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**FACILITATING VOLUNTARY TRANSFERS
OF
BUREAU OF RECLAMATION - SUPPLIED WATER**

**VOLUME II
CASE STUDIES**

**Natural Resources Law Center
University of Colorado School of Law
Boulder, Colorado 80309-0401**

PREFACE

This volume contains the findings from a series of case studies that comprised the primary work in this project. A major purpose of this project was to evaluate transfer issues in relation to specific examples where these issues were raised. We examined Bureau of Reclamation projects in eight states (see next page). Transfers involving a change of use of water either had occurred in each of the projects or had been seriously proposed.

The case studies are the product of work by a number of people. Bruce Driver was the author of the Central Valley Project case study. Richard Wahl prepared the case studies of projects in Arizona and New Mexico. Teresa Rice was the primary author for the three case studies in Utah and the two in Colorado. Steve Bushong prepared the Casper-Alcova case study. Larry MacDonnell authored the Newlands and Rapid Valley case studies. Research assistance by Rhonda Egan and Emily Keimig, University of Colorado School of Law (Class of 1992) and Peter Waack (Class of 1991) is acknowledged with thanks.

The case studies themselves are useful summaries and analyses of transfer issues in the context of a specific project. Each of them can stand on its own as a piece of research and analysis. Special attention was given to the Central Valley Project in California because of its size and its importance. Ultimately, however, the case studies were intended only as a means to get at the end which was to analyze general federal law and policy affecting transferability of Bureau-supplied water. The results of this effort are contained in volume one.

Research supported by the U.S. Geological Survey, Department of the Interior, under USGS award number 14-08-0001-G1736. The views and conclusions in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government

Larry MacDonnell

FACILITATING VOLUNTARY TRANSFERS OF BOR-SUPPLIED WATER

LOCATION OF CASE STUDIES

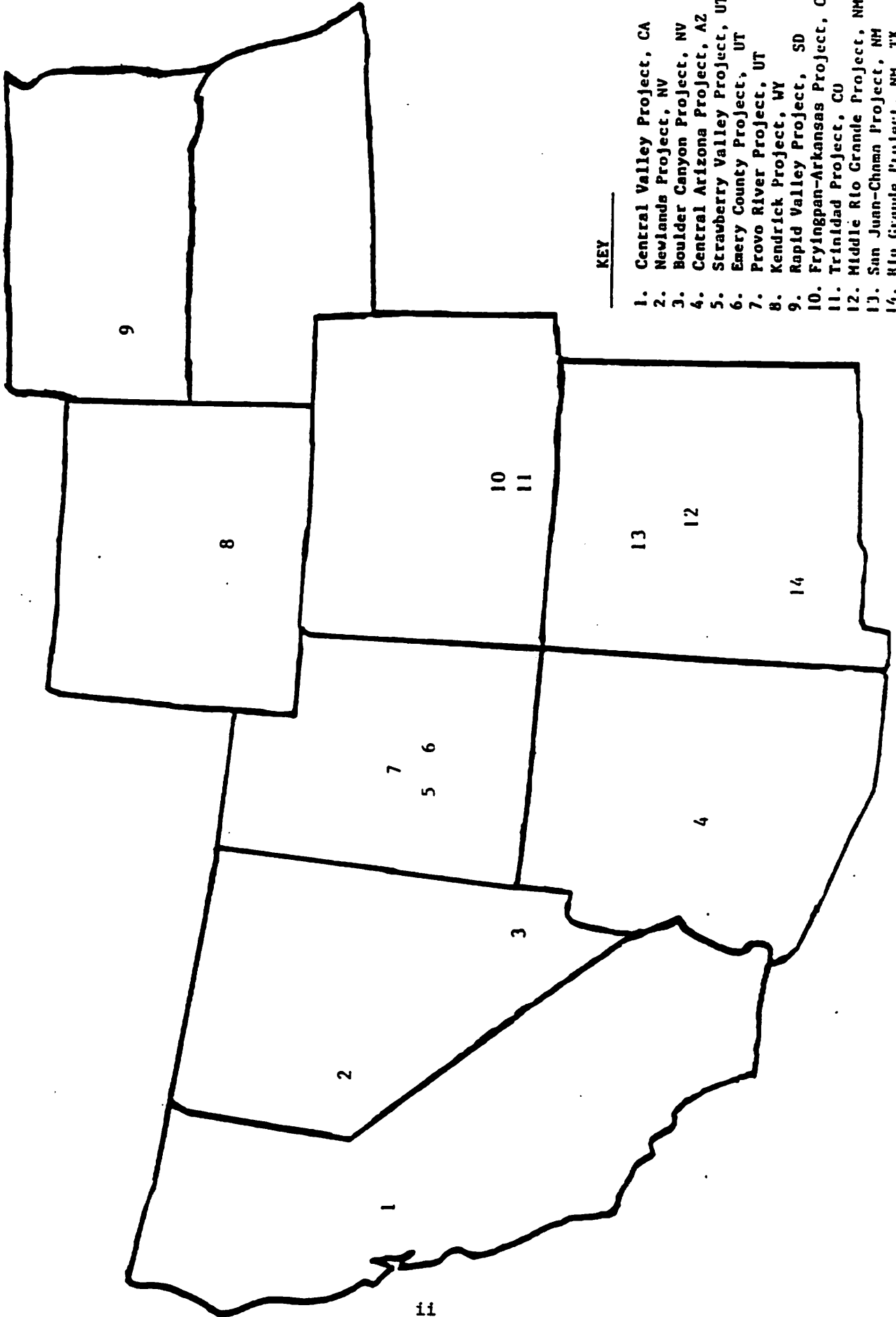


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ARIZONA CASE STUDIES

ARIZONA CASE STUDIES¹

When one hears of water transfers in Arizona, one probably first thinks of the purchases of rural lands by cities in order to gain rights to their groundwater supplies for future urban growth. According to the state's groundwater code, cities within designated "active management areas" must demonstrate a 100-year assured supply of water before land is subdivided. This has set off something of a bidding war between cities and has resulted in a good deal of controversy--pitting urban areas and counties against rural ones and areas within active management areas against those that are not. Many of these purchases of privately owned groundwater have a potential connection to the federal Bureau of Reclamation. The purchasers expect to be able to utilize surplus capacity in the federal conveyance canal of the Central Arizona Project in order to convey their groundwater when it is needed.

Although most of the publicity concerning water transfers in Arizona has focused on groundwater purchases, there is also a growing interest in transfer of surface water supplies from federal projects. This interest is motivated by several factors: the senior surface water rights of some federal contractors (particularly those preceding the authorization of the Central Arizona Project), federal contractor seniority for access to the Central Arizona Project's conveyance facilities, and the potential to utilize existing surface supplies to satisfy certain federal obligations. In particular, purchase of water from federal contractors has been utilized in past Indian water settlements and is being looked at as one source in future settlements. Purchase of surface water is also being considered by Phoenix area cities as a potential source of replacement water for Cliff Dam, a federal storage facility that was halted by Congress in 1988.

This activity has meant that in Arizona, the federal government has been a participant in the market for transfer of surface water rights. However, this market is complicated by several factors. (1) Much of the surface water use in Arizona from federal projects is from the Colorado River. The Secretary of the Interior has particular authority over contracting for water from the Colorado River (more authority than in Reclamation projects elsewhere). Therefore federal rules and procedures may have more importance, compared with state law, than in other areas of the west. However, the federal rules under which transfers of Colorado River water would take place are not clear. (2) The Central Arizona Project is relatively recent, with the result that not all of the water is under contract. Although all of the water was allocated to specific parties by the Secretary of the Interior, some contracts have been declined and other contracts have not been signed. This has meant that a great deal of attention is focused on the reallocation of the declined water and on what will happen to the allocated, but uncontracted water, rather than on transfer of water already under contract. (3) Arizona statutes provide a procedure for a "severance and transfer" of surface water rights, but one provision in this statute requires that such transfers be approved by all water districts in the same basin. This is in stark contrast to the transfer laws of most western states where a state agency is responsible for protecting third-party interests in water. This provision has the potential to halt, or to greatly complicate, transfer of surface rights falling under state water law. At a minimum, a transfer would require agreement on the part of a large number of water users. Whether transfers of Colorado River entitlements (including allocations of CAP water) fall under this requirement is uncertain -- perhaps not, particularly given

that the rights were not obtained under state law. (4) Certain other special provisions also affect the transfer of surface water rights on some federal projects. For example, the particular structure of the water rights within the Salt River Project clouds the transferability of such water. In the course of the following discussion we will return to a more detailed examination of these various factors, but first we provide some background on the nature of federal facilities and authorities within Arizona.

Background

The various compacts and pieces of legislation relating to use of Colorado River water and the court decisions based on them are known as the "Law of the River." The Colorado River Compact of 1922 states that 75 million acre-feet of water must be delivered every 10 years by the Upper Basin to Lee Ferry, the dividing point between the Upper Basin and the Lower Basin, resulting in an average of 7.5 million acre-feet per year. The Upper Basin itself is allocated 7.5 million acre-feet, but, because annual flows of the Colorado River average only around 14 million acre-feet, the obligation to deliver water to Lee Ferry may in effect reduce Upper Basin entitlements to less than 7.5 million acre-feet. This has not been a problem to date because Upper Basin depletions have not exceeded 4 million acre-feet. The Mexican Water Treaty of 1944 allocated 1.5 million acre-feet of water per year to Mexico, further adding to the demands on Colorado River water.

An allocation among the Lower Basin states was specified by the Boulder Canyon Act of 1928 and the Supreme Court's 1963 decision in *Arizona v. California*: 4.4 million acre-feet of Colorado River water to California, 2.8 million acre-feet to Arizona, and 0.3 million acre-feet to Nevada.

California and Arizona were each entitled to 50 percent of any surplus flows.

For many years, Arizona had no practical means to divert much of its share, except for some diversions to low-lying lands along the Colorado River in the Yuma Valley before the river enters Mexico. Even in the early 1980s, the state was utilizing only about 1.3 million acre-feet per year from the river. In 1968, Arizona was able to secure passage of the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501), authorizing construction of the Central Arizona Project (CAP) to divert water from the Colorado River to the state's population centers surrounding the cities of Phoenix and Tucson in the south central part of the state. Arizona's success in securing authorization of the Central Arizona Project did not come cheaply, however; in the process, it had to give priority to Lower Basin diversions to California in times of low flow. This means that as demands on the river increase in the Upper Basin (Colorado, Wyoming, and Utah), Arizona will have to bear the brunt of reduced Lower Basin diversions in times of shortage in order to meet the U.S. obligation for water deliveries to Mexico.

Any diversion of water from the Colorado River (including those within the Central Arizona Project) require a contract with the Secretary of the Interior. One implication is that the Secretary's authority over allocation of Colorado River water is nearly absolute - perhaps limited only by the contracts he has signed for water use. In actual practice, the Secretary has often made an attempt to work with state agencies (in Arizona, primarily with the state Department of Water Resources) in the allocation of water. The Bureau of Reclamation also works closely with the Central Arizona Water Conservancy District in operation of the Central Arizona Project. But certain questions remain. Do federal rather than

state definitions of appurtenancy and beneficial use apply to all CAP and other Colorado River contracts? Will the federal government bear primary responsibility for determining historical consumptive use of any Colorado River contracts that are transferred? One answer may be that there is a degree of gradation of federal authority, with the exact nature to be determined by future federal and state actions. The answer may also depend in part into which class of contracts a particular transfer falls. At any rate, for purposes of presenting some case studies and for discussing the legal and contractual questions surrounding them, three distinct categories suggest themselves: (1) transfers of contractual rights to pre-CAP Colorado River water, (2) transfers of contractual rights to CAP water deliveries, and (3) transfer of other surface water rights from federal facilities; i.e., non-Colorado River water supplies, such as those of the Salt River Project.

Transfers of contractual rights to pre-CAP Colorado River water

In Arizona, there are a number of water users in the western and southwestern part of the state that have contracts with the Secretary of the Interior. Many of these take water from the Lower Colorado River either directly or through a project. The Federal projects in this area include the Yuma Project, the Yuma Auxiliary Project, and the Gila Project.

The Yuma Project (see Figure 1) receives water from the All-American Canal to irrigate lands in both California (the Reservation Division of the Project) and Arizona (the Valley Division). The project was authorized in 1904 and began delivering water in 1907. Water is carried by a siphon from California under the Colorado River to irrigate about 54,000 acres in the Valley Division, lying generally southwest of Yuma

Arizona, along the Colorado River. The original plans were to irrigate another 45,000 acres on the adjacent Yuma Mesa to the east. However, the acreage of this project was scaled down considerably to the 3,305-acre Yuma Auxiliary Project, which began delivering water in 1922.

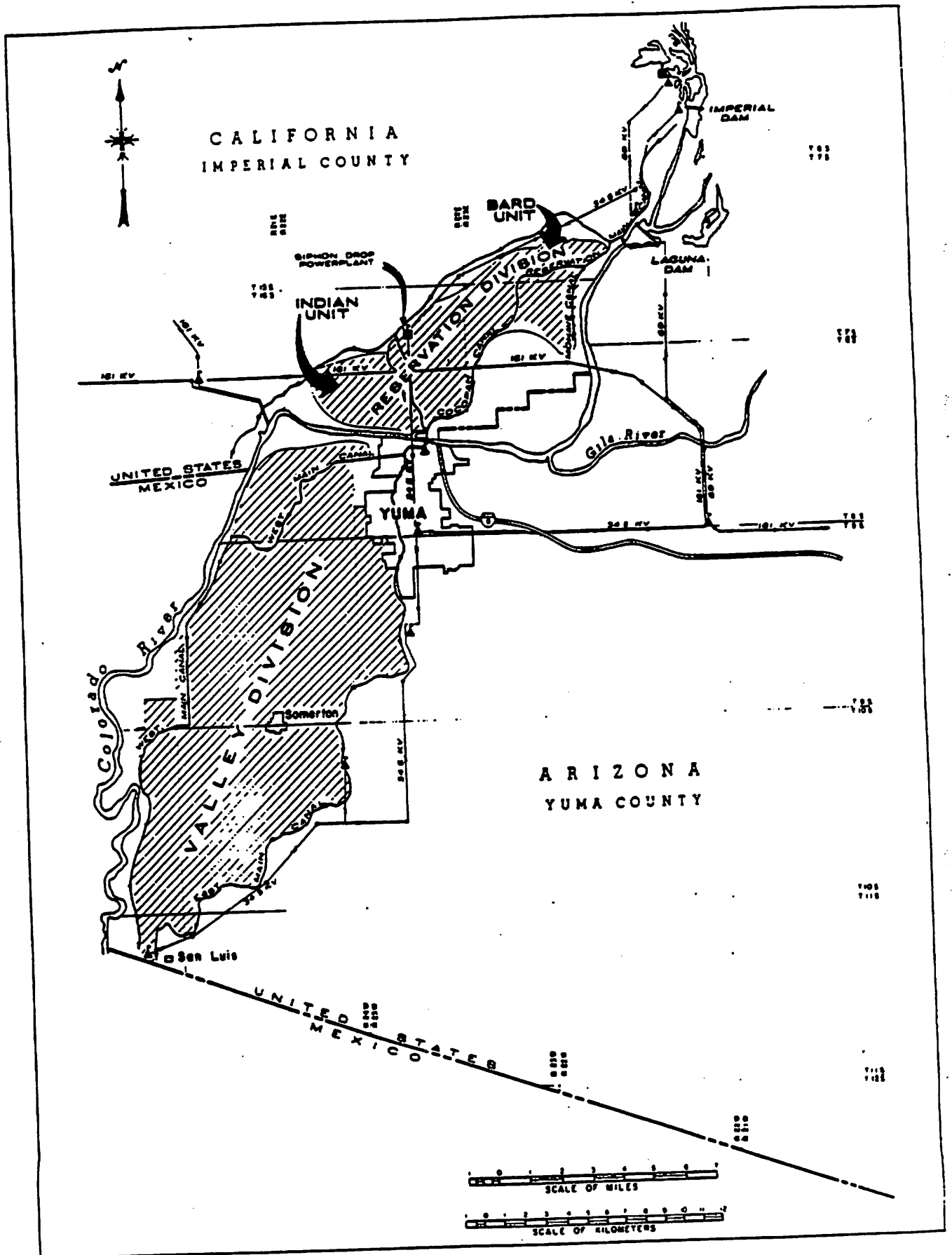
The Gila Project (see Figure 2) irrigates some 95,000 acres lying along Arizona's Gila River to the east of Yuma, as well as lands to the northeast and south of the city. In the late 1800s, settlers along the Gila River diverted water from that river to irrigate their crops. However, after floods washed out the diversion works, they turned to pumping groundwater. By the 1930s, salinity in the wells became a problem. The Gila Project was designed to save the area by importing surface flows from the Colorado River, with the first water deliveries arriving in 1943. Deliveries to the Wellton-Mohawk Irrigation District (east of Yuma along the Gila River) began in 1952.

In addition to these two projects, the Secretary has contracts for Colorado River water with other entities that are not part of any local Bureau of Reclamation Project (see Table 1 and Figure 3). The Bureau lists these contracts under the Boulder Canyon Project, of which Hoover Dam is the principal facility. Below Lake Havasu at Parker Dam (the point where CAP water is pumped) are the Ehrenberg Water Company (at Ehrenberg), the city of Yuma, and the Cibola Valley Irrigation and Drainage District (at Cibola). Above Parker Dam, the Secretary has contracts with the following Arizona entities: Bullhead City, Kingman, the Lake Havasu Irrigation and Drainage District (at Lake Havasu City), the Mohave Water Conservation District (near Bullhead City), and the Mohave Valley Irrigation and Drainage District (near Needles, California).

Table 1. Colorado River Contracts in Arizona (other than CAP)

<u>Contractor</u>	<u>Projected Population by 2040</u>	<u>Current Contract (acre-feet)</u>	<u>State's Recommendation (acre-feet)</u>	<u>Increase</u>
Mohave Water Con. Dist.	8,880	1,800	1,800	0%
Bullhead City	74,610	8,200	15,210	85%
Mohave Valley IDD	14,300	23,000	23,000	0%
Golden Shores	1,640	2,000	2,000	0%
Havasu Water Co.	8,780	993	1,420	43%
Lake Havasu City	73,170	14,801	19,180	30%
Consolidated Water Col.	3,590	680	800	18%
Parker	6,890	630	1,660	163%
Ehrenberg	2,110	500	500	0%

Source: Arizona Dept. of Water Resources



Yuma Project

Figure 1

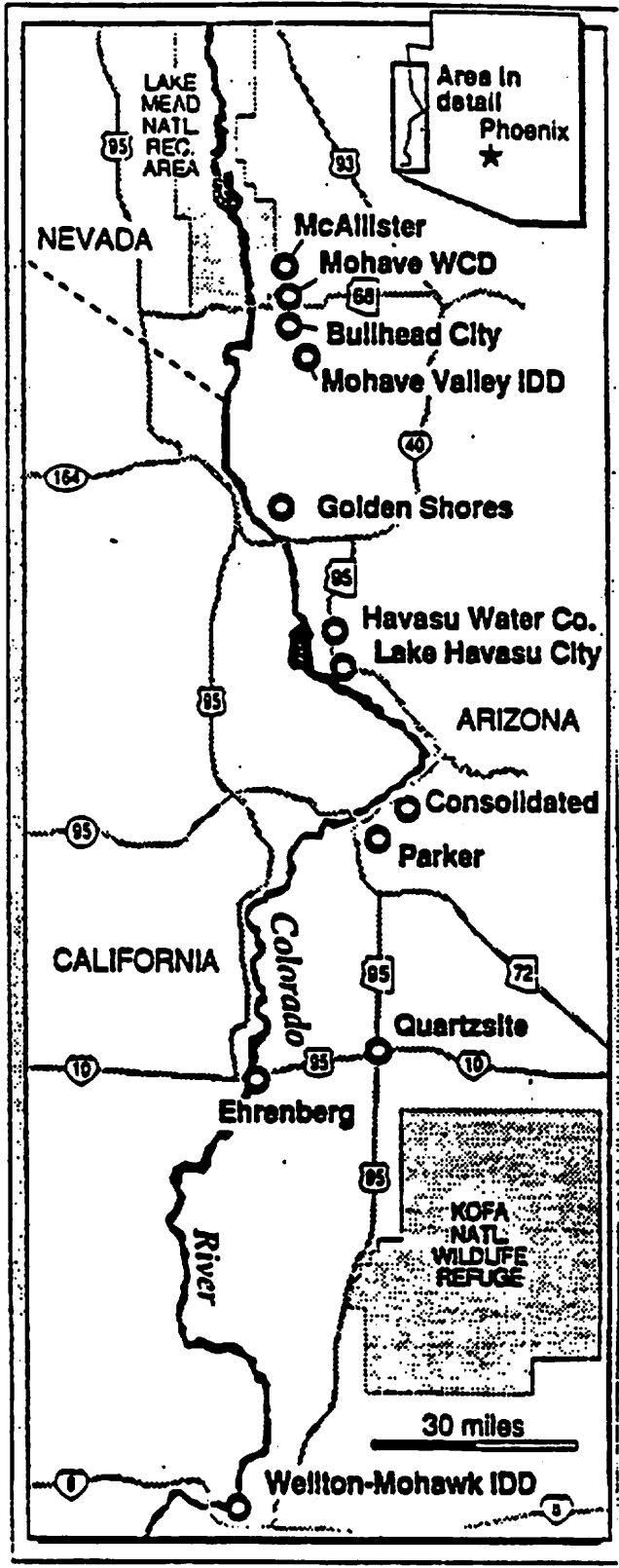


Figure 3

Transfers related to the Yuma Desalting Plant

Historically, one of the factors motivating federal acquisition of water in this area (or acquisition of irrigation land that would otherwise utilize water) was the concern over meeting treaty obligations to Mexico. The Mexican Treaty of 1942 obligated the U.S. to provide 1.5 million acre-feet annually to Mexico. In 1973, minute 242 of the International Boundary and Water Commission obligated the U.S. to assure that this water has no greater concentration of total dissolved solids than 115 ppm (plus or minus 30 ppm) more than the total dissolved solids in the water arriving at Imperial Dam. The goal was to provide water quality comparable to that of the flows being diverted to the agricultural areas on the northern side of the border through the All-American Canal.

To implement the U.S. salinity obligations to Mexico, Congress passed the Colorado River Basin Salinity Control Act in 1974. Among other measures, the act authorized the Secretary to remove 10,000 acres from the 75,000 acres originally authorized in the Wellton-Mohawk Irrigation District in the Gila Project, and this measure was implemented.² The purpose of acquiring these lands was to leave more fresh water in the Colorado River, thereby reducing the burden on the Yuma desalting plant which treats agricultural drainage water from the project to a quality suitable to re-enter the Colorado River below the Wellton-Mohawk District. The acquisition of these lands was, in effect, a purchase of water entitlements by the federal government (for additional discussion of the salinity control issues and other perspective water trades related to it, see Wahl, 1989, pp. 253-269). Of course, in this case the purchased entitlement was not to be transferred to another location, but to be left in the river.

Purchases by the United States related to the settlement of Indian water claims

A more recent market transfer of water in Arizona is the purchase by the United States of an entitlement to 50,000 acre-feet of water to be used in partially meeting the requirements of the Ak Chin Water Rights Settlement Act. The United States purchased Colorado River water entitlements from the districts of the Yuma Mesa Division of the Gila Project.

The Salt River Pima Maricopa Indian Water Rights Settlement Act of 1988 authorized the Secretary to acquire 22,000 acre-feet of water (consumptive use) from pre-CAP Colorado River contractors. The Wellton-Mohawk Irrigation District agreed to provide the federal government this quantity of water. This is to be obtained by the purchase of 2,000 acres of land and certain other measures. The estimated consumptive use per acre in this area is about 3 acre-feet per acre, so retiring 2,000 acres would yield about 6,000 acre-feet. The rest of the amount is evidently to be achieved by a reduction in deliveries in other portions of the district and reduced application rates of water. One of the principal attractions of the transaction to the district is that the legislation provided them with an exemption from acreage limitation. In fact, subsequent offers to the district to buy additional water (see discussion of Cliff Dam replacement water) have been refused by the district.

Proposed transfers relating to the replacement of Cliff Dam

There is a recent set of alternative proposals that would transfer about 30,000 acre-feet of water from agricultural areas in Arizona to central Arizona cities by utilizing CAP conveyance facilities. Some of the alternatives involve the transfer of water from pre-CAP Colorado River contractors to CAP

contractors. In December 1987, Congress voted to delete the proposed Cliff Dam from the future construction schedule of the CAP. The elimination of Cliff Dam had been sought by environmental groups (the "Coalition to Stop Cliff Dam") because the dam would have flooded a bald eagle nesting area, as well as having other adverse impacts. In exchange, the Secretary of the Interior was authorized to purchase up to 30,000 acre-feet of water rights (and any associated lands) for a replacement water supply (Energy and Water Department Appropriation Act of 1988). The purchase would be paid for by Arizona cities. These cities had already agreed to make advance payments into a fund for constructing Cliff Dam, and, after the decision not to fund Cliff Dam, the cities agreed to keep these contributions in escrow while sources of replacement water were examined.

By December 1988, the Bureau of Reclamation had identified several alternatives for the replacement water. These alternatives were presented to the interested parties so that their reaction could guide the Bureau's future study and implementation plans. Since most of the potential sources would yield less than the full 30,000 acre-feet of replacement water, the plan could involve implementing some combination of the alternatives. The various sources of replacement water are indicated in Figure 4.

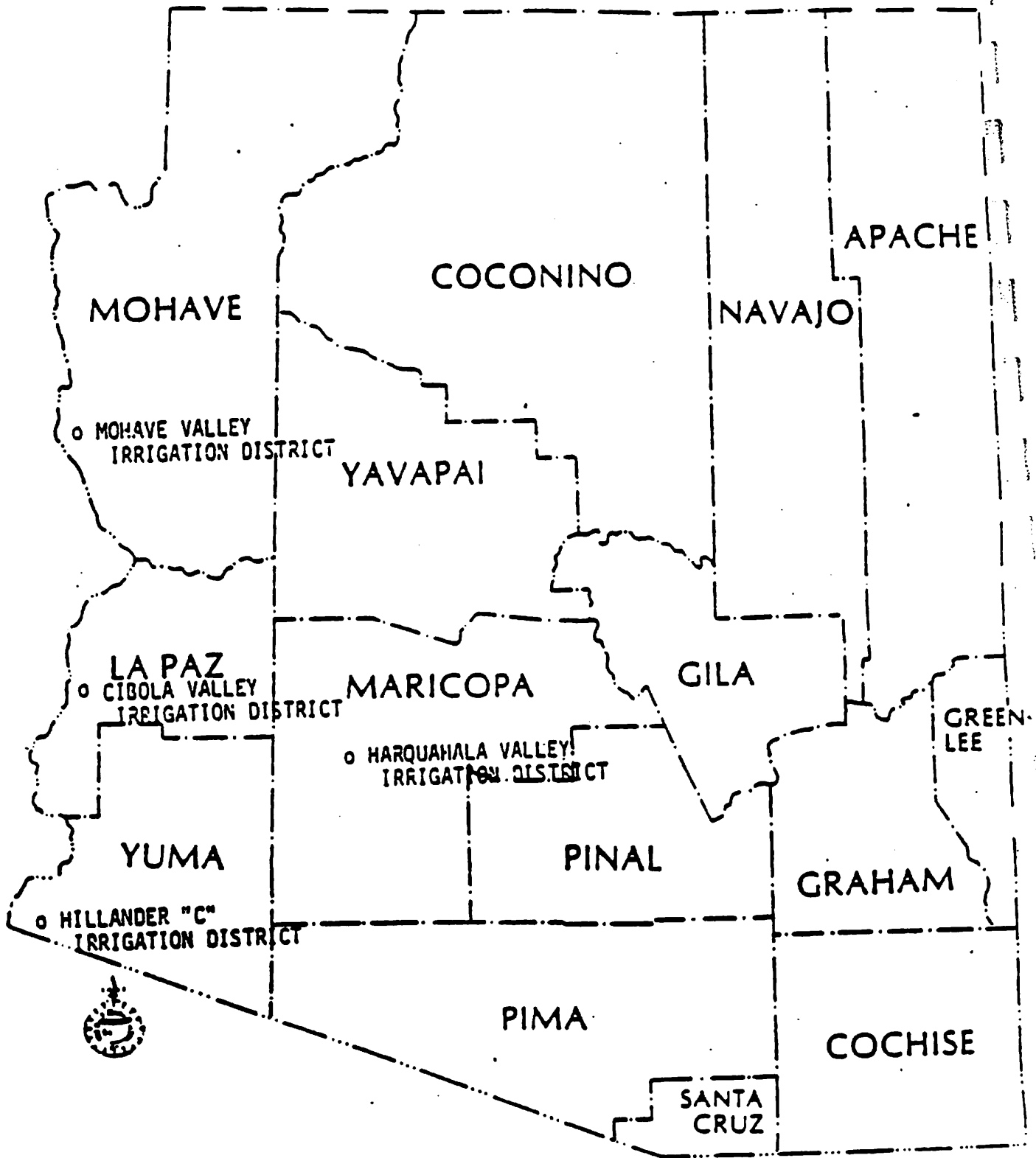
Potential transfer from the Cibola Valley Irrigation District. One of the districts that expressed immediate interest in transferring water for the Cliff Dam replacement supply was the Cibola Valley Irrigation District. The district, comprised of some 4,840 acres, is located along the Colorado River below Lake Havasu. The district indicated that a majority of its landowners were willing to sell their lands. Assuming the entire district did so, this would provide an estimated 18,600 acre-feet of

water. This water would be diverted at the CAP pumping plant on Lake Havasu. After accounting for conveyance losses and reduced supplies during shortage years, an average of about 16,872 feet would be deliverable to the Phoenix area over the 1997 to 2050 period. The delivery schedule would have some restrictions imposed by the current operating procedures of the Central Arizona Water Conservation District. Only 11% of annual diversions could be delivered to the Phoenix area in any one month, limiting the use of this water to supply peak demands.

The Bureau of Reclamation estimates that it would cost \$1,100 to \$3,500 per acre to purchase the lands, equivalent to about \$45 to \$145 per acre-foot per year for the deliverable water, once investigation and other costs are added.³ In addition, operation, maintenance, and replacement costs for delivering the water would be about \$60 per acre-foot. The cities receiving the water would also be required to pay the capital cost component for CAP municipal and industrial supplies, which is \$12 per acre-foot for 1997 and rising on an established schedule to \$40 per acre-foot by 2025. In total, the estimated cost to Arizona cities would be about \$117 to \$217 per acre-foot in 1997 and rising by another \$28 per acre-foot by 2025.

Under this proposal, the U.S. would become owner of the Cibola Valley Irrigation District lands. There has been discussion of transferring management of these lands to the U.S. Fish and Wildlife Service to supplement wildlife habitat along the Colorado River. In fact, one of the motivations for the farmers offering to sell their lands is the amount of damage their crops sustain from birds passing through the area. If the land were maintained for wildlife purposes, a certain amount of water (probably 0.5 acre-feet per acre) would be retained for maintaining vegetation for wildlife.

Figure 4. Alternative Sites for Purchasing
Cliff Dam Replacement Water



Potential transfer from the Mohave Valley Irrigation District. The Mohave Valley Irrigation District lies along the Colorado River north of Lake Havasu. The Mohave Valley district expressed interest in selling up to 4,000 acres of agricultural lands, which would reduce both their agricultural entitlement and their municipal and industrial diversions from the Colorado River. Purchase of 3,800 acres would yield an estimated 11,400 acre-feet (which when combined with 18,600 acre-feet of water from the Cibola Valley Irrigation District would yield the full 30,000 acre-feet of Cliff Dam replacement water). After subtracting for conveyance losses and reductions during years of shortage, an annual average supply of 10,360 acre-feet could be expected at the Phoenix metropolitan area delivered through the CAP aqueduct. The district's expression of interest in December 1988 did not involve commitments of individual landowners to sell water.

The Bureau estimates that land costs in the Mohave Valley area would average \$4,000 to \$5,000 per acre, equivalent to \$134 to \$167 per acre-foot of water deliverable to the Phoenix area. Costs for CAP operation and maintenance and capital costs would bring the total 1997 costs of this water up to \$206 to \$239 per acre-foot. By 2025, increases in CAP charges would raise these rates by \$28 per acre-foot.

Potential transfer from the Hillander "C" Irrigation District. The Hillander "C" Irrigation District lies near the Colorado River and just north of the Mexican Border (see Figure 4). The district utilizes both groundwater and water diverted from the Colorado River. There are two possible ways of obtaining an additional 11,400 acre-feet of water from the Hillander district if a sufficient number of farmers were willing to sell their irrigated lands. One would be to divert that amount of pumped groundwater

back to the Colorado River by constructing a pipeline from the district to the river. A second possibility would be to exchange the pumped groundwater with other Yuma Valley water users for a portion of their Colorado River water entitlement. In either case, this would allow the Bureau to divert water upstream at the CAP's Lake Havasu pumping plant and to deliver about 11,250 acre-feet to the Phoenix area.

The Bureau estimates that land costs would average \$2,500 per acre in the Hillander "C" district, equivalent to \$70 per acre-foot for water deliverable to Phoenix. The annual costs for pumping and wellfield operation are estimated at \$20 per acre-foot. The capital costs of constructing a collector system are unknown. To these costs would have to be added the CAP O&M costs of \$60 per acre-foot and the capital cost component for municipal and industrial water. Therefore, the total annual costs would exceed \$162 per acre-foot in 1997 and \$190 per acre-foot in 2025.

Potential transfer from the Harquahala Valley Irrigation District. Another potential source identified by the Bureau of Reclamation for Cliff Dam replacement water is the Harquahala Valley Irrigation District. This district, comprised of some 33,000 acres, does not lie along the Colorado River, but southwest of Phoenix in Maricopa County in central Arizona. The district holds a contract for CAP agricultural water. An estimated 25,000 acres are available for resale. The Bureau estimates that only 10,000 acres would be needed to yield 30,000 acre-feet of Cliff Dam replacement water. After taking into account CAP conveyance losses and projected shortage years, an average of 27,475 acre-feet would be deliverable to the Phoenix area over the 1997 to 2050 period.

The district has an allocation of 7.69% of the CAP's irrigation deliveries. After

assuring that groundwater was of satisfactory quality, the proposal would involve rehabilitation of existing wells and installation of at least one new well. Therefore, there are two potential ways of providing the water to the Phoenix metropolitan area. One would be to deliver water from the wells to other Harquahala Valley Irrigation District lands in exchange for a corresponding amount of their CAP allocation. Another would be to construct a collector and pipeline system to convey the water to the CAP aqueduct.

The following estimates the cost of the first of these alternatives. The cities would be required to pay the incremental component of the CAP charges (above that already being paid by the Harquahala district for agricultural use). This increment would be \$2 per acre-foot in 1997, rising to \$38 per acre-foot in 2025. Land costs are estimated at \$2,500 to \$3,000 per acre, equivalent to about \$83 to \$100 per acre-foot annually. Preliminary estimates of the annualized cost of constructing the well-field are \$59 per acre-foot and the annual operating costs are estimated at \$60 per acre-foot. The costs of a conveyance system are yet to be determined. The cities would also have to compensate the remaining farmers in the district for adverse impacts on their groundwater extraction. Therefore, the cost to the cities would exceed \$204 to \$221 per acre-foot annually for 1997 and another \$28 per acre-foot by 2025.

Offer price from the Phoenix-area cities. In November 1989 the cities that had contributed up-front funds to finance Cliff Dam specified the prices they would offer for replacement water: \$1200 per acre-foot for Colorado River water with a pre-1968 priority (prior to CAP) or for CAP water with an M&I priority (see discussion of priorities of different classes of CAP water below, under section on the CAP), and \$650 per acre-foot for Colorado River water with a 1968 or later

priority or for CAP agricultural water. Where land and water were offered together, the cities insisted that the U.S. be responsible for the land costs. The cities also requested that the Harquahala purchase be removed from consideration since they were separately considering purchase of the groundwater from that district, with the idea of letting the federal government utilize the district's CAP allocation for the Fort McDowell Indian water settlement (or some other Indian water settlement in the Phoenix area).

The Bureau of Reclamation subsequently sent letters to the various Colorado River contractors in Arizona, but none expressed interest in selling water at the prices specified by the cities. The cities will have to decide if they want to enter into negotiations with some of these entities, or merely take back the funds that they have escrowed for Cliff Dam replacement water.

Comment on land purchases. It is notable that all of the Cliff Dam replacement water alternatives were presented by the Bureau of Reclamation in terms of purchases of land, not just water supplies. This raises the question whether the land purchases are necessary; whether it is appropriate for the federal government to be the owner of the land; and whether the land, absent the irrigation water supply, would have value for grazing or other purposes. If the answer to the latter question is yes, then the landowners may be willing to sell their water supplies for something less than the total land value. In the Cibola Valley case, there has been some discussion of making the lands available for wildlife uses. However, there does not appear to be any particular rationale for federal ownership of the lands in the other cases. The Bureau has examined these examples in terms of land sales in part because the Cliff Dam replacement legislation authorizes land purchases. The Bureau also feels it is on safer legal ground because of

questions whether the water must be regarded as appurtenant to the land. In this case it is not clear whether state or federal requirements apply and what appurtenancy requirements, if any, may be applicable. Such a lack of clarification of water rights procedures can delay and complicate water transfers, as well as raising the costs of the transaction.

