supplies During Drought," American Journal of Agricultural Economics (forthcoming 1993).

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.[210]

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

3.4.3.1 Dudley Ridge Agreement With Metropolitan Water District

Anticipating a possible seventh year of drought, in the fall of 1992 Metropolitan Water District of Southern California (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 (SWP) water supply.[211] Dudley Ridge agreed to facilitate the sale of a portion of its 57,700 acre foot annual SWP water allocation to MWD for $125 an acre foot.[212] 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.[213] Given the district's estimated need for permanent crop lands, MWD figured it could purchase as much as 12,117 acre feet 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 district farmers request

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[210]Id.

[211]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].

[212]This price would apply for water delivered at the Harvey O. Banks Delta Pumping Plant.

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

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.[214]

What impact would a transfer to MWD have on lands within 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.[215] This type of transfer may actually be viewed by the irrigators as a way to survive the drought.[216]

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[214]Telephone conversation with Dale K. Melville, Provost & Pritchard, Inc., Fresno, Consultants for Dudley Ridge Water District (May 27, 1993).

[215]See "Initial Study by Dudley Ridge Water District for 1993 Dudley Ridge Water District/Metropolitan Water District of Southern California Water Transfer" (Sept. 1992).

[216]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 losses

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.[217]

3.4.4 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 water user is 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.

3.4.4.1 Palo Verde Irrigation District

In 1992, Metropolitan Water District (MWD) and Palo Verde Irrigation District (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

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

Metropolitan Agreement, supra note 211, at pages 1-2.

[217]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).

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.[218]

Palo Verde is one of four water supply organizations with rights to Colorado River water pursuant to the Boulder Canyon Project Act.[219] Under this Act, the United States constructed Hoover Dam and Lake Mead, and entered water delivery contracts with Palo Verde, MWD, Imperial Irrigation District, 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 fallowing agreement is to increase its allocation of Colorado River water and, to accomplish this, Palo Verde as well as Imperial and Coachella have agreed not to use or demand the saved water.[220]

How much water is expected to be saved? The goal is about 200,000 acre feet over the two years of the program. This figure is based on an assumption contained in the agreement that 4.6 acre feet per fallowed acre per year, less any water applied, is saved.[221] The agreement states that 5.1 acre feet 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."[222] The Agreement also establishes a

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[218]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, dated May 29, 1992 [hereinafter Land Fallowing Agreement].

[219]43 U.S.C. § 617-619(b)(1988).

[220]Land Fallowing Agreement, supra note 218, at Article II, Section 2.1,

[221]Land Fallowing Agreement, supra note 218, at Article II, Section 2.2.

[222]Id.

"measurement committee, comprised of representatives from each of the districts and the Department of Interior, to review the status of the fallowed acres, to calculate the amount of saved water available to MWD, and to estimate the actual water saved by the program.[223] 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.[224] Any water saved in excess of the 4.6 acre feet 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.[225]

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.[226]

SECTION 4: SOME OPTIONS FOR COLORADO

We begin with the premise that the movement of some water from agricultural use to urban use will continue to happen and, properly managed, will benefit the state. Colorado law does a thorough job of protecting the interests of water users but is lacking

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[223]Id. at Article IV, Section 4.3.

[224]Id. at Attachment 1.

[225]Presentation by Jan Matusek, Asst. General Manager, Metropolitan Water District of Southern California, at "Water Organizations in a Changing West", June 1993 conference, Natural Resources Law Center.

[226]Id. (Jan Matusek); and Land Fallowing Agreement, supra note 218, at Attachment 1.

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. It provides little incentive to make more efficient use of water under established water rights. It does not 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 Colorado law.

4.1 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.[227] 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 Section 3.3, several states now provide legal recognition of this approach.

Clarification is needed in Colorado 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 keeps 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

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[227]George W. Pring and Karen A. Tomb, "License to Waste: Legal Barriers to Conservation and Efficient Use of Water in the West," 25 Rocky Mtn. Min. L. Rev. 25-1 (1979); Steven J. Shupe, "Waste in Western Water Law: A Blueprint for Change," 61 Or. L. Rev. 483 (1982).

and not, for example, to water consumed by cottonwood trees growing along a river.[228] 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 transferrable 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.

Representative Tim Foster has introduced bills in recent sessions of the Colorado Legislature providing for "plans for conservation" that would allow users to save part of the water historically diverted and transfer that water to another use. An excerpt from HB 1158, introduced in the 1993 session, is attached as Appendix 1.

Another option is to restrict the right to save water to a state agency such as the Colorado Water Conservation Board (CWCB). Under current law, the CWCB is the only entity authorized to hold instream flow water rights. Restricting the right to saved water to the CWCB would simply add an additional function to an existing and familiar entity whose activities are carefully monitored by the State Legislature. State funds would be used to make improvements producing water savings, and the uses of the saved water would be determined by the CWCB. 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.

