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CALFED Water Transfer Element

Draft Discussion Paper No. 1 - Transferable Water

Issues

The basic questions are: what constitutes transferable water? How is transferable water defined and measured for a specific transfer? What quantity of water can be transferred without adversely affecting other legal users of water or the affected environment?

A number of variations or sub-issues arise from these basic questions:

1. What constitutes transferable water for a transfer of saved or conserved water? Are the rules different for a fallowing or crop shift transfer, or other types of transfers?

2. Can water quality improvements or changes in flow timing be used to produce transferable water?

3. Some water users have their own historic water rights and an entitlement to water based on a settlement contract with the Central Valley Project (CVP) or the State Water Project (SWP). What is the significance of this distinction for determining transferable water? A related question is what are the criteria for determining whether water proposed for transfer is available at the time of the transfer?

4. Does promotion of water transfers, or the rules of the current water transfer system, encourage diversions and consumptive use of water which would not otherwise occur?

The question of what is transferable water depends on the physical source of the water, the underlying water right or legal entitlement to the water, and the type of transfer. From a technical perspective, groundwater and surface water are part of the same system, but legally, water is considered to be surface water or ground water.

Water rights or legal entitlements include: riparian and pre-1914 rights, post 1914 appropriative rights, prescriptive rights, various types of contract entitlements, overlying ground water rights, and appropriative ground water rights.

There are several types of water transfers: transfer of surface water through groundwater substitution; direct groundwater transfer; transfer based on reductions in consumptive use through crop fallowing or crop shifting; transfer of stored water; transfer of treated wastewater; transfer for instream use; and transfer of saved or conserved water by reduction of irrecoverable losses to saline sinks or "undesirable" vegetation, or other reductions in evapotranspiration. Additionally, transfers of CVP water are subject to the requirements of the CVPIA.

This paper will not address transfers of reclaimed waste water, groundwater, stored water, transfers for instream uses under Water Code section 1707, or CVPIA rules for transfers. This paper will focus primarily on transfers of surface water held under a right of direct diversion.

Background

Water Code sections 386, 1702 and 1706 codify what is commonly referred to as the "no injury" rule on water transfers. While the practical application of these provisions is not always clear, they do establish the principle that water transfers may not injure other legal users of water or the environment.

Water Code sections 386 and 1725 establish that, at least as to transfers which must be submitted to the State Water Resources Control Board, the Board must make a finding, as part of an approval of a transfer, that the transfer will not injure any legal user of water, will not have an unreasonable affect on fish, wildlife or other instream beneficial uses, and will not unreasonably affect the overall economy of the area from which the water is being transferred.

Transfers of water held under a pre-1914 diversion right, while not subject to State Board jurisdiction, are subject to judicial enforcement of the no-injury rule.

Water Code sections 484 and 1725 define transferable water as water that would have been consumptively used or stored by the transferor in the absence of the transfer, the transfer of which will not injure any legal user of water, and which will not unreasonably affect fish, wildlife, or other instream beneficial uses.

Water Code section 484 also says that temporary transfers of water (as defined) do not prejudice the transferor's future right to the use of the transferred water. This section and section 1725 define consumptively used water as water "which has been consumed by use through evapotranspiration (ET), has percolated underground, or has been otherwise removed from use in the downstream water supply as a result of direct diversion."

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Water Code section 1011(a) allows for the transfer of water produced by water conservation efforts. Water conservation is defined as the use of less water to accomplish the same purpose of use permitted by the existing water right. This section provides that when water appropriated for irrigation is not used because of land fallowing or crop rotation, the reduced usage shall be deemed water conservation for purposes of this section.

Water Code section 1011(b) provides that water, or the right to the use of water, the use of which has ceased or been reduced as the result of conservation may be sold, leased, exchanged or otherwise transferred, pursuant to any provision of law relating to water transfers.

Water Code sections 1011(a) and (c) also provide that any cessation or reduction in the use of appropriated water, as a result of water conservation efforts, is deemed equivalent to a reasonable and beneficial use of water; and upon completion of any transfer of water based on conservation efforts, the right to the use of the water shall revert to the transferor as if the transfer had not been undertaken.

Water Code section 1725 provides that a permittee or licensee may change the place of use (i.e., transfer) water "if the transfer would only involve the amount of water that would have been consumptively used or stored by the permittee or licensee in the absence of [the transfer], would not injure any legal user of the water, and would not unreasonably affect fish, wildlife or other instream beneficial uses. For purposes of this article, 'consumptively used' means the amount of water which has been consumed through use by evapotranspiration, has percolated underground, or has been otherwise removed from use in the downstream water supply as a result of direct diversion."

Water Code section 1745.04 provides that a water supplier may contract to transfer, or store as part of a transfer, water, if the water supplier has allocated to users within its service area the water available for the water year and no other user receives less than the amount provided by that allocation or is otherwise unreasonably adversely affected without that water user's consent.