The Central Arizona Project

The principal components of the Central Arizona Project are shown in Figure 5. Colorado River water is pumped approximately 1,200 feet up from Lake Havasu behind Parker Dam into the Granite Reef Aqueduct. This structure has, since 1985, carried water about 190 miles to an area just northeast of Phoenix near the confluence of the Salt and Verde rivers. The second section of the aqueduct, the Salt-Gila Aqueduct, is designed to transport water an additional 58 miles to agricultural areas near the Gila River in Pinal County. It began providing deliveries in 1987.

The final portion of the aqueduct, the Tucson Aqueduct, will lift water an additional 1,700 feet and extend another 60 miles to Tucson and the San Xavier Indian Reservation south of Tucson. Initial deliveries through the Tucson Aqueduct are slated for 1991. The conveyance of water from the Colorado River is planned to operate in conjunction with existing and newly constructed reservoirs on tributaries of the Colorado arising within Arizona, such as the New Waddell Dam on the Agua Fria River and the Modified Roosevelt Dam on the Salt River (see figure 5).⁴

The initial allocation of CAP water among the various water-using entities in Arizona was a long and controversial process extending over a period of six years -- a process that involved balancing agricultural

demands against urban demands and Indian water claims against non-Indian demands. This allocation involved more than seventy municipal and industrial entities, twenty irrigation districts, and twelve Indian tribes. The Central Arizona Water Conservation District (CAWCD) was created in 1971 by the Arizona legislature as an umbrella agency charged with coordinating with the Bureau of Reclamation and operating the completed project. The Bureau executed a master repayment contract with CAWCD prior to the start of project construction in 1972. In turn, CAWCD is responsible for executing subcontracts with the various individual water entities (the Bureau of Reclamation will also be a party to the subcontracts).

Although the Secretary of the Interior has final authority for allocating CAP water, various Secretaries have relied heavily on the state of Arizona to make recommendations on the allocation for non-Indian water users. State recommendations were based on projected water needs throughout Arizona and included uses for power development, recreation, and municipal and domestic needs of cities. Municipal and industrial demands were projected by multiplying projections of future population by estimated per capita water use, with deductions for renewable water supplies available to each entity. The projections assumed substantial reductions in per capita water use to be achieved through water conservation initiatives.

The irrigation allocations recommended by Arizona did not assign specific quantities of water, but instead established pro rata shares of the CAP supplies remaining after the municipal and industrial demands were satisfied. The agricultural allocations were based on the amount of historically irrigated acreage in each district during the ten years prior to the CAP authorization, with deductions for land irrigated with renewable water supplies and

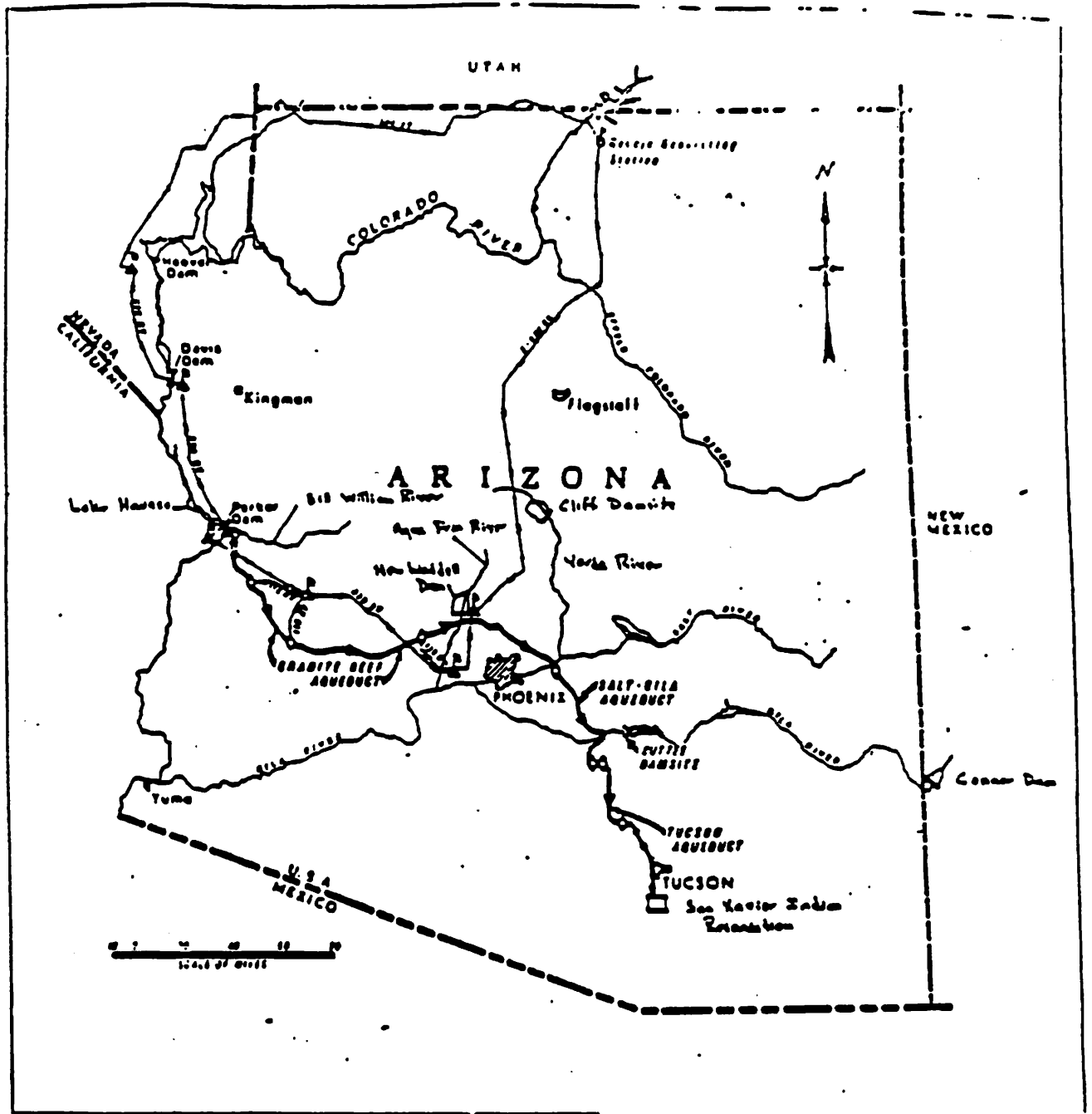


Figure 5. Central Arizona Project

Source: Based on U.S. Bureau of Reclamation, Project Data, p.302. Washington, D.C., 1981.

for expected future urbanization in each area (see table 2). In essence, the allocations established a lower priority for non-Indian irrigation water in recognition of the fact that the total CAP supplies from the Colorado River were subject to substantial variability (refer to table 3).

The Secretary of the Interior took primary responsibility for allocating water among Indian tribes in Arizona (consistent with his trust responsibility for Indian tribes) and for determining the relative priorities of Indian, municipal and industrial, and (non-Indian) agricultural water. In March 1982, Secretary of Interior James Watt selected a "final" allocation of CAP water. Watt's allocation placed 510,000 acre-feet of the M&I water on a first priority with 258,300 acre-feet of highest priority Indian water (see the last column of table 3). The remaining Indian entitlement (51,500 acre-feet) would retain a second priority. The additional 130,000 acre-feet of M&I water requested by Arizona would have a third priority, leaving non-Indian irrigation water with a fourth priority.

Possibilities for voluntary transfers of CAP water

There are several different categories of CAP water that could potentially be involved in voluntary market transfers, such as non-Indian agricultural supplies, non-Indian municipal and industrial supplies, and Indian supplies. A number of federal contractual and legal provisions currently limit the transferability of the water in each category. But, as discussed in the next subsection, the Bureau of Reclamation appears to have the discretion to modify most, if not all, of these.

Transfers between agricultural users and between municipal and industrial users

Probably the least complicated transactions that could occur with CAP water are transfers within either the agricultural category or the municipal and industrial category, rather than between the two. Federal charges for agricultural water must cover operation and maintenance costs and an appropriate share of capital. When the CAP was authorized in 1968, the total agricultural water rate was expected to be about \$16 per acre-foot. By 1986 the rate had increased to \$57 per acre-foot (a capital cost of \$2 per acre-foot plus operation and maintenance costs of \$55 per acre-foot). This price may make the water unattractive to some agricultural producers, even though they have already contracted for water (under the terms of the CAP contracts, irrigation districts pay only for the amount of water they use each year). For many irrigation districts, local groundwater may remain a less expensive alternative for a number of years (Bush and Martin, 1986). Although contractors could opt simply not to take delivery, they might also lease agricultural entitlements to other agricultural water users. Possible purchasers would include other producers with a competitive advantage or those who grow perennial or high-value crops -- for example, owners of citrus groves or pecan trees. Additional CAP agricultural entitlements would be of at least limited value to some agricultural water users because entitlements are determined on a pro rata basis of available CAP agricultural supplies. Of course, purchasers of CAP agricultural supplies would need to recognize that the purchased supplies would also be subject to reductions during years of low flow.

Table 2. Central Arizona Project Water Allocations - Quantities

Water entity	Secretary Kleppe's Indian allocation with 1977-79 state recommendations ^a	Secretary Vatt's allocation ^b	Current status of contracting ^c
<u>M&I entities</u>	(acre-feet)	(acre-feet)	
Apache Junction	4,300	6,000	Signed
Avondale	2,000	4,099	Signed
Casa Grande	10,500	8,884	Signed
Chandler	2,600	3,668	Signed
Chaparral City Water Co.	3,900	6,978	Signed
Clearwater Co.	690	2,849	Signed
Coolidge	2,600	2,000	Signed
Consolidated Water Co.	12,600	3,932	Signed
Cottonwood Water Co.	2,500	1,789	Pending
Crescent Valley Water Co.	1,200	2,697	Pending
Desert Sage Water Co.	6,000	5,933	Pending
Eloy	2,700	2,171	Signed
Florence	1,000	1,641	Signed
Flowing Wells I.D.	0	4,354	Signed
Gilbert	0	7,235	Signed
Glendale	12,700	14,083	Signed
Globe	2,900	3,480	Pending
Goodyear	740	2,374	Signed
Green Valley Water Co.	2,600	1,900	Signed
Litchfield Park Ser. Co.	5,900	5,580	Signed
McMicken I.D.	2,500	9,513	Signed
Mesa	15,600	20,129	Signed
Miami-Claypool	2,400	1,829	Declined
Nogales	3,800	3,949	Pending
Palm Springs Water Co.	0	2,919	Signed
Paradise Valley Water Co.	3,400	3,231	Signed
Payson	2,700	4,995	Pending
Peoria	0	15,000	Signed
Phoenix	102,000	113,882	Signed
Prescott	3,500	7,127	Pending
Rio Rico	160	2,683	Pending
Scottsdale	17,600	19,702	Signed
Sun City	23,900	15,835	Signed
Tempe	3,400	4,315	Signed
Tucson	97,800	151,064	Signed
Turner Ranches	1,900	3,932	Signed
Other M&I Entities	11,200	22,990	
Power Plant Cooling	100,000	43,218	Pending
Mining	0	60,784	
Recreation	2,456	989	Pending
State land/Phoenix Park	37,750	39,090	Pending
Total M&I	509,496	638,823	

(continued)

Table 2. (continued)

Water entity	Secretary Kleppe's Indian allocation with 1977-79 state recommendations ^a	Secretary Watt's allocation ^b	Current status of contracting ^c
<u>Indian tribes</u>	(acre-feet)	(acre-feet)	
Ak Chin Indian Community	58,300	58,300	Signed
Camp Verde	0	1,200	Signed
Fort McDowell Indian Com.	4,300	4,300	Signed
Gila River Indian Com.	173,100	173,100	Pending
Papago-Chuichu	0	8,000	Signed
Papago-San Xavier	8,000	27,000	Signed
Papago-Schuk Toak	0	10,800	Signed
Pasqua Yaqui	0	500	Signed
Salt River Indian Com.	13,300	13,300	Signed
San Carlos Apache	0	12,700	Signed
Tonto Apache	0	128	Signed
Yavapai	0	500	Signed
Total Indian	257,000	309,828	
<u>Irrigation entities</u>	(percent)	(percent)	
Arcadia Water Co.	0.14	0.13	Pending
Avra Valley Assoc.	3.68	3.69	Declined
Central Arizona I.D.	19.50	18.01	Signed
Chandler Heights I.D.	0.22	0.28	Signed
Cotaro Morana I.D.	2.97	2.14	Pending
Farmers Investment Co.	1.79	1.39	Pending
Harquahala Valley I.D.	8.39	7.67	Signed
Hohokam I.D.	6.97	6.36	Signed
La Croix	0.05	0.04	Declined
Maricopa-Stanfield I.D.	22.10	20.48	Signed
Marley, Kemper Jr.	0.05	0.04	Declined
Marley, Kemper Sr.	0.01	0.00	NA
McMicken I.D.	8.65	7.28	Declined
MCMVCD#1	3.12	4.66	Pending
New Magma I.D.	4.88	4.34	Signed
Queen Creek I.D.	4.82	4.83	Signed
Rood, V.E.	0.05	0.04	Pending
Roosevelt I.D.	0.13	2.61	Declined
Roosevelt Water C.D.	5.64	5.98	Signed
Salt River Project	0.00	2.97	Declined
San Carlos I.D.	4.51	4.09	Pending
San Tan I.D.	0.09	0.77	Signed
Tonapah I.D.	2.24	1.98	Signed
U.S. Forest Service	0.00	0.22	Declined
Total irrigation	100.00	100.00	

(continued)

Table 2 (continued)

Sources: Secretary Kleppe's Indian allocation is from "Central Arizona Project, Ariz.; Allocation of Project Water for Indian Irrigation Use," U.S. Department of the Interior, Office of the Secretary, Federal Register vol. 41, no. 202 (October 18, 1976), pp. 45883-89. Secretary Watt's allocation is from "Central Arizona Project, Arizona; Water Allocations and Water Service Contracting: Record of Decision," U.S. Department of the Interior, 1983, Federal Register vol. 48, no. 58 (March 24, 1983), pp. 12446-52. Other data is from Bureau of Reclamation records as of June 1986.

^aM&I and irrigation allocations are for target year 2034. Indian allocation is through year 2005, after which Indians receive 20% of irrigation or 10% of M&I supplies, whichever is most advantageous.

^bIncorporates quantities from Secretary Andrus' 1980 Indian allocation and quantities from Arizona's 1982 recommendations. Secretary Watt's allocation calls for 100,000 acre-feet of water for the Gila tribe to be obtained from treated effluent from Arizona cities. All allocations shown, including Indian allocation, are for target year 2034.

^cAs of July 1986.

^dIncludes 35 entities with less than 2,000 acre-feet. Of these, 22 have signed contracts, 2 are pending, and 1 has declined.

^eOf 9 mines with allocations, 2 have declined and 7 are pending.

Table 3. Central Arizona Project Water Allocations - Priorities

(in acre-feet)

Priority		Secretary Kleppe's Indian allocation (1976) with 1977/79 state recommendation	Secretary Andrus' Indian allocation (1980) with 1977/79 state recommendation	Arizona recommendation (1982)	Secretary Watt's allocation (1982) (final)
1	M&I	510,000	510,000	640,000	510,000
	Indian	51,000 ^a (10% of M&I)	283,800	158,300 ^b	158,300 ^b
	Total of priority 1	561,000	793,800	798,300^b	668,300^b
2		Agriculture Ind - 206,000	Ind - 26,000	Ind - 51,000	Ind - 51,000
3			Agriculture	Agriculture	M&I - 130,000
4					Agriculture

Note: "Ind" denotes Indian; "M&I" refers to non-Indian municipal and industrial use; "Agriculture" refers to non-Indian agricultural use.

Source: Andrus Indian allocation is from "Central Arizona Project; Allocations of Project Water to Indian Tribes," U.S. Department of the Interior, Federal Register vol. 45, no. 239 (December 10, 1980), pp. 81265-73. Sources for other data are the same as for table 2.

^aAllocation after 2005 is 10% of M&I supplies or 20% of irrigation supplies, whichever is greater. The allocation based on M&I supplies is used here as more representative of a firm supply because of the higher priority accorded to M&I supplies.

^bExcludes 100,000 AF of water for the Gila tribe to be obtained from treated effluent from Arizona cities.

Within the municipal and industrial category, the growth of urban demands for CAP water may differ from the projections made before the initial CAP allocations. If so, cities may find it advantageous to trade their existing CAP water supplies among themselves in order to balance demands with available supplies. Such transfers of existing contractual entitlements could be made either on a short-term or long-term basis. The charge for CAP supplies by CAWCD to M&I water entities was \$55 per acre-foot for operation and maintenance in 1986, plus \$5 per acre-foot for capital. The capital charge will increase on a preestablished schedule to \$40 per acre-foot by 2024. Unlike the charges for CAP agricultural water, M&I entities must pay the capital charges for their water, whether or not they take delivery. Therefore, cities not needing all of the water they contracted for may be willing to sell or lease water to other cities with greater water demands. Those cities that need to purchase additional supplies would find the total cost of CAP supplies -- \$60 per acre-foot in 1986 and \$95 per acre-foot in 2024 -- to be considerably less than the prices being paid for privately developed water (\$200-\$300 per acre-foot). Of course, water from the federal project would be subject to mandatory reductions in times of low flow on the Colorado River because of California's priority among Lower Colorado River Basin water users.

At present, there are certain federal contractual provisions relating to transfers of CAP irrigation or M&I water that would severely limit such transactions. Notable among these are restrictions on the increased income that could be realized by any water entity leasing or selling water. Section 4.3(e) of the CAP water service subcontract with each agricultural water district and M&I entity states that

Project water scheduled for delivery in any year under this subcontract may be used by the subcontractor or resold or exchanged by the subcontractor pursuant to appropriate agreements approved by the contracting officer [the Bureau of Reclamation] and the contractor [CAWCD]. If said water is resold or exchanged by the subcontractor for an amount in excess of that which the subcontractor is obligated to pay under this subcontract, the excess amount shall be paid forthwith by the subcontractor to the contractor for application against the contractor's repayment obligation to the United States.

While this provision clearly acknowledges that transfers may occur, it severely restricts the financial attractiveness to the selling party. No additional income can be immediately forthcoming from the transaction to be used for, say, financing district conveyance systems, installing conservation measures, reducing the district's charges to its members, or making payments to farmers to retire marginal lands from production. Of course, there would be a limited financial incentive in that additional income from the transfer would accelerate payout of the subcontractor's obligation and therefore move nearer the date after which the subcontractor would no longer have to assess CAP capital charges against its members. Furthermore, if the transfer were of sufficiently long duration, there could be increased income to the selling or leasing party after the federal obligation was repaid. But in both cases, there is a significantly reduced financial incentive for transfers.

A second contractual provision contained in the master repayment contract with CAWCD and echoed in each subcontract restricts the service area where water can be transferred:

Neither the Contractor (CAWCD) nor any subcontractor shall sell or otherwise dispose of or permit the sale or other disposition of any project water, including return flows, for use outside the Contractor's service area.

Although this clause limits transfers of water within the three-county service area of the CAP, this would not be a serious restriction in most cases since the greatest demands for water would also be located there. If there were a transfer possibility in Arizona outside of these three counties, then the Bureau could possibly amend this contractual provision provided other CAP water users agreed. Section 301(a) of the Colorado River Basin Storage Act contains only a more general restriction on the service area for water deliveries of the Central Arizona Project: "the water deficient areas of Arizona and western New Mexico through direct diversion or exchange of water."

Transfers between agricultural users and municipal and industrial users

Another category of transfers that might arise if the Bureau shows its willingness to amend its contracts is transfers from irrigation to municipal and industrial use. It would generally be expected that cities, as they grow, would be able to sufficiently compensate agricultural users to make water sales attractive, such as in the recent purchases of non-CAP water in the state. As noted above, some agricultural contractors might be willing to sell some of their agricultural entitlements for two reasons: (1)

the expected CAP agricultural water rates have increased significantly since the project was authorized, and (2) CAP water is often more expensive than groundwater. The CAP authorizing legislation recognized that agricultural water use in the Central Arizona Project would eventually give way to increased urban use. However, urban purchasers of agricultural water would likely be willing to pay a reduced amount for CAP agricultural water because of the possibly lower priority attached to CAP water converted from irrigation use. Purchases of higher priority water from other municipal and industrial entities would be more valuable in this regard.

The water service subcontracts with each irrigation entity clearly recognize that water could be transferred from agricultural to urban uses, as evidenced by the following provisions (Section 4.3(i)):

Subject to the prior approval of the Contracting Officer and the Contractor, which approval shall not be unreasonably withheld, agricultural water made available hereunder for eligible lands may be converted to M&I purposes if and to the extent that such water is no longer required by the subcontractor for irrigation purposes and shall be converted in all cases where eligible lands receiving project agricultural water have been converted to M&I use; provided that the water converted from irrigation to M&I purposes as a result of conversion of eligible lands to M&I uses shall be used only for M&I purposes within the service area of the entity responsible for serving the

converted lands. Such conversion of water use for eligible lands shall be at the rate of one acre-foot per acre minus the average annual surface water supply for said acre which was available [from sources other than the CAP] for use during the 1958-1976 period as determined by the Contracting Officer. Conversion of water from agricultural to M&I purposes shall take effect only upon execution or amendment of an appropriate subcontract among the United States, the Contractor, and the M&I user.

This clause appears to consider two types of transfers of irrigation water to M&I use: (1) changes of use resulting from land conversions and (2) other transfers. Under the first category, up to 1 acre-foot per acre of water would be converted to domestic uses when land was converted to urban use. This type of transfer requires that the water be reserved for use in the same service area. Other water transfers appear to be allowable under the provision that water can be transferred if it "is no longer required by the subcontractor for irrigation purposes." It appears that transfers in this category may also be limited by the contract language to 1 acre-foot per acre of eligible land, but the area of use may not be limited to the service area of the irrigation subcontractor.

Of course, M&I purchasers of CAP irrigation supplies would have to pay rates that reflected the interest charges in Reclamation law, rather than agricultural rates. The CAP water service subcontracts place an additional requirement on agricultural to urban transfers, namely, "payment of an amount equal to the acre-foot charges previously paid by other subcontractors ... plus interest." In other words, a lump sum payment is required.

Clauses of this type are not uncommon in large municipal water supply districts and are designed to encourage all water-using entities with potential future demands to participate in the initial allocation of the financial burden of the project. Otherwise, a city could understate its expected demands and then later purchase additional water, possibly at a lower total cost.

In addition to the restrictions already discussed, there are certain other provisions embodied in the CAP water allocations and contracts that in their current form would complicate transfers from agricultural to urban use. For example, even though agricultural use of CAP water is expected to average about 2 acre-feet per acre, the contract language cited above may place a limit of 1 acre-foot per acre on transfers from agricultural to municipal and industrial use.⁵ In effect, the M&I purchaser of water in a market transaction would have to value the water about twice as much as the agricultural seller just on this basis alone (the higher federal charge for M&I water and the possibly lower priority for converted agricultural water would also affect the price paid).

The CAP water allocation also stipulates that subsequent increases in M&I use (such as through land conversion) not increase the total amount of first-priority water shared with Indian tribes:

For the limited purpose of establishing the relative Indian and non-Indian M&I percentages of the shared priority, non-Indian M&I allocations beyond 510,000 acre-feet, including conversions from agriculture to M&I, will not be permitted to be included in the calculations of the non-Indian portion of the

shared priority. (This is not to say that future Secretarial allocations for M&I use, or agricultural conversions to M&I use might not take the total non-Indian allocations to a figure greater than 510,000, but that 510,000 acre-feet is an absolute limit when calculating the shared priority between Indian and M&I use in times of shortage.) (U.S. Department of the Interior, Office of the Secretary, 1980).⁶

In contrast, the CAP subcontracts (all written after 1982) state that project water converted from agricultural to M&I use shall be delivered with the same priority as other project M&I water. This provision appears to conflict with the allocation language cited above, although it is possible to read the two provisions in a consistent manner, illustrated as follows. Under the current allocation of water, 640,000 acre-feet are assigned to M&I use. Of this amount 510,000 acre-feet have first priority and the remaining 130,000 acre-feet are assigned third priority (see table 3). Therefore, an entity with an existing M&I allocation of 100,000 acre-feet has approximately 80,000 acre-feet of first-priority M&I water (that is, $510/640 \times 100,000$ acre-feet) and 20,000 acre-feet of third-priority M&I water. If a voluntary transfer of 50,000 acre-feet of irrigation water to M&I use were to occur, there would then be a total of 690,000 acre-feet of project water with an M&I priority. Therefore, the same M&I entity with 100,000 acre-feet of water would now have only 74,000 acre-feet of first-priority water ($510/690 \times 100,000$ acre-feet) -- a reduction of 6,000 acre-feet. This 6,000 acre-feet would be, in effect, shifted to third-priority water, which would increase in quantity to 26,000 acre-feet. Therefore, deliveries to each M&I entity in shortage years would be reduced. In other words,

under this interpretation of the provision in the subcontracts, a transfer from agricultural to municipal and industrial use would dilute the priority of the M&I water supplies of all other M&I entities. Because of this anomaly, it could be expected that urban entities generally would oppose any one city's purchase of additional CAP water from irrigation users.

The Bureau of Reclamation, in conjunction with the CAP water contractors, should consider reconstructing its contracts such that this dilution does not occur. For example, water transferred from agricultural to municipal and industrial use could be placed in the lower priority for M&I water (the third-priority category in the last column in table 3), leaving the allocations in the first priority untouched. This interpretation would be consistent with the allocation decisions as published in the Federal Register. Of course, such an interpretation would still mean some dilution of the priorities of other municipalities' water in this lower priority class, but that would be less serious than a dilution of their first-priority water. Under this interpretation, cities desiring an increased quantity of first-priority water would have to purchase some portion of the first-priority water allocated to other municipalities.

Another possibility for restructuring the allocation of water converted from irrigation use to municipal and industrial use would be to place the converted water in a new category, lower in priority than all M&I water, but ahead of agricultural use. Alternatively, such purchases could retain their agricultural priority, which is subject to proportional reduction in times of shortage. In either case, cities wanting additional quantities of first-priority water would have to purchase it from other cities, with the total pool of first-priority water remaining unchanged.

Other federal projects in Arizona (non-Colorado River)

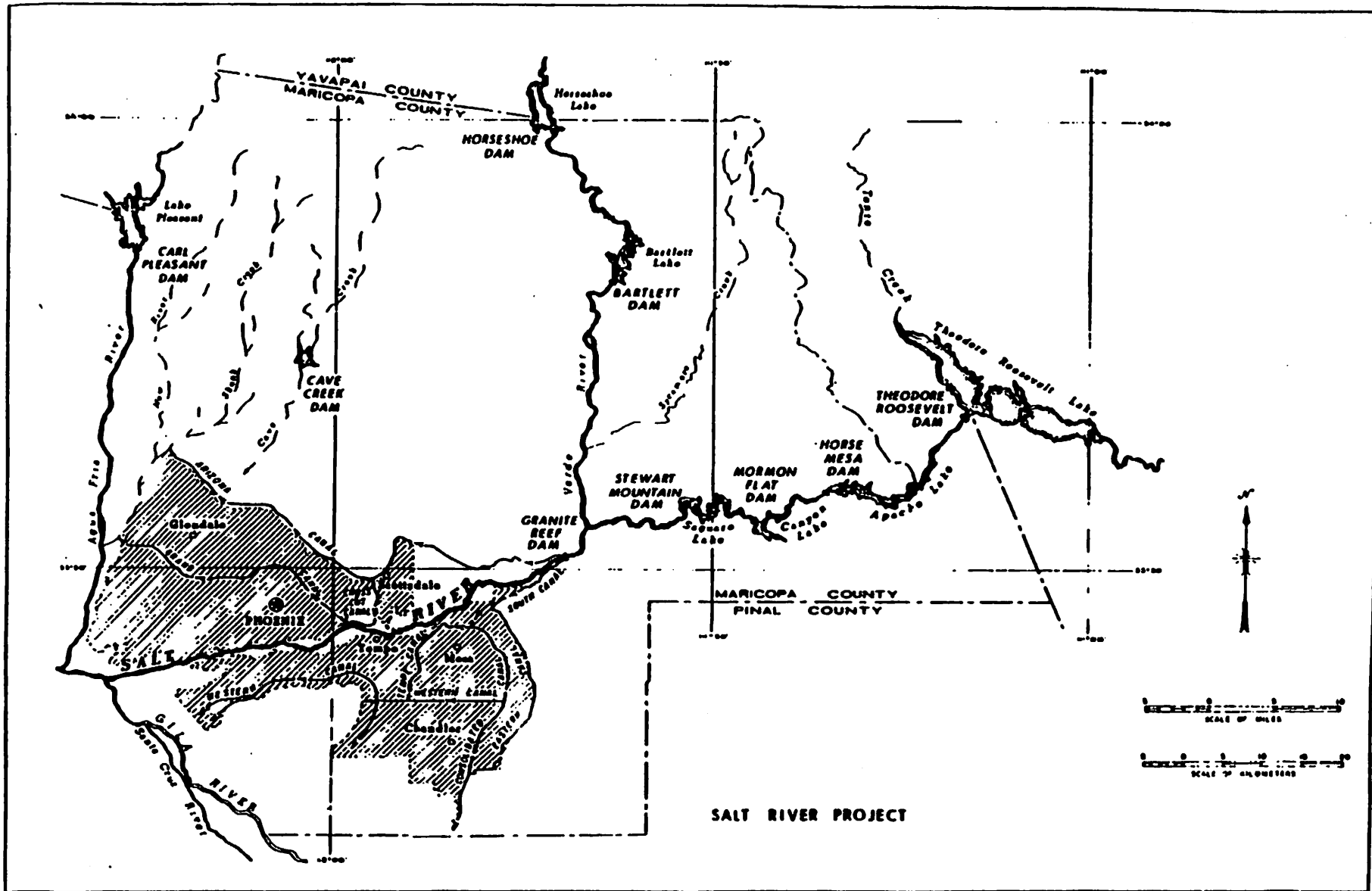
One of the earliest Reclamation projects is the Salt River Project (SRP) in Arizona. The project lies generally at the confluence of the Salt and Verde Rivers near Phoenix, Arizona (see Figure 6). Irrigation in the Salt River Valley began as early as 1867, but the farmers faced tremendous variations in streamflow, including flash floods. In subsequent years, a number of diversion dams and canals were constructed by private water companies, but these faced problems also. In order to be able to construct some storage reservoirs upstream and to contract with the Bureau of Reclamation, the local canal companies formed the Salt River Valley Water Users' Association in 1903. The Salt River Project was authorized by the Secretary of the Interior in 1903 under the authority of the 1902 Reclamation Act, which contemplated irrigation development only. Today, Phoenix and several of its surrounding suburban cities have grown within the boundaries of the district--they have land both within and outside the SRP.

The original project consisted of Theodore Roosevelt Dam (on the Salt River), the Granite Reef Diversion Dam (below the confluence of the Salt and Verde Rivers), and associated canals (see Figure 6). This system was delivering water by 1903 and was completed by 1911. Operation and maintenance responsibilities for these facilities were turned over to the district in 1917 (title to the facilities remains with the United States), and to this day the district has been the operating entity for the project.

The Salt River Valley Water User's Association subsequently built several additional storage facilities on the Salt River between 1923 and 1930 -- Horse Mesa, Stewart Mountain, and Mormon Flat Dams (refer to Figure 6). In 1935, the Association

contracted with the Bureau of Reclamation to construct Bartlett Dam on the Verde River, in addition to making repairs on the spillways at the four storage reservoirs previously constructed on the Salt River. A final storage facility -- the Horseshoe Dam on the Verde River -- was completed in 1946. The project also relies on some 250 wells within its service area to augment available surface water supplies.

One need only to fly over Phoenix to visualize the approximate boundaries of the project--the Arizona Canal on the north, the Consolidated and Eastern Canals on the east, and the western Canal on the south delineate the approximate boundaries on three sides of the district. Within those areas, there is a preponderance of older, larger trees and abundant shrubbery, which places it in contrast to the areas outside the boundaries, where there is greater use of desert landscaping. In part, this is due to the fact that the district lands were settled first, but it is also because urban landowners within the district have the option of continuing to receive surface water supplies through a series of ditches for flood irrigating their lawns. The landowner accomplishes this by utilizing his assigned ditch turnout (one is located on each quarter section) and having diked borders around his lawn to contain the water. The cost for this water is relatively inexpensive. This practice might appear as both an anachronism, a remnant of the irrigation practices of the district, and an extravagant, use of cheap water in a desert environment. However, one should keep in mind two factors. (1) This cheaper surface supply is untreated water and therefore would be expected to carry a much lower water charge than treated water.⁷ (2) The surface water rights in Salt River Project are, in an underlying sense, owned by the landowners within the district, rather than the district. Therefore, a central question related to efficient water use is whether, in this arid



Salt River Project

Figure 6

environment, these individuals might want to sell a portion of their water rights, forgoing some of their water uses.

A second observation relates to the same question. Along with urbanization within the SRP boundaries, a significant amount of water has shifted from irrigation use to municipal and industrial use (see Table 4).⁴ This change in use has also resulted in a lower consumptive water use for the Salt River Project's surface water supplies. However, with some exceptions, the district and its members have shown little interest in leasing possible surplus supplies to entities outside the district, nor have they shown any interest in engaging in programs by which other entities might pay for conservation within the district in exchange for the conserved water. In fact, the district has maintained that there would be several legal obstacles to such out-of-district leasing. Indeed, as discussed below, the particular nature of the water rights held within the district would present obstacles to out-of-district sales, although the attitude against out-of-district sales may be as much an obstacle to such leasing as any legal restrictions.

In brief, there appear to be several factors that might contribute to the difficulty of out-of-district transfers. (1) The fact that landowners within the district own the district's water rights. (2) The Kent Decree, which made the district's pre-1910 water rights appurtenant to the land. (3) The fact that the Kent Decree was established by a territorial court (prior to statehood), rather than state court, making it uncertain as to what process would be required to alter aspects of the decree. (4) The state's "severance and transfer" provision, which requires the permission of all water districts in a basin before water rights can be severed from the land.

(5) The bylaws of the district, which may require the permission of all of the district's landowners to transfer water outside the district. (6) The voting rules in the district. Voting rights are assigned by acreage, which means that agricultural interests dominate the board. Through these means it appears that SRP has gone to great lengths to maintain water rights as appurtenant to the district's lands.

Neither the appurtenancy of water rights to district lands nor the fact that the Salt River Project is an irrigation project appear to have imposed significant restrictions on the transfer of water from agricultural to urban use within the district. Beginning in the 1950s, in light of urbanization within the SRP boundaries, SRP entered into agreements with local urban entities to supply Salt River Project water for domestic and other urban uses. Under the terms of these contracts, which were approved by the Secretary of the Interior, individual landowners within the district have the option of assigning the responsibility for delivery of their surface water rights to the city in which they reside (the landowner retains the actual water right). (In approving these agreements, the Bureau of Reclamation did not impose any higher repayment requirements for water converting to municipal and industrial use.) After such an assignment is made, the city assumes the responsibility for collecting the water charges for SRP. Indeed, one of the motivations for these agreements was that SRP was having difficulty collecting its assessments on urbanized land. Land deeds within the urbanized areas contain a section indicating whether the assignment has been made.