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[228]In Southeastern Colorado Water Conservancy District v. Shelton Farms, Inc., 187 Colo. 181, 529 P.2d 1321 (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 Colorado's 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).

4.2 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 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. It 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 Colorado. Particularly attractive would be the creation of banks for the major basins of the state, perhaps operated by a committee of water organization representatives and other interests, that could utilize existing storage (including groundwater recharge) within the basin to bank and make available appropriated, historically used, but currently unneeded water. The flexibility with which water could be provided through a bank might help create markets in areas of the state where such opportunities do not presently exist. For example, agricultural water users in the Lower Arkansas Valley might find interest in the temporary use of their water rights by other irrigators, by local communities, or by those wanting water for recreational or wildlife purposes. A bank could be an option to the permanent sales that have removed considerable amounts of water from use in the valley over the last 20 years.

Banks might also facilitate the development of rotating land fallowing schemes and dry-year option arrangements, discussed in Section 3.4. 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, with appeal to the water court only in situations where acceptable transactions cannot be worked out. 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.

The Center is mid-way through a funded research project looking at water banks.[229] One outcome of this project, scheduled to be completed in August 1994, will be a recommended approach for creating and implementing several different types of water banks.

Either as a part of new water banking legislation, or in addition to it, the legislature should consider revisiting Colorado law regarding temporary transfers. Existing law only addresses temporary transfers occurring within a water delivery system and does not provide a process for considering possible out-of-system transfers such as the dry-year options discussed in Section 3.4.3. States with laws providing for temporary transfers generally seek to facilitate such transfers by modifying the "no injury" burden in the approval process while providing for remedies for actual harm that may subsequently result.

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[229]This project, funded under a grant from the USGS through the Water Resources Research Act, includes a description of existing water banks throughout the western states with emphasis on the California State Water Bank and the water banking programs in Idaho. It includes a detailed evaluation of groundwater recharge banks. Economists Charles Howe and Kathleen Miller are evaluating the economic effectiveness of various water banking features such as price and supply arrangements.

4.3 Third Party Effects

In 1991 the Colorado Legislature for the first time went beyond protection of water rights in water rights transfers and recognized the potential need for revegetation of dried-up lands to prevent soil erosion and build up of weeds. The Legislature has considered the need for offsetting payments to local governments to make up for reduced property taxes as land shifts from irrigated cropland to dry land farming or grazing. Other states require the consideration of additional impacts including those on the local economy, on water quality, and on fish and wildlife and related habitat. In several states, if the transfer would remove water from a river basin, the requirements are even more comprehensive.

4.4 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 Colorado and 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 for Colorado:

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

We recommend that Colorado 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 Colorado. 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 water courts factor in public values may require some guidance from the legislature. For example, the legislature could, like California, specifically mandate consideration of the proposed transfer's impact on fish, wildlife, and other public values.[230] Alternatively, the legislature 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.[231] Or the legislature 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.[232]

Measuring and addressing local economic impacts are more problematic. We suggest that all transfers be subjected to a charge of $50 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. Colorado law presently imposes this charge on water to be transferred for use outside the state.[233] 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*.[234]

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[230]Cal. Water Code § 386 (1971); See Table 3.1.

[231]See e.g., Nev. Rev. Stat. Ann. §§ 533.370(3), -.345 (Supp. 1991).

[232]HB 337, Ch. 182, 1987 New Mexico Laws.

[233]Colo. Rev. Stat. § 37-81-104(1) (1990).

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

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 kind 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. Substantial transbasin diversions already exist in Colorado. 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 basin will be used in an efficient manner, and can show that this source of supply is the best available alternative.[235]

SECTION 5. SUMMARY

Water rights in Colorado are regarded as property rights and may be transferred and changed in use so long as there is no injury to other water rights. For well over 100 years agricultural water rights have been changed to urban use in Colorado. In recent years such transfers have been viewed as an increasingly important source of new water supplies for the growing urban areas of the state. Several relatively large-scale purchases of agricultural water rights in places like the Lower Arkansas Valley focused attention on concerns raised by the removal of water and the consequent loss of agricultural activity.

There are opportunities in Colorado to improve utilization of the state's water resources and to meet the needs of urban areas without undermining the agricultural economy of the state. At present the legal system promotes only one type of transfer—permanent sale of water rights with dry-up of formerly irrigated lands. We suggest here mechanisms that provide options to this approach—by providing incentives to

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[235]Urban water suppliers traditionally have not been leaders in promoting water use efficiency since, among other reasons, they do not operate on a profit basis. The Office of Water Conservation within the Colorado Water Conservation Board should be directed to establish efficiency standards against which proposals could be measured.

make more efficient use of water presently diverted, by facilitating short-term transfer arrangements that could address much of the present demand (such as for drought-year supplies), and by assuring that transfers do not impose uncompensated losses on local communities and resources.