Section 1745.05 provide that a water supplier may transfer water stored by the water supplier, water made available by crop shifting or fallowing, or water made available by "conservation or alternative water supply measures ...". Fallowing transfers are limited to 20% of the water which would have been applied or stored by the water supplier in the absence of a transfer contract entered into in any given hydrological year, unless the agency approves, after reasonable notice and a public hearing, a larger percentage.

The application of these statutes and, in particular the interpretation of the "no injury rule", has led the Department of Water Resources (DWR) to develop three concepts which are instrumental in evaluating proposed water transfers and determining the quantity of water available for transfer.

"New water" is water not previously available in the system, created, for example, by reducing irrecoverable losses or flow to unusable water bodies. "New water" results from some action by a seller that provides water to the system which would not be available absent the transfer.

"Real water" is water which, if transferred, does not diminish the supply available for other beneficial uses and which is not derived at the expense of another legal user. "Real water" is not necessarily "new water", but all "new water" must be "real water".

"Paper" water is water that does not create any increase in the water supply, such as water under right but not historically used, or tailwater or return flows which are used downstream.

Discussion

Collectively, these provisions establish the public policy and legal authority that water transfers based on fallowing, crop shifting, and conservation measures are determined substantially by reductions in consumptive use and reductions in irrecoverable losses. However, some questions remain.

1. The first specific issue is the question of what is the scope of "consumptive use" for transfers based on fallowing, crop shifting or conservation measures.

Some stakeholders (potential sellers and buyers of transferred water) argue that the traditional definition of "consumptive use" is too narrow, and unreasonably limits transfers of saved or conserved water authorized by Water Code section 1011(b) and fallowing/crop shift transfers authorized by section 1001(a).

The argument is that the narrow definition of consumptive use effectively limits transferable water to reductions in evapotranspiration (ET), which can only be accomplished by fallowing or crop changes, and reductions in percolation to unusable groundwater, which occurs only in a few geographic areas of the state.

There is no disagreement that water consumed by the crop (evapotranspiration of applied water) is part of the consumptive use measure and that, if foregone, is transferrable.

Similarly, there does not appear to be any serious dispute that surface water runoff (tailwater) which is not recaptured and reused, but which becomes available to a downstream user, is not transferrable. (The question is sometimes asked: if it is permissible for the water user to recapture tailwater for his own use, thereby depriving the downstream user of its benefit, why can he not reduce his tailwater production by efficiency improvements and transfer the saved water? The answer is that under current law, the "no injury" rule does not apply in the first case, but it does apply to water transfers.)

Water Code section 1725 includes in its definition of consumptive use "water which ... has percolated underground." The Department of Water Resources has interpreted this phrase to be limited by other language in this section, so that it only applies to water percolating underground which "has been removed from use in the downstream water supply...."

There is no dispute that water which otherwise would have percolated to unusable groundwater is transferrable. While there is general agreement that water which would otherwise have percolated to usable groundwater is not transferrable, there is some question about how this rule should be applied.

For example, water that percolates below the crop root zone as a result of overapplication of irrigation water (which is necessary to some extent for leaching of salts) enters the "vadose zone". This is the portion of the soil column below the rootzone but above the aquifer. Water movement through this zone is known as vadose zone transport. Transport is affected by several variables but most significantly by gravity and soil type (permeability).

The rate at which water moves through the vadose zone affects the rate of recharge to the aquifer. The recharge rate is not always known; therefore the consequence of changing the rate of transport through the vadose zone cannot always be determined. The extent to which other legal users of water may be affected by changing this transport rate (as a result of a groundwater substitution transfer) is also dependent on other variables that result in a recharge or drawdown of the aquifer, including subsurface lateral flow, precipitation, streamflow accretions and depletions, and rates of withdrawal by other overlying users. Therefore, it is not always clear that reducing deep percolation (as an irrigation improvement or water conservation measure) which would otherwise eventually move through the vadose zone to a usable aquifer (or affect the rate of recharge to the aquifer) will necessarily injure another legal user of water.

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In summary, there do not appear to be significant differences in views on the quantification of transferable water based on fallowing or crop shifting. There is, however, some variation among stakeholders and water management agencies in their views of how to quantify transferrable water based on conservation. Some believe that the strict interpretation of "consumptive use" when applied to conservation based transfers is inconsistent with the policy of promoting and encouraging such transfers as a way of providing financial incentives for water conservation improvements.

Solution Options (First Issue)

It has been suggested that a standardized set of policies and rules on transferable water generally, agreed to by USBR, DWR and the State Board, would be helpful in clarifying the agencies' interpretations of the requirements for transfers of saved or conserved water.