Even though the cities receive only the right to deliver SRP water to the same lands, rather than the actual water right, they have exercised some discretion in utilization of the water. For example, in at least two

Table 4

Conversion of Agricultural Acreage and Water to Urban Uses

Salt River Project, Arizona 1950-1988¹

<u>Year</u>	<u>Project Acreage</u>	<u>Agricultural Acreage</u>	<u>Urban Acreage</u>	<u>Agricultural Land(%)</u>	<u>Urban Land(%)</u>	<u>Agricultural² Water(a-f)</u>	<u>Urban³ Water(a-f)</u>
1950	240,999	207,779	33,220	86.2	13.8	935,006	79,728
1951	240,904	205,727	35,177	85.4	14.6	925,772	84,425
1952	240,661	201,259	39,402	83.6	16.4	905,666	94,565
1953	240,388	197,798	42,590	82.3	17.7	890,091	102,216
1954	240,261	195,435	44,826	81.3	18.7	879,458	107,582
1955	239,908	192,825	47,083	80.4	19.6	867,712	112,999
1956	239,645	190,597	49,048	79.5	20.5	857,686	117,715
1957	239,289	188,354	50,935	78.7	21.3	847,593	122,244
1958	238,787	185,920	52,867	77.9	22.1	836,640	126,881
1959	238,582	181,136	57,446	75.9	24.1	815,112	137,870
1960	238,342	176,712	61,630	74.1	25.9	795,204	147,912
1961	238,191	173,839	64,352	73.0	27.0	782,276	154,445
1962	238,082	171,262	66,820	71.9	28.1	770,679	160,368
1963	238,252	169,834	68,418	71.3	28.7	764,253	164,203
1964	238,252	167,922	70,330	70.5	29.5	755,649	168,792
1965	238,252	167,120	71,132	70.1	29.9	752,040	170,717
1966	238,252	165,276	72,976	69.4	30.6	743,742	175,142
1967	238,252	164,495	73,757	69.0	31.0	740,228	177,017
1968	238,252	162,514	75,738	68.2	31.8	731,313	181,771
1969	238,262	162,874	75,388	68.4	31.6	732,933	180,931
1970	238,264	158,136	80,128	66.4	33.6	711,612	192,307
1971	238,264	153,558	84,706	64.4	35.6	691,011	203,294
1972	238,264	148,128	90,136	62.2	37.8	666,576	216,326
1973	238,264	142,931	95,333	60.0	40.0	643,190	228,799
1974	238,264	125,741	112,523	52.8	47.2	565,834	270,055
1975	238,264	124,452	113,812	52.2	47.8	560,034	273,149
1976	238,266	121,761	116,505	51.1	48.9	547,924	279,612
1977	238,220	118,951	119,269	49.9	50.1	535,280	286,246
1978	238,220	114,392	123,828	48.0	52.0	514,764	297,187
1979	238,221	109,223	128,998	45.8	54.2	491,504	309,595
1980	238,221	105,771	132,450	44.4	55.6	475,970	317,880
1981	238,221	102,105	136,116	42.9	57.1	459,472	326,678
1982	238,172	98,546	139,626	41.4	58.6	443,457	335,102
1983	238,172	95,292	142,880	40.0	60.0	428,814	342,912
1984	238,171	89,268	148,903	37.5	62.5	401,706	357,367
1985	238,170	81,911	156,259	34.4	65.6	368,600	375,022
1986	238,170	74,746	163,424	31.4	68.6	336,357	392,218
1987	238,170	71,245	166,925	29.9	70.1	320,602	400,620
1988	238,266	69,271	168,995	29.1	70.9	311,720	405,588

¹ Sources: Various SRP reports from 1977 and 1988.² Assumes 4.5 acre-feet per acre, which is the 1980 agricultural use rate.³ Assumes 2.4 acre-feet per acre, which is the 1980 urban use rate.

Compiled by Gary Woodard, University of Arizona.

Indian water settlements -- the Salt River/Pima Maricopa settlement and an offer in the Fort McDowell settlement, Phoenix area cities made contributions of water, part of which might be regarded as water attached to lands within the Salt River Project. However, SRP has required that any contributed water be delivered to Indians lands within their Association boundaries. In these agreements, the cities can in some sense be considered as acting on behalf of their landowners: the water rights of SRP landowners are at some risk if the Indian water claims were adjudicated in court. Settlements offer an opportunity for an outcome over which the participants exercise greater control. Presumably, if the cities took some action with their delivery of water to which landowners objected, they could halt the cities' actions.

Interestingly enough, there are at least two agreements involving the Salt River Project that are out-of-district transfers. In the early 1920s, the Roosevelt Water Conservation District (RWCD), southeast of Phoenix and outside the SRP boundary, was interested in obtaining additional surface water supplies. Under the agreement, RWCD paid for the lining of about 9 miles of the Eastern Canal and agreed to pay for the maintenance of the canal lining. In exchange, RWCD receives the salvage water, which was estimated to be about 5% of SRP water. Some entities have, however, threatened to challenge this agreement when the initial contract expires, believing that it does not have a firm legal basis.

Second, there appear to be some agreements regarding use of the extra return flows resulting from the lower consumptive use of water under urban use. The effluent from a number of Phoenix area cities is treated at the 91st Avenue treatment plant (the SRP itself does not have ownership in

the plant). The Arizona courts have ruled that these cities may lease or otherwise utilize the outflow from the plant, as long as they do so before it reenters a natural water course. There are currently two applications pending for use of treated effluent from the plant: one by the Buckeye Irrigation District some 6 miles downstream (and outside the Salt River Project boundaries), and another by the Arizona Public Service Company for the Palo Verde Nuclear Power Plant. In fact, reuse of water from the treatment plant may prove an important vehicle, if no other is worked out, to allow for greater use of surplus SRP water resulting from lower consumptive use.

Utilization of excess conveyance capacity in the CAP aqueduct

Several of the water transfers discussed in this paper would propose to utilize the CAP for conveyance of the transferred water. Most of these transfers involve terminating a consumptive use on the Colorado River and increasing the intake of water at the CAP pumping facilities to deliver the water to central Arizona. Such transfers include the purchase of water from the Gila Project for the Ak Chin settlement and purchase of water from the Wellton-Mohawk Irrigation District for the Salt River/Pima Maricopa Indian settlement, as well as several of the alternatives for locating Cliff Dam replacement water from the Cibola Valley Irrigation District and the Mohave Valley Irrigation District.

In addition some nonfederal purchasers of water clearly expect to utilize CAP conveyance facilities.

Purchase by Scottsdale

In 1984 the city of Scottsdale purchased the Arizona Ranch and Metal Company (the Planet Ranch property),

located in western Arizona near the Colorado River (see Figure 5). The ranch has approximately 8,300 acres of land irrigated with an existing proven right to approximately 8,000 acre-feet of surface water from the Bill Williams River, a tributary of the Colorado (see Figure 5). Under the provisions of Arizona water law, Scottsdale plans to increase that proven right to approximately 13,000 acre-feet by establishing a firm record of beneficial use over a five-to seven-year period. Then it plans to transfer use of the water from the ranch to the city in order to meet growing municipal and industrial water demands during those future years when low flows on the Colorado River force a reduction in diversions by the Central Arizona Project. This will necessitate the construction of pipeline and storage facilities to transport water from the ranch to the CAP's Granite Reef Aqueduct. Scottsdale will also need permission from the Bureau of Reclamation and CAWCD to utilize surplus capacity in the aqueduct. If Scottsdale intends to use the water during periods of low flow on the river, the surplus conveyance capacity should probably be available. However, Scottsdale has not received formal approval from CAWCD or the Bureau of Reclamation. The fact that the city paid some \$12.2 million for the ranch indicates it does not expect significant obstacles to the approval. (For additional details concerning this purchase, see Saliba and Bush, 1987, or Wahl, 1989, pp. 238-39).

Purchase by Mesa

In 1985 the city of Mesa purchased approximately 11,000 acres of farmland with the intent to eventually transfer the associated groundwater rights to itself. Mesa purchased the land within two CAP irrigation districts located between the Phoenix and Tucson metropolitan areas in a region where groundwater overdraft has not been severe and where groundwater supplies are expected

to be available over the long term. Under the Arizona Groundwater Management Act, the lands have a grandfathered right to pump approximately 3 acre-feet of water per acre. The city plans to relocate the wells for the groundwater in an area near the Salt-Gila Aqueduct and then to pump groundwater into the aqueduct for delivery to the city of Tucson in exchange for equal amounts of Tucson's CAP water. This plan would also need the approval of the Bureau of Reclamation and CAWCD. Unlike the Scottsdale purchase, this proposal does not require utilization of additional conveyance capacity in the CAP aqueduct -- it would actually free up additional capacity between Phoenix and the point where the groundwater is placed in the aqueduct. (For additional detail, see Saliba and Bush, 1987, pp. 103-104; or Wahl, 1989, p. 239).

In any event these transfers and purchases raise questions as to how the surplus capacity in the CAP will be allocated. CAWCD has already begun thinking about these questions. The board has passed a resolution indicating the following basic priority scheme--existing CAP contractual commitments, Indian water settlements that Congress authorizes, and other supplies. The CAWCD is considering what means might be utilized to allocate the surplus. These include (1) first-come, first-served, (2) proportional to request, and (3) highest bidder.

Conclusions and recommendations

There is considerable interest in water transfers in Arizona, both for surface and groundwater supplies. Although there have been a number of purchases of lands to acquire groundwater rights, purchases of surface supplies has been more limited -- principally the purchase of the Planet Ranch property on the Bill Williams River and the acquisition of water from contractors on the Lower Colorado River for Indian water

settlements. The federal government has been a major participant in these latter acquisitions. This makes Arizona unusual when compared with other western states, in that the federal government has become a participant in the market. Negotiated settlements of Indian water treaties are usually concluded through legislation. This legislation provides the opportunity to make special rules regarding those particular settlements, but they do not necessarily clarify the procedures that would apply to more routine transfers.

(1) The Bureau of Reclamation could do more to clarify the rules for transfers on several fronts--both for transfers of CAP water and for transfers of other Colorado River water. Indeed, some of the personnel that could be expected to deal with water transfer issues in the Arizona Project's Office, the Bureau's Phoenix office that manages the Central Arizona Project, had not received the Bureau's own internal guidelines on water transfers from the regional office (although they were familiar with the Department's December 1988 principles on voluntary water transfers). But, even beyond the level of detail of the Bureau's guidelines, there appears to be a particular need to clarify the rules applying to transfers in Arizona because of several factors: (1) the uncertainty over the extent to which federal rather than state law applies, given the Secretary of the Interior's authorities of Colorado River Water and Colorado River contracts, (2) the complexity of the rules applying to Colorado River water -- the "law of the River", and (3) the newness of the CAP contracts.

CAP contracts. Not only are the CAP contracts relatively new, but not all of the CAP water is under contract. Currently, most of the debates taking place over CAP water have to do with how the uncontracted water will be utilized (to what parties it will be re-offered for contract). Transfers of CAP

water would logically take place after this contracting process is complete, since an original contract for CAP water could generally be expected to be cheaper than repurchasing water from an existing contractor. However, existing CAP contractors are beginning to ask questions regarding how leasing or sale of contract water might take place, and the proposal to utilize the CAP allocation of the Harquahala Irrigation District in an Indian water settlement is perhaps the first concrete example. Although the Harquahala exchange may be accomplished by means of legislation, it will confront some of the same issues as transfers of CAP for other purposes: (1) under the terms currently being discussed, a "fair value" would be paid for the water--an amount which could be above the allocated contract cost, and (2) if the water is converted to M&I use, it must be determined how the priorities of other M&I contractors will be affected.

Informally, some Bureau of Reclamation personnel indicated their willingness to modify the current provision in CAP contracts which practically removes any economic incentive for transfers (any increased income from transfers must be returned to the CAWCD for use against its repayment obligation) if parties interested in a transfer brought a proposal to the Bureau. However, the Bureau's intent in this regard has not been made clear to all contractors, even those familiar with the Department's principles regarding water transfers. Furthermore, those we spoke to in CAWCD, the entity that will actually manage the project, seemed less familiar with the Department's principles involving water transfers, less sure whether these provisions signaled the Bureau's willingness to modify the restrictions in current contracts that virtually prohibit the selling districts from receiving any increased income, and less inclined to see economic incentives as

important in promoting water transfers and efficient water use.

Purchasing parties are also interested in the precise way in which priority would be established for CAP water converted from agricultural use to municipal and industrial use. The current understanding appears to be that such converted water would enlarge the current pool of municipal and industrial water--thereby diluting its priority. Most Bureau staff we contacted believe that the cities in the Phoenix area would not favor establishing a new priority for converted water--between the existing M&I and Indian priorities and above the agricultural priority. However, the limited number of cities we contacted in this study would support such a concept--even those that are expected to benefit from conversions. They appear to desire the greater certainty that would attach to leaving the existing quantities of high priority water in place. It would probably be a good idea for the cities and the Bureau to undertake the necessary contract amendments in the near future in order to establish what would probably be a more rational policy. If they wait until a number of conversions have already taken place, then there would naturally be resistance to lowering the priority of those conversions on the part of the entities to which they applied.

There is also uncertainty over how the conversion provision of the CAP contracts would be interpreted. The current expectation is that it would apply only to land that is actually converted to urban use. However, under one interpretation, it could also apply to land not converting to urban use in order to obtain additional M&I water.

CAP conveyance. A related question is under what rules surplus conveyance capacity in the CAP might be available for transporting leased and purchased water. Although development and transport of

purchased water supplies is probably some years off, it is clearly not too early to begin considering these questions since a number of entities are considering utilizing CAP conveyance for purchases they have already made.

Another concept that CAWCD may want to consider in this regard is the transferability of canal capacity -- i.e., once an assignment of surplus capacity is made, demands may vary, and a party desiring additional conveying should be allowed to pay a contractor with a conveyance entitlement not to utilize all or a portion of that capacity for a specified period of time.

Other Colorado River water. Other Colorado River contracts have an earlier priority date than CAP water, making them more attractive than CAP water. However, there are a number of questions relating to transfer of such water that could be clarified by the Bureau of Reclamation, possibly in conjunction with the Arizona Department of Water Resources.

(1) What entity is responsible for determining consumptive use if Colorado River water is transferred?

(2) Do the appurtenancy restrictions of Arizona law apply to transfer of Colorado River water under contract with the Secretary?

(3) What entity will be responsible for determining other aspects of beneficial use? For example, under what conditions would a contractor be allowed to lease or sell that part of his contractual entitlement which has never been put to beneficial use?

(4) Are there any other specific restrictions that might apply to certain contracts limiting either the transferability (e.g. the convertibility of agricultural water to

municipal and industrial use) or income gains from the transfer.

The Bureau of Reclamation, in conjunction with the Regional Solicitor's Office, is proposing to clarify some aspects of the Department's management of the Colorado River through developing a set of guidelines. This idea originated because of the increasingly heavy demands on the River. Use of water by the CAP is increasing, thereby reducing the "slack" in Lower Basin supplies. In 1990, for the first time, the Bureau will not be able to fulfill the extra demands of Lower Basin users such as the Metropolitan Water District, over and above their initial allocations. In addition, the Bureau is finding that an increasing number of Lower Basin entities are interested in more fully utilizing their return flows. This has the potential to reduce return flows to the river. Since existing contracts are written in terms of diversions, this raises the question of whether the Bureau might have to limit the increased consumptive use of return flows through contractual or other means.

In conjunction with the Department's efforts to develop guidelines applying to Colorado River water use, the Department could respond to the above questions and otherwise clarify the rules that will apply to transfers of Colorado River contract water.

2. Arizona statutes could be revised to facilitate efficient water transfers. Two aspects of Arizona law are particularly relevant either directly or indirectly to transfer of surface water supplies from federal projects or utilization of federal conveyance facilities: (1) the appurtenancy provisions and (2) the Arizona groundwater code.

Arizona's appurtenancy provisions. As noted above, there is an unusual provision in Arizona law relating to the "severance and transfer" of water rights from a parcel of

land. The approval process for severance and transfer requires the approval of all of the water districts in the same basin.

No right to the use of water on or from any watershed or drainage area which supplies or contributes water for the irrigation of lands within an irrigation district, agricultural improvement district or water users association shall be severed or transferred without the consent of the governing body of such irrigation district, agricultural improvement district or water users association.

The statute requires that any proposed transfer be submitted to the governing bodies of such districts for approval, and written approval must be submitted to the state. If the districts do not act within 45 days of receipt of transfer applications, they are considered to have approved it.

This procedure differs sharply from that in other states, where a state agency accepts protests from potentially affected water rights holders, but makes the final determination as to whether any prior water rights are injured. This Arizona provision does not, of course, rule out transfers of surface water rights, but the apparent veto power granted to water districts appears to unnecessarily complicate the water transfer process.

Arizona's groundwater code. Much of the market activity in Arizona--purchases of both surface and groundwater rights--are spurred by the requirement that urban developments possess an assured 100 years' supply of water. There are two aspects of this law that appear to be particularly inefficient from an economic standpoint.

First, because groundwater is heavily regulated only within four active management areas, water purchases have been focused on areas outside of these areas, where there is little regulation. This defeats one of the goals of the legislation -- to assure the orderly development of the groundwater resource. Furthermore, it has probably accelerated purchases by cities far in advance of the time when they would normally have been made by prudent water utility planners. This structure has also had the unfortunate side effect of pitting urban interests against rural interests. All of these effects could have been ameliorated by placing similar requirements over all areas of the state, and the same reasons are compelling to take such action now.

A second aspect of the Arizona code is that its goals of arresting groundwater mining are economically inefficient--in economic terms they frustrate the economic goal of utilizing the cheaper resources first and the more expensive later at a rate that would maximize the present worth of the benefits from the resource. Pursuing such an economic strategy should not necessarily mean mining the groundwater to exhaustion because, as the resource became more scarce and as pumping became more expensive, groundwater would rise in value. The price rise would itself serve to ration the resource and enforce conservation. Under the current situation, which artificially slows pumping rates, Arizona citizens must pay the higher cost of obtaining more costly supplies (such as importing surface and groundwater from rural areas) or enforcing conservation before it is economically necessary. From an economic standpoint, sustained yield is not necessarily the economically desirable goal.

Under the current system, if an entity is forced to mine some groundwater above the safe yield level during years of reduced surface supplies, then it must replace this

amount. If entities were allowed to decide whether they wanted to replace these amounts or not, then they could judge the competing values of surface and groundwater supplies.

What an economically efficient system would do is either create a system of property rights in groundwater basins so that the entities controlling them would value them correctly, or a centralized entity would regulate the rates of extraction based upon an analysis which would attempt to maximize the present worth of the resource. This analysis would have to take into account the values of available surface water supplies and the potential for groundwater recharge.

The central point in this discussion is that the Arizona groundwater code has created an artificially high demand for surface and groundwater outside the active management areas. A more economically rational use of groundwater would lower the total cost of obtaining water.

3. The Salt River Project. The above discussion of the Salt River Project illustrates the complicated provisions that surround the ownership and use of this water. These complications are abetted by the authority in an attempt to retain district control over water rights of landowners within the project. Because these rights are some of the earliest and least expensive rights, however, one could imagine that the members of the district could eventually benefit from the lease or sale of some of its water. Additional motivation for such a transfer will occur as the increased urbanization of the area within the district's boundaries reduces consumptive use. It is difficult to say what means will be found to ultimately make some of this water available to other parties, especially given the resistance of the authority to out-of-district transfers. The above discussion illustrates some potential means, although they are

limited--(1) reutilization of water at the 91st avenue treatment plant; (2) conservation projects, such as the existing agreement with the Roosevelt Water Conservation District; and (3) contribution of water to Indian water settlements.

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ENDNOTES

1. The case studies in this chapter were completed in the spring of 1990.
2. The Secretary was also authorized to purchase additional lands at a later date if the district consents, but this authority has not been utilized.
3. Land acquisition and investigation costs in this and other Cliff Dam replacement alternatives are annualized at 9% over a 50-year period. Per-acre foot values are based on amount of water delivered to the Phoenix area.
4. As noted above, Cliff Dam on the Verde River was originally planned to be part of the system, but in December 1987, Congress voted to delete it from the Central Arizona Project.
5. The CAP contract calls for deducting the previous agricultural surface water supplies from other sources, which would be zero in most cases. The remaining agricultural water not transferred (approximately 1 acre-foot per acre) would presumably reenter the pool of available CAP irrigation water and be reallocated to all agricultural users based on the percentages established in the CAP allocation (shown in table 2).
6. Since this portion of the notice is not inconsistent with subsequent Federal Register notices, this provision remains in effect.
7. The cost of treated urban supplies water evidently does not vary significantly between those located inside the SRP and those located outside. A survey done during preparation of the Environmental Impact Statement on allocation of CAP water indicated no preference for locating inside the SRP boundaries on the part of companies planning to locate in the Phoenix area. Subsequent analyses of land values both inside and outside SRP did not identify the availability of SRP water as a determining factor.
8. Interestingly, the Bureau of Reclamation still considers the project an irrigation project, describing it as capable of supplying 238,220 acres with a full irrigation supply and another 24,715 acres with a supplemental (partial) supply. As table 4 shows, the actual number of irrigated acres has been far less.

**BOULDER CANYON PROJECT: REALLOCATION OF
WATER TO THE CITY OF HENDERSON**

**BOULDER CANYON PROJECT:
REALLOCATION OF WATER TO THE CITY OF HENDERSON**

Reallocation of Water to the City of Henderson, Nevada

In understanding under what conditions the Bureau of Reclamation will allow transfers of water, it is also of interest to examine cases in which proposed transfers were either substantially modified or disallowed. A proposed transfer in southern Nevada between Basic Management, Incorporated (BMI) and the city of Henderson represents such a case. Although the proposed resale (or subcontracting) of water by BMI to Henderson was disallowed, principally because BMI had not established beneficial use of the water, the Bureau did allow a "reassignment" of previously unused water from BMI to Henderson. This was accomplished by (1) reducing the contractual entitlement of BMI, (2) executing an "assignment and transfer of entitlement to delivery" from BMI to Henderson, and (3) executing a new Bureau contract with Henderson.

In 1942 the Defense Plant Corporation (DPC), a federally chartered organization for the purpose of building and expanding facilities to produce war materials, constructed the town of Henderson, Nevada, about 13 miles southeast of Las Vegas and nearby facilities for the production of magnesium (see Figure BC-1). In order to secure a water supply, included in the facilities were an intake structure at Lake Mead on the Colorado River, as well as pumping stations and a 16-mile pipeline. In accordance with state law, DPC applied for a permit to divert water through the pipeline. In 1948 the state of Nevada issued water rights permits to the Defense Plant Corporation for the diversion of Colorado River water in the amounts of 32,587 acre-

feet for milling and metallurgical use and 8,690 acre-feet for municipal use.

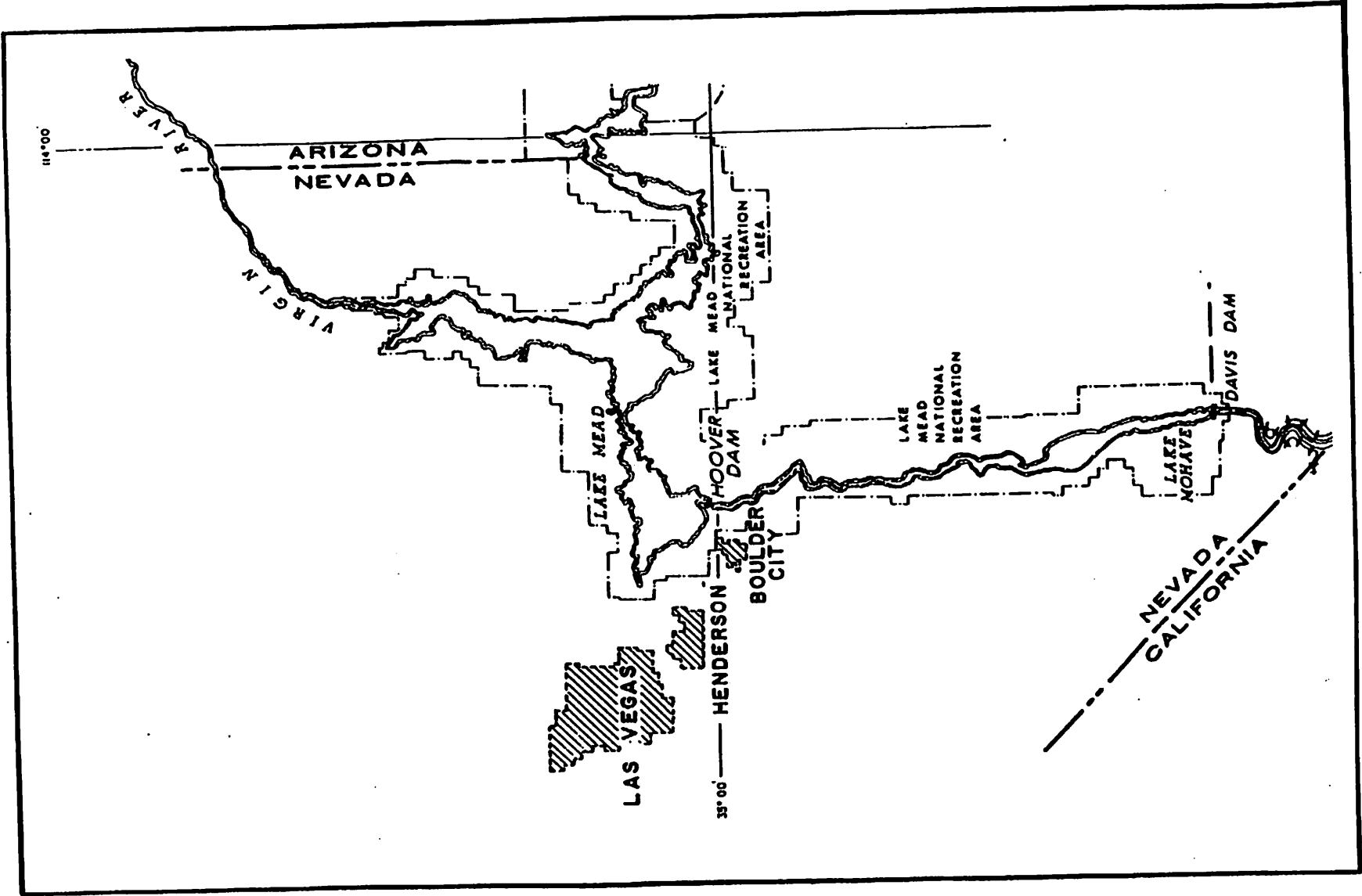
Subsequent to the end of World War II, the U.S. sold the plant facilities in 1949 to the state of Nevada and transferred the water rights permits to the state. In 1953, the state sold the facilities and water rights to a consortium of private mining and chemical companies, in which Basic Management, Inc. (BMI) was a holding company created to manage the water rights and water delivery facilities for the industrial complex.

Following the Arizona v. California ruling in 1963 that water from the Colorado River could only be delivered under contract with the Secretary of the Interior (the Boulder Canyon Act of 1928 also requires that all Colorado River water be delivered under contract by the Secretary of the Interior), BMI entered into a 1969 contract with the Bureau of Reclamation for delivery of water under the state permits. The purpose and place of use of the industrial water were specified in the contract:

"...32,587 acre feet of water per annum, or so much thereof as may be required for beneficial consumptive use for industrial purposes by members of the Basic Group and such of their successors, tenants, and assignees as may be in lawful possession of the Basic Complex or portions thereof, in the service area described in Certificate No. 3118 as that certificate is identified in Article 2(5)...."

The contract is for permanent use. The 1969 contract also allowed BMI to deliver water

BCP, Hoover Dam



Hoover Dam, Boulder Canyon Project

Figure BC-1.

under its existing contract for 5,603 acre-feet, with the city of Henderson, with such contract expiring in 1990. BMI pays \$.50 per acre-foot for the quantities diverted, plus an administrative charge to defray the expenses of the Colorado River Commission of Nevada (currently set at \$.05 per acre-foot). Under the overall contract, the maximum industrial use by BMI was 18,000 acre-feet in 1969. However, over the past 11 years, the average annual use has been only 7,662 acre-feet.

Because of its proximity to Las Vegas, Henderson has been growing in recent years and has projected a need for additional water supplies. Accordingly, BMI executed a new contract with the City of Henderson for water -- a minimum of 6,000 acre-feet in 1991 and increasing to a minimum of 12,895 acre-feet in 1997. This additional water was to come from BMI's unused BMI's industrial entitlement. In October 1989, BMI requested an amendment to its Bureau of Reclamation contract to allow the new arrangement with Henderson, which increased the amount of municipal deliveries, as well as extending the delivery date beyond 1990. BMI also requested an amendment to its contract to allow it to market water for municipal and industrial purposes anywhere in Clark County, Nevada.

The Bureau of Reclamation raised several concerns about these actions and proposals. Should BMI be allowed to transfer and sell water for a profit that it had never placed in beneficial use? In other words, was there a right to transfer? And by doing so, should BMI be allowed to become a major water wholesaler in southern Nevada, again for water it had never put to use? Yet the Bureau sought to be responsive to the Department's water transfer principles.

The Bureau chose to resolve the issue in the following manner. First, it disallowed the contract for additional water with

Henderson or the purveying of unused water to other entities in southern Nevada. However, it did allow a reassignment of the water to take place. This was accomplished by (1) reducing the contractual entitlement of BMI, (2) executing an "assignment and transfer of entitlement to delivery" from BMI to Henderson, and (3) executing a new Bureau contract with Henderson. The new and revised contracts were reviewed by the Colorado River Commission of Nevada (the entity that oversees the allocation of Nevada's 300,000 acre-feet of Colorado River water), which found that there were no adverse impacts on third parties. The final agreements were executed in May 1990. More specifically, the amendments to BMI 1969 contract transferred 15,878 acre-feet of deliveries to Henderson, consisting of 6,449 acre-feet of the M&I water previously dedicated to municipal use and provided for subcontracting for that purpose to Henderson, and 9,429 acre-feet of BMI's industrial entitlement. In effectuating the assignment, BMI permanently relinquished any control over the assigned water, as they sought under their original proposal.

The Bureau's rationale for its decision is as follows. The Bureau interpreted the purpose of the Department's policy to facilitate water transfers to increase the economic productivity of water and, in particular, to provide an incentive to transfer water already under contract and in use. However, the Bureau did not feel that allowing an entity to sell water never put to use was consistent with the goals of the Department's principles. The Bureau regarded that BMI had ample time since the initiation of its 1969 contract (as had previous permittees since the initiation of diversions in 1942) to place its full entitlement to beneficial use. However, because BMI had not done so, there was no transferrable interest in the unused water (objections to the original transfer proposal on this basis

were also raised by the City of North Las Vegas during the Colorado River Commission's public review process). The Bureau regarded it as within its authority to simply require BMI to relinquish its unused contract entitlement. Nevertheless, the Bureau worked with the parties to reach an agreement to effectuate an "assignment and transfer of entitlement to delivery of Colorado River water" from BMI to Henderson. One of the benefits to Henderson of this form of the agreement, compared to the alternative of a new contract, is that it preserved the 1942 priority date for the water based on the original state permits.

Under the agreements, Henderson pays about \$6 per acre-foot to the Bureau for the water. The amount paid by the city to BMI for the assignment and delivery through the BMI pipeline is \$110 per acre-foot, increasing by \$10 per acre-foot for every two years until the year 2000. There is an additional escalator clause indexed to water rates in Clark County. These price terms are subject to renegotiation in 2015. Reportedly, these financial terms are the same as those in the original, disallowed sales agreement.¹

Depending upon what future transactions take place, the distinction between BMI's original request for subcontracting and the approved reassignment may be more of form than of substance. For example, if BMI is allowed to reassign all of the remaining unused water under its contract and to negotiate its own financial terms for doing so, then its financial returns may be nearly the same as if it had been allowed to subcontract the unused water. Under the reassignment procedure, however, BMI appears to lose some control over subsequent use of the water and payments for it after the term of the new Reclamation contract with the transferee. In the case of the Henderson assignment, though, given that BMI owns the

delivery pipeline, it can have considerable influence over the new financial terms when contracts for the reassigned water expire.

ENDNOTES

1. Water Strategist. 1991. "Interior's Policy of Voluntary Water Transactions: The Two-Year Record." Vol. 4, No. 4 (January 1991), pp. 1, 2, 11, 13. Stratecon, Inc. (Claremont, CA).

CENTRAL VALLEY PROJECT

CENTRAL VALLEY PROJECT, CALIFORNIA

Introduction and Summary

This is a report on transfers of water supplied by the Central Valley Project.¹

The Central Valley Project ("CVP" or "the project") is the largest multi-purpose project constructed by the U.S. Bureau of Reclamation. It consists of 20 reservoirs with the capacity to store about 11,000,000 acre-feet and 500 miles of major aqueducts to convey project water to contractors.² Installed project electric generating capacity is about 1800 megawatts.³ By 1989 the CVP had executed water service contracts with 309 water supply districts, farmers, municipalities, wildlife refuges and wetlands.⁴ Under these contracts, the bureau is obligated to supply about 7.1 million acre-feet (MAF) per annum out of the 8.2 MAF that is available annually, except during times of drought.⁵ Water delivered for agricultural purposes provided a partial or full supply to 2.1 million acres in 1978.⁶ This is nearly one-third of all lands served by the entire reclamation program in the West.⁷

Water allocation in California in 1991 is characterized by a number of factors that create pressure for reallocation of water provided by the CVP. Indeed, these pressures place the project under siege. First, water development undertaken by private parties, the U.S. Army Corps of Engineers and, more recently, the CVP and the California State Water Project (SWP) is now understood by many to have done great damage to fish and wildlife resources. For example, San Joaquin River salmon runs have declined by 90% over the past 40 years and 95% of northern California's wetlands have disappeared.⁸ As a result, increasingly urbanized Californians want more water used to revive and sustain natural systems. Pressure to use more water for this purpose

is played out in many forums, including the extensive "Bay/Delta" hearings, proposals for federal legislation and challenges to the manner in which expiring CVP water service contracts are renewed, and is bolstered by the evolution of California's public trust doctrine.⁹

Second, people keep moving to California's coastal areas, increasing the growth in demand for water for municipal and industrial (m&i) purposes. Generally, coastal cities can pay multiples of the marginal dollar value of water to irrigators for the use of their water.

Third, municipal demand for water is growing within the Valley. Agricultural water supply districts in some areas are faced with urbanization within their boundaries. On the east side of the Valley, where most of the urbanization has occurred to date, municipal demand for water has been slaked by groundwater. On the west side, however, growing towns within commuting distance of San Francisco are looking to surface water supply already applied to the land by irrigation and other water supply districts.¹⁰

Fourth, the western side of the San Joaquin Valley is increasingly plagued by the effect of salty and sometimes toxic agricultural drainage on wildlife and cropland productivity. A leading drainage reduction strategy is water conservation encouraged by the ability of water supply districts to transfer the entitlement to use conserved water.¹¹

Fifth, conditions have changed among CVP contractors since initial water allocations, with the result that some contractors have ended up with relatively abundant supplies of water whereas others are water-short.¹²

Finally, the present drought in California is cutting into the state's water "reserve margin", increasing the need for all Californians to use water more efficiently, including through water conservation and transfers.¹³

Each one of these factors exerts pressure for reallocation of water provided by the CVP for irrigation, whether it be for environmental purposes, to meet municipal demand, to minimize contributions to the drainage problem, to reflect changing agricultural patterns within the Valley or simply to stretch available resources to meet the need.

Water may be reallocated administratively by the bureau or voluntarily, through transfers of entitlements to use water provided by the CVP. This report focuses on the second means: Transfers. It does so by reviewing the legal and institutional context in which transfers of CVP water are implemented, with the purpose of considering whether changes in the law and bureau policy would be appropriate to facilitate these transfers. It begins, in Chapter I, with a brief description of the CVP. Chapter II describes transfer activity within the CVP to date. Chapter III is a review of federal project-specific and general reclamation law affecting transfers of CVP water. Chapter IV summarizes California state law bearing on CVP transfers. Chapter V reviews administrative policies implemented by the Department of the Interior, bureau and the bureau's Mid-Pacific regional office as they affect CVP transfers. Chapter VI is a discussion of "institutional considerations", such as non-market values and attitudes that affect transfers. Chapter VII is a conclusion to the report as well as recommendations for changes in policy to facilitate transfers of CVP water that would be broadly in the public interest.

The report concludes that the market for water that is "surplus" to the needs of CVP irrigators, particularly "conserved" water, is underdeveloped.¹⁴ It is underdeveloped primarily because CVP contractors and growers have insufficient incentive to conserve and transfer conserved water.

The problem of insufficient incentives to develop and transfer conserved water is not, primarily, a result of disincentives in reclamation or California law or even policy enunciated by the U.S. Department of the Interior. Rather, the disincentives exist for a mix of other reasons, including political/institutional and "cultural" resistance, "third-party" effects, lack of technical capacity among bureau contractors and, most importantly, bureau policy at the regional level that discourages water conservation and long-term transfers generally. A special problem exists for transfers to environmental uses. This is at once a problem of California law, which has not yet found ample means to allow water to be used for instream uses, and an absence of funds to buy water for wetlands.

In Chapter VII, the report recommends that the region move quickly to finalize its policy regarding long-term transfers, with an emphasis on removing impediments to the transfer of conserved water.

Chapter I: The Central Valley Project: A Brief Description

The CVP was initially authorized to rectify four principal conditions in the Central Valley: (1) Most of the need for water for irrigation was in the San Joaquin Valley whereas most of the water arises in the Sacramento Valley; (2) Almost all of the water falls as precipitation during winter months, when farmers have little need for it, and then flowed unimpeded and unused (by

man) to the ocean; (3) Growers in parts of the Valley south of the Delta were mining locally available groundwater; and (4) Parts of the Valley were subjected to chronic and sometimes severe seasonal floods.¹⁵

Figure 1 is a map of the CVP. It indicates the enormous and, among bureau projects, unique reach of the CVP. However, notwithstanding the far-flung nature of the project and the fact that its facilities have been authorized, in pieces, for varying purposes under a long string of legislation, the region attempts to operate it as one, integrated project.¹⁶ In doing so, the bureau is following the intent of Congress.

The CVP is operated by the Mid-Pacific region of the bureau, with headquarters in Sacramento and five field offices (Redding, Willows, Fresno, Tracy, and Folsom). The project is divided into several divisions and units. For a detailed discussion of these divisions as well as other factual project data, see Appendix 1 to this case study. In the north are found the Shasta, Trinity and Sacramento divisions. Shasta and Trinity include two principal reservoirs used to store water for irrigation and other uses both north and south of the Delta. The Sacramento division includes the Red Bluff dam which diverts water from the Sacramento River to a system of canals for distribution to agricultural water districts. East of Sacramento is the American River division, comprised primarily of Folsom Dam and Lake and the Sly Park unit, now under the operation of the El Dorado Irrigation District.