APPENDIX

The following is excerpted from House Bill 93-1158, introduced in the 1993, First Regular Session, Fifty-Ninth General Assembly, State of Colorado:

Be in enacted by the General Assembly of the State of Colorado:

SECTION 1.37-92-102(1), Colorado Revised Statutes, 1990 Repl. Vol., is amended BY THE ADDITION OF A NEW PARAGRAPH to read:

37-92-102(1) Legislative declaration. (1)(c) IT IS THE POLICY OF THIS STATE TO ENCOURAGE THE EFFICIENT USE OF WATER RESOURCES UNDER VALID EXISTING WATER RIGHTS. IN RECOGNITION OF THIS POLICY, MEASURES THAT CAN BE TAKEN TO MAKE MORE EFFICIENT USE OF WATER UNDER A WATER RIGHT, WITHOUT INJURY TO OTHER WATER RIGHTS, ARE HEREBY ENCOURAGED. HOLDERS OF WATER RIGHTS WHO SAVE WATER UNDER AN APPROVED PLAN FOR CONSERVATION MAY MAKE ADDITIONAL USE OF SUCH WATER, USING THE SAME PRIORITY AS THE ORIGINAL RIGHT UNDER THE CHANGE OF WATER RIGHT PROCEDURES SET FORTH IN SECTION 37-92-302. THE AVAILABILITY OF SAVED WATER UNDER A PLAN FOR CONSERVATION, OR THE FAILURE TO APPLY FOR A PLAN FOR CONSERVATION, SHALL NOT CONSTITUTE EVIDENCE OF ABANDONMENT OR A WASTEFUL OR NONBENEFICIAL USE OF WATER UNDER THE ORIGINAL WATER RIGHT. NOTHING IN THIS SECTION SHALL BE CONSTRUED TO REQUIRE THE OWNER OF A DIRECT FLOW RIGHT TO CHANGE ALL OR ANY PART OF SUCH RIGHT TO A CONSERVATION WATER RIGHT PURSUANT TO THIS SECTION.

* * *

SECTION 3.37-92-103 (10.4),....is further amended BY THE ADDITION OF THE FOLLOWING NEW SUBSECTIONS, to read:

37-92-103. Definitions. (6.5) "CONSERVATION PRACTICES" MEANS MEASURES THAT ARE IMPLEMENTED TO REDUCE THE HISTORICAL DIVERSION OF WATER ASSOCIATED WITH THE EXERCISE OF A VALID EXISTING WATER RIGHT AND THAT PRODUCE SAVED WATER. "CONSERVATION PRACTICES" INCLUDES, BUT IS NOT LIMITED TO, IMPROVEMENTS IN WATER DIVERSION AND DELIVERY SYSTEMS, REDUCTIONS IN WATER USE, AND ENHANCEMENT OR OTHER MANAGEMENT OF RETURN FLOWS. "CONSERVATION PRACTICES" DOES NOT INCLUDE MEASURES THAT PRODUCE SAVED WATER BY THE ERADICATION OF PHREATOPHYTES OR HYDROPHYTES.

(9.5) "PLAN FOR CONSERVATION" MEANS A DETAILED PLAN QUANTIFYING THE AMOUNT OF WATER HISTORICALLY DIVERTED UNDER A VALID WATER RIGHT THAT WILL BE SAVED THROUGH THE APPLICATION OF CONSERVATION PRACTICES WITHOUT INJURY TO ANY OTHER WATER RIGHTS. HOLDERS OF WATER RIGHTS WHO SAVE WATER UNDER AN APPROVED PLAN FOR CONSERVATION MAY MAKE ADDITIONAL USE OF SUCH WATER, USING THE SAME PRIORITY AS THE ORIGINAL RIGHT UNDER THE CHANGE OF WATER RIGHT PROCEDURES SET FORTH IN 37-92-302.

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(10.4) ... "SAVED WATER" MEANS THE AMOUNT OF WATER THAT HAS HISTORICALLY BEEN AVAILABLE TO AN APPROPRIATOR UNDER A WATER RIGHT AND WOULD NO LONGER BE NECESSARY BECAUSE OF THE IMPLEMENTATION OF CONSERVATION PRACTICES UNDER AN APPROVED PLAN FOR CONSERVATION.

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SECTION 5.37-92-302 ...(5)...amended to read:

(5) ... IN THE CASE OF CONSERVATION PRACTICES FUNDED OR IMPLEMENTED BY THE FEDERAL GOVERNMENT, OR ANY AGENCY THEREOF, AN APPLICATION FOR A PLAN FOR CONSERVATION MUST SHOW THAT SUCH PLAN HAS BEEN APPROVED BY THE BOARD OF DIRECTORS OR OTHER GOVERNING BODY OF THE LEGAL ENTITY, IF ANY, OWNING OR MANAGING, UNDER CONTRACT, THE CLAIMED SAVED WATER.