It has also been suggested that one way to resolve the question of what constitutes transferable water based on conservation measures is to make the State Water Resources Control Board the exclusive arbiter of this decision, even for those transfers not currently within the State Board's jurisdiction.

Alternatively, if the problem is that the existing law is not clear on this point, then the law should be amended to state clearly the circumstances under which saved or conserved water is transferable.

Finally, there may be other interpretations of consumptive use based on a variation of what constitutes an "irrecoverable loss". This idea will be explored in more detail in the following section. For example, some have suggested that water which would percolate to a usable aquifer should be considered transferrable unless its removal from the system would affect other legal users of water within some reasonable period of time.

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2. The second specific issue raised by the question what constitutes transferable water is whether there are other interpretations of consumptive use or irrecoverable loss which might be applied. For example, if improvements in receiving water quality or changes in flow timing can be incorporated into the ideas of consumptive use and irrecoverable loss, the volume of water available for transfer might be expanded without injury or impairment to the rights of downstream users or the environment.

Over the past several years, water suppliers generally have been encouraged by state law to adopt and implement water conservation plans. CVP contractors are required by federal law to adopt and implement such plans. The public policy intent behind water conservation is that reductions in applied water and improvements in application efficiency will make the saved or conserved water available for other beneficial uses. Some argue that if saved or conserved water is not transferable water, there is little, if any, financial incentive to adopt and implement conservation measures. The rebuttal is that if the same crop production can be achieved with 20% less water than was historically required, then in dry years, when 20% less water is available, the same production value can be realized. Thus, over the long term, the argument goes, conservation does pay off, even if the water user cannot sell the saved water.

Additionally, in spite of law to the contrary, there is a concern that conservation measures may actually create a risk to water rights or contract rights to water, if the saved/conserved water is not continually and regularly put to beneficial use.

In DWR's 1993 publication "Water Transfers in California, Translating Concept into Reality", there is a discussion of conserved water transfers in the Sacramento Valley. An important point is that "... new water can be created only by reducing losses to unusable water bodies (rare in the Sacramento Valley), reducing surface outflow during periods of excess Delta outflow, reducing consumptive use of crops, or environmentally acceptable reductions in consumptive use of non-agricultural vegetation. Reducing percolation to groundwater depletes another part of the system and can penalize other users by direct reduction of ground water supplies, decreasing groundwater discharge to surface streams or increasing percolation from surface supplies to groundwater. Reducing drainage outflow during the irrigation season merely reduces the supply available downstream".

In summary, some stakeholders believe that, given the strict and traditional interpretation of "consumptive use", the amount of transferable water which can be generated by saving or conserving is very limited. This would appear to be inconsistent with the broader state policy of encouraging conservation by making conserved water transferable, thus creating additional economic incentives for conservation measures.

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Solution Option (Second Issue)

An alternative approach to quantifying transferrable water based on conservation measures would be to expand the traditional concept of irrecoverable loss to include losses to the watershed of timing, quality or location. Under this approach, water which would have been lost to a stretch of the stream or river, or water which is returned in a degraded condition, or water which is lost to the system for a period of time, could under some circumstance be considered transferrable water, subject to the "no injury" and "no unreasonable" impact rules.

3. The third specific issue arises out of the fact that some water rights settlement contracts in the Sacramento Valley provide for the contractors' use of water which may exceed the amount of water they hold under their own historic rights (riparian, pre-1914 or appropriative). This can lead to questions about (1) whether the water proposed for transfer is available under the contractor's historic right at the time and in the quantity proposed in the absence of the settlement contract, or (2) whether the water proposed for transfer is CVP (or SWP) water available as a result of the settlement contract, or (3) some combination.

Generally, USBR approval of any such transfer is required as a condition of the USBR settlement contract. Some of the issues that are considered are the timing of the transfer versus the timing of the diversion on which the transfer is based; and the quantity of water proposed for transfer versus the rate of diversion. In other words, if the transfer is based on the historic water right, the water to be transferred must be water that would have been available in the absence of the settlement contract. If the water would not be available in the absence of the settlement contract, the USBR may limit the quantity of the water transferred, or place other conditions on its approval, in order to protect the CVP and other CVP contractors.

Solution Option (Third Issue)

This issue will probably be resolved in the negotiations of renewed contracts between the Bureau of Reclamation and Sacramento River settlement contractors.

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4. The fourth specific issue has arisen because of a concern that a water user may increase his/her consumptive use of water over historical amounts in order to "qualify" as much water as possible for transfer. This situation will generally arise when a water user holds a right to use water which exceeds his historical use. The water user clearly has a legal right to the use of the water, but under current water transfer law and the rules of "real water vs paper water", the water user will not be allowed to transfer water which has not been consumptively used in the past.

Solution Option (Fourth Issue)

Agreement on a method of determining historical use.