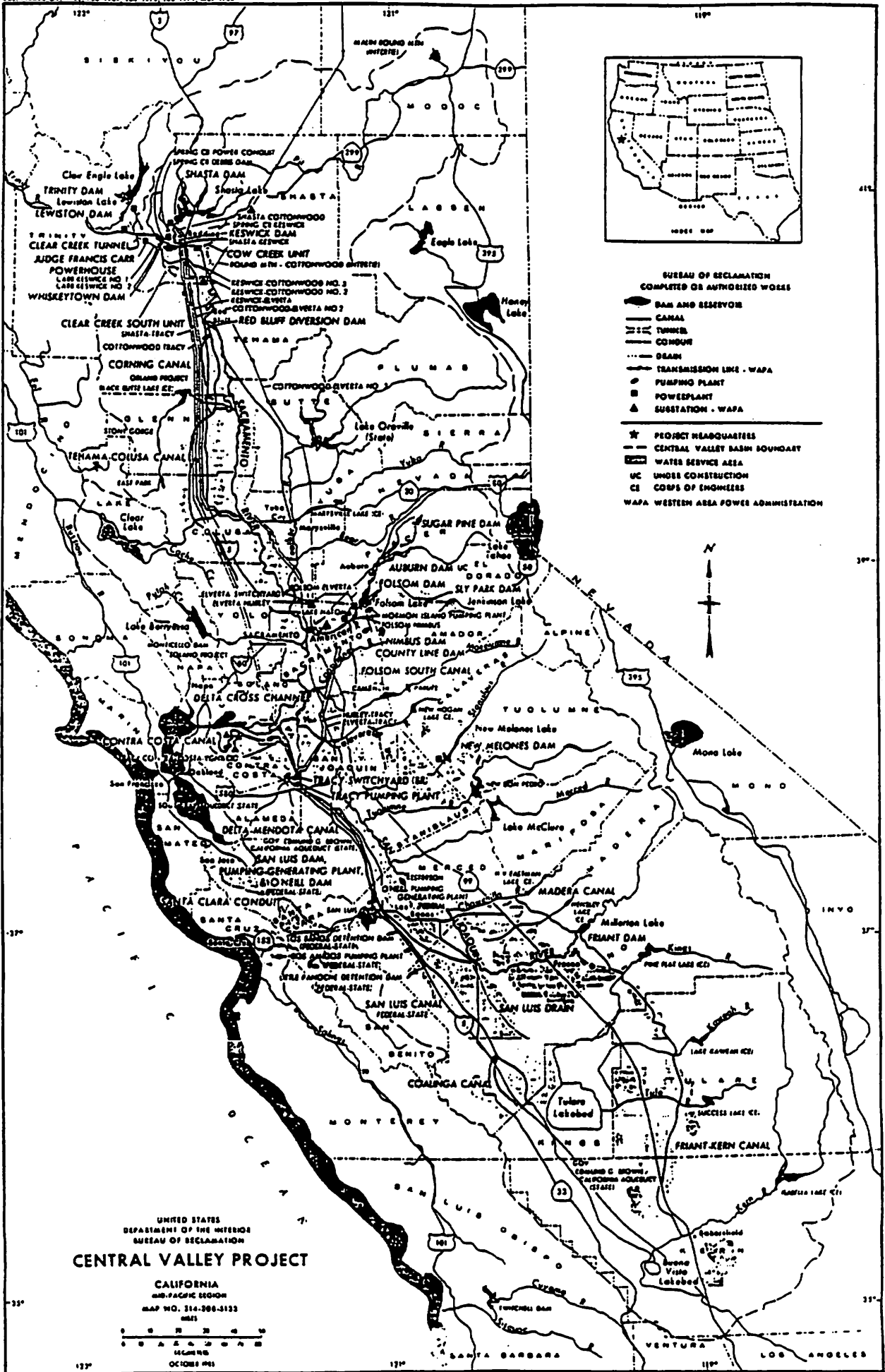
Principal features of the Delta division are the Delta-Cross channel which transports water across the Delta and the Tracy Pumping plant, which lifts water from the Delta into the Delta-Mendota Canal. The canal conveys water from the Delta for use by farmers along the west side of the San

Joaquin Valley. The San Luis Unit, partially jointly owned and operated by the bureau and the SWP, includes the San Luis reservoir, used to store primarily winter flows from the Delta for later use by the Westlands Water District and farmers and other users within the San Felipe Unit south of San Jose.

The Friant Division, hydraulically independent of the rest of the project, serves to impound the headwaters of the San Joaquin River, in Millerton Lake behind Friant Dam, and to transport them to irrigation contractors in the southern and eastern portions of the San Joaquin Valley. Buchanan and Hidden Dam, just to the north of Millerton Lake, were constructed and are operated by the Corps, but are integrated into CVP operations. Finally, the East Side division consists of the New Melones Dam, constructed by the Army Corps of Engineers ("Corps") but operated by the bureau.

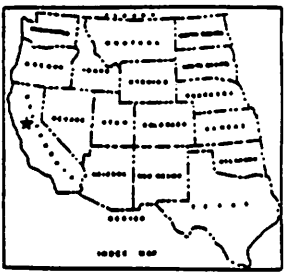
Operating the CVP as an integrated project involves releasing water from the northern reservoirs, in particular Shasta, Trinity and Folsom, after flood control season is over (March or April) for use south as well as north of the Delta. Water from northern reservoirs takes about five days to reach the Delta from which it is lifted at Tracy for conveyance by the Delta-Mendota Canal to agricultural contractors on the west side of the San Joaquin Valley. The Delta-Mendota Canal is also used to transport water to San Luis reservoir.

At about the same time of year, water is released from Friant Dam for transport by the Friant-Kern and Madera canals to a group of agricultural contractors. The right to use water now used by Friant Unit contractors formerly was held by farmers along the west side of the Valley. They are now served by the Delta Division with water transported from northern California. Indeed, the Friant Unit would be unable to divert



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT

CALIFORNIA
SAN-PACIFIC DIVISION
MAP NO. 314-200-5133
MAY 1985
1:500,000



- BUREAU OF RECLAMATION
COMPLETED OR AUTHORIZED WORKS
- DAM AND RESERVOIR
 - CANAL
 - TUNNEL
 - CONDUIT
 - DRAIN
 - TRANSMISSION LINE - WAPA
 - PUMPING PLANT
 - POWERPLANT
 - SUBSTATION - WAPA
-
- PROJECT HEADQUARTERS
 - CENTRAL VALLEY BASIN BOUNDARY
 - WATER SERVICE AREA
 - UNDER CONSTRUCTION
 - CORP OF ENGINEERS
 - WAPA - WESTERN AREA POWER ADMINISTRATION



Figure 1. Central Valley Project 40A

water were it not for water from northern California transported for use on the west side of the San Joaquin Valley.

Operation of the project is complex, with hundreds of water contractors of various kinds, each with different contract entitlements for different uses and with rates for water that vary widely as a function of when their contracts were executed. In addition, the region operates the project within a fishbowl, subject as it is to pressure from irrigators, environmentalists, cities, other agencies of the federal government and state government. The region believes that operation of the project would be complicated further were transfers of water to become commonplace.¹⁷

Chapter II: Transfer Activity Involving Water Provided by the CVP

Transfer activity involving water provided by the CVP falls into two categories: (A) transfers among CVP contractors and (B) transfers between CVP and State Water Project contractors.¹⁸

Transfers among CVP contractors

According to a study by Gray, over 3 million acre feet of water moved between CVP contractors by means of transfers during the period 1981-1988.¹⁹ Most transfers of water among CVP contractors are short-term, lasting no more than one year. Almost all of the water moving by short-term transfers was from one irrigation use to another.

Short-term transfers

Short-term transfers are of two kinds: (a) those carried out on an ad hoc basis and (b) those implemented through a pool or water bank.

Ad hoc transfers between CVP contractors are routine, occur on an informal basis and are approved by the bureau as a means of reallocating water to meet annually varying needs.²⁰ Most of these transfers are within a field division, even within one service area within a field division.²¹ The vast bulk of these ad hoc transfers are from one contractor to another and are carried out, with the permission of a field officer, without amendment of contracts.²²

Two groups of contractors in the Sacramento River Valley have created pools as a means of facilitating annual transfers.²³ The purpose of these pools is to provide water banks in which contractors may deposit "surplus" water for withdrawal by pool members facing a deficit. While the pools have been in existence for many years, they operate on an annual basis: Water may not be deposited in the bank one year and withdrawn in another. The pools are the exclusive means by which members may transfer water among each other. In addition, membership in the pools restricts pool members from transferring water to and receiving water from a non-pool member.

Another pool arrangement of sorts is found among Friant Unit contractors. In wet years water from Millerton Lake is transferred to those districts with underground storage capacity. In dry years this water is pumped and returned to those districts with inadequate groundwater supply. In other words, transfers are used to permit conjunctive use through banking of temporarily excess surface water supplies.²⁴ This arrangement has been in place for many years, but the bureau reserves the right to approve or disapprove it on an annual basis.²⁵

Long-term transfers

Construction of the locally financed Cross Valley Canal was completed in 1975.

The canal facilitates an exchange of water between the Arvin-Edison Water Storage District and a group of entities that have long-term contracts with the bureau for water released from Shasta Dam and Reservoir known as the Cross Valley Exchange Contractors.²⁶ Pursuant to the exchange, Arvin-Edison, a long-term Friant Unit contractor, permits the Exchange Contractors to use up to 128,000 acre-feet per year of Arvin-Edison's Friant Unit water. In return, the Arvin-Edison District takes an equivalent amount of water released from Shasta Dam and delivered to Arvin-Edison by means of the California Aqueduct and Cross-Valley Canal. The effect of this exchange is to make up to an additional 128,000 acre-feet of water available to the east side of the southern San Joaquin Valley.²⁷

The bureau has also approved a permanent transfer of water used for irrigation by the Lindsay-Strathmore Irrigation District to the City of Lindsay for m&i use.²⁸ There appear to have been no other such transfers from irrigation uses to m&i uses within the project.

Transfers between CVP and SWP contractors

In 1989 the State Water Resources Control Board ("SWRCB")²⁹ approved a transfer of 50,000 acre-feet from the Kern County Water Agency ("KCWA"), a SWP contractor, to the Westlands Water District, a CVP contractor. The transfer was made possible by the fact that KCWA unexpectedly found itself with a surplus of water that Westlands could use. Westlands paid \$20 per acre foot for the water plus transportation charges of about \$12 per acre foot.³⁰ Westlands will also repay KCWA with CVP water. If the water is repaid in dry years, KCWA will pay Westlands between \$5 and \$15 per acre-foot.³¹

A second transfer proposal entailing the movement of water between CVP and SWP contractors involves the Arvin-Edison District and the Metropolitan Water District of Southern California (MWD). Under this proposal, during wet years the DWR would deliver up to 135,000 acre-feet of the MWD's entitlement to SWP water to Arvin-Edison. Arvin-Edison would use this water for aquifer recharge or for irrigation. During dry years, and in exchange for the SWP water, Arvin-Edison would make up to 128,000 acre-feet of CVP water available to the MWD. A petition for the approval of this transfer is pending before the SWRCB.³²

These transfers show that considerable water does move between CVP contractors and, in limited circumstances, between CVP contractors and SWP contractors. However, most of the water is transferred for no more than one year and from one agricultural contractor to another. Little water has been transferred from agricultural to m&i uses or to environmental uses.³³ The major proposed transfer of water from the CVP to the MWD is an exchange where essentially no water is ultimately lost to agriculture.

Chapter III: Reclamation Law Affecting Transfers of CVP Water

This chapter is an analysis of the effect of federal reclamation law on the transferability of water provided by the CVP. The chapter is divided into four parts. Part A delineates the roles of federal and state law in transfers of project water. Part B analyzes whether statutes authorizing the CVP contain restrictions on CVP transfers. Part C is a review of general reclamation law to ascertain its effect on such transfers. Part D is a brief section on the effect of reclamation law on the transfer of CVP entitlements by the San Joaquin Valley "exchange contractors", a group of CVP contractors who have a different relationship

with the United States than other CVP contractors.

Part A: The Role of Federal Law in Transfer Policy

While it is the federal government that built and owns CVP storage and conveyance facilities, California law has at least as much to say about transfers of CVP water as does federal law.

The basis for the role that California law plays in CVP water transfers is found in section 8 of the Reclamation Act. Section 8 provides:

Nothing in this Act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws...Provided, that the right to use of water acquired under provisions of this Act shall be appurtenant to the land irrigated, and beneficial use shall be the basis, the measure, and the limit of the right.³⁴

Interpreting this section, the U.S. Supreme Court held in California v. United States ("California") that the Secretary of the Interior must follow state law regarding Bureau projects "in all respects not directly inconsistent with" congressional directives.³⁵

In the water transfer context the United States Court of Appeals for the Ninth Circuit, citing California, stated that "the conspicuous absence of transfer procedures [in reclamation law], taken in conjunction with the clear general deference to state water law, impels the conclusion that Congress intended transfers to be subject to state water law."³⁶

These cases may create the impression that transfers of CVP water are subject exclusively to California law. This would not be a correct impression. First, while it is true that the absence of explicit provisions in reclamation law governing "transfers" has opened the door for California law to regulate transfers of CVP water, there are provisions in the legislation authorizing the CVP and in general reclamation law that leave room for a significant role for federal law in these transfers. For example, provisions of federal law controlling place of use of CVP water and the purposes for which the water may be used as well as contract provisions can and do limit the transferability of CVP water.

As a result, it is necessary to review both project authorization, general reclamation law and contract provisions to ascertain whether they circumscribe the application of California law in a manner that could affect the transferability of CVP water.

Finally, federal law other than reclamation law may impinge on transfers even where inconsistent with state law governing transfers. For example, the requirements of the National Environmental Policy Act, Endangered Species Act, Clean Water Act and other federal environmental legislation may limit transfers that otherwise would be lawful under both reclamation law and state law. This report does not address this body of federal law, but notes that it

cannot be ignored in the consideration of CVP transfers.

Part B: CVP Authorizing Legislation

There are no provisions in the statutes authorizing the CVP and units thereof that explicitly address transfers of water provided by the project. However, some CVP statutes do contain specifications of the purposes for which and, in some cases, the places in which CVP water may be used.

Initially authorized facilities

Congress first authorized and appropriated funds for the construction of the CVP in three statutes enacted in 1935 and 1936.³⁷ None of these early authorization and appropriation enactments establish any congressional policy to guide the government in its construction of the CVP. The facilities authorized in these statutes were those contained in documents prepared by the Department of War. The Department relied on the Corps which, in turn, relied on components of the CVP contained in California plans for the project.

It took the Act of August 26, 1937 for Congress to establish statutory policy for the project. This statute reauthorized the project (for construction by the Secretary of the Interior), as it had been described in plans submitted by the Secretary of War to the Rivers and Harbors Committee of the U.S. House of Representatives. This document describes project facilities that are the backbone of the project, principally the Shasta Dam, Delta-Cross Channel, Tracy Pumping Plant, Contra Costa Canal, Delta-Mendota Canal, Friant Dam, Madera Canal and Friant-Kern Canal.³⁸ Thus, the Act of August 26, 1937 is the initial expression of congressional policy applying to these facilities.

Insofar as it bears on the question of transferability of water provided by the project, the statute (as amended to include authorization to construct distribution systems by the Act of October 17, 1940) reads as follows:

...the entire (CVP) is hereby reauthorized and declared to be for the purposes of improving navigation, regulating the flow of the San Joaquin River and Sacramento River, controlling floods, providing for storage and for the delivery of the stored waters thereof, for construction under the provisions of the Federal reclamation laws of such distribution systems as the Secretary of the Interior deems necessary in connection with lands for which said stored waters are to be delivered, for the reclamation of arid and semi-arid lands of Indian reservations, and other beneficial uses, and for the generation and sale of electric energy as a means of financially aiding and assisting such undertakings and in order to permit the full utilization of the works constructed to accomplish the aforesaid purposes...And Provided further, That the said dam and reservoirs shall be used, first, for river regulation, improvement of navigation, and flood control; second for irrigation and domestic uses; and, third, for power.³⁹

The inclusion of water supply for "other beneficial uses" as an authorized project

purpose makes clear that CVP water delivered through those facilities authorized by the Act of August 26, 1937 may be used for any beneficial use, including domestic, municipal and industrial, and fish and wildlife uses.

Any doubt as to the availability of water provided by the CVP for use for fish and wildlife purposes was dispelled by the Act of August 27, 1954, which specifically authorized the use of waters provided by the project "for fish and wildlife purposes subject to such priorities as are applicable under [the 1937 CVP legislation.]"⁴⁰ Moreover, a 1954 opinion by the Solicitor of the Interior indicated that fish and wildlife had been an authorized purpose since 1937 and that the express reference in the 1954 act was simply a "more definitive specification."⁴¹

Thus, water provided by the CVP from the "backbone" facilities authorized in 1937 may be used for any beneficial use. It follows that authorized purpose of use is not an impediment to transfers of CVP water provided that a transferee will put the water to a "beneficial use."

The 1937 legislation says nothing about the place of use of water developed by the authorized facilities. This has led some to opine that there are no restrictions on the place of use of water provided by the facilities authorized in the statute. Others argue that the legislative history of the legislation evinces an intent to restrict the use of CVP water to the Central Valley.

The better opinion is that the use of water from facilities authorized in the 1937 legislation is not restricted to the Valley. First, the statute is unambiguous: There is no place of use restriction. Thus, there is no need for a court to refer to legislative history, whatever it may say. Indeed, courts typically do not refer to legislative history where a

statute is unambiguous. Second, water, even from the initially authorized facilities, from the project is already used outside the Valley.⁴² Third, the bureau's preliminary decision to approve the transfer of CVP water to the Metropolitan Water District of Southern California for use outside of the Valley, as part of the Arvin-Edison/MWD transfer discussed in Chapter II, is an indication that the bureau does not read the act as confining water provided under its provisions to use in the Valley. This opinion is entitled to considerable weight.⁴³

Third, assuming, for argument's sake, that a court might be impelled to review the legislative history of the 1937 act to ascertain congressional intent regarding the place of use of project water, it would not find clearly stated intent to limit project waters to use within the central Valley. The legislative history of the 1937 legislation consists of, at best, secondary sources, such as reports of Executive Branch agencies on the project. No House or Senate reports on the act were published.⁴⁴ There appears to have been no debate on the question of where project water may be used. Agency statements do show an intent to develop the project to produce benefits for the Central Valley. But these statements do not expressly limit these benefits to the Valley. Nor do they expressly limit the use of project water to the Valley.

Congressional intent as to the place of use of CVP water provided from initially authorized facilities is, at best, ambiguous. As such, under California, California law regarding the place of use of CVP water is controlling, not reclamation law. To ascertain whether CVP water may be used outside the Central Valley, one would look first to the state water rights permits held by the United States for the water provided by these facilities. These permits prescribe places of use that do not include certain areas outside the Central Valley, in particular, Los Angeles

and San Diego. As a result, before water so provided may be used there, applicable water rights permits would have to be amended.

The remainder of the CVP has been constructed pursuant to individual authorizations. The following sections analyze whether legislation authorizing these additional facilities contains impediments to transfers rooted in limitations in purpose or place of use.

Folsom and Sly Park units

By an act of October 14, 1949, Congress authorized construction of the Folsom and Sly Park units of the CVP, located in the American River Basin northeast of Sacramento.⁴⁵ Section 1 of the act states that the CVP, as authorized by the Act of August 26, 1937, is "hereby reauthorized to include the American River development as hereinafter described, which development is declared to be for the same purposes as described in (the Act of August 26, 1937)."⁴⁶ Thus, there are no limits on the types of uses to which water developed by the Folsom and Sly Park units may be transferred.

Three other provisions of the Act of October 14, 1949 bear on the transferability of water from these units. First, section 2 contains the following provision:

Nothing contained in this Act shall be construed by implication or otherwise as an allocation of water and in the studies for the purposes of developing plans for disposal of water as herein authorized the Secretary of the Interior shall make recommendations for the use of water in accord with State water laws, including but not limited to

such laws giving priority to the counties and areas of origin for present and future needs.⁴⁷

The question is whether this directive might restrict transfers. In that California law in 1991 not only protects basins of origin but also encourages transfers of water, it would appear that this provision does not prevent the Secretary from approving transfers.

Another provision of the Act of October 14, 1949 may have an indirect effect on the transferability of water from one of the facilities of the Folsom Unit, namely Folsom Dam and Reservoir. The act directs the Corps of Engineers to construct Folsom Dam and Reservoir, but directs the Bureau of Reclamation to operate and maintain the facility. However, the act also requires that the dam "shall be operated for flood control in accordance with criteria established by the Secretary of the Army as provided for in section 7 of the Flood Control Act of 1944 (cites omitted)."⁴⁸ In theory operation of Folsom Dam for flood control could impinge on transfers dependent on the availability of storage.

Finally, the Act of October 14, 1949 contains an "integration" provision:

The Secretary of the Interior is directed to cause the operation of said works to be coordinated and integrated with the operation of existing and future features of the Central Valley project in such manner as will effectuate the fullest and most economic utilization of the land and water resources of the central valley project for the widest possible public benefit.⁴⁹

While this provision does not authorize the Secretary to ignore the explicit terms of the Act of October 14, 1949, it does appear to give him the discretion to review transfers of water from the two units involved for consistency with the objective of using the land and water resources of the project "for the widest possible public benefit." In that many transfers would have the effect of spreading the benefits of the project, this provision is supportive of transfers.

Sacramento River Canals

In 1950 Congress authorized the Tehama-Colusa Conduit (or Canal)

...so as to permit the most effective irrigation of the irrigable lands lying in the vicinity of said canal and supply water for industrial, domestic, and other beneficial uses for these lands in Tehama, Glenn and Colusa Counties or such alternate canals and pumping plants as the Commissioner of reclamation and the Secretary of the Interior may deem necessary to accomplish the aforesaid purposes.

The features herein authorized shall also include an irrigation canal...beginning at the Sacramento River near Vina, California, and extending through Tehama and Butte Counties to a point near Durham, California, so as to permit the most effective irrigation of the lands lying in the vicinity of said canal and supply water for industrial, domestic, and other beneficial uses for these lands lying

within the Tehama and Butte Counties....⁵⁰

An amendment to this statute in 1967 authorized the Secretary to "provide sufficient extra capacity and elevation in the Tehama-Colusa Canal to enable future water service to Yolo, Solano, Lake and Napa Counties for irrigation and other purposes...."⁵¹ A further amendment in 1980 extended the service area described in the first paragraph of the passage cited above to include "...those portions of Yolo County within the boundaries of the Colusa County, Dunnigan and Yolo-Zamora water districts...."⁵²

These provisions of law indicate that water may be provided for any beneficial use. However, the legislation appears to constrain the use of water provided by the facilities to Tehama, Colusa, Glenn, Yolo, Solano, Lake and Napa counties. This limitation does not appear to mean that water which contractors in these counties are entitled to use cannot be used outside of these counties. It appears to mean only that water delivered by the Canals cannot be used outside of the seven-county area. As a result, a transfer to a use outside of these counties would have to be effectuated without use of these facilities. One way to effectuate such a transfer is to leave the water in the Sacramento River rather than diverting it to the Canals.

The Sacramento Division of the CVP, containing the facilities whose authorization is discussed herein, also contains the Black Butte Dam and Lake. This facility, constructed and operated by the Army Corps of Engineers but, in part, integrated into the CVP⁵³, provides water for the Orland Project (not part of the CVP) and to the facilities of the Sacramento canals.⁵⁴ Black Butte was authorized by the Act of August 26, 1937 and, as such, transfers of water it impounds are not limited as to purpose or place of use.⁵⁵

Trinity River Division

The Trinity River Division was authorized in 1955

For the principal purpose of increasing the supply of water available for irrigation and other beneficial uses in the Central Valley of California....⁵⁶

Thus, water developed and provided by the division may be transferred to any beneficial use, but that use need be within the Central Valley.

The legislation authorizing the division also includes an integration requirement similar to that included in legislation authorizing the Folsom and Sly Park Units:

Subject to the provisions of this Act, the operation of the Trinity River division shall be integrated and coordinated, from both a financial and an operational standpoint, with the operation of other features of the central Valley project, as presently authorized and as may be in the future be authorized by Act of Congress, in such manner as will effectuate the fullest, most beneficial, and most economic utilization of the water resources hereby made available.⁵⁷

This passage is followed by a series of provisos designed to assure flows in the Trinity River sufficient to protect fish populations. A final proviso requires that not less than 50,000 acre-feet per annum be released from Trinity Reservoir and made available to Humboldt County and downstream water users.⁵⁸ Transfers

inconsistent with these provisos would not be permitted.

San Luis Unit

The San Luis Canal was authorized by an act of June 3, 1960. Section 1 states that the unit is authorized

For the principal purpose of furnishing water for the irrigation of approximately five hundred thousand acres of land in Merced, Fresno, and Kings Counties, California, hereinafter referred to as the Federal San Luis unit service area, and as incidents thereto of furnishing water for municipal and domestic use and providing recreation and fish and wildlife benefits....⁵⁹

Section 6 directs the Secretary to construct the unit in such a manner as to "make possible the future provision of Central Valley project service...to lands and municipalities in Santa Clara, San Benito, Santa Cruz, and Monterey Counties...."⁶⁰

These provisions establish that water delivered through the canal may be used for a broad range of purposes, although, when used for non-irrigation purposes, it need be used as an "incident" to irrigation use.

The provisions also create a presumption that water provided through unit facilities is limited to use in the area described in section 1 and, later, when other facilities are constructed, to counties described in section 6.⁶¹ However, water provided by the San Luis Unit originates in facilities authorized under the 1937 statute, which, as indicated, contains no place of use limitation. As a result, if a transfer of water now delivered for use by facilities of the San

Luis Unit can be effectuated without use of these facilities, say by moving the water to another place of use by means of the Delta-Mendota Canal or the SWP's California Aqueduct, it appears that any place of use limitation contain in the San Luis Unit legislation can be avoided.

New Melones Project

The New Melones project was originally authorized by section 10 of the Flood Control Act of 1944 in which Congress simply approved construction of projects on the Stanislaus River and other rivers according to the recommendations of the Chief of Engineers in Flood Control Document 2, 78th Congress. However, by the Act of October 23, 1962, Congress modified the project in accordance with a later report of the Chief of Engineers and provided that, upon completion of construction, the project would become an integral part of the CVP. Congress also provided that the project would be operated by the Secretary of the Interior according to reclamation law, except that the flood control portion of the project would be operated in accordance with rules prescribed by the Secretary of the Army.⁶²

San Felipe Division

The San Felipe Division, in operation since 1987, transports water from San Luis Reservoir for irrigation and municipal use in the Santa Clara Valley. The Division was authorized

For the purposes of providing irrigation and municipal and industrial water supplies, conserving and developing fish and wildlife resources, enhancing outdoor recreation opportunities and other related purposes....⁶³

Conservation and development of fish and wildlife resources and enhancement of recreation opportunities in connection with the division "shall be in accordance with the provisions of the Federal Water Project Recreation Act."⁶⁴ This act, among other things, provides for the integration of fish and wildlife and recreation opportunities into reclamation projects.⁶⁵

No place of use is specified in the authorizing legislation. The division is authorized to be "an addition to, and an integral part of, the Central Valley Project."⁶⁶

It appears, then, that there are no meaningful limitations in the legislation authorizing the San Felipe Division that would restrict transfers of water within or to a use outside of the Division.

Summary

This part shows that project authorizing legislation places few restrictions on the transferability of water provided by the CVP. The restrictions that do appear in the legislation fall into three categories:

1. Water that is intended by Congress to be used only for irrigation use. There is only one example of such a restriction in the CVP: Water provided by the San Luis Unit may be used for purposes other than irrigation, but only as an "incident thereto."

2. Water that is allocated for fish flows (Trinity River Division) or the transferability of which may be affected by the requirement that certain facilities (Folsom Dam, New Melones, Black Butte, Buchanan and Hidden Dam)

be operated by the Army Corps of Engineers or the bureau primarily or significantly to meet flood control purposes.

3. Water the use of which is restricted to the Central Valley (Trinity River Division) or some other local area (Sacramento River Canals, San Luis Unit.) As explained in Part 1, place of use restrictions in the legislation authorizing both the Sacramento River Canals and the San Luis Unit may be avoided simply by not using these facilities to implement a transfer that would be inconsistent with the legislation.

Finally, operation of CVP facilities for fish protection or flood control could affect the seasonal availability of water that is transferred.

Part C: General Reclamation Law

The phrase "general reclamation law" refers to the uncodified mass of law beginning with the Reclamation Act of 1902 and including statutes, case law and Solicitor's opinions that address reclamation issues that are not project-specific. As used in this part, reclamation law also includes the terms and conditions of contracts executed under the authority of reclamation law, but does not include Departmental and regional policy. Agency policy is reviewed in Chapter V.

There is no general reclamation law that explicitly addresses transfers of water. But, as in the case of CVP authorizing legislation, there is general reclamation law that may affect these transfers. For analysis purposes this part analyzes these provisions in

six sub-parts: (1) Transferable interests; (2) Purpose and place of use; (3) Appurtenancy; (4) Beneficial use; (5) the Reclamation Reform Act; and (6) Miscellaneous.

Transferable interest

Do CVP contractors or individual growers receiving water from these contractors have a legal interest in CVP water that they may transfer to other users?

Analysis of the nature of the interest in CVP water held by CVP contractors and growers begins with the holding of the U.S. Supreme Court in Nevada v. United States ("Nevada")⁶⁷. In this case the bureau sought to reduce the entitlement of growers to water from the Newlands Project in order to provide additional water to the Pyramid Lake Paiute Tribe. The bureau argued that it could administratively reallocate water within the project from irrigation use to protection of Pyramid Lake because it held the water rights for the project. The Court rejected the bureau's contention, reasoning that

"Once...lands were acquired by Settlers in the project, the (federal) government's ownership in the water rights was at most nominal; the beneficial interest in the rights confirmed to the Government resided in the owners of the land...[T]he law of the relevant State and the contracts entered into by the landowners and the United States make this point very clear."⁶⁸

Thus, it is the users that hold the most important legal interest in water supplied by the bureau, not the bureau.

Does the holding in Nevada apply to the CVP? In the Newlands Project, contracts

for the supply of water by the United States provide landowners with a "permanent water right" in an amount that may be beneficially applied to a specified tract of land.⁶⁹ Neither growers nor contractors hold such rights pursuant to contracts executed for the supply of water from the CVP. Thus, it has been argued that, in the CVP, neither contractors nor growers have the beneficial or equitable interest in the water that was found to exist in the Newlands Project.

This contention places more reliance on the issuance of contract water rights to the users than did the Supreme Court in Nevada. The primary basis for the Court's holding that the United States could not administratively reallocate water within the Newlands Project over the objections of the growers was Nevada law, which the Court, citing California, Ickes v. Fox and Nebraska v. Wyoming⁷⁰, found binding on the bureau. That law requires that, for the perfection of a water right for agricultural purposes, the water must be beneficially used by application to the land.⁷¹ Thus, the beneficial or equitable interest in the water resides with growers. As a result, if California law contains a similar requirement, the actual users of CVP water appear to have the same beneficial or equitable interest that Newlands growers were held to have. As elucidated below in Chapter IV, California law contains a similar provision. Thus, irrigation uses of CVP water hold the "equitable" title to water provided by the CVP.⁷²

Under California law holders of the equitable right to use water possess a "property right" to use the water deriving from their application of the water to a beneficial use. And under traditional principles of western water law, a property right in water may be sold or otherwise alienated by the holder of that right. Thus, one might conclude that growers receiving

CVP water might be able to transfer this water at will.

Such a conclusion would be erroneous. The property right to water provided by the CVP under Nevada has been restricted both by Congress and by the terms and conditions under which growers' organizations receive water from the CVP.

Since 1926 the bureau has been directed to contract with organizations ("contractors") representing growers rather than with growers themselves.⁷³ Since 1939, the bureau and contractors have had a choice as to the nature of the contractual relationship between them. They may enter into a repayment contract, under which a contractor agrees to pay off the share of project costs allocated to irrigation over a 40-50 year contract period.⁷⁴ Or they may enter into a utility-type water service contract under which the parties agree that the contractor pay an appropriate share of project costs allocated to irrigation over a 40 year contract period.⁷⁵

Most CVP contracts are water service contracts. Pursuant to section 9(e) of the Reclamation Project Act, CVP water service contracts are for 40 years. Many CVP contracts are in their final years. As a result, the transferable, equitable interest in CVP water supply, as shaped by contracts, is of short duration for many contracts unless the contracts come with a right of renewal.

Under the Act of July 2, 1956, irrigation contractors do have a limited right of renewal.⁷⁶ In relevant part, the act provides in section (1) that the Secretary of the Interior shall include in any long-term water service contract, if the contractor so requests, provision for renewal.⁷⁷ Section (4) defines the scope of the right to renewal by directing the Secretary to

provide that the contractor shall, during the term of the contract and of any renewal thereof and subject to fulfillment of all obligations thereunder, have a first right (to which the rights of the holders of any other type of irrigation water contract shall be subordinate) to a stated share or quantity of the project's available water supply for beneficial use on the irrigable lands within the boundaries of, or owned by, the party and a permanent right to such share or quantity upon completion of payment of the amount assigned for ultimate return by the party subject to payment of an appropriate share of such costs, if any, as may thereafter be incurred by the United States in its operation and maintenance of the project works.⁷⁸

Thus, pending completion of payment of that share of project costs ultimately assigned to a contractor, a contractor has a right of renewal only as against holders of other types of irrigation contracts, assumedly holders of irrigation repayment contracts. And, whether such a first right or a permanent right (after a contractor's repayment is complete), the right is always limited to a share or quantity of project supply for beneficial use on the irrigable lands within the boundaries or owned by the contractor.

Obviously, the act provides for an incomplete right of renewal, especially as it affects transfers. That the right extends only to application of water on lands within a contractor's boundaries or owned by the contractor strongly suggests that it confers no

interest on contractors that may be transferred to a use outside of a contractor's area or to a non-agricultural use inside such area beyond the expiration of any 40 year water service contract. This result for transfers should not be surprising because the purpose of the act was to provide for continuity in farming operations and not for the development of transferable property rights in water beyond the expiration of current contracts.⁷⁹

While early CVP contracts typically limit water to irrigation uses, most later contracts permit the use of water for irrigation and m&i uses. The Act of June 21, 1963 establishes a right of renewal for m&i water service contract water.⁸⁰ It directs the Secretary to provide a right of renewal to m&i water service contractors, to which right the rights of m&i repayment contractors are subordinate, to a share of a project's water supply available for municipal, domestic or industrial uses. As a result, the right of renewal to the supply of m&i water from the CVP is not restricted by the 1963 act to m&i uses within a contractor's service area.

As importantly, the bureau may and does, through contracts, regulate the use of water it provides to the growers.⁸¹ These contracts contain many terms and conditions that define and circumscribe the equitable interest that growers, through their district-contractors, hold in CVP water.⁸² As they bear on the transferability of this interest, some of these contract provisions are:

1. Place of use. Under this term a contractor is prohibited from disposing of any water delivered under the contract outside of district boundaries absent the permission of the bureau's contracting officer. Some contracts make no

provision for changes in the place of use whatsoever.

2. Purpose of use. Some older CVP contracts restrict use of water to irrigation uses (and sometimes groundwater replenishment) absent permission of the contracting officer.

3. Return flows. The bureau reserves the right to control and use for other purposes any return flow outside a district's boundaries.

4. Shortages. The U.S. is not liable for shortages and reserves the right to apportion shortages among all contractors taking water from a particular CVP facility.

5. Assignments. Typically, no assignment of any interest in the contract is permitted absent the approval of the contracting officer.

6. Repayment. Contractors may receive no water if they fall behind in their payment for water.

7. "Transfers" (for one year) are typically allowed under CVP contracts, with the permission of a contracting officer.

These terms restrict the interest that growers and contractors hold in CVP water. With the concurrence of the bureau, their negative effect on transfers can be overcome. However, the bureau may exact the toll of a rate increase for its concurrence. Where a

contract amendment is needed to obviate the effect of a contract term on transferability, there will likely be water rate-related Reclamation Reform Act consequences. As discussed in sub-part 5, these may discourage transfers. By and large, however, the negative disincentive of the RRA is minimal within the CVP, provided that the region does not impose rate increases that exceed the minimum required by the RRA.

The fact that growers' equitable interests in CVP water have been whittled down by contract terms and conditions does not mean that these interests are for naught. For example, the existence of an equitable interest should inform a court's review of whether the bureau's refusal to permit a transfer or to amend a contract to enable one is "arbitrary and capricious" under the contract.⁶³ That is, a contractor might argue that, absent compelling circumstances, the bureau should permit the district to implement a transfer to a use outside of the district's boundaries as consistent with an equitable interest in the water.

Changes in the purpose or place of use

Part 1 of this chapter established that the transferability of most water provided by the CVP is not limited by project authorizing legislation either as to purpose or to place of use. No other limitations based in purpose or place of use are found elsewhere in reclamation law.

At least three general reclamation statutes address changes in the purpose of water provided by bureau projects. In 1906 the Secretary was given the authority to enter into contracts to provide water to town sites developed in connection with irrigation projects "and other towns or cities on or in the immediate vicinity of irrigation projects, which shall have a water right from the same source as that of said project...."⁶⁴ In the

Miscellaneous Water Supply Act of 1920, the Secretary was given the authority to enter into contracts to supply water from any "project irrigation system" for purposes other than irrigation upon three conditions:

1. Such a contract has been approved by the appropriate water users' associations;
2. There is no other "practicable" source of water supply for the other purpose; and
3. The supply of water for the other purpose is not "detrimental" to the water service for the project.⁶⁵

Finally, the Reclamation Project Act of 1939 is authorizes the Secretary to enter into contracts to supply water for municipal or miscellaneous purposes, provided that to do so would not "impair the efficiency of the project for irrigation purposes."⁶⁶

Must the Secretary find that a transfer from irrigation use to m&i use is consistent with one of these statutes before he approve such a transfer when, as in the CVP, m&i use is already authorized? The probable answer is "no". The statutes described in this section were enacted during a time in which practically all water supplied under contract was supplied for irrigation pursuant to the Reclamation Act or project legislation that clearly restricts authorized purposes to irrigation. The intent of the 1906 and 1920 enactments and the 1939 legislation (insofar as it is addressed to reallocation of water supplied for irrigation) appears to have been to clarify that water supplied for irrigation only could, by contract, be reallocated for other uses. There is no evidence that Congress intended to require the Secretary to comply with either the 1906,

1920 or 1939 Acts when considering the transfer of water from irrigation to another use when that other use is already authorized.

It is less clear whether general reclamation law provides authority to the Secretary to approve a transfer that would involve the movement of water out of a congressionally restricted service area. One argument that such authority exists is premised on the Miscellaneous Water Supply Act of 1920. If the phrase "project irrigation system" in the 1920 legislation means "project service area"--the phrase is undefined in the statute--then it follows that Congress meant to authorize transfers outside of that area. Bolstering this argument is the fact that, in 1920, there were virtually no non-irrigation demands for water outside of project service areas. Hence, Congress must have meant to have authorized transfers of irrigation water to uses outside of project service areas. However, this is a slender, inferential reed on which to base such a transfer.

The language in the Reclamation Project Act of 1939, in effect authorizing transfers as long as the efficiency of a project for irrigation is not impaired, is not expressly limited to situations where the transfer is to a use within a congressionally authorized service area. As such, it may constitute authority for transfers to uses outside of such service areas. However, there is dictum in a Solicitor's Opinion to the contrary:

...The 1939 Act was designed to overhaul the repayment scheme for reclamation but was not designed to grant blanket authority in the Secretary to override subsequent Congressional authorization of projects...Therefore, section 9(h) does not provide an independent base for

delivering water to areas outside of the authorized (service area)....⁸⁷

This opinion was reversed by a subsequent Solicitor's Opinion, but on a different issue.⁸⁸ The result for transfers to a use outside of a congressionally authorized service area is that, under reclamation law, they are legally risky.

Appurtenancy

The broad deference in section 8 of the Reclamation Act to state primacy in the allocation of water provided by the bureau is conditioned by two provisos. The first is that the right to use water provided under the Reclamation Act "shall be appurtenant to the land irrigated...."⁸⁹ "Appurtenant" is not defined in the act. "Appurtenancy" requirements or remnants thereof are found in the law of many western states, but their meaning is not uniform. It can mean that an interest in water associated with land may not be severed from title to the land. This definition of appurtenancy would not present an insurmountable hurdle for transfer of CVP water. It would simply require that a transferee must also own the land to which an interest in the water is appurtenant. However, appurtenancy can also mean that water may not be severed from the land without loss of the right to use the water. If "appurtenancy" in section 8 has this meaning, it would constitute a significant impediment to transfers of CVP water away from the land.

Because the meaning of "appurtenancy" is unclear, a court may look to the legislative history of the Reclamation Act for guidance. The legislative history contains sparse reference to "appurtenancy", but that which exists provides some support for the proposition that, once water was applied to a particular tract of land, the water is inseparable therefrom. First, the

report of the Committee on Irrigation and Arid Lands states that "...the character of the right which is contemplated under the act is clearly defined to be that of appurtenance or inseparability from the lands irrigated...."⁹⁰

Second, Rep. Mondell, (R-Wyo.), who carried the bill from the Committee on Irrigation and Arid Lands and who was a primary sponsor in the House of Representatives, began floor consideration of the measure with a lengthy opening statement which includes the following passage:

The water having been beneficially applied and payments having been made under the provisions of the bill, the water right would become appurtenant to the land and inalienable therefrom...

The settler to landowner who complies with all the conditions of the act secures a perpetual right to the use of a sufficient amount of water to irrigate his land, but this right lapses if he fails to put the water to beneficial use and only extends to the use of the water on and for the tract originally irrigated. These most important provisions of the law prevent all the evils which come from recognizing a property right in water with power to sell and dispose of the same elsewhere and for other purposes than originally intended. This is an advance over the water usage of most of the States, and it is not denied that making water rights appurtenant to the tract irrigated will in some cases

work hardship, but it is believed that it is much better to risk the individual hardships which will inevitably occur under a provision of appurtenance than to risk the evils certain to result from unlimited authority to transfer water rights.⁹¹

Rep. Mondell's remarks evince the intention to deny a landowner the right to transfer his entitlement to transfer water provided by the bureau, even where state law permitted such transfers. If a court accepts his interpretation of "appurtenancy", transfers of water away from the land to which it was originally appurtenant are unlawful.

There are several reasons why a court would not likely adopt Rep. Mondell's interpretation. First, the Supreme Court has stated that the views of individual legislators, even sponsors, do not control the interpretation of a federal statute.⁹² The significance of the remarks of key legislators is diminished further when they are made outside of debate, as were Rep. Mondell's.

Second, Rep. Mondell, himself, indicated during debate that "...we are urging no new experiment and exploiting no new theories...[in] the principles which underlie this measure, the policies which it outlines, the detail of administration which it provides. There is in it no new thing."⁹³ If so, his concept of "appurtenancy" may not have been intended to be at odds with contemporaneous notions of appurtenancy in western state water law, even though "appurtenancy" in section 8 appears as a general deference to state law.

Thus, a court might be impelled to investigate the meaning of appurtenancy in 1902, as a means of ascertaining what Congress must have meant when it used that

term in section 8. If so, the court would likely refer to "Kinney on Irrigation and Water Rights", the standard reference on western water law of the time.⁹⁴ Kinney defines "appurtenances" as things belonging to another thing as principal and which pass as incident to the principal thing but which did not belong to it immemorially.⁹⁵ He goes on to indicate that "Although a water right may be appurtenant to a certain tract of land, it is the subject of property, and may be transferred either with or without the land."⁹⁶ This is true, he says, even when legislatures attempted to provide for inseparability.⁹⁷ In this context, Kinney addresses the meaning of "appurtenancy" in section 8:

"...there is nothing in the nature and character of a water right acquired under the Arid Doctrine of appropriation which makes it, upon any principle of law that can be conceived, an inseparable appurtenance to any particular tract of land, so that a sale or transfer of the right would work an abandonment, and vest no right in the grantee. Upon the other hand, the inherent rights guaranteed under our constitutions and law to own, hold and dispose of all or any portion of our property, either as a whole or in parts, permits the sale and transfer of a water right separate from the land. This principle was undoubtedly recognized by Congress in passing the national reclamation Act (cite omitted), where, in section 8, it is provided that the Secretary of the Interior, in carrying out the provisions of the Act, shall proceed in conformity with the

laws of the respective States and Territories; and, in the same proviso, "That the right to the use of water acquired under the provisions of this Act shall be appurtenant to the land irrigated," etc. As will be noticed the proviso does not state what "land irrigated," nor does it attempt to make the water an inseparable appurtenance to any land. It certainly cannot be contended in the face of the whole of this section, that a person in either the states of Wyoming or Idaho, who had fully paid for a water right under the provisions of the Act, and where the law of those States recognize the validity of a sale and transfer of a water right separate and apart from the land to which it was first applied, can not sell his right, or transfer the water claimed thereunder to some other tract of land. The same may be said relative to the water rights acquired under the Act in other states under the principles stated above (cite omitted).⁹⁸

Thus, Kinney concluded that Congress (whatever Rep. Mondell had in mind) could not have intended in section 8 to make project water inseparable from the land because to do so would be inconsistent with not only with contemporaneous western water law but also with "our constitutions."

A court might also defer to the Department of the Interior for guidance as to the meaning of "appurtenancy". While the Department has not issued a definition of "appurtenancy", it has behaved throughout as

if "appurtenancy" is no bar to such transfers in its approval of transfers of CVP water as well as water provided by other projects.⁹⁹ In addition, its Water Marketing Policy Statement and Criteria and Guidance would be practically meaningless if it believed that "appurtenancy" constituted a significant barrier to transfers.¹⁰⁰ The policy of the department on "appurtenancy" appears to be grounded in the belief that "appurtenancy" was simply a congressional directive that the early federal reclamation contracts be granted only to owners of land that would be irrigated with project water, rather than speculators.

One federal court has addressed the meaning of appurtenancy. In El Paso County Water District v. City of El Paso¹⁰¹, an issue before the court was whether water provided by the bureau for irrigation could be used for municipal purposes without violating the appurtenancy provision of section 8 of the Reclamation Act. Texas had accorded a higher preference for municipal use than for irrigation use. The court held that this municipal purpose overcame the appurtenancy requirement because section 8's larger purpose was to defer to state control over water allocation.¹⁰² However, the court's analysis of "appurtenancy" is brief. It seems to be inconsistent with the plain meaning of section 8, which creates "appurtenancy" as a proviso to the general bow to state primacy over the allocation of water.

A more sound way of deferring to state law would be to adopt a definition, if any, of appurtenancy that appears in California law. Under California, given that section 8 "appurtenancy" is ambiguous, arguably a California definition should apply. Unfortunately, no such definition exists. One can argue that California has impliedly rejected notions of appurtenancy as a barrier to transfers. (See Chapter IV, *infra*.) As such, in California, "appurtenancy" should be interpreted so as to avoid such barriers.

Beneficial use

The last proviso of section 8 states that "...beneficial use shall be the basis, the measure, and the limit of the right (to use water acquired under the provisions of the Reclamation Act.)"¹⁰³ In that the beneficial use requirement of section 8 appears as a proviso to the general deference to state law, some have wondered whether the requirement creates authority for the bureau or federal courts to develop notions of beneficial use that are different than those which appear in a state's water law. If such authority exists, it might be used to stifle transfers, for example under the theory that a transfer, per se, is not a "beneficial use" under section 8 if it involves removal of water from beneficial uses in a contractor's service area.

Case law establishes that where state law is explicit on the meaning of beneficial use under state law in a particular context, a state's notion of beneficial use governs. However, where a state law is not explicit, a court may make a de novo determination of "beneficial use" in furtherance of the requirement of section 8. In United States v. Alpine Land & Reservoir Co.¹⁰⁴ the Court of Appeals for the Ninth Circuit stated that "While there were provisions of federal law which were intended to displace state law...beneficial use itself was intended to be governed by state law."¹⁰⁵ In this case the court affirmed a district court de novo determination of beneficial use within the Newlands Project in which the district court had declined to be bound by a Nevada statute defining water duties.

However, in this case, the Nevada statute had been repealed. In addition, the statute may not have applied to Newlands irrigators even when it had been in effect. Had the state of Nevada had in place a "special rule of law" on the question before

the court, the Circuit Court implied, it would have been proper to have applied that rule rather than to have made the de novo determination.¹⁰⁶

As explained below, California has "special rules of law" establishing that transfers of "surplus" water may be beneficial uses. These rules should control the application of the "beneficial use" requirement of section 8. As such, "beneficial use" is not an impediment to the transfer of CVP water.

Reclamation Reform Act

The Reclamation Reform Act of 1982¹⁰⁷ was intended to modernize the ownership restrictions of reclamation law as well as to apply new, higher repayment requirements to some growers under certain condition. The RRA does not directly address transfers. However, it may act as a disincentive to a transfer where the transfer requires an amendment to a contract. This section summarizes how this disincentive may arise.¹⁰⁸

Under the RRA contractors may elect to avail themselves of more liberal land ownership restrictions prior to scheduled contract renewal, but, if they do, they will pay full O&M rates for grower landholdings less than 960 acres.¹⁰⁹ These rates apply automatically after a contract is renewed.¹¹⁰ However, upon a contract amendment for any purpose which enables a contractor to receive "supplemental or additional benefits", the RRA requires payment of full O&M costs on all land as a minimum.¹¹¹ Thus, if a transfer requires amendment of a contract deemed to constitute "supplemental or additional benefits", growers, after such an amendment, will pay at least full O&M costs for the water they receive.

The degree to which these provisions of the RRA are a disincentive to a transfer

depends on several factors, including when the district's contract will be renewed (and, thus, full O&M rates apply anyway), whether the district or growers therein have already elected to begin to pay full O&M costs (so as to take advantage of expanded land ownership entitlements prior to contract renewal) and how far apart full O&M rates are from the fixed contract rates they pay prior to the transfer. Also to be taken into account in ascertaining the effect of the "supplemental or additional benefits" requirement is P.L. 99-546, which provides that all O&M costs (deficits and prospective costs) as well as capital costs of the CVP be repaid by 2030.¹¹² It also imposes a requirement that interest accrue on contractor-district O&M deficits incurred after October 1, 1985.¹¹³ As a result, growers not already paying full O&M rates under the RRA are faced with the financial equivalent thereof for O&M deficits incurred since 1985.

Because of P.L. 99-546, the RRA should not prove to be a significant disincentive to transfers in the CVP, with the likely exception of the exchange contractors whose situation is described in Part D of this chapter. What disincentive exists depends, first, whether CVP contracts need to be amended to enable a contractor to effectuate a transfer and, second, whether a contract amendment enabling a transfer would constitute a "supplemental or additional benefit."

As to whether a transfer would require a contract amendment, in the CVP, it would appear that such amendments would be required in three situations:

1. Where the existing contract did not explicitly permit transfers (with the permission of the contracting officer);

2. Where the proposed transfer is to a use not allowed under a current contract; and

3. Where a district, in order to effectuate a long-term transfer, wants to reduce its contractual entitlement to water and to allow a receiving district (a) to increase its contractual entitlement or (b) enter into a contract with the bureau.

As to whether transfers requiring a contract amendment would also constitute "supplemental or additional benefits" and, thus, threaten an amending contractor-district with the requirement to pay more than full O&M rates (as a matter of regional Bureau policy), relevant bureau regulations promulgated to implement the RRA state as follows:

All contract amendments will be construed as providing supplemental or additional benefits except those amendments which do not require the United States to expend significant funds, to commit to significant additional water supplies, or to substantially modify contract payments due the United States.¹¹⁴

The transfer of water on an annual basis from one district to another (will not be considered to provide supplemental or additional benefits), provided that (1) both districts have contracts with the United States, (2) the rate paid by the district receiving the transferred water

is the higher of the applicable water rate(s) for either district, and provided further that the rate paid does not result in any increased operating losses to the United States above those which would have existed in the absence of the transfer and the rate paid does not result in any decrease in capital repayment to the United States below that which would have existed in the absence of the transfer, and (3) the recipients of the transferred water pay a rate for the water which is at least equal to the actual O&M costs or the full-cost rate in those cases where, for whatever reason, the recipients would have been subject to such costs had the water not been considered transferred water.¹¹⁵

Acquisition of irrigation water from federally financed facilities by exchange shall not subject the users of such water to Federal Reclamation law and these regulations if no material benefit results from the exchange to the recipient of water from the federally financed facilities.¹¹⁶²

The regulations also provide that the Secretary can designate other contract amendments as exceptions.

These regulations, applied to the three situations in which a transfer would require an amendment to a contract, indicate that some, perhaps many, transfers for more than one year and possibly even some annual transfers will be construed to imply

supplemental or additional benefits under the RRA unless they do not require the United States to expend significant funds, commit significant additional water supplies or to substantially modify contract payments due the United States. Most transfers will not require the United States to expend significant funds or to commit additional water supplies. However, many may entail the modification of contract payments due to the United States. As a result, some transferors of CVP water may be required by the bureau to pay full O&M cost-rates for all water they receive after the transfer. As indicated above, because of P.L. 99-546 this likelihood should not, in itself, discourage too many transfers.

In sum, as long as the bureau refrains from exceeding the minimal rate increase requirements triggered by the RRA, the RRA should not be a major disincentive to transfers in the CVP. However, if the bureau determines, as a matter of policy, to charge more than what is required under the RRA--as it may under the RRA--, the bureau will discourage transfers.

Miscellaneous provisions

Certain other provisions of reclamation law may come into play when a transfer of CVP water is proposed.

Section 301(d) of the Water Supply Act of 1958¹¹⁷ provides that modification of a reservoir project (say to facilitate a transfer of water from an irrigation use to an m&i use) which would "seriously affect the purposes for which the project was authorized...or which would involved major structural or operational changes shall be made only upon the approval of Congress...." Given the breadth of the purposes for which CVP reservoirs have been constructed, the only problem this section could present for a CVP transfer is if the transfer required a major operational

change in a reservoir. If it did, congressional approval would be required.

Under section 3 of the Reclamation Act¹¹⁸, the Secretary must classify land as suitable for irrigation before he may allow water provided by the CVP to be used for irrigation on such land. Thus, before a transfer of water to an irrigation use may be approved, a land classification analysis must be undertaken and successfully completed. Because an irrigation transferee would likely know whether his land is suitable for irrigation in advance of a transfer (particularly if the transferee is already a CVP contractor), this requirement should present little problem for CVP transfers to irrigation uses.

Reclamation law establishes repayment requirements other than those that are contained in the RRA and the COA legislation already discussed. Thus, irrigation users must pay rates to recover operating and capital costs, but no interest on capital is recouped from these users. M&I users must pay interest on capital.¹¹⁹ Transfers must be in compliance with these provisions of law. As a result, an m&i transferee will end up paying a higher rate for water transferred out of irrigation. The effect on transfers of the repayment requirements of reclamation law is a broad subject and is treated in greater detail by Richard Wahl in the larger report of which this case study is a part. However, one aspect--the effect of repayment requirements on transfers to benefit the natural environment--is treated here because of its importance to the CVP.

It is departmental policy that repayment to the federal government for after a transfer will be no less than it was prior to the transfer.¹²⁰ Where an entity of one kind or another may hold an entitlement to use water for environmental purposes, this policy does not seem unfair, although it may shortchange environmental uses of water

because of the difficulty in securing sufficient money to pay for these uses. However, where, as in California, it is unlawful to hold a water right for purposes of maintaining or enlarging instream flows, this policy presents a problem. This may be less a problem of federal policy than California law.¹²¹

Finally, the Warren Act¹²² authorizes the Secretary to contract for the use of excess storage or carrying capacity in projects constructed under the authority of reclamation law. It also prohibits anyone contracting with the Secretary under this authority from charging in excess of the costs paid the United States plus distribution costs. Thus, the Act prohibits "profits" on the delivery charges imposed by the bureau attendant to a transfer of Warren Act water. This is not a major disincentive to the transfer of CVP water because the project stores very little Warren Act water.¹²³

Part D: The exchange contractors

There are two groups of exchange contractors who take water from the CVP. One group is found in the San Joaquin Valley. The other is comprised of Sacramento River contractors. Both groups have different relationships with the bureau than ordinary contractors. This part reviews only the four exchange contractors located on the west side of the San Joaquin Valley.

The four CVP contractors on the west side of San Joaquin Valley that are exchange contractors are the Central California Irrigation District, San Luis Canal Company, Columbia Canal Company and the Firebaugh Canal Company. These entities and their predecessors had been diverting directly from the San Joaquin River pursuant to riparian water rights. By a single contract, executed in final form on February 14, 1968, these contractors agreed to accept a substitute supply of water through the Delta-Mendota

Canal in exchange for water from the San Joaquin River so that the bureau could impound this water to serve Friant Unit contractors.

The exchange contract differs markedly from ordinary CVP contracts. First, its term is perpetual. Second, in recognition of pre-project rights, the contractors pay nothing for CVP water. Friant Unit contractors pay the costs of delivering water to the exchange contractors. Third, arguably, reclamation law, general as well as project-specific, does not apply to the contractors.

It might appear that the exchange contractors are free to transfer their water without restriction under reclamation law. However, Article 6 of the Exchange Contract limits the use of water provided by the CVP to service areas described in the contract. Thus, it is likely that a contract amendment is necessary to effectuate a transfer at least to a use outside of the service areas of the contractors. The contractors are concerned that the bureau would exact a high price in return for an agreement to amend the contract, namely, the application of the pricing and, perhaps, even the acreage limitations established by the RRA.¹²⁴

Apparently, the rationale for applying RRA provisions to the exchange contractors stems from the possibility that a contract amendment would amount to a "supplemental or additional benefit" under the RRA. Assuming that provisions of the RRA may lawfully be applied to the exchange contractors, whether allowing a transfer amounts to a supplemental or additional benefit depends, in part, on whether the exchange contractors presently could transfer an entitlement to use water. The argument that they could not is based on the fact that they used to hold riparian rights which, absent quantification, may not be transferred under California law.¹²⁵ However, this

argument is not sound because, as of now, the exchange contractors hold contract rights which they accepted in return for yielding their riparian rights. Even if the rights which the exchange contractors hold are still construed to be riparian rights, these rights have now been quantified.

Chapter IV: State Law Affecting Transfers of CVP Water

Chapter IV indicates that general reclamation law does not provide clear answers to some questions that bear on the legality of transferring water provided by the CVP. In particular, important questions remain unanswered in the areas of transferable interest, purpose and place of use, and beneficial use. As a result, under California v. United States, courts will look to California law for answers. This Chapter shows that California law lifts the cloud of uncertainty from most of these issues. The chapter also explains the basic requirements of California law that apply to CVP transfers. In doing so, it demonstrates that, as a general matter, California law provides strong support for transfers of "surplus" water, including conserved water, by bureau contractors. Where California law appears deficient is in its refusal to permit any entity, even the state, to hold a water right to secure instream flows.

The State Water Resources Control Board, ("SWRCB"), has regulatory jurisdiction over all transfers that require a change in the place of use, purpose of use or point of diversion set forth in the water rights permits for the CVP. Some transfers of CVP water will require approval of the SWRCB because the bureau's water rights for the CVP restrict the place of use of water, even if project authorizing statutes do not, to the Central Valley and adjacent areas of the Sacramento-San Joaquin Delta. In addition, they specify points of diversion, in particular, from the

Delta, that will need changing to effectuate north-south transfers.¹²⁶

In 1980 California law was amended to provide that it is

the established policy of this state to facilitate the voluntary transfer of water and water rights consistent with the public interest in the place of export and the place of import.¹²⁷

Thus began a nearly decade-long effort to amend California water law to encourage voluntary water transfers. The new policy together with the amendments is important in providing the legal basis for transfers of CVP water.

California law establishes four categories of transfers: (1) temporary urgency changes; (2) temporary changes; (3) long-term transfers; and (4) transfers of reclaimed, conserved and surplus water.¹²⁸ As this report is interested primarily in the latter two types of transfers, it is to provisions of California law bearing on them that this chapter now turns.

A long-term transfer is defined as a transfer "...for any period in excess of one year."¹²⁹ Section 1736 contains the basic test that long-term transfers must meet. It authorizes the Board to "approve a petition for a long-term transfer where the change would not result in substantial injury to any legal user of water and would not unreasonably affect fish, wildlife, or other beneficial uses."

Most transfers in which bureau contractors are involved will entail transfer of "surplus" water. Transfers of "surplus" water by agencies of government are governed by special provisions of law contained in sections

380 through 387 of the Code.¹³⁰ These and related sections provide answers to other issues affecting the transferability of water by contractors left unresolved by reclamation law.

Section 380 states that the policy of encouraging local agencies to transfer water based on local and regional economic conditions is "in furtherance of" the reasonable and beneficial use doctrine of Article X, Section 2 of the California Constitution¹³¹ as well section 109 of the Water Code, cited above. Section 382 declares that "[n]otwithstanding any other provision of law to the contrary, every local or regional public agency authorized by law to serve water to the inhabitants of the agency may sell, lease, exchange, or otherwise transfer water that is surplus to the needs of the agency's water users for use outside the agency." (Emphasis added.)

Section 383 defines "surplus water" in three ways. Section 383(a) authorizes water agencies to transfer water "which the agency finds will be in excess of the needs of water users within the agency for the duration of the transfer." Section 383(b) includes, within the definition of surplus water, water "of which any water user agrees with the agency on mutually satisfactory terms to forgo use for the duration of the transfer." Section 383(c) authorizes an individual water user within an agency to negotiate a transfer of water that is surplus to the user's needs. Thus, a local water agency such as a CVP contractor is authorized to transfer water that is surplus to the needs of all water users served by the agency or surplus to the need of an individual water user, including in circumstances in which the user, himself, has negotiated the transfer. Obviously, "surplus" water includes conserved water, as defined in footnote 14, supra.

Sections 1011 and 1244 of the Code provide additional support for the transfer of "surplus" water. Section 1011(a) establishes that "[w]hen any person entitled to the use of water under any appropriative right fails to use all or any part of the water because of water conservation efforts, any cessation or reduction in the use of such appropriated water shall be deemed equivalent to a reasonable beneficial use of the water to the extent of such cessation or reduction in use." Section 1011(b) authorizes the transfer of water or water rights "the use of which has ceased or been reduced as a result of water conservation efforts." Finally, section 1244 declares that "[t]he sale, lease, exchange, or transfer of water or water rights, in itself, shall not constitute evidence of waste or unreasonable use."

Two requirements must be met before water may be transferred pursuant to the "surplus" water provisions. First, section 385 establishes that, just as the transferor-agency must approve the transfer, so must the water agency with jurisdiction over the area to which the water is being transferred. Second, all transfers must comply with the other provisions of the Code that govern water transfers. According to section 384,

Prior to serving water to any person for use outside the agency, the agency shall comply with all provisions of the general laws of the state relating to the transfer of water or water rights, including, but not limited to, procedural and substantive requirements governing any change in point of diversion, place of use, or purpose of use due to such transfer.

Moreover, section 386 authorizes the SWRCB to approve a transfer of "surplus" water

...only if it finds that the change may be made without injuring any legal user of water and without unreasonably affecting fish, wildlife, or other instream beneficial uses and does not unreasonably affect the overall economy of the area from which the water is being transferred.

California law also establishes that it is the growers (as distinct from the districts in which they operate), not the bureau, that holds the important, beneficial, equitable interest in water provided by the CVP. Water Code section 1240 provides that an appropriation must be for some beneficial use. It is the growers to whom the bureau supplies CVP water, not the bureau, who apply the water to beneficial uses and, thus, it is they who provide the basis for the bureau's water rights. It follows that they, not the bureau, hold the beneficial interest in CVP water.

These sections together resolve the principal issues raised but unresolved in the discussion of reclamation law. First, these provisions apply to water provided by the CVP. There just is not indication that California legislators intended to exempt CVP water users from them. The fact that it is the United States, and not either CVP contractors or the growers, who holds the water rights for the CVP, does not mean that the policies embodied in California law are not intended to apply to transfers by CVP contractors.

Second, these sections are "special rules of law" that confirm that a transfer of water that is "surplus" to the needs of one or more users served by a bureau contractor

may be transferred by the contractor, as a matter of state law, and that such transfers are a beneficial use under California law. As such, transfers are a "beneficial use" under section 8 of the Reclamation Act.

Third, they resolve that the growers have a legal interest in the water provided by the CVP, since it is the growers, not the bureau, that applies the water to the land.

Fourth, they clarify that growers acting through their contractors do not risk a claim of forfeiture of water rights simply by attempting to transfer them.

Fifth, in authorizing local agencies to transfer water, these sections of the law clarify that, under state law, a bureau contractor may transfer water even though it neither holds the water right nor applies water to the land. Indeed, by requiring individual water users to work through local agencies to effect a transfer of water that is "surplus" to the individual water users' needs, these sections affirm the critical role of contractors in the transfer process.

In sum, California law encourages the conservation of water by bureau contractors by clearing the way for transfers of this water by the contractors, themselves. However, California law cannot vest contractors or growers with a transferable interest in CVP water that is inconsistent with the limited rights of renewal granted by Congress in the 1956 and 1963 acts described in Part C of Chapter III. Nor can it confer rights to transfer that are inconsistent with the CVP contract provisions discussed in Part C. Nonetheless, its provisions encouraging transfers, particularly of conserved water, can inform the Mid-Pacific region's policies governing transfers. Certainly, pursuant to its continuing jurisdiction over the water rights permits under which the bureau operates the CVP, the SWRCB can require the region to

implement California transfer policy within the broad discretion which the bureau possesses under reclamation law.

Chapter V: Bureau Policy Affecting CVP Transfers

The import of Chapter III and IV is threefold: (1) That neither project-specific nor general reclamation law erects major barriers to CVP transfers at least within the time term of most CVP contracts; (2) California law encourages transfers of "surplus", conserved water; and, (3) Many CVP contracts contain serious impediments to transfers.

These contract impediments can be alleviated through the exercise of discretion by the Mid-Pacific Region. Where contract amendment are needed, the mandatory provisions of the Reclamation Reform Act should not pose a major disincentive to transfers, but bureau policy authorized, but not required, by the RRA may create significant disincentives.

This chapter reviews departmental and regional bureau policy to ascertain its effect on CVP transfers.

Departmental policy

On December 16, 1988 the Department of the Interior issued "Principles Governing Voluntary Water Transactions That Involve Or Affect Facilities Owned Or Operated By The Department Of The Interior" (hereafter "Principles"). About six months later, the Commissioner of Reclamation issued "Voluntary Water Transactions Criteria and Guidance" (hereafter "Criteria") for the purpose of assisting in the implementation of the Principles. These documents, provided as appendices to the main report, establish departmental policy that governs CVP

transfers. The contents of the documents are reviewed in detail in the main report. This section summarizes some of the major policies embodied in the documents to set the stage for the discussion of regional CVP transfer policy..

The first principle is consistent with section 8 of the Reclamation Act as well as with the holding in California v. United States. It states, among other things, that "Primacy in water allocation and management decisions rests principally with the States." An elaboration of this principle in the Criteria states that "State laws generally provide procedures for transferring water rights, and should be the primary mechanism for protecting the sellers/lessors of water, as well as third parties."

Principle 2 sets basic policy for the involvement of the department in transfers, stating that the department will facilitate a transfer only when it can be accomplished without diminution of service to other parties being served by federal resources. Among the factors that the bureau will consider if it becomes involved in a proposed transfer are third-party effects, compliance with NEPA, land classification, the effect on project operations and the effect of the RRA.

Principle 3 states that the department will participate in or approve transactions when there are no third-party consequences, or when such third-party consequences will be heard in an appropriate state forum or mitigated to the satisfaction of the affected parties. This principle leaves unresolved the forum for the consideration of third-party effects attendant to transfers that do not implicate the jurisdiction of the SWRCB. Given the size of the CVP, this could be a large number of transfers.

The Guidance to Principle 4 indicates that it is the intent of departmental transfer policy to "ensure that voluntary exchanges of

water are considered as alternatives in water resource management within Reclamation' planning, operation, and other water resource development."

Principle 5 states that the "The fact that the transaction may involve the use of water supplies developed by Federal water resource projects shall not be considered during evaluation of a proposed project." The companion Criteria provision states that the fact that "[water] was developed by virtue of a subsidized Federal project or program should not, in and of itself, be a barrier to the transaction."

Principle 6 sets forth departmental policy on the financial terms of transfers. There are three important policies articulated in this principle. The first is that the federal government must not be made worse off financially as a result of a transfer. Second, prospective subsidies of irrigation water use cannot be transferred to m&i uses. Third, the department announces its intent to refrain from burdening the transfer with transaction costs, in particular by refraining from "charging a percentage of any 'profit' that might be envisioned as the difference between appropriate costs and the market value of the water."¹³² Thus, the department has committed itself to allow the wealth inherent in a transfer of CVP water to flow unencumbered to the parties to transfer.¹³³ This policy is entirely consistent with California water policy, which relies in part on voluntary reallocation of developed water to meet shifting needs.

Principle 7 enunciates DOI's intention to consider collaboratively with state, tribal and local authorities necessary measures that may be required to mitigate any adverse environmental effects that may arise as a result of a proposed transaction.

In sum, by and large, departmental policy on transfers of water is consistent with California policy, as it should be under California.

Mid-Pacific Region policy

Chapter II shows that a considerable amount of water has been transferred within the Sacramento and San Joaquin valleys among agricultural users within the CVP on an annual basis. Other kinds of transfers, however, are exceptional. One reason for this situation is that, as Chapter VI elucidates, many growers have not been interested in making their CVP entitlements available for m&i development. Another reason is that the Mid-Pacific Region has not acted to "facilitate" transfers, particularly long-term transfers, in accord with DOI policy.¹³⁴

One policy that actively discourages transfers is the region's reluctance to allow contractors to make a "profit" on the sale or lease of water.¹³⁵ As a result, contractors have little incentive to make water available to users outside their own service area, particularly on a long-term basis. This policy has a particularly damaging effect on incentives to conserve water.¹³⁶ The region's position on "profits" is at odds with DOI policy set forth in Principle 6 of the DOI Voluntary Water Transactions Principles.¹³⁷

Other ways in which the region discourages transfers typically are not the result of affirmative policy but stem either from unclear policy or from the effect of non-transfer policies on incentives to transfer. For example, the region has not been clear regarding the policy it will apply in setting rates as a result of an approval of a transfer that does not trigger application of the RRA. Potential transferors do not know what rate penalties, if any, the region may exact as a "toll" for the approval of a transfer. Similarly, where a contract amendment is required and

a "supplemental or additional benefit" entailed, what rate policy will the bureau apply? RRA-related issues are particularly acute for San Joaquin exchange contractors, as Part D of Chapter III explains. Failure to address these issues is at odds with the department's promise to facilitate transfers.

In addition, the region has not acted, consistent with DOI Principle 1, to bring its contract administration policies into line with California law. As Chapter IV explains, California law establishes a policy to encourage water conservation, in part, through incentives to transfer "surplus" water. It is not clear whether the region believes that body of law applies to CVP contractors.¹³⁸ As a result, contractors do not know how the region will respond to a proposal by an irrigation-only contractor to conserve water and transfer it for use by an m&i user outside the contractor's service area. By contract, all would agree that the contractor does not have a right to make this transfer unless the bureau agrees to a contract amendment. But will the bureau agree to these kinds of proposals, as it should, generally, as a means to be consistent with California law? Or will it adopt a "use it or lose it" response to these proposals and take the contractor's desire to transfer conserved water as an indication that the contractor does not need all the water it is entitled to receive? Too many believe that the region's response to conserve and transfer proposals will be the latter.

What lies behind the region's less-than-enthusiastic embrace of the DOI principles? In part, the region may believe that it is responding to institutional considerations raised by the bureau's long-time constituents, the CVP growers. In part the region also appears to believe that the CVP is just "different" from other bureau projects because it is multi-use, because it has so many contractors, because it has so many

facilities that are operated in a coordinated fashion to meet contract demands, because the third-party effects of transfers in the CVP may be worse than in other projects and so on.¹³⁹ Some in the regional office question whether the Department's policy statement was intended to be implemented in the CVP or, at least, whether it is well-adapted to the CVP.

Another concern expressed by regional officials is that long-term transfers in the CVP would be inequitable: Most of the water would move to the powerful, rich districts in contravention of congressional policy embodied in the Reclamation Act and CVP authorizing legislation.¹⁴⁰

The author of this case study came away with the belief that, at the core of the region's reluctance to facilitate transfers so far is the fear of loss of control over the CVP that, it believes, would result from a much greater volume of transfers. This fear plays itself out in the expression that "it is the bureau that should control the reallocation of water from one contractor to another or to new contractors, not the contractors, themselves." It may not be so much the loss of bureaucratic power that regional officials seem to fear as it is the disorder, including negative third-party effects, that they feel a water market might entail.¹⁴¹ As a result, the region has a strong tendency to want to administer reallocation.¹⁴²

What do its contractors think about the bureau's reluctance to at least get out of the way of transfers, particularly of "surplus" or conserved water?¹⁴³ No one to whom the author of this report spoke thought that the bureau should simply permit markets for CVP water to develop unrestrained. Some feared the chaos of the market. Others thought that the regional office had a very difficult task on its hands in implementing the DOI Water Transaction Principles.

Those thoughts aside, however, many thought that the region should show more flexibility, particularly where conserved water was at issue. One stated that contractors fear approaching the regional office to propose a transfer of conserved water because "It's very risky to say to the bureau, 'I don't want water, I want money instead'. You can't take this statement back." One went so far as to say that the principal impediments to CVP transfers reside within the bureau, not the districts. Another opined that the bureau would have nothing to do if it did not control the allocation of water within the CVP and so, out of bureaucratic imperative, it discourages transfers. Still another believes that the bureau is afraid of the "have-nots" among CVP contractors who would complain bitterly if the bureau permitted water to be transferred to anyone but themselves. Finally, one said that long-term transfers are going to happen, one way or the other, either with the bureau's assistance or over its objections.

On May 7, 1990, the region issued a Draft CVP Water Transfer Option Paper. It is the region's attempt to align its regional policy with departmental and California policy. A copy of the draft paper is Appendix 2 to this case study. The paper represents a significant departure from traditional regional policy, but it only goes part way. It drops the informal policy against profiting on transfers. And it explicitly approves of transfers of water that is conserved. On the other hand, it appears to limit the transfer of water that is allocated for irrigation use only by contract to other irrigation uses, absent an amendment to the contract. And the policy applies only to annual transfers, although the paper appears to contemplate longer-term transfers.

Reaction to the new policy was apparently mixed.¹⁴⁴ Finally, the region decided to withdraw the policy for further review. In the intervening year, the drought

in California worsened. Much of the energy of regional staff was dedicated to dealing with the drought. As a result, long-term transfer policy formulation was shunted aside. However, short-term temporary transfers received considerable attention as a means to alleviate shortages. A series of short-term transfer policy papers was prepared, the last of which was issued on March 14, 1991. Importantly, this policy paper permits "amounts of payment in excess of the cost-of-service water rate" resulting from transfers to be retained by the transferor. This policy represents a break with the past and may be an indication of the direction in which the region may go in developing long-term policy.

Chapter VI: Institutional Considerations

This chapter explores the mix of considerations that impede or otherwise shape transfers of CVP water that are non-legal and non-policy. They include non-market values in water, water supply district attitudes and policies, reactions to regional and state policy, lack of data, and other matters, lumped together, in this chapter, under the phrase "institutional considerations."¹⁴ The discussion of these considerations appears at this point in the report because, as they reflect how people feel about water, they are of great significance in shaping project transfer policy.

Non-market water values

Obviously, water has value to people that extends beyond its market value. These values are helpful in explaining why there have not been more transfers of CVP water provided for irrigation to m&i and even environmental uses.

Water is sometimes worth much more to Central Valley growers than its market price. Thus, it should come as no surprise that growers and their districts are often disinterested in selling water for use by cities

even when cities offer to pay many multiples of the marginal value of the water to the growers. A phrase often used in discussions about this phenomenon is "heritage value". Often mentioned concomitantly with heritage value in water is the Owens Valley Syndrome: We can't let the cities take even a small portion of our water or they'll take it all and/or we'll never get it back.

Loss of heritage value and Owens Valley concerns are lessened if the topic turns to transfers of water that contractors determine is "surplus" to their needs, especially if the water transferred is made available by conservation measures. Indeed, many share the notion that the cities, even under a worst-case drought scenario, may not need much more than what irrigators can conserve, without loss of net income to agriculture generally. Nonetheless, perhaps only a minority of growers in the Valley see the issue in this light. Boards of Directors of bureau contractors, in control under California law of transfers from within their boundaries, reflect the understanding and will of the majority.

The environmental value of water is another significant, non-market value in water. Concern with these values can lead in two different directions as far as transfers of CVP water are concerned. On the one hand, if transfers are a substitute for new dams, they may be a plus. On the other hand, some transfers can be environmentally damaging. Thus, transfers from CVP contractors north of the Delta to San Joaquin districts may cause water quality and other problems in the Delta. Transfers of conserved water, if not regulated, can threaten wetlands and streamflow, particularly in the west side of the San Joaquin Valley.

The emergence of the public trust doctrine in California may have contrasting effects on transfers. On the one hand, the

SWRCB may look at transfers as a means of meeting public trust obligations. On the other hand, consideration of public trust water needs in the Bay/Delta hearings is thought by some to have had a chilling effect on transfers: Until there is resolution of these hearings, neither the bureau nor its irrigation contractors are sure how much water is available for transfer.

Other "institutional" concerns

Foremost among these concerns is attitudes, often developed in response to long-time bureau policy. Principal among these attitudes is a "use it or lose it" culture that pervades the project.

Related to this attitude is the fear of going first. Thus, while some contractors are aware of changes in departmental policy regarding transfers, they don't want to be the first to find out that regional policy regarding long-term transfers still is driven by use-it-or-lose-it policy. Combined with this fear is the complexity of accomplishing the transfer. Permission must be obtained not only from the regional office of the bureau (with uncertain consequences for water rates), but, in some cases, from the SWRCB, and environmental agencies (both federal and state), all this against the backdrop that some within the CVP community will view the transferor as a traitor for making water available to a "highest bidder" instead of to CVP "have-nots."

Other concerns expressed include:

1. Lack of understanding of the capabilities of the system: Can a transfer of conserved water be effectuated between one contractor and another? Is the aqueduct capacity there or not?

2. Fear of third-party effects of conservation on (a) return flow users; (b) on environmental water uses.

3. If agriculture transfers water to the cities, we'll play into the hands of environmentalists who want to use transfers as a substitute for projects.

4. Transfers to the cities will create more sprawl and degradation of the environment.

5. There's been no crisis yet. Major transfers to the cities have not yet been needed. This gives everyone time to jockey for the upper hand in negotiations.

Chapter VII: Conclusion and Recommendations

This report has shown that there are few, significant legal impediments to the transfer of CVP water. Indeed, California law, which is controlling on most aspects of transfer policy, encourages transfers, particularly of "surplus" and conserved water.

The region needs to take the final step to bring its regional policy into line with both California transfer and departmental policy. It can do so, most importantly, by re-designing its transfer policy so as to rid it of disincentives to water conservation. Focusing on the development of transfer policy to encourage conservation reduces the perceived threat of transfers to the Valley's agricultural economy because conservation does not imply drying up vast quantities of land now in production. It would also likely gradually generate enough water to meet growing urban water requirements as well as to help

meet environmental needs for water.¹⁴⁶ At a minimum it is a reasonable, moderate step for the region to take as it tries to implement a transfer policy more in line with California and departmental policies.

The transfer policy, itself, should build on the May 7, 1990 draft, but should go further by:

1. Clarifying that the policy applies to long-term transfers.
2. Clarifying that the region seeks to facilitate, not impede, voluntary transfers of water, particularly of conserved water, in a manner that is consistent with reclamation law, and accounts for third-party effects (in the proper forum). The clarification should extend to stating that the region will administer contracts, and consider amendments to them, in a manner to facilitate transfers. General acceptance of California transfer policy would be helpful in this regard.
3. Clarifying the policy that the region will use regarding recalculation of rates for water triggered by a transfer attendant to both RRA and non-RRA situations.

ENDNOTES

1. In this report "transfer" refers to a voluntary change, temporary or permanent, short- or long-term, by a bureau contractor or water user in the place or nature of use or point of diversion of a quantity of water. The crucial concept of "transfer", then, is that the reallocation effectuated by the transfer is at the initiative of the Bureau contractor or user of water. Thus, "transfer" is distinguished from an administrative reallocation of water by the Bureau.
2. "Central Valley Project Water Development", Raymond W. Gaines, 1986, p. 106.
3. Id.
4. "Annual Progress Report 1989, Mid-Pacific Region Bureau of Reclamation, p. 2.
5. Telephone conversation with Robert Stackhouse, Regional Project & Repayment Officer, Mid-Pacific Region, December 6, 1990.
6. Gaines, fn. 2, supra, p. 115.
7. "California Fish and Wildlife Protection Act of 1990", House Report 101-726, Part 1, 101st Congress, 2d sess., Sept. 21, 1990, p. 20.
8. Id., pp. 16-20.
9. See National Audubon Society v. Superior Court of Alpine County, 33 Cal. 419, 658 P.2d 709, cert. denied, 104 S. Ct. 413 (1983).
10. Interview with Mike Porter, General Manager, Central California Irrigation District, January 16, 1990.
11. In 1985 a joint state/federal program, the San Joaquin Valley Drainage Program, was initiated, among other things, to analyze the means by which drainage could be controlled. Work undertaken for the program showed that conservation of water provided by the CVP to agricultural users encouraged by the prospect of revenues gained from transfer of the conserved water is a key strategy in curtailing increments to drainage. "Legal and Institutional Structures for Managing Agricultural Drainage in the San Joaquin Valley: Designing a Future", Report to the San Joaquin Valley Drainage Program by the Natural Heritage Institute, July 31, 1990.
12. Telephone interview with Richard Moss, General Manager, Friant Water Users Authority, January 30, 1990.
13. See "Testimony of Douglas Wheeler, Secretary of the Resources Agency, State of California, Before the Committee on Interior and Insular Affairs, Subcommittee on Water, Power, and Offshore Energy Resources Regarding The 1991 California Drought, and the Responses of Local Government, the Government of the State of California, and the needs for Federal Response and Assistance to Mitigate the Worsening Conditions of Critical Water Shortages", February 18, 1991.

14. As elucidated in Chapter V of the text, California law permits and encourages the transfer of water that bureau contractors find to be "surplus" to their needs. As used in this report, "conserved water" is a subset of "surplus" water and is used to denote water that is made available from existing applications to the land through efficiency improvements, crop changes and other practices not including permanent agricultural "dry-ups", except where, in the San Joaquin Valley, taking land out of production is a proper drainage management strategy. See "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley", Final Report of the San Joaquin Valley Drainage Program, September, 1990.
15. See, generally, Gaines, fn 2, supra.
16. Interview with Robert Stackhouse, fn 5, supra, November 13, 1989.
17. Interview with Robert Stackhouse, fn 5, supra, December 12, 1990.
18. Transfers, as used in this report, may be effectuated in several ways. First, water may be shifted from one place of use to another, between bureau contractors, on a temporary (annual) basis. This is what the region calls a "transfer". Second, a contractor may assign all or a portion of its entitlement to receive a supply of water to another entity, which would, in turn, execute a contract with the United States. Third, the bureau can permanently reallocate water from one contractor to another upon contract amendment. Finally, water can be exchanged between contractors. An exchange connotes a trade in place or time.
19. "Water Transfers in California: 1981-1989", Brian E. Gray, in "The Water Transfer Process as a Management Option for Meeting Changing Water Demands", Volume III, Submitted to the U.S. Geological Survey in fulfillment of Grant Award Number 14-08-0001-G1538, Lawrence J. MacDonnell, Principal Investigator, May 1990, Chapter 2, p. 22. There is some question whether all 3.1 million acre-feet of the water was "transferred". Some portion of the recorded transactions may have amounted to "paper" transactions without actual, voluntary changes in purpose or place of use or point of diversion. Communication with Richard Wahl, March 18, 1991.
20. Id., p. 23.
21. Id.
22. An exception to the contractor-to-contractor model is a 1989 transfer of water from the Broadview Water District to named individuals with the Westlands District.
23. The Sacramento River Water Contractors Association and the Tehama-Colusa Canal Authority.
24. "Friant Unit of the Central Valley Project", Friant Water Users Authority, p. 3.
25. Telephone interview with Richard Moss, fn 13, supra.

26. The Cross Valley Exchange Contractors include Fresno County, Tulare County, Hills Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District and Tri-Valley Water District.

27. See "Friant Unit of the Central Valley Project", fn 24, supra.

28. Conversation with Merv de Haas, Chief, Repayment Branch, Mid-Pacific Regional Office of the bureau, April 26, 1991.

29. The SWRCB is a California state agency responsible, among other things, for issuing water rights permits and reviewing applications for changes in these permits. See text, Chapter V.

30. Gray, fn 19, supra, p. 22.

31. Id.

32. Id.; For a detailed discussion of the issues raised by this transfer proposal, see "Response Summary, July 17 & 19, 1989 Public Workshops on a Proposed Water Storage and Exchange Agreement between the Arvin-Edison Water Storage District and the Metropolitan Water District of Southern California."

33. CVP water (not already allocated to environmental uses) is made administratively available for wetlands and instream uses by the bureau on an ad hoc basis. And the irrigation water usage patterns of some CVP contractors also provide water for habitat, primarily through return flow. However, temporary transfers of entitlements to receive water for irrigation purposes to environmental uses are exceptional. There appear to be no examples of permanent transfers of water for environmental uses.

34. 32 Stat. 390; 43 U.S.C. 372, 383.

35. California v. United States, 98 S.Ct. 2985, 3002.

36. United States v. Alpine Land and Reservoir Company, 697 F.2d 851, 858 (9th Cir. 1983) (quoting 503 F. Supp. 877, 884 (D. Nev. 1980)).

37. 49 Stat. 1028 at 1038; 49 Stat. 115; 49 Stat. 1622.

38. Rivers and Harbors Committee Document Numbered 35.

39. 50 Stat. 844.

40. 16 U.S.C. 695d.

41. Opinion by Acting Solicitor Armstrong, Allocations for Fish and Wildlife Conservation on Central Valley Project (Nov. 15, 1954). A 1985 Solicitor's Opinion concluded that the 1954 Act limits the supply of water to fish and wildlife refuges to 47,000 acre-feet per annum and that deliveries to the Grasslands Water District are restricted to 50,000 afa. Opinion of Principal Deputy Solicitor Horn (Nov. 18, 1985), at 23. The effect of this opinion on transfers is to

require transferees who wish to use CVP water for fish and wildlife purposes, like other transferees, to pay the United States for the water.

42. Water from initially authorized facilities is transported by the Contra Costa Canal for municipal, industrial and irrigation uses outside the Valley. The San Felipe Division also transports northern California water from San Luis reservoir for use in Santa Clara and San Benito counties, both outside the Valley.

43. The U.S. Supreme Court has held that when a statute is silent or ambiguous on an issue, an interpretation by the agency charged with its administration is entitled great deference. Chevron U.S.A. v. Natural Resources Defense Council, 467 U.S. 837, 843 (1984).

44. The only congressional committee report on the project was a report by the U.S. Senate Committee on Irrigation and Reclamation published in 1933. The strongest statement regarding place of use contained in this report is

The plans for development and utilization of water resources involved in the committee's investigation are directly related to and predicated upon the present and future needs of this great central valley of California. S. Rept. No. 1325, 72nd Congress, 1933. At p. 488 of "Part 1, Authorizing Documents, Central Valley Project", H.R. Doc. No. 416, 84th Cong., 2d Sess (1956).

45. 63 Stat. 852.

46. Id.

47. Id.

48. Id.

49. 63 Stat. 854.

50. 64 Stat. 1036.

51. Public law 90-65, 81 Stat. 167.

52. Public Law 96-570, 94 Stat. 3339.

53. Act of October 23, 1970; 84 Stat. 1097.

54. See Figure 1, supra, "Factual Data on the Central Valley Project--Sacramento River Division."

55. See discussion of "Initially authorized facilities", supra, text 19-25.

56. 69 Stat. 719.

57. Id.

58. Id. The provisos that may constrain transfers are as follows:

Provided, That the Secretary is authorized and directed to adopt appropriate measures to insure the preservation and propagation of fish and wildlife, including, but not limited to, the maintenance of the flow of the Trinity River below the diversion point at not less than one hundred and fifty cubic feet per second for the months July through November and the flow of Clear Creek below the diversion point at not less than fifteen cubic feet per second unless the secretary and the California Fish and Game Commission determine and agree that lesser flows would be adequate for maintenance of fish life and propagation thereof....Provided further, That not less than 50,000 acre-feet shall be released annually from the Trinity River and made available to Humboldt County and downstream water users. 69 Stat. 719

In County of Trinity v. Andrus, 438 F. Supp. 1368 (E.D. Cal. 1977), the court held that the language in this passage requiring the Secretary to adopt measures to "insure the preservation" of fish does not impose an absolute duty to maintain populations at pre-Trinity project levels, but merely requires that some fish life be maintained.

59. 74 Stat. 156

60. 74 Stat. 159.

61. The place of use of water provided by the San Luis Unit was the source of a battle of Solicitor's Opinions. In 1978 Solicitor Krulitz opined that an earlier enlargement of the service area to approximately 614,000 acres from the 500,000 acres established by congressional authorization was invalid. 85 L.D. 297. An opinion by Solicitor Tarr overturned that opinion.

62. 76 Stat. 1191.

63. Act of August 27, 1967, 81 Stat. 173.

64. 81 Stat. 174.

65. 79 Stat. 213; 16 U.S.C. 4601-12.

66. 81 Stat. 173.

67. 463 U.S. 110 (1983).

68. Id. at 126.

69. Id. at 126 n.9.

70. Ickes v. Fox, 300 U.S. 82 (1937); Nebraska v. Wyoming, 325 U.S. 589 (1945). In Nevada, the Court cites the following passage from Ickes with approval:

Although the government diverted, stored and distributed the water, the contention of petitioner that thereby ownership of the water or water-rights became vested in the United States is not well founded. Appropriation was made not for the use of the government, but, under the Reclamation Act, for the use of the land owners; and by the terms of the law and of the contract already referred to, the water-rights became the property of the land owners, wholly distinct from the property right of the government in the irrigation works...The government was and remained simply a carrier and distributor of the water..., with the right to receive the sums stipulated in the contracts as reimbursement for the cost of construction and annual charges for operation and maintenance of the works. 463 U.S. at 123.

71. Id. at 126.

72. Other issues are raised by the application of Nevada to the CVP situation. One is whether the irrigator loses his equitable interest in CVP water if he no longer applies project water to the land. Resolution of this issue is provided by California law, made applicable by section 8 of the Reclamation Act. As discussed in Chapter V of the text, California law explicitly protects growers and contractors against loss of an entitlement to water as a result of non-application to the land.

Another issue unanswered by Nevada is whether a contractor, rather than a grower, may hold an equitable interest in CVP water. Again, this is a question to be decided by reference to California law. Under California law, contractors have no equitable interest in water that derives from actions the contractors take. As such, as in Nevada, their activities are "strictly managerial." Truckee-Carson Irrigation District v. Secretary of the Department of the Interior, 742 F. 2d 527, 531 (1984). However, the contractors do not need to hold such an interest in CVP water to be able to transfer an entitlement to use CVP water if the contractors are acting on behalf of the growers. As discussed in Chapter V of the text, California law practically forces growers to act through contractors in any transfer of an equitable interest the growers hold in CVP water.

73. Section 46 of the Omnibus Adjustment Act of 1926 prevented the provision of water from a new project absent a contract, to the satisfaction of the Secretary of the Interior, with "irrigation" districts organized under state law. 44 Stat. 649; 43 U.S.C. 423e. Section 2(g) of the Reclamation Project Act of 1939 authorized contracts not only with irrigation districts but also conservancy and other districts organized under state law and which have "the capacity to enter into contracts with the United States pursuant to federal reclamation laws." 72 Stat. 543; 43 U.S.C. 485a.

74. Repayment contracts are authorized and by section 9(d) of the Reclamation Project Act. 53 Stat. 1195; 43 U.S.C. 485h(d).

75. Water service contracts are authorized under section 9(e) of the Reclamation Project Act. 53 Stat. 1196; 43 U.S.C. h(e).

76. 70 Stat. 483.

77. Id.

78. Id.

79. "The impetus for the Act was the concern, primarily on the part of California farmers [citation omitted] about renewability of and repayment under 9(e) contracts and, inherent in the first concern, the availability of a continuous supply of water." Memorandum to Assistant Secretary, Water and Science, from Solicitor re renewal of Friant Unit Contracts, November 10, 1988, p. 3.

80. 43 U.S.C. 485h; 77 Stat. 68.

81. The ultimate source of the bureau's regulatory authority over contracts for CVP water is the property clause of the U.S. Constitution.

82. The combination of contract terms and conditions and other justifications for the assertion of regulatory power over the equitable interest in water provided by the bureau has led to what one commentator calls a "project right" in such water. See, generally, "Voluntary conveyance of the right to receive a water supply from the United States Bureau of Reclamation", Ecology Law Quarterly, Volume 13, Number 4.

83. At least some CVP contracts contain a term reserving the right of the contractor for relief from arbitrary or capricious behavior by the bureau.

84. Act of April 16, 1906. 34 Stat. 116.

85. 41 Stat. 451; 43 U.S.C. 521.

86. 53 Stat. 1194; 43 U.S.C. 485h(c). This authority was the basis for the Secretary's approval of the transfer of salvaged water from the Casper-Alcova Irrigation District to the City of Casper in Wyoming. In this instance, the transfer did not "impair the efficiency of the project for irrigation purposes" because the District transferred only an entitlement to receive water that the district had "wasted" prior to the transfer.

87. 85 LD. 297.

88. Opinion of June 17, 1986.

89. 32 Stat. 390; 43 U.S.C. 383.

90. H.R. No. 1468, 57th Cong., 1st Sess. 7 (1902).

91. 35 Cong. Rec. 6679 (June 2, 1902).

92. Chrysler v. Brown, 441 U.S. 281, 311 (1979). However, notwithstanding this general rule, one court has cited Mr. Mondell's remarks with favor:

As described by Rep. Mondell, a water right under the Reclamation Act "only extends to the use of water on and for the tract originally irrigated"; there is no general "property right in water with power to sell and dispose of the same

elsewhere and for other purposes than originally intended. 35 Cong. Rec. 6679, (1902) ." United States v. Alpine Land & Reservoir Co., 697 F. 2d 851, 858.

93. 35 Cong. Rec. 6677.
94. "Kinney on Irrigation and Water Rights", second edition, 1912.
95. Id., section 1005.
96. Id., section 1006.
97. Id., section 1005.
98. Id.
99. The case studies developed for this report, including this case study, indicate that the department does not feel constrained by a restrictive notion of "appurtenancy".
100. "Principles Governing Voluntary Water Transactions That Involve Or Affect Facilities Owned Or Operated By The Department Of the Interior" and "Voluntary Water Transactions Criteria and Guidance", issued by the department and Commissioner of Reclamation, respectively, in December 1988 and in 1989.
101. 133 F. Supp. 894 (W.D. Tex. 1955).
102. Id., at 904.
103. 32 Stat. 390.
104. 697 F. 2d 851 (1983)
105. Id., at 854.
106. Id.
107. 96 Stat. 1263; 43 U.S.C. 390aa.
108. For a complete explanation of the provisions of the RRA that may create disincentives to transfers of water provided by the bureau see Gray, Driver and Wahl, "The Transferability of Water Provided by the State Water Project and the Central Valley Project, pp. 91-108, in "Legal and Institutional Structures for Managing Agricultural Drainage in the San Joaquin Valley: Designing a Future", Chapter XI, Natural Heritage Institute, September 30, 1990.
109. 96 Stat. 1264; 43 Stat. 390cc.
110. Id.
111. Id.

112. 100 Stat. 3050. This legislation authorized the Coordinated Operating Agreement between the CVP and the State Water Project.

113. Id. This requirement means that growers ultimately cannot avoid paying interest on O&M deficits since 1985 whether they amend their contracts prior to renewal. As a result, this legislation softens the disincentives inherent in the RRA to transfers that require a contract amendment.

114. 43 C.F.R. 426.5(a)(3)(ii).

115. 43 C.F.R. 426.5(a)(3)(ii)(F).

116. 43 C.F.R. 426.18(b)(1)(B)(2)

117. 72 Stat. 319; 43 U.S.C 390b.

118. 32 Stat. 388; 43 U.S.C. 416.

119. 43 U.S.C. 485h(c); 53 Stat. 1194.

120. See Voluntary Water Transactions Criteria and Guidance, Principle 6.

121. The combined effect of the difficulty in securing adequate revenues to acquire water for environmental purposes and the absence of protection of instream flows in California has forced California Fish and Game officials to meet environmental needs for water, as best as possible, by ad hoc, on-time deals and by piggybacking these needs onto other movements of water. Thus, in 1989, Fish and Game learned that water was available from the New Melones facility of the CVP. It quickly pieced together a deal to buy water out of New Melones, at \$5.64 per acre-foot, with the cost of the purchase to be defrayed by Fish and Game, Ducks Unlimited and the Grasslands Water District. The water was delivered by the bureau to Grasslands for use on wetlands, a beneficial use under California law. When a transfer of water from the Yuba County Water agency to the East Bay Municipal District fell through in 1989, Fish and Game worked out a deal to move a portion of this water to Grasslands. Fish and Game also tries to work with the bureau to have the bureau release water from its major CVP facilities for irrigation and other "higher priority" consumptive uses at a time that is propitious for anadromous fish runs. These ad hoc deals show imagination, but they provide no long-term security for either wetlands or instream flows.

122. 43 U.S.C. 523 et. seq.

123. Interview with Robert Stackhouse, fn 5, supra. Most Warren Act storage water is found in Millerton Lake in the Friant Unit of the CVP.

124. Interview with Mike Porter, fn 10, supra.

125. Gray, Driver and Wahl, fn 108 supra.

126. The CVP's Delta-Mendota Canal is often filled to capacity. As a result, a transfer of CVP water from the Delta typically would require use of the SWP's California Aqueduct which is not an authorized point of diversion for the CVP.

127. Cal. Water Code section 109(a).

128. Gray, Driver and Wahl, supra, fn 108 , at 24. The description of California water law contained in this Chapter is taken mainly from this publication, pp. 24-32.

129. Cal. Water Code section 1735.

130. It has been questioned whether these provisions of law apply to transfers proposed by bureau contractors that do not require the approval of the SWRCB. It seems clear that these provisions do apply in these circumstances. First, it seems clear that California intends to apply these provisions to transfer situations even where the SWRCB's jurisdiction is not invoked. The reference to the SWRCB in section 386, as described in the text, is meant to impose requirements on the SWRCB in those circumstances in which a transfer by a local agency requires a change in place or purpose of use or point of diversion. There is no implication that the other provisions of these sections do not apply when no such changes in water rights permits are required. Second, California v. United States and Alpine Land establish that, unless state transfer policy is inconsistent with a congressional directive, state law applies. Except for the minor place and purpose of use directives set forth in Part 1 of Chapter IV, no such congressional directives exist to preempt these state law provisions.

131. Article X, Section 2, states that [t]he right to water...is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water."

132. Criterion and Guidance, Principle 6.

133. This commitment was most recently confirmed in the remarks of John Sayre, Assistant Secretary of the Interior for Water and Science in remarks before "Water Marketing 1990: Moving from Theory to Practice", a conference at the School of Law, Denver University, November 15.

134. The author's understanding of regional policy is based primarily on a series of interviews conducted by the author with several senior-level regional officials in late 1989-early 1990 and, again, with two of them on April 26, 1991. These regional officials were Larry Hancock, Director, Mid-Pacific Regional Office of the bureau; Robert Stackhouse, Regional Project and Repayment Officer, Mid-Pacific Region; Merv de Haas, Chief, Repayment Branch, Mid-Pacific Region of the bureau; and James Turner, Regional Solicitor, DOL. The author wishes to stress, however, that the conclusions regarding regional policy which he has drawn in this chapter are his alone. No regional official can be said necessarily to agree with these conclusions. The author circulated a draft of this study to two of the above officials, but did not receive comments on this draft from these officials prior to submitting the final study.

135. Based on interviews with senior-level regional bureau officials. See fn 134, supra.

136. The policy against profits appears to hold with particular force in the water conservation situation. One official stated: "If we screwed up and gave a contractor more water than he needed, why should he be able to make a profit on that?"

137. A discussion of the effect on efficiency and equity of allowing contractors to make a profit on the sale or lease of water provided by the bureau is contained in the main report.

138. See fn 134, supra.

139. Id.

140. Id.

141. Conversation with Merv de Haas (see fn 134 supra), April 26, 1991 (as to third-party effects).

142. The bureau's preference for administrative reallocation is particularly troublesome for water conservation. The region has neither the manpower nor the political will to get tough on contractor water usage. Thus, contractors have no real regulatory incentive to enhance the efficiency with which they use water. At the same time, as described, the region has not facilitated the development of a market for conserved water. Suspended between a bureau that is both unable to regulate and unwilling to let a market for conserved water to develop, contractors conserve only when they must for reasons peculiar to their districts, such as drainage. They do not conserve because there might be a market for their conserved water, except, at most, on an annual basis. And so, a significant water conservation opportunity is lost.

In response to this scenario, the author was told by one official in the regional office that the office had received virtually no requests for long-term transfers of conserved water. He appeared to deduce from that fact that there was little interest in transfers of conserved water. More likely, the author believes, is that the absence of requests stems from the policies in place that discourage such transfers or, at least, fail to facilitate them.

143. The author of the report spoke to several contractors and contractors' representatives in the preparation of this report: Jerry Butchert (General Manager, Westlands Water District); Mike Porter (General Manager, Central California Irrigation District); William Camp (then-Manager, Firebaugh Canal Company), BJ Miller (consultant); Jason Peltier (Executive Director, CVP Water Association); Steve Hall, (then-Director, Land Preservation Association); Richard Moss, (General Manager, Friant Water Users' Authority); Mark Atlas (Counsel to Sacramento River water users); David Cone (Manager, Broadview Water District); Paul Bartkiewicz (Counsel to CVP water users).

144. A problem with the draft policy apparently was that it did not contemplate an irrigation transferee taking more water than its existing contract permitted absent contract amendment, thereby raising the threat of the application of the RRA.

145. Material for this chapter was generated primarily from the author's interviews, cited in fns 134 and 143, supra, as well as from pp. 32-34 of "A catalog of obstacles to water transfers in California, Final Draft, a Report to the San Joaquin Valley Drainage Program," by Marc Reisner, June, 1990.

146. The amount of water available from conservation measures will vary by region of the CVP. Estimates of conservation potential on the west side of the San Joaquin Valley range upward of from between 10,000 acre-feet per year to as much as several hundred thousand acre-feet. Other areas may have less potential, particularly where they are already water-short. Sacramento River contractors may be able to conserve substantial quantities of water through crop changes. Other means of conserving water may not actually save any water that does not already return to the river.

EMERY COUNTY PROJECT

EMERY COUNTY PROJECT, UTAH

Background

The Emery County Project is located in east-central Utah about 25 miles southwest of Price, Utah. The project is located in the Green River basin, a part of the upper Colorado River basin (See Figure EC-1). The project was authorized by the Act of April 11, 1956¹ as a participant in the Colorado River Storage project.

The project was planned to provide the farmers in Castle Valley with an expanded and dependable supply of water for irrigation. Prior to the project's completion, the area was one of limited agricultural opportunity with a standard of living that was below average for the State of Utah. The limited storage facilities were inadequate for providing the late season water necessary to bring crops to full maturity.

As currently operated, the project provides a supplemental water supply for about 14,000 acres of irrigable acres or project land and a full supply for about 771 acres.² The increased production in livestock feed led to a correlating increase in the production of beef, sheep and dairy products. Additionally, the project provides recreational and fish and wildlife benefits, and supplies over 8,000 acre feet annually of project water to Utah Power and Light Company's Hunter Plant for coal fired electric power generation.

Project features include a dam and reservoir, several smaller reservoirs, a siphon, and several canals and ditches. The major project feature, Joe's Valley Dam and Reservoir, has a total capacity of 62,500 acre feet. Water is released into Seely and then Cottonwood Creeks and is distributed downstream through canals and ditches. Some of the water is diverted to the Huntington North Reservoir, through the

Cottonwood Creek - Huntington Canal. Both the reservoir and the canal were constructed as a part of the project. Additionally, several smaller pre-project reservoirs upstream on Huntington Creek store water that is released into Huntington Creek.

Project operation and maintenance is carried out by the Emery Water Conservancy District. The District was formed in 1961. It comprises about 3,600 square miles and covers almost all of Emery County, including the cities and towns located within the county boundaries. The District entered a repayment contract with the Bureau in 1962. Amendatory contracts were entered in 1972 and 1978.

The District has entered water supply contracts with two irrigation companies, the Cottonwood Creek Consolidated Irrigation Company and the Huntington-Cleveland Irrigation Company. These two companies serve essentially all of the presently irrigated land within the project boundaries. The District agreed to provide a specified quantity of project water for supplemental irrigation use to the company, and the companies agreed to pay a portion of the District's repayment obligation and a portion of the annual operation and maintenance expenses.³

Additionally, each of the two irrigation companies entered an agreement with the Bureau in the early 1960s in anticipation of the construction of the Emery County Project wherein the company gives the Bureau the perpetual right to use its water rights to the extent equivalent project water is made available to the company. Specifically, each company agreed to limit its call under primary water rights to a certain percentage of the annual irrigation demand from April through October and quitclaimed to the U.S. primary water rights in excess of these percentages,

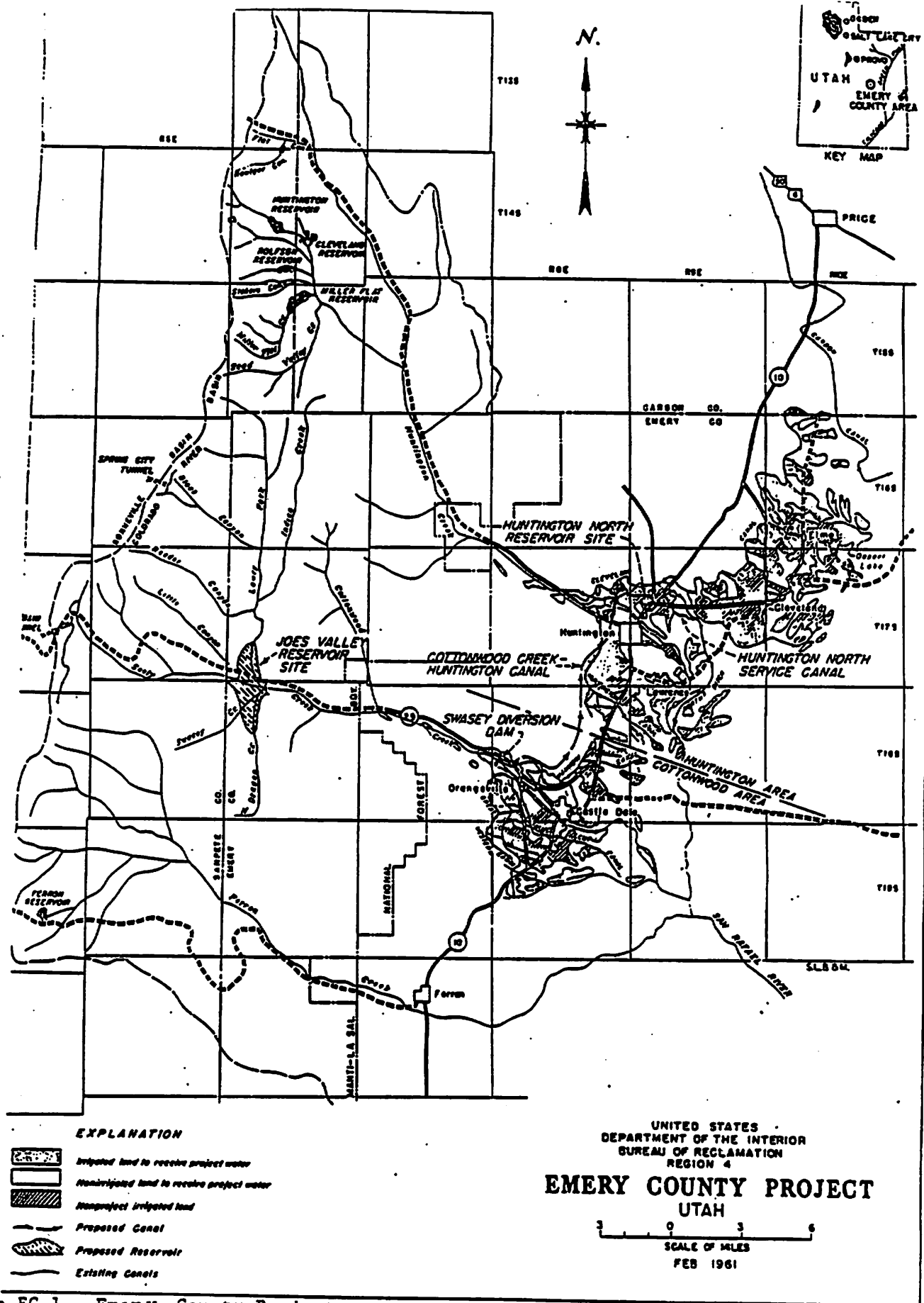


Figure EC-1. Emery County Project.
Source: U.S. Bureau of Reclamation, 1962 Definite Plan Report.

stored as part of the project water supply (company storage water). The percentages range from 4 to 23 which is equivalent to 3,400 to 19,600 acre feet of water. The United States, in exchange, agreed to deliver to the company an equivalent amount of project water. If equivalent project water is not made available to the company, the company has the right to call for the delivery of company storage water.⁴ While the companies have not yet invoked this latter provision, the recent water shortage may cause them to review their option to do so under these early agreements.

Finally, the District has been a party to two contracts with Utah Power and Light Company and one contract with the Castle Valley Special Service District, for providing project water for municipal and industrial purposes.⁵

Project Costs

Repayment obligation

The total project cost for Emery County is \$17,996,848. The irrigators are responsible for about \$2.3 million over a 50 year repayment term. The first annual payment was made in 1971, and the irrigators have paid about \$975,000 as of 1989. Utah Power and Light is responsible for about \$3.7 million and Castle Valley Special Service District will pay about \$92,000 of the total obligation. Power revenues subsidizing the irrigation portion will pay for about \$7.3 million of the total. This leaves about \$4.6 million of nonreimbursable costs.⁶

While the portion of repayment allocated to irrigation users is not charged interest, the municipal and industrial users are. The M&I proportion of the principal construction obligation represents an unsubsidized amount, again unlike the irrigation component. Irrigation users pay

\$1.81 per share or acre foot while municipal and industrial users pay about \$22 per acre foot. This obligation is fixed and must be paid even if the full amount of project water, an acre foot per share, is not delivered. For example, the 1990 allocation was 50 percent of the amount users subscribed for. This also means that the users pay no additional fee in those years when they receive more than an acre foot per share of project water.

Operation and maintenance costs

Under the repayment contract, the District is responsible for operation and maintenance of the project. The District is required to maintain a reserve fund of \$20,000 for operation and maintenance. This fund is only available for meeting extraordinary and unforeseen costs, rather than the ordinary costs of operation and maintenance. The irrigation company contracts with the District require the users to pay a proportionate share of the District's operation and maintenance costs. Each irrigation company's share of the total O&M and replacement costs is based upon their purchased quantity of project water in relation to the total quantity of project water sold or otherwise disposed of by the District. As with their share of the repayment obligation, the users must pay their share of O&M costs whether or not they receive their full entitlement of project water.

Water Rights

The United States holds title to project storage and direct flow water rights. Each of the irrigation companies owns primary (nonproject) direct flow water rights on Cottonwood and Huntington Creeks, subject to the early exchange agreements discussed above.

Description of project water rights

Several of the project water rights were assigned to the United States from other entities. The Utah Water and Power Board, a state entity, assigned to the U.S. two pending applications for storage rights at Joe's Valley Reservoir site that resulted in storage permits for over 217,000 acre feet of water.⁷ Additionally, the U.S. owns about 5,500 acre feet of storage rights in Huntington North Reservoir and about 300 acre feet in several smaller reservoirs. The U.S. also holds direct flow rights on Seely Creek, Huntington Creek and Jacobson Hollow totalling about 80 cfs. All of these direct flow rights are for irrigation use except 15 cfs (or 120 AF) that is for fish, wildlife or stockwatering uses. Finally, the U.S. has a contract or agreement, discussed above, with each irrigation company to store a part of their direct flow primary water rights in exchange for the delivery of equivalent project water.⁸

Allocation of project water

Project water is allocated on an annual basis by the District, considering contract obligations to each irrigation company and to UPL and Castle Valley Special Improvement District. Each spring, the District meets and makes a decision on the estimated available water supply. The irrigation companies and municipal and industrial users are given a percentage of their project water entitlement. If there is an adequate supply, all users will receive 100 percent of their entitlement and the total amount delivered will be 28,100 acre feet.⁹ If the supply is short, all users' deliveries are equitably reduced.

Emery County Project Transfers

The Emery County Project was planned primarily to regulate and store the

flows of Huntington and Cottonwood Creeks in order to improve the irrigation water supply. Incidental fishery and recreation benefits were recognized for Joes Valley and Huntington North Reservoirs. Early project reports specifically stated that the project would provide no opportunity for power development or domestic water supplies.¹⁰ However, local farmers did not subscribe for all available project water, and shortly after the project's completion, Utah Power and Light Company (UPL) needed a water supply for its Huntington Plant operations. The first project irrigation water was delivered in 1966, and the first industrial water was delivered to UPL in 1973. Since then, UPL has acquired an additional 2,576 acre feet of project water for industrial use and a local district has converted 189 acre feet of project water to municipal use.

Utah Power and Light transfers

In 1972, Utah Power and Light Company (UPL) subscribed to 6,000 acre feet of project water to supply cooling water to its coal fired thermoelectric power plant in Huntington Canyon. UPL entered into a 40 year term repayment contract with the Bureau and the District for the use of this project water. Under the contract, UPL is obligated to pay the District \$120,000 per year for the contract term, and its share of operation and maintenance expenses. The total price paid averages about \$800 per acre foot, or \$20 a year per acre foot for 40 years. The price reflects unsubsidized capital costs attributable to the 6,000 acre feet of water plus a project interest rate of about 3.046 percent per annum.

UPL was able to obtain this 6,000 acre feet of project water because of an undersubscription by farmers in the Huntington-Cleveland Irrigation Company (HCIC) that resulted in a financial hardship for the company. HCIC was unable to make

its full annual construction payment obligation to the District for several years at the project's inception. When UPL expressed an interest in acquiring project water, the District worked out a negotiated settlement with HCIC whereby UPL agreed to bring all payments current and HCIC agreed to relinquish about 5,500 acre feet of project water. Most of the water was never subscribed for, but a small amount was relinquished by individual farmers. Additionally, to provide UPL with the quantity of water the utility requested, the shareholders of the Cottonwood Creek Consolidated Irrigation Company relinquished about 500 acre feet of project water back to the District.

The individual relinquishments were made in order to come up with the 6,000 acre feet needed by UPL in an equitable manner so that UPL would agree to buy into the project supply thus saving HCIC and the District from a difficult financial situation caused by undersubscription. Each of the irrigation companies relinquished a quantity of water that was equally proportional to the amount originally contracted for.¹¹

UPL also conceded to certain conditions requested by the irrigation companies and irrigators. For example, UPL provided some funds to HCIC for the installation of water measuring devices. UPL is charged the same canal conveyance losses and the same assessments as all other shareholders in the respective irrigation companies. The utility also agreed to pay a special industrial assessment to cover administrative costs associated with its stock acquisition and use of water. Additionally, even though it became the largest stockholder in each irrigation company, UPL agreed not to participate in voting for directors of individual canals or of the general company. It reserved the right to vote on general

company issues in annual or general stockholder's meetings.¹²

In the late 1970s, UPL again looked to the acquisition of Emery Project water for its expanded operations. The Company began negotiating with individual farmers for the purchase of primary water rights and the relinquishment of project water rights along with the associated lands. UPL paid about \$603 per acre for the relinquishment of project water and associated acreage of farm land. In this second acquisition, a total of 2,576 acre feet of project water was purchased. Each farmer who relinquished his project water to UPL signed a relinquishment agreement that was conveyed to the appropriate irrigation company. They also assigned their stock certificate to UPL.

As with the 1972 acquisition, UPL had to reach an agreement with each one of the irrigation companies before the companies would relinquish the purchased water back to the District. This proved to be the most time consumptive level of negotiations because of philosophical differences in the positions taken by some representatives of UPL and Huntington-Cleveland Irrigation Company (HCIC) as to how the subject water should be allocated and used. In the end, UPL agreed to sign a Letter of Understanding that granted several concessions to HCIC, including adherence by UPL to specific operating criteria. No similar concessions were granted the Cottonwood Creek Company.

Once an agreement was reached with the irrigation companies, the District relinquished the shares back to the United States and a separate repayment contract was negotiated between the Bureau and UPL. In 1987, a repayment contract was entered between the District, the Secretary of the Interior and Utah Power & Light Company. UPL agreed to a new fee schedule for the

water, which reflected the actual (nonsubsidized) project cost plus interest associated with these project water rights, and averaged about \$1,000 per acre foot. The interest was calculated using a debt service concept for all previous years of the project, and went as high as 13 percent. The debt service schedule resulted in a higher cost per acre foot

than in the first UPL purchase. The total price of \$2.9 million was paid off in one lump sum at the time the contract was entered, in order to avoid the necessity for the District to submit the additional obligation to a general vote.¹³ UPL also pays an annual O&M fee of \$1 per acre foot. Additionally, the irrigation obligation was reduced so that the irrigation companies are responsible only for repayment related to the portion of irrigation water now supplied. UPL continued to be responsible for all conservancy district assessments on lands retired from irrigation.

What are the significant differences between UPL's 1972 acquisition and the 1987 acquisition? In 1972, most of the 6,000 acre feet acquired had never been subscribed for by any irrigation users. In the 1987 UPL purchase (and the 1989 Castle Valley Special Service District purchase), all of the water was transferred from existing irrigation use to new municipal or industrial uses. In both cases, UPL had to reach an agreement with the irrigation companies, the conservancy district, and the Bureau. In the 1972 purchase, UPL did not have to deal with as many individual farmers. The difference in the amount of time it took to complete each transfer seems to be tied to UPL's ability to negotiate successfully with the irrigation companies. It took about 13 years for UPL to finalize the second transfer. Once UPL had reached an agreement with the irrigation companies, it took only one to two years to reach agreements with the District and the

Bureau. This type of local opposition also was a major obstacle for the City of Huntington's proposed transfer, described below.

Castle Valley Special Service District transfer

The Castle Valley Special Service District acquired 189 acre feet of irrigation project water when it purchased a parcel of land on which it planned to locate a sewage treatment facility. The Castle Valley District paid \$600 per acre for the relinquishment of project water. The water rights were represented by shares of stock in Huntington-Cleveland Irrigation Company (HCIC). The seller relinquished the stock back to HCIC, which then reissued the stock to the Castle Valley District. The Bureau never raised the issue of the individuals receiving a profit for the sale of project water. There apparently was no profit issue because the transfer was structured as a relinquishment of the right to use project water rather than a sale of project water.

Once Castle Valley had reached a tentative agreement with the irrigation company and the Conservancy District, the Conservancy District approached the Bureau. Castle Valley negotiated with the Bureau for over two years before reaching a final agreement for the transfer of the project water. The rate for the project water was increased to the municipal rate of \$22 per acre foot. This amount was determined by adding an interest factor of about 3.046 percent to the remaining nonsubsidized repayment obligation attributable to the 189 acre feet.

Castle Valley questioned the need to change the type of use. The water would be delivered through a pressurized irrigation system (separate from the culinary system) and only used for gardens, lawns, pastures

and other outdoor uses. Many of the residential lots in Emery County are about two acre parcels. The District's Board approved the final agreement with the Bureau in 1989. This water is now delivered to the City of Huntington, although this is not enough water to satisfy the city's current demands.

City of Huntington proposed transfer

In 1989, the City of Huntington purchased 500 acre feet of project water represented by shares in the Huntington-Cleveland Irrigation Company. The City paid about \$250 per share or acre foot, for a total cost of \$127,000. The City could not take the water directly, but theoretically could obtain an equivalent supply through an upstream exchange with Utah Power and Light Company (UPL). UPL would make no commitment until the City converted the use to M&I.

The City approached the HCIC. The Company's Board, however, never approved of the conversion proposal. They were concerned with the decreased volume of flow in the canal because the 500 acre feet would be transferred from the lower end of the canal and instead taken out above the head of the canal. Additionally, the Board was apparently concerned about impairing their own ability to make an exchange with UPL.

The local opposition to the conversion frustrated the City, which therefore eventually sold the water back to irrigators with qualifying project lands.

Limitations on change of purpose of use

The Emery County Project was authorized under a statute that contemplated irrigation, flood control and hydroelectric power generation. The original repayment

contract between the Bureau and Emery Water Conservancy District, however, listed only irrigation, fish and wildlife, and recreation as authorized project purposes. The 1972 contract allocating project water to the Utah Power & Light Company recognized industrial and other uses for project water, and specifically allowed the Company to use 6,000 acre feet of project water for use at its stream-electric generation plant. Municipal use was specifically authorized in the 1989 Castle Valley Special Service District contract. The Conservancy District agreed to provide project water to Castle Valley for municipal and industrial purposes. Therefore, even though municipal use was not expressly authorized by the project enabling legislation, and not expressly mentioned in the original repayment contract, this has not presented a bar to changing project water to municipal and industrial uses. Under Utah State water law, changes of use applications had to be filed with the State Engineer for the transfers to municipal and industrial uses.¹⁴

Adjusted repayment obligation

The Emery County project provides subsidized project water for irrigation users.¹⁵ When UPL subscribed for 6,000 acre feet in 1972, a new repayment contract was negotiated and UPL's obligation reflected the actual nonsubsidized cost of project construction plus interest attributable to the 6,000 acre feet. The 1987 UPL contract and the 1989 Castle Valley contract also reflect a nonsubsidized, interest bearing obligation.

The Bureau's Utah Projects Office has adjusted the construction repayment obligations of the municipal and irrigation users in order to comply with the 1939 Reclamation Project Act requirement that the M&I use "not impair the efficiency of the project for irrigation purposes."¹⁶ They have interpreted this provision to require that the Bureau ensure that the remaining irrigators

not be impaired in their ability to meet their repayment obligation.¹⁷

An interest component was also added to the repayment obligation of the M&I users. The 1939 Act provides authority to the Bureau to add interest to municipal use contracts.¹⁸ There is also authority for the interest included in the 1989 Castle Valley contract under the 1988 Bureau Principles Governing Voluntary Water Transactions, which state that

[a] change in use from irrigation to municipal and industrial purposes would require a change in the repayment of costs to include interest during construction and interest on investment, but only to the extent of the remaining years in the payment period.¹⁹

This 1988 provision refers to change in use, which would seem to be inapplicable to the type of transaction represented by the 1972 UPL subscription. However, unlike the 1939 Act, the 1988 Bureau Principles refer to changes to both municipal and industrial uses.

Profits

While the Bureau's position is that it does not allow the making of profits from the sale of project water, the transfers of project water rights in Emery County have occurred with no apparent limitations imposed by the Bureau or by the Department of Interior. As mentioned above, this may be because they have been structured as relinquishments, not sales. There definitely was consideration paid for this relinquishment, however. In UPL's first acquisition, money was paid to a small number of individual farmers who voluntarily agreed to relinquish their rights to project water. In the second acquisition, the

Company offered and paid \$603 per acre foot of project water with its associated land. Again, the project water was relinquished by the users to the irrigation companies, and by the companies to the District. Castle Valley paid \$600 per acre foot for its purchase of project water (separate from the land). Finally, the City of Huntington paid about \$250 per acre foot for its 500 acre foot purchase (separate from the land). There was no Bureau involvement in any of these transactions until it was time to negotiate a repayment contract with the transferee.

Conclusion

Future conversions from irrigation to municipal-industrial uses are likely if the transferee is willing to pay the adjusted rate of about \$22 per acre foot (assuming 100% supply) and is able to obtain local approval. From the transfers that have been reviewed, the major hurdle appears to be approval and acceptance by the irrigation companies. This was the apparent reason for the City of Huntington's inability to change the use of its project water. UPL faced similar difficulties in negotiating with the Huntington-Cleveland Irrigation Company (HCIC). The transfer process took several years and was finally resolved by UPL's concession to several conditions to satisfy HCIC. Once the transfer approval process reaches the level of the conservancy district and the Bureau, approval seems to be more certain.

ENDNOTES

1. 70 Stat. 105, 43 U.S.C. § 620 (1982 and Supp. 1985).
2. An additional approximately 5,000 acres within the project area is considered irrigable but no longer receives project water because of transfers to Utah Power and Light Company, described below.
3. See Contract Between The Emery Water Conservancy District and the Huntington-Cleveland Irrigation Company dated June 27, 1962; and Contract Between the Emery Water Conservancy District and the Cottonwood Creek Consolidated Irrigation Company dated June 25, 1962.
4. See e.g., Contract between the United States and Huntington-Cleveland Irrigation Company Relating to Exchange and Adjustment of Water Rights, Contract No. 14-06-400-2523, dated June 27, 1962.
5. See contracts among the District, the Bureau and Utah Power and Light dated Nov. 17, 1972 and June 8, 1978, and Contracts Between the Emery Water Conservancy District and the Castle Valley Special Service District.
6. Telephone conversation with LaVar Richman and Mike Hansen, Utah Projects Office, U.S. Bureau of Reclamation (Sept. 20, 1990).
7. The Utah Water and Power Board had acquired these applications in 1947 from the Utah State Land Board. Apparently the applications were originally filed in anticipation of a future storage project.
8. See discussion, supra. The Bureau was obligated under these agreements to file a change application with the Utah State Engineer for the exchange of project water. An application was filed but apparently never approved (see Utah State Engineer file for exchange no. 142). A later comprehensive change application likely was in part intended to legitimize this exchange (see Utah State Engineer file no. 14199).
9. A 1951 Bureau report estimated the annual average water supply at 31,400 acre feet. See U.S. Bureau of Reclamation, Emery County Project Feasibility Report (Feb. 1951).
10. See Bureau of Reclamation Definite Plan Report for Emery County Project at Chap. II, p. 10 (196__).
11. Telephone conversation with Mack Bunderson, Attorney for the Emery County Water Conservancy District (Nov. 14, 1990).
12. See C.B. Burton, *A Challenge in Water Supply Planning: Achieving a Balance Between Industry Needs and Agriculture in Emery County Utah*, proceedings of the Symposium on Water Resources Related to Mining and Energy - Preparing For The Future, American Water Resources Association (Nov. 1987).

13. This would have been required under Utah Water Conservancy Law, Utah Code, §73-9-32.
14. See supra note 8 and associated text. The Bureau filed one comprehensive change application in the 1980s to cover past and future transfers.
15. Irrigators pay an amount based on their ability to pay; the subsidy comes from Colorado River Storage Power Revenues. See Act of April 11, 1956, ch. 203, 70 Stat. 105, § 5.
16. 53 Stat. 1194, 43 U.S.C. § 485h(c).
17. Telephone conversation with LaVar Richman, Utah Projects Office, Bureau of Reclamation (Oct. 23, 1990).
18. 53 Stat. 1194, 43 U.S.C. § 485h(c)(1).
19. See Department of the Interior, Principles Governing Voluntary Water Transactions, Criteria and Guidance for Principle 6 (2) (Dec. 16, 1988).

FRYINGPAN-ARKANSAS PROJECT

FRYINGPAN-ARKANSAS PROJECT CASE STUDY

The Fryingpan-Arkansas Project was authorized in 1962¹ for the purpose of providing a supplemental water supply for irrigation, municipal and industrial uses in the lower Arkansas Valley of Colorado. Other planned project benefits include flood control, recreation, power generation, and the conservation and development of fish and wildlife resources. Pre-authorization studies demonstrated a significant shortage of water for irrigation almost annually in the Arkansas Valley. However, the irrigation demand for and use of project water for irrigation has not reached anticipated levels. This case study presents some background data on the Fryingpan-Arkansas Project, then looks at some issues affecting the potential for both temporary and permanent transfers of project water.

Physical Setting and Project Facilities

The Fryingpan-Arkansas Project is a multipurpose project extending from the headwaters of the Fryingpan River and Hunter Creek on the western slope of central Colorado over the divide to the Arkansas River basin in southeastern Colorado. The project follows the river eastward to the Arkansas Valley and the plains area of southeastern Colorado (see Figure FA-1).

Project features consist primarily of west slope facilities to divert, collect, and transport water over the divide to the upper Arkansas, and storage facilities on the upper and lower Arkansas to regulate river flows. West slope facilities also include the Reudi Dam and Reservoir that provide storage for replacement and regulation of water for downstream Colorado River basin users, as well as recreation and fish and wildlife enhancement. The west slope collection

system includes the north system that collects and transports an average of 18,400 acre feet of water annually through facilities located on the North Fork of the Fryingpan River, and the south system that collects and transports an average of 50,800 acre feet of water annually from both the Fryingpan River and Hunter Creek basins. On the east side of the divide, the water is carried into Turquoise Lake, about five miles west of Leadville. The lake has an active capacity of 120,478 acre feet. The project water leaving Turquoise Lake goes through the Mt. Elbert Powerplant to generate power, then directly into Twin Lakes Reservoir. The reservoir has an active capacity of 67,917 acre feet, and is controlled by the Bureau of Reclamation. Finally, Pueblo Reservoir, near the City of Pueblo, is the terminal storage facility for the project with a total capacity of 357,678 acre feet. This reservoir is also designated as the flood control facility of the project.

The project is operated by the U.S. Bureau of Reclamation under a repayment contract with the Southeastern Colorado Water Conservancy District. The District was formed in 1958, and encompasses 280,600 acres of irrigable land in the Arkansas River basin covering about 26,000 square miles. The District currently serves about 1,100 farm families and 15 domestic suppliers. Population within the District has grown from under 200,000 at the project's inception to about 600,000 today. Most of the growth since 1960 has been in El Paso County. Many of the communities within the District have declined in population during this time. If the domestic demand increases in these other communities and additional delivery systems are built, the project could eventually serve 42 domestic suppliers that are currently eligible to receive project water.²

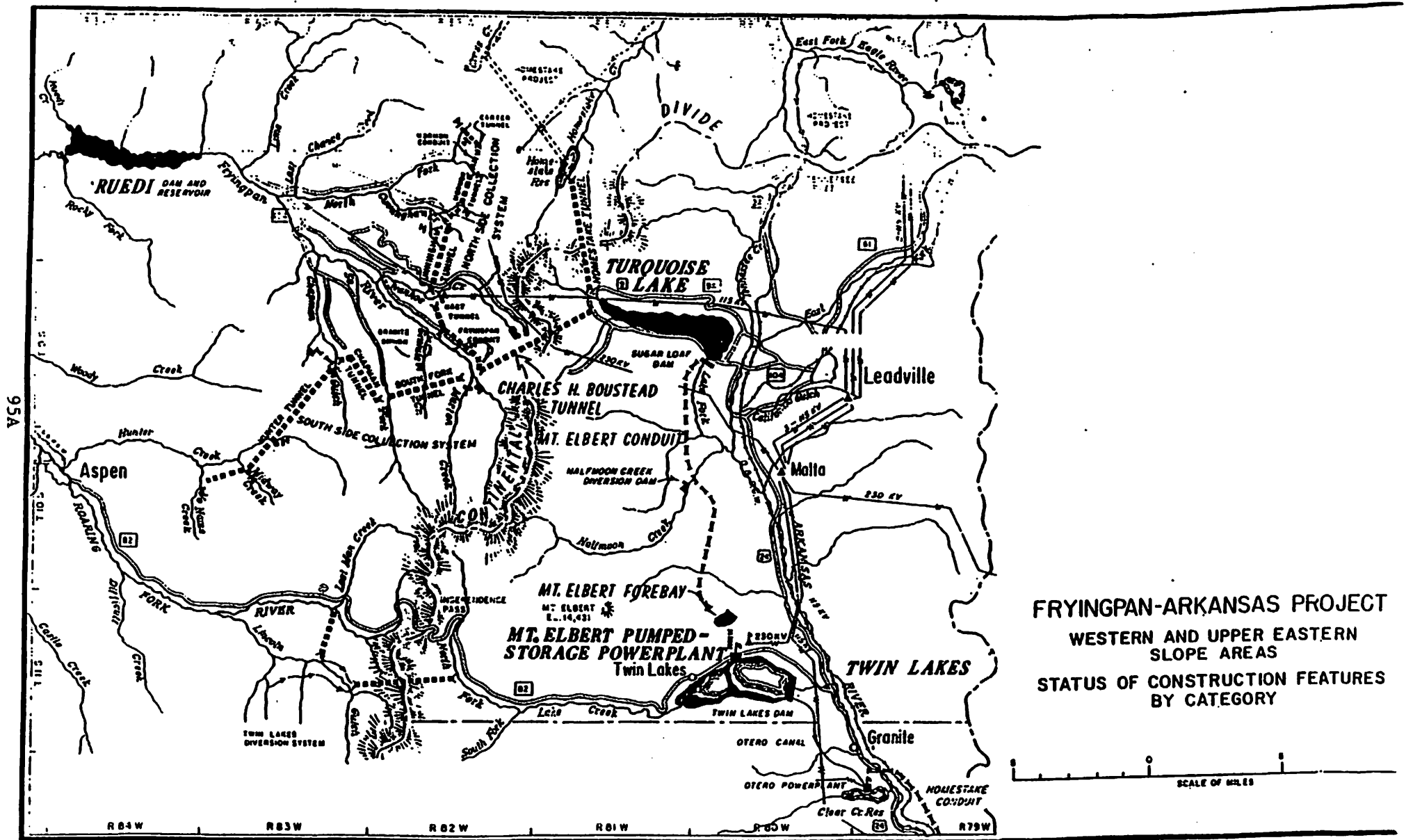


FIGURE FA-1. Fryingpan-Arkansas Project

Project Costs

The project was originally authorized at \$170 million for capital costs, excluding interest during construction. Final construction costs, excluding interest during construction and deficit interest on investments and penalties, was about \$509 million. With interest and penalties, the total jumps to nearly \$600 million. Of this latter amount, about \$425.5 million is allocated to three reimbursable accounts.³ As of 1989, the reimbursable users had paid about \$11.7 million, leaving a balance of about \$413.8 million (see Table FA-1). Nonreimbursable construction costs totalling about \$172.3 million were allocated to several purposes including fish and wildlife conservation, recreation, and flood control and navigation (see Table FA-2).

Revenues to pay for the reimbursable portion of the project come from four sources: (1) an ad valorem tax; (2) an \$8.00 per acre foot charge for project water delivered; (3) a \$3.20 per acre foot charge for rental of winter storage space; and (4) monies collected under nonproject water service contracts.

The District collects the ad valorem tax and turns over 90 percent of the assessed tax to the Bureau. The District also collects the fee for delivered project water and winter storage space and submits these revenues to the Bureau. Except for O&M reimbursement, discussed below, most revenues submitted to the Bureau are credited against the District's M&I repayment obligation. No money is credited against the irrigation repayment obligation unless revenue from irrigation water sales and storage of winter water in a given year is in excess of the O&M obligation allocated to irrigation for that year. Where there is such an excess, it is credited to the irrigation repayment

obligation. Revenues received from M&I water sales are applied first to the O&M costs allocated to the M&I water supply. Any excess revenue is then applied to the interest on the construction obligation and then to the principal of the M&I construction obligation. All revenue from the ad valorem tax and from the miscellaneous water service contracts is first credited against any deficit O&M obligation allocated to irrigation and M&I uses, next against the interest on the M&I construction obligation and finally against the principle of the M&I construction obligation.⁴

Power revenues are being applied toward the construction cost repayment obligation for the power facility. If the revenues received from the District and storage contracts are not enough to cover the District's repayment obligation then power revenues will be applied to cover the deficit. It is expected that power revenues will not be needed for this purpose.

Currently, the Bureau operates and maintains the project excluding (1) the Fountain Valley conduit which is maintained by the Fountain Valley Authority and (2) the specific recreation and fish and wildlife facilities which are operated and maintained by the United States Forest Service and the State of Colorado. The Bureau receives a federal appropriation to cover the operation and maintenance costs of the facilities it operates and maintains. The Bureau then is reimbursed for actual O&M expenses allocated to the irrigation and M&I uses, first from the water sales including winter water storage and miscellaneous water service contracts and then, if there is still a deficit, from the ad valorem tax collected by the District. The District operates on the balance of the collected ad valorem tax, the sale of return flows, and from some savings.⁵

Table FA-1
Reimbursable construction costs,
Fryingpan-Arkansas Project

Type of use	Total construction repayment obligation	Amount paid as of 9-30-89
Irrigation	\$ 71,265,333	0 ⁶
Commercial Power	213,786,358	\$2,531,781
Municipal & Industrial ⁷	140,453,099	9,163,149
Total	\$425,504,790	\$11,694,930

Source: U.S. Dept. of Interior, Bureau of Reclamation, Statement of Project Construction & Repayment report, based on Budget Specifications as of Sept. 30, 1989.

Table FA-2
Nonreimbursable construction costs,
Fryingpan-Arkansas Project

Type of use	Allocated construction cost
Fish and Wildlife Conservation	\$90,306,902
Recreation	41,361,444
Flood Control & Navigation	15,249,809
Highway Construction	1,573,220
Scenery Conservation	22,775,164
Historical & Archaeological	992,340
Total	\$172,258,879

Source: U.S. Dept. of Interior, Bureau of Reclamation, Statement of Project Construction & Repayment report, based on Budget Specifications as of Sept. 30, 1989.

Project Water Rights

The Fryingpan-Arkansas Project was designed primarily to divert water from the western slope for storage and use on the eastern slope. As a result, project water rights include direct flow rights from the Fryingpan River and other tributaries of the Roaring Fork River and storage rights on both sides of the divide. Decreed direct flow rights total over 3,000 cfs although the tunnel size limits the flow to about 945 cfs. Storage rights include about 102,000 acre feet on the west slope (Reudi Reservoir) and about 625,000 acre feet on the east slope (Twin Lakes, Turquoise and Pueblo reservoirs).

The District is the legal holder of project water rights. However, under the project Operating Principles⁸ the United States can require the District to convey the water rights to it. Under the repayment contract, the District has a first right to the available project water supply until the project is paid out. Once pay out is complete, the District will have a permanent right to the available supply. Project water rights are decreed for a number of beneficial uses, including irrigation, municipal, industrial, power, recreation, and fish and wildlife.

The average annual usable water supply has been estimated at 80,400 acre feet. This figure is based on data covering a 38-year period, 1928-1965.⁹ But as indicated in Table FA-1, in many years the allocation is far less than the available supply because of low demand.

Allocation of Project Water

Allocation of (1) the project water supply and (2) the conservation pool of project storage space is governed by the project Operating Principles.¹⁰ The Operating Principles were developed to carry out the objectives contemplated by the Fryingpan-

Arkansas Project--(1) maximize the conservation and use of water; (2) protect existing and potential, future western Colorado water users; and (3) preserve recreational values.

In addition to the Operating Principles, the District has over the years allocated project water under its Water Allocation Policy and established procedures. The process begins in early spring when the Bureau advises the District Board of the projected water supply based on current snow pack conditions. The Board invites applications from ditch or canal companies, municipalities, and domestic water user associations. At its May meeting, the Board makes a discretionary decision as to how much water will be allocated to each applicant, considering the amount requested by the applicant, the overall supply and total requests, the Operating Principles and the Water Allocation Policy. If additional water becomes available, a second allocation is made in July following essentially the same procedure.¹¹

Under the Allocation Principles 51 percent of the year's supply is made available for municipal users, and at least 49 percent is made available for agricultural users. No municipal user is required to take a minimum amount of project water in any given year, and there is no penalty for their failure to subscribe to any specific amount of project water. Most municipal and industrial users do not yet need or request all of their allocated amount of project water. Water not claimed by municipal users out of their share, plus unallocated project water carried over from the previous year is made available first to other municipal and domestic users and then to irrigation users.¹² The District also owns the return flows from the imported project water that may be purchased by project water users for the same price as all other project water.

There is great variability in the amount of project water requested or used each year. In addition, the proportion of project water used by agricultural vs. nonagricultural users varies greatly from year to year. There are a number of reasons for this variability. First, project water is supplemental to nonproject supplies. Therefore, the use of project water increases during years in which there are lesser supplies of nonproject water. Further, although M&I users are entitled to up to 51 percent of the supply, many M&I users have not yet requested any or all of their share of the 51 percent. Therefore, more than 49 percent of the supply has regularly been available to agricultural users. Table FA-3 gives the total amount of project water allocated and the percentage allocated to agricultural use between 1972 and 1989 (the balance went to municipal or industrial uses). Agricultural percentages below 49 indicate that the requests from agricultural users was below 49 percent of the supply for that year.¹³

Agricultural Storage Rights

The peculiar nature of the interest held by agricultural users within the Fryingpan-Arkansas project service area makes it difficult to define such rights and consequently impairs the free transfer of these rights. Not only are they subject to some discretion of the District Board in allocating the annual water supply, unlike the municipal users they have no individual carryover storage accounts in project reservoirs. The agricultural user's share of project water is carried over in project storage space but not in individual accounts. If the individual farmers do not take their allocated water by May 1 following the year in which the water was initially allocated, the water is retained in a general storage account and is subject to reallocation by the District.¹⁴

Individual agricultural users do have two types of temporary storage rights available: (1) winter storage rights and (2)

Table FA-3.

Project water allocations, 1972-1989.

<u>Years</u>	<u>Total water taken (in acre feet)</u>	<u>% allocated to agricultural use</u>
1972-1980	201,691	86%
1981	23,944	72%
1982	66,107	73%
1983	19,133	8%
1984	29,239	6%
1985	24,285	20%
1986	23,645	72%
1987	12,542	56%
1988	79,494	90%
1989	108,728	80%

rights under "if and when" storage contracts. Water stored under these rights, however, is subject to being dumped if the reservoir space is needed for project water or for flood control (if their water is stored in the joint use flood control space). Because of this uncertainty, farmers are currently seeking a reallocation of reservoir storage space to give them firm storage.¹⁵

Winter storage program

The Fryingpan-Arkansas Project was planned with sufficient space in Pueblo Reservoir for the storage of decreed project water during the nonirrigation season. Prior to project construction, irrigation companies had diverted the flow of the Arkansas River when available outside of the normal irrigation season in order to maintain soil moisture levels in those fields to be planted during the following growing season. This idea was incorporated into early project planning by providing storage space in Pueblo Reservoir to hold the waters that otherwise would have been diverted to fields or reservoirs between Pueblo Reservoir and John Martin Reservoir. This water can then be released during the following irrigation season.¹⁶

In the 1960s, representatives from the District and each irrigation company began to hold informal meetings that resulted in an agreement to begin a voluntary winter storage program and the creation of a representative Board of Trustees to evaluate and manage the program. At the suggestion of the State Engineer, the District and the Board of Trustees decided to formalize their voluntary program by applying for a permanent winter storage decree in water court. The decree became final in November 1990.

The program has enabled farmers to start crops in the spring or complete valuable crops in the fall. Prior to the decree, the

Board of Trustees would meet annually to reach an agreement for the following year's program. The agreement would dictate the percentage of each company's water rights that may be stored and the period of allowable storage. Since the decree became final, annual meetings are still held but there is no longer a need for an annual agreement. The decree established estimated percentages that are not subject to annual reconsideration. However, the farmers' rights are still not firm; their water is subject to being dumped if the reservoir space is needed for the storage of additional project water (in the conservation pool) or to make room for potential flood waters under the Project flood control criteria (in the joint use pool).

"If and when" storage contracts

Both agricultural users and M&I users may enter into an "if and when" type of storage contract to hold their nonproject water in a project reservoir. However, as is suggested by the title, the storage space obtained under this type of contract is not firm; like the water stored under the winter water program, the "if and when" water will be dumped if and when the space is needed.

Efforts to Obtain Firm Storage Space

Under the current allocation scheme, Pueblo Reservoir capacity includes a 234,000 acre foot active conservation pool (to regulate imported and native flows for municipal, industrial, and irrigation uses); and a 66,000 acre foot joint use pool. The joint use pool must be vacated and used for flood control between April 15 and November 1st of each year. The cities collectively have a guaranteed minimum of 159,000 acre feet of carryover storage space in project reservoirs within the active conservation pool, broken down as follows: Fountain Valley Pipeline, not less than 78,000 acre feet; Arkansas Valley cities, towns and entities lying east of

Pueblo, not less than 37,400 acre feet; Pueblo, not less than 31,200 acre feet; and Arkansas Valley cities, towns and entities lying west of Pueblo, not less than 12,400 acre feet.¹⁷

Following a succession of years in which the farmers' stored winter water was dumped, in 1984, 1985 and 1987, the irrigators asked the District and the Bureau to evaluate the potential for dedicating up to 40,000 acre feet of firm storage in Pueblo Reservoir to the winter water storage program. The municipal users also became involved in the study, asking the Bureau to comprehensively look at ways to expand and reallocate Pueblo Reservoir storage capacity to give the cities space to store nonproject water.

As a result of the municipal users request, what began as a one year study to address the farmers' concerns of having their winter water dumped, became a three year comprehensive evaluation of potential improvements to current operations for the benefit of all users. Final recommendations were presented in the form of potential scenarios that juggled the relative weight of the following interests:

- the municipal demand for project water;
- the percentage of project water allocated to the municipal users;
- the amount of project storage capacity allocated to municipal users;
- the dedication of up to 210,000 acre feet of project storage capacity in Pueblo Reservoir to the irrigators Winter Water Storage Program; and
- the reservation of 30,000 acre feet of project storage capacity for the storage of nonproject water in Pueblo Reservoir.

No change to the system is likely to satisfy all project participants, who have diverse concerns with regard to any expansion and reallocation of Pueblo Reservoir capacity. The irrigators want 40,000 acre feet of firm project storage and an adequate annual water supply. The municipalities want to protect their ability to take and store their allocation of project water but some cities also want the ability to store nonproject water. Currently, nonproject water can be stored only under "if and when" contracts. The District is concerned that any space used for nonproject water will reduce potential imports of project water thus reducing the quantity of project water they can provide to users in the District, and reducing the revenues needed to meet their repayment obligation. Any expansion and/or reallocation may trigger the NEPA process, requiring the Bureau to prepare an environmental assessment and possibly an environmental impact statement. Many project participants are worried that a reallocation will require an amendment to the District's Allocation Principles, allowing other potential users into the project.

Administrative Control of the Transfer of Agricultural Water

District rules and policies may limit the transferability of agricultural project water in two ways. First, under the District allocation rules, individual agricultural users have no right to receive a specific quantity of project water.¹⁸ Municipal users collectively have a right to a minimum of 51 percent of the annual supply and this figure is further allocated by region (see discussion, *supra*). Each spring, all users must apply to the District for project water for the following year. The District then allocates water from the municipal water pool to meet municipal users' requests and makes a discretionary decision as to how much water should be allocated to each agricultural user from the remaining supply.

Second, the District has a policy that has made some irrigable lands within the District ineligible for project water. The policy reads:

Inasmuch as [] Project water is designed to supply supplemental water, the [] Board declare[s] that it is the Policy of the District not to replace with Project water decreed water sold by persons or entities. In applying this rule, the Board shall consider the total supply of the applicant and the percentage thereof sold or replaced.¹⁹

This policy has significantly reduced the sale of project water in the Colorado Canal system, where a large portion of the decreed nonproject water rights were sold to the Cities of Colorado Springs and Aurora.²⁰ The effect of the transfer was to make about 36,550 irrigable acres in the Colorado Canal System ineligible for project water.

Some of the municipal users in the District have suggested that this policy reduces the potential storage capacity in Pueblo Reservoir because available project water supply cannot be sold to willing irrigation buyers who do not qualify under the policy. Therefore, the unsold supply remains in the reservoir, taking up storage space that might otherwise be available for use by the cities for the storage of project or nonproject water.

Out of Service Area Restrictions

In the Fryingpan-Arkansas Project, service area or district boundaries can affect the ability to transfer project water and project storage entitlements in three ways: (1) outright prohibitions on transferring project storage or supply entitlements if the water

will be used outside of the service area or district; (2) increased costs for entities located outside the service area or district; and (3) subordination to the rights of project water users within the District.

Under the repayment contract, project water may not be sold or otherwise disposed of outside of the District boundaries. Cities are permitted to resell their allocated project supply, but only within the area served by them.²¹

The Bureau currently is a party to five "if and when" contracts for storage of nonproject water. One of these contracts is with the City of Aurora, which is assessed a much higher price for this storage space than entities located within the District. Entities within the District pay \$4 an acre foot while Aurora is charged \$32 per acre foot. The variance in the fee is based upon Bureau understanding of the repayment needs of the project as well as other factors. The increase to Aurora is meant in part to compensate for the fact that Aurora and its users pay no ad valorem tax to the District.

All "if and when" contracts for the storage of nonproject water are the first to spill when necessary for flood control or to make room for additional project water: nonproject water is subordinated to project water. However, the nonproject water of a user outside the District is spilled before the nonproject water of a user inside the District.

Aurora's attempt to acquire an "if and when" contract from the Highline Canal illustrates some of the out of service area restrictions discussed above. Near the inception of the Fryingpan-Arkansas Project, Highline Canal entered an "if and when" storage contract for 10,000 acre feet of storage in Turquoise Reservoir. This contract was for the storage of Busk-Ivanhoe (nonproject) water brought through the Busk-

Ivanhoe Tunnel and ultimately used for agricultural purposes within District boundaries. Highline Canal Company created a separate entity, Busk-Ivanhoe Inc. (BII), and assigned the storage contract to BII. This transaction facilitated a subsequent sale to Aurora of 95 percent of the BII stock. Aurora was interested in acquiring both the water supply and the right to the storage space in Turquoise Reservoir. Aurora offered to pay the BII shareholders an additional sum of money if the shareholders succeeded in getting the necessary approvals for Aurora to use the "if and when" storage contract. At this point, the Bureau became involved in the transfer.

The Bureau's position was that an "if and when" contract to store water for use within the project service area cannot be assigned to an entity outside the service area. The Bureau cited several reasons for its objection to this type of assignment or transfer of contractual right. First, Aurora does not pay ad valorem taxes to the District, so the price paid for the storage space should be increased to compensate for this lack of revenue towards repayment. Second, the use of the stored water would change from irrigation to municipal and industrial, warranting a new rate structure. Third, the Bureau was concerned with setting a bad precedent if it allowed BII shareholders to profit from the transfer or assignment of a subsidized government service contract. Finally, Aurora would be gaining a storage right contrary to the intent of Section 13 of the Repayment Contract, because the BII contract was not a first to spill contract. That is, it was an "if and when" contract for the storage of nonproject water to be used within the District boundaries, and as such would be the fourth category of water to spill. In contrast, water stored for use outside the boundaries is the first to spill.

The Bureau offered to enter a new contract with Aurora with a new rate structure and under terms and conditions that would make the storage among the first to be spilled. The Bureau indicated that if it was a city within the District boundaries trying to acquire this "if and when" contract from BII, then the Bureau might agree to the assignment with possible amendment of the service charge due to the change of use from irrigation to M&I.

Intra-Regional Reallocation of Municipal Entitlements

As discussed above, the District allocates a minimum of 51 percent of the annual project water supply to municipal and domestic use. This percentage of annual supply is further subdivided by region of use within the District, as follows:

- no less than 25 percent to the Fountain Valley Pipeline that services the City of Colorado Springs, the City of Fountain, and other entities in the same vicinity;
- no less than 12 percent to cities, towns and entities lying east of Pueblo;
- no less than 10 percent to the City of Pueblo; and
- no less than 4 percent to the cities, towns and entities lying west of Pueblo.

The District has an unwritten policy that municipal or industrial users within these regions may work out agreements among themselves to transfer their allocation of project water. The District will not increase the overall percentage to a region, but will generally abide by any arrangements that are worked out among users within a region. The transferor may not profit, according to

the District; the only incentive is the hope of improving the local economy.

Crowley County has been involved in negotiations with the City of La Junta for a reallocation in two separate cases. Initially, the county and the State Department of Corrections (DOC) were seeking a water supply for the new prison near Ordway because the size of the prison was increased from 250 beds to 950 beds. The County Engineer projected an additional water supply need of 110 acre feet due to the expanded capacity of the prison. The DOC agreed to obtain the water, and was looking at various options including a reallocation of project water from the City of La Junta. La Junta is allocated up to 2,000 acre feet annually of project water supply within the 12 percent allocated to communities east of Pueblo, and has not yet needed its allocated supply. As mentioned above, cities pay only for project water allocated by the District and stored or delivered. The District encouraged the county and DOC to work with La Junta but apparently La Junta is reluctant to agree to any permanent type of reallocation. The DOC is still working on the acquisition of a permanent supply.

In the second case, Crowley County was seeking an additional water supply in connection with a feedlot in Ordway, and again approached the City of La Junta. The feedlot had been sold apart from its underlying water rights in 1987. Subsequently, a major dust problem arose and the Environmental Protection Agency became involved. The County approached the District, and the District in 1989 allocated 500 acre feet as a one-time emergency solution to the feedlot for dust control. The County then negotiated with La Junta for a more permanent solution, asking La Junta for a reallocation of 2,000 acre feet. This amount of water would take care of the County's needs for both the feedlot and the

new prison. La Junta has refused to agree to a permanent reallocation, but has entered a contract with the County to waive up to 2,000 acre feet a year of project water on a year to year basis. This water then becomes available to the County on the condition that the County pay the \$8.00 per acre-foot charge for delivered project water. The District Board approved the contract, and the first reallocation was made in 1990. Although there was an issue of whether the feedlot use was industrial or agricultural, for now it is being considered industrial, and so within the M&I allocation percentages.

Future reallocations are anticipated by the District. The City of Lamar may be negotiating with the City of Las Animas for a reallocation of part of Las Animas' share of the 12 percent of project water supply allocated to municipal users lying east of Pueblo. The City of Lamar needs an additional supply for industrial use within the City. The City of Las Animas is currently not using its full allocation of project water.

Currently, the District has an informal unwritten policy to facilitate these types of regional arrangements once the parties have agreed to the basic idea of a transfer. The Bureau has not gotten involved in specifying procedures as yet. Guidelines adopted by the Bureau and District may encourage more inquiry into these types of transfers by other users and also provide some certainty that any arrangement worked out would be favorable to the Bureau and the District Board.

Management of Project Supply to Provide Recreational Flows

About 18 percent or \$90 million of project costs were allocated as nonreimbursable expenses for the purposes of fish and wildlife. Additionally, about \$41 million has been allocated to the recreation purpose of which about \$25 million has been

invested in recreational facilities around Pueblo Reservoir. While maintenance of flows in the Arkansas River may have been contemplated at the project planning stage, 1990 was the first year the Bureau was asked to maintain a specified flow in the river to provide flows for rafting.

Early each spring, the Bureau holds a public meeting to discuss its draft operating plan for the upcoming year. Representatives from the rafting industry routinely attend the meeting and in 1990 asked the Bureau to insure that there is available a minimum flow of 700 cfs in the summer through August 15. This would be done by monitoring flows in the Arkansas River at the Wellsville gaging station and releasing water when flows decrease to less than 700 cfs. The Bureau agreed to provide releases necessary to maintain the 700 cfs following negotiations during which the rafters offered to pay for any water lost to evaporation by early releases downstream. The Bureau did not assess the rafters for this loss, which was determined by the Bureau to be about 272 acre feet.

One significant side benefit from the maintenance of this minimum flow was to raise the level of Pueblo Reservoir. The reservoir has been one of the heaviest used recreational areas in the state between 1987 and 1989, and declining water levels had significantly reduced the fish take.

The Bureau's formal position on future management for recreational flows will likely await the development of a long term plan. While there has been some talk of creating a recreation management area on the upper Arkansas River, there are some conflicts that need to be resolved. The rafting industry in the upper Arkansas is a lucrative business that contributes significantly to the local economy. However, the Bureau questions whether there is any clear authority

under the project enabling legislation to provide flows for rafting, since rafting was likely not contemplated by Congress when the legislation was approved. Additionally, early flow releases may not be consistent with the water conservation plan requirements under the Reclamation Reform Act, because of the consequent loss to evaporation.²² Flows sufficient for rafting may be harmful to other project purposes such as fish and wildlife, particularly when there are severe fluctuations between day and night.²³ And water that is moved down the river in the summer months for rafting includes water that would otherwise be released in the winter months for the enhancement of fish flows. The Bureau expects there will be some weighing of benefits in the long term plan, and that some water will be released for rafting flows. Finally, any significant change in the operation of the project could trigger the NEPA process, requiring an environmental assessment and possibly a full environmental impact statement.

ENDNOTES

1. Pub. L. No. 87-590, 76 Stat. 389 (codified) at 43 U.S.C. § 616.
2. See Report on Arkansas Valley Conduit, Black & Veatch, Consulting Engineers (1972), at 11-12.
3. This figure is allocated among (1) irrigation uses; (2) commercial power uses; and (3) municipal and industrial uses and the municipal and industrial delivery system. See Table FA-1.
4. See Southeastern Colorado Water Conservancy District, 1989 Annual Report, at 8. There are long-term water service contracts between the Bureau and the following entities: Twin Lakes Reservoir and Canal Company, 54,452 AF; the City of Colorado Springs, 17,416 AF; the City of Aurora, 5,000 AF; Pueblo Board of Water Works, 5,000 AF; Busk Ivanhoe Inc., 10,000 AF; and the Homestake Project, 30,000 AF. See U.S. Department of the Interior, Bureau of Reclamation, Review of Operations, Fryingpan-Arkansas Project, Colorado (Sept. 1990), at Table 4 [hereinafter Review of Operations]. There are also several short-term "if and when" storage contracts described in a later section of this case study.
5. Prior to 1981, the District retained 60 percent of the ad valorem tax. This was reduced to ten percent in the 1981 repayment contract amendment. Until this 1981 change, the District was able to put some of the collected taxes into a savings account.
6. There has been payment against the irrigation obligation since Sept. 30, 1989, but this data has not yet been compiled and is unavailable at the time of this report.
7. This obligation is allocated to (1) M&I uses and (2) the municipal and industrial delivery system. While a part of the ad valorem tax is applied to the M&I uses obligation, only the direct beneficiaries pay for the delivery system obligation through a special assessment.
8. See House Doc. No. 130, 87th Cong., 1st Sess., "Operating Principles, Fryingpan-Arkansas Project, Adopted by the State of Colorado, April 30, 1959 (as amended December 30, 1959, and December 9, 1960." [hereinafter Operating Principles.]
9. Review of Operations, supra, at 11.
10. See Operating Principles, supra. Project storage space is first divided up by the Bureau among authorized project purposes including (1) fish and wildlife, (2) recreation, (3) flood control (Pueblo Reservoir only) and (4) irrigation and M&I uses (the conservation pool).
11. See 1989 Annual Report and Letter from Kevin B. Pratt, Attorney for the District, to Larry MacDonnell, Natural Resources Law Center (Mar. 11, 1988).
12. See Operating Principles, supra, at 4. There is an unsettled issue as to whether the percentage allocated to municipal users includes any carryover storage. For example, if the cities comprising the Fountain Valley Authority carried over 60,000 acre feet, they would only

be entitled to a new allocation of 18,000 acre feet so that their total storage and allocation would not exceed their share of 78,000 acre feet. This limitation has not yet been tested because of the current surplus of storage and water supply.

13. See Review of Operations, supra, at Table 8. Total water taken figures do not indicate the available water supply, which in many years exceeded the amount requested.

14. The District may approve extensions of storage of the agricultural user's allocation beyond May 1 based upon available space; it has done so in the past.

15. The agricultural users may alternatively be seeking a guarantee of monetary relief when their water is spilled, particularly their winter water.

16. See Review of Operations, supra at 15.

17. See Review of Operations, at 12.

18. See Allocation Principles, at 3.

19. See Water Allocation Policy at para. 11, adopted Feb. 19, 1981.

20. The Reclamation Reform Act of 1982 also plays a role in preventing the sale of Colorado Canal system project water. See Public Law No. 97-293, 96 Stat. 1272.

21. See Repayment Contract, at 10. Colorado law also limits transfers to district boundaries, Colo. Rev. Stat. § 37-45-134 (1) (E) (1973), but allows potential transferees to petition the board or the court for inclusion of their lands within the district, Colo. Rev. Stat. § 37-45-136 (1973 & Supp. 1989).

22. See 43 U.S.C. § 390jj. Under the RRA, Section 210, each district is required to develop a plan with definite conservation goals, measures, and time schedule for meeting the conservation objectives.

23. Significant daily fluctuations are not common and not as detrimental as seasonal fluctuations that can wash out spawning beds.

KENDRICK PROJECT

KENDRICK PROJECT, WYOMING

Project Description

The Kendrick Project is located in Natrona and Carbon counties in central Wyoming (see Figure K-1). Included in the Project is Seminoe Dam and Power Plant, situated about 72 miles SW of Casper upstream on the North Platte River. The Seminoe Reservoir is the primary storage facility for the project with a present capacity of 1,017,279 acre-feet (af). Approximately 37 miles downstream of Seminoe is the Alcova Dam, Reservoir and Power Plant with a storage capacity of 184,295 af. The Alcova reservoir is used primarily to divert water into the Casper Canal for irrigation of lands in the Kendrick Project. Water is maintained at a high level in Alcova Reservoir to provide adequate gravity head for the Casper Canal diversion.

The 59-mile long Casper Canal is the backbone of the distribution system and has a diversion capacity of 1200 cubic feet per second (cfs). The distribution system includes 190 miles of laterals and sublaterals, and 42 miles of drains. As of 1986, the system provided irrigation water to 131 full-time farms and 360 part-time farms with a total population of 1,531 people served.¹ There is currently about 24,000 acres being irrigated by the Kendrick Project.

The Kendrick Project is closely associated with the North Platte Project. Included in the North Platte Project is the Pathfinder Reservoir which lies on the North Platte River between Alcova and Seminoe Reservoirs, and the Guernsey Reservoir which is 185 miles downstream from Pathfinder. The North Platte Project was authorized in 1903 and the supporting water rights have a priority date of 1904 or 1923 (1923 is Guernsey only).

History of the Kendrick Project

Until 1933, the lands now included in the Kendrick Project were open range and used primarily by sheepherders. The U. S. Reclamation Service first investigated these lands for possible irrigation in 1904 but no action was taken at that time. The Kendrick Project (formerly the Casper-Alcova Project) was further investigated in 1933 by the U. S. Bureau of Reclamation (USBR). The renewed interest was due to regional water shortages caused by a drought that began in 1931, and due to the Project's sponsorship by Wyoming Senator John Kendrick. Senator Kendrick was motivated by the high unemployment rate in Natrona county's oil and gas industry, and by his personal gratitude to the county citizens over a recent election victory.

Project Authorization

The Kendrick Project was initiated under provisions of the National Industrial Recovery Act of 1933. The Secretary of the Interior made a finding of feasibility in 1935 and the project was authorized by President Franklin Roosevelt later that same year under terms of section 4 of the Act of June 25, 1910² and section 4(b) of the act of December 5, 1924³. Construction began in 1935 and the first irrigation water was released into Casper Canal in 1946. Maximum expenditures of \$20,004,254 were authorized for the project under Title II of the National Industrial Recovery Act. The stated purpose of the project was irrigation, flood control and power generation for municipal development. As of 1984, actual total construction costs were \$36,420,778.⁴

The letter of recommendation by the Secretary, dated August 27, 1935, chose the best irrigable lands commended by the Casper

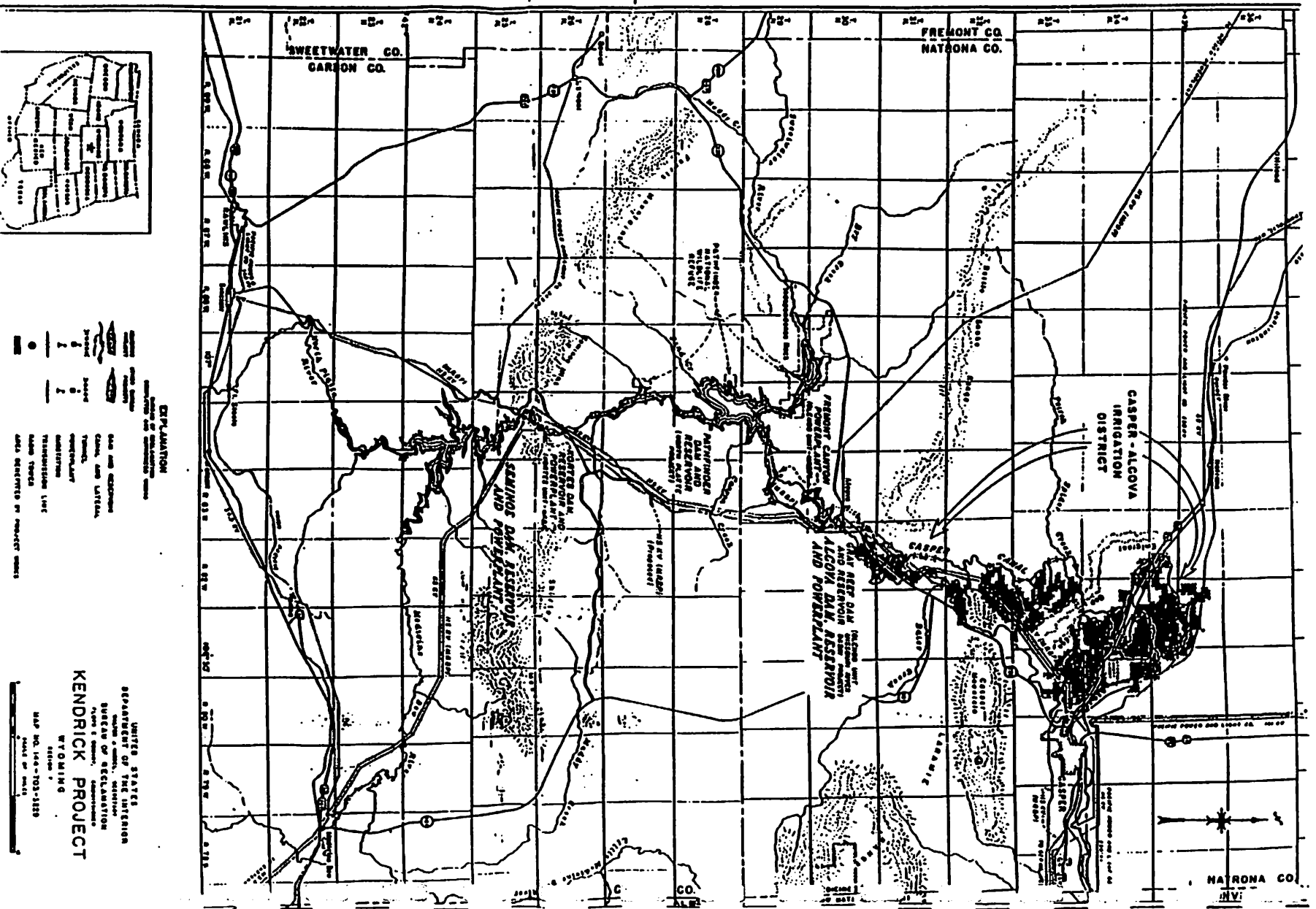


Figure K-1. Kendrick Project, Wyoming.

Canal to be included in the Project. This consisted of 66,000 acres which was divided into two units of 35,000 and 31,000 acres each. The scheme of development provided for initial irrigation of only the first unit (35,000 acres) because of uncertainty regarding the adequacy of water supply. It was determined in the feasibility finding that the cost of production would probably be returned to the government within 40 years by charging \$2 per acre a year, with the remaining debt financed by the generation of hydroelectric power.

A Power Plant was proposed for the Alcova Dam to meet Casper's growing energy demands. The Alcova Power Plant was found feasible by the Secretary in 1949 and authorized in 1950 under section 9(a) of the Reclamation Project Act of 1939. The plant started seasonal power production in July, 1955.

The North Platte decree

A year after the Kendrick Project was approved, in 1934, the state of Nebraska initiated litigation against Wyoming seeking equitable apportionment of North Platte River water. Colorado was impleaded as a defendant in the proceedings and the United States was granted leave to intervene. The problem that arose concerned over-appropriation of the North Platte River's dependable flow and the fact that neither Colorado nor Wyoming regulated their diversions to be subordinate to senior appropriators downstream in another state. The Kendrick Project was junior to practically every appropriation downstream to the Tri-State Dam in Nebraska and was a threat to these senior Nebraska water rights. The resulting decree regulated the storage of nonproject water, and enjoined the storage of project water between May 1 and September 30 of each year except in accordance with the rule of priority. The Court went on to hold

certain Nebraska appropriations senior to Kendrick Project storage and natural flow water rights.⁵ Thus the Kendrick Project is often not in priority.

Control of North Platte River flows

Each year, Colorado, Nebraska and Wyoming agree to an annual plan that controls the North Platte River for the benefit of irrigation, hydroelectric power, and instream flows.⁶ The annual operating plan optimizes power generation with fall and winter releases of water from upstream reservoirs. These waters pass through four power plants before being recaptured downstream in the Glendo Reservoir.⁷ Maximum upstream reservoir capacity is thus created prior to spring runoff. During the irrigation season (May 1st through September 30th), water is moved downstream in accordance with delivery obligations under Reclamation contracts and rights to the natural streamflow, while taking into account flood control and tributary inflows. The operations of this reservoir system must maintain accounting of water ownership and provide the necessary water for irrigation while trying to provide "the additional benefits of hydro-electric power, reservoir recreation, and instream flows."⁸

The Casper Al-Cova Irrigation District

Repayment contract

The Casper-Alcova Irrigation District (CAID) was organized and created in conformity with Article 7 provisions of Chapter 122 in the Wyoming Revised Statutes, 1931. CAID's purpose was to act as the repayment agent for the irrigation costs of the Kendrick Project. In 1935, CAID entered into a repayment contract with the USBR that provided for the construction of necessary irrigation works for the first 35,000 acres. CAID was required to impose and

collect assessments from benefitted lands within the District for the purpose of covering its share of the construction costs. The remaining costs were allocated to hydroelectric power. In practice, CAID assesses a per acre fee on irrigated acreage within the District.

Payments by CAID were not to exceed 40 years and a schedule of 80 semi-annual payments of \$35,000 was agreed upon for a total of \$2,800,000. This was less than CAID's actual pro rata share of construction costs which was calculated to be \$3,080,000. CAID's payments were left negotiable so that if power plant earnings were insufficient to cover the total cost within 40 years, CAID's payments could be restructured up to a maximum total payment of \$3,080,000.

The contract states that the Project is governed by Reclamation laws and that the Project's development should in no way impair water rights of the North Platte Reclamation Project. Landowners in the district were required to execute recordable contracts with the United States, whereby each individual landowner would agree to the terms and conditions set forth in Article 38 of the contract. This was a necessary prerequisite for land to be supplied with Project water.

Amendatory contract

The repayment contract was amended on November 25, 1957 because reclassification of the original 35,000 acres showed that only about 23,000 acres were irrigable and these had a lower paying capacity per acre than assumed in the original contract. The amendatory contract was authorized pursuant to Federal Reclamation Laws, and the Congressional Act of September 4, 1957. The amended contract called for the United States to deliver 2 af of water per irrigable acre during the irrigation season if enough

water was available. CAID's share of construction costs were lowered to \$600,000 and an annual fixed charge of \$10,000 was assessed for the cost of operation and maintenance of the "reserved works". The District also agreed to take over the care, operation and maintenance of the project irrigation delivery and drainage works without cost to the United States as of January 1, 1958.¹⁰

The amended contract called for additional water to be made available to the District at \$0.50 per af if sufficient quantities existed. For a 5-year period commencing January 1, 1958, all payments for "additional water" collected by CAID were to be used exclusively for constructing seepage control facilities. When accumulated revenues from the sale of additional water totalled \$600,000, no further payments for the additional water were required from the District.

The amended contract abrogated the recordable contracts that landowners had entered into under the original 1935 contract. The amendatory contract did not set forth a user contract requirement analogous to the prior system. Several other important provisions were included in the amended contract. First, that the United States would not abandon or relinquish any seepage or return flow attributable to irrigation of lands. "[S]uch water is reserved and retained for use on the Kendrick Project." Secondly, proof of beneficial use of Project water must be submitted to have permits granted by the State of Wyoming. All rights to Project water secured as such, are regarded as appurtenant to the land to which it was issued. It is also stated that the United States does not relinquish title to the project works or reserved works and that maintenance and control of the reserved works remains with the U.S. Finally, the amended contract is expressly limited to lands in the first unit. The second unit (31,000

acres) is recognized as part of the Kendrick Project, but its rights to service from the project works remained suspended.

District financial difficulties

The high elevation, short growing season, and marginal soil conditions have made it difficult to grow high value crops on Kendrick Project lands. Forage crops predominate with alfalfa hay grown on over one-half of the irrigated lands. The limited amount of land being irrigated and low crop values has impeded CAID's ability to maintain its operation and maintenance costs, and service its USBR debt. Likewise, CAID has not been able to finance the rehabilitation of its leaky distribution system. Prior to the water service contract entered into with the city of Casper in 1982, the District had made no payments toward construction costs. District money was instead invested into improved drainage systems. Personal Communication, Jack Miles, President of the Casper-Alcova Irrigation District.

Current application of the repayment contracts

Two subsequent amendments of the repayment contract were agreed upon; the first on June 1, 1965, and the second on November 2, 1973. Both amendments were for deferments of water charges. A rehabilitation and betterment contract was entered into between CAID and the USBR on June 16, 1966. This provided CAID with \$150,000 for rehabilitation of the irrigation system.

At present, CAID operates, maintains, and is liable for the irrigation system, although the USBR maintains a supervisory role. The reservoirs and dams (i.e., reserved works) are operated and maintained by the USBR. CAID pays a fixed annual fee of

\$10,000 to the USBR for operation and maintenance of these headworks but does not pay for any water delivered, including "additional water" in excess of 2 af per acre.

Irrigators are currently charge \$79.00 for the first acre irrigated, and \$9.00 for each additional acre. This entitles the landowner to 2 af of water per acre. The price for additional water is variable, but as of August 1990, the cost was \$5 per af. Additional water is limited to 1 af per acre."

Water Rights

It was initially proposed that the Kendrick Project be granted the 1904 water right maintained by the North Platte Project because the Kendrick Project could reasonably be interpreted as an extension of this earlier project. This was strongly objected to by the irrigators in eastern Wyoming and western Nebraska who had 1915 water rights. The Project was authorized with a 12/1/31 priority date for Seminoe Reservoir and a 4/25/36 priority date for Alcova Reservoir. Water from storage in the reservoirs remained the property of the USBR as appropriated by state permits.

The District has operated the irrigation system since 1958 but the USBR continues operation and maintenance of the dams, reservoirs and power plants. The adjudicated water rights held by the United States from the State of Wyoming are listed in Table K-1. The water stored in Seminoe and Alcova Reservoirs is attached to lands within CAID by secondary permits (See Table K-2). These water rights are for irrigation, domestic and stock water uses.

Water Needs for the City of Casper, Wyoming

Historically, the city of Casper depended solely on ground water supplies to

Table K-1. Water Rights Held by the United States.

<u>PERMIT</u>	<u>FACILITY</u>	<u>PRIORITY DATE</u>	<u>USE</u>	<u>CAPACITY</u>
4552R	Seminoe Res.	12/1/31	Irrigation, power, flood control	1,017,279 af
4630R	Alcova Res.	4/25/36	Irrigation, power	184,295 af
18681	Seminoe Power Plant	4/25/36	Power	1,990 cfs
21174	Alcova Power Plant	11/27/51	Power	3,800 cfs

Table K-2. Water Rights Held by CAID for Individual Land Owners Within the District.

<u>PERMIT</u>	<u>DITCH</u>	<u>APPROPRIATION DATE</u>	<u>ACRES (approximate)</u>	<u>CFS</u>	<u>SOURCES</u>
18683	Casper Canal	12/1/31	24,000	secondary supply	Seminoe Res.
18488	Casper Canal	7/27/34	24,000	secondary supply	North Platte River
				330.44	Poison Spider Creek
18682	Casper Canal	4/25/36	24,000	Alcova Res.	Alcova Res.

meet its demand for municipal water. However, projections of population growth made in the late 1970's indicated that the present water supplies would not be sufficient to sustain the city's growth. In 1977, Casper serviced approximately 49,000 people with an average demand of 8.3 million gallons per day (mgd) and a maximum demand of 25.0 mgd. By the year 2,000, the city's population was expected to be more than double and the average and maximum water demand was projected to increase to 17.9 and 53.8 mgd, respectively.¹²

Casper has two water rights to divert North Platte River water for the purpose of recharging ground water wells. These water rights consist of a priority date of 1926 for 10 cfs and a priority date of 1963 for 20.5 cfs. Considering the potential water produced by recharging wells under the 1926 permit, the maximum sustainable yield is estimated at 12.6 mgd with a maximum supply of 22.1 mgd. This production falls short of the estimated future water demands of Casper. The 1963 water right could be affected by senior irrigation or storage rights during droughts.

In response to increasing municipal demand, Casper obtained a permit to divert 14 cfs from the North Platte River to a water treatment facility in 1970. An additional diversion permit for 14 cfs was obtained in 1977. Presently, Casper's water treatment facilities have a normal operating capacity of 18 mgd. These water rights are junior to almost every user in the region. The State Engineer has stated that the junior rights for diversion to the water treatment facility may be cut off to meet demands by senior irrigation and storage rights, and to keep within the limitations imposed upon the state by the North Platte decree. Thus, the city of Casper does not have a reliable water supply during times of drought.

The actual population and water demands of the Casper area are less than earlier predicted. The projected population of the Casper area for 1990 was 84,800 with an average and maximum water demand of 14 and 42 mgd, respectively. In 1989, the actual population receiving municipal water in Casper and the outlying areas was approximately 54,500. The average and maximum water demands in 1989 were 10.3 and 29.9 mgd, respectively. In 1988, which was an exceptionally hot and dry year, the average water demand was 12.6 mgd with a maximum daily demand of 35 mgd.

Casper's Options in Meeting Its Municipal Water Demand

Casper has considered several options for obtaining new municipal water supplies. One possibility is to purchase ranch lands and acquire their senior water rights or ground water sources. Although conceivably cost effective, this is politically unpopular. It would be necessary to purchase approximately 5,600 acres. Such a large-scale transfer would have socio-economic impacts on this predominantly agricultural area. There would be a considerable loss of crop production and some loss of farming-related employment. Impacts on vegetation and wildlife might also result. Two proposed transfers from irrigation to municipal/industrial use were denied between 1980 and 1985 by the State Water Control Board.

A second option under consideration is to develop unallocated water within the North Platte basin. This may not be a viable alternative because of the restrictions imposed on the state by the North Platte decree. Recent plans to construct a dam on Deer Creek near Casper was met by lawsuits from the state of Nebraska intended to halt construction.

Another option is to use water from transbasin diversions into the North Platte River. High costs have made this alternative unattractive. The development of groundwater supplies was also considered, but preliminary investigations proved this option to be unreliable.

The alternative which has been acted upon by the city of Casper, is to utilize Kendrick Project water through a cooperative agreement with CAID and the U.S. government. The allocation of a portion of the Project's water supplies to Casper could be mutually attractive to Casper, CAID and the USBR. Casper would be provided a supply of water on an annual basis from available storage to alleviate potential future water shortages. CAID would benefit by receiving money which it could use to pay off its debts and rehabilitate the irrigations system. This would in turn benefit the USBR.

Utilization of Kendrick Water by the City of Casper

There were potential state and federal obstacles to transferring water from the Kendrick Project to the city of Casper. The Wyoming water rights that assign the Project's storage water to lands within CAID were amended to allow a portion of the water supply to be transferred to municipal use. The federal Kendrick Project authorization which states the Project's purpose as irrigation, power generation and flood control was also considered. One option available to the USBR was to request Congress to authorize a new purpose for the Project. Rather than do this, the USBR chose to use the general authority provided by section 9(c) of the Reclamation Project Act of 1939,¹³ which allows authorization to furnish a municipal water supply, only if "it will not impair the efficiency of the project for irrigation purposes." This could be

accomplished by repairing the irrigation system to improve its efficiency and eliminate water delivery losses. The water saved by improvements in the irrigation system could then be made available to Casper.

Feasibility of an irrigation system improvement program

The City of Casper hired a consulting engineer, Wright Water Engineers (WWE), to investigate the distribution system in order to identify and quantify water losses in the canal system. From aerial photographs of the Kendrick Project, approximately 5,200 acres of seep areas were identified along the main canals and laterals. Average consumptive use rates for the predominate phreatophytes and grasses in the area were determined from published literature values in order to estimate consumptive use of water seepage from the distribution system. Water seepage not consumed by plants or evaporated would make up return flow to the North Platte River. It was determined that if all seeped lands were eliminated, approximately 8,137 af of water per year would be conserved for beneficial use in the Kendrick Project. A canal and lateral improvement program could not eliminate all seepage, but such a program would be effective in reducing Project water loss to non-beneficial consumption. This would mean less water being released into Casper Canal to meet the same irrigation demands.

WWE determined that the impact of Casper's diversion and improvement plan on the flow pattern of the North Platte River would be minimal, both above and below Casper. A portion of the releases from Alcova Reservoir that historically were diverted into the Casper Canal would now be released directly into the river for Casper's use, thus increasing the river's flow. Further downstream, the implementation of an irrigation improvement program would result

in less return flow into the river from the irrigated lands. Overall, there would be a slight net increase in flow between Alcova Dam and Casper. Casper's diversion of Kendrick water for the water treatment facility and associated return flows would alter the present flow pattern of the North Platte River downstream of Casper but the change would be minor.

WWE recommended various improvements to the irrigation system that would conserve much of the wasted water. Improvements would consist of lining the canal and laterals with an impervious material, or the installation of pipelines. Other improvements would involve rehabilitation of headgates, siphons, bifurcations, checks, and drops.

Environmental assessment

The city also contracted with Environmental Research and Technology Inc. (ERT) to conduct an environmental assessment of a proposal to purchase 7,000 af of water per year from CAID's Kendrick Project water supply. The proposed canal rehabilitation program would save approximately 4,000 af of water per year lost to nonbeneficial consumption by drying up roughly one-half of the total estimated seepage acres. Approximately 2,900 af of additional water consisting of return flow would also no longer need to be diverted into the canal, for a total of roughly 7,000 af of water conserved. The rehabilitation program would be done in phases with initial improvements used to determine the actual amount of water conserved.

Twenty-seven distinct seep areas were identified by ERT. Seep areas characterized by wetland vegetation communities such as cattail-bulrush, bulrush or wetland meadows are unique and ecologically important. Wetlands are rare in the sagebrush and

grassland communities of central Wyoming. Although artificially created by the Kendrick Project, these habitats have developed into a unique and valuable feature of the terrain. The elimination of seepage water that sustains these plant communities would have an adverse impact not only on the vegetation, but also the wildlife dependent upon the communities. Most impacted would be the wildlife closely associated with wetland habitats such as muskrats, ducks and red-winged blackbirds. Mule deer could also be adversely affected by losing wetland/marsh feeding areas and from loss of travel corridors and cover. Raptors and mammalian predators would also be impacted by reductions in the abundant prey base. It is unlikely, however, that any threatened or endangered species exist in these areas.

The environmental assessment recommended that of the twenty-seven seeps surveyed, five consisting of wetland-type communities should be protected. Mitigation could consist of simply not lining those stretches of canal and laterals associated with these five seep areas. It was recommended that the rehabilitation program be restricted to seeps dominated by vegetative communities characterized by greasewood, big sagebrush and alkali flats. Since much of the surrounding area offers similar habitat, there should be minimal impact on wildlife if the seepage flows are restricted in these areas. Enough seep acreage dominated by these less desirable plant communities exists to obtain the necessary water savings.

Finding of no significant impact

Representatives from the USBR, City of Casper, CAID, U. S. Fish and Wildlife Service (USFWS), and Wyoming Game and Fish Department (WGFD) met to develop a plan which would minimize the effects a water transfer would have on the wetland habitat. As a result of this meeting, CAID

agreed to preserve 1,589 acres of the highest value wetland habitat. With this agreement, USFWS and WGFD determined that the proposed project would not significantly affect the wildlife and wetland habitat of the Project area.

In accordance with the Council on Environmental Quality Regulations for implementing the National Environmental Policy Act, the Regional Director of the USBR (Lower Mississippi region) issued a Finding Of No Significant Impact (FONSI) for the use of Kendrick water supply by the City of Casper. The FONSI was approved on October 19, 1981. This signified that no environmental impact statement was necessary for the proposed water transfer.

Negotiations for a Water Transfer

Water service contract between USBR, CAID and Casper

On April 15, 1982, the United States, CAID and City of Casper entered into a water service contract (2-07-70-W0534) pursuant to section 9(C)2 of the Reclamation Project Act of 1939 (53 Stat. 1187) and the Act of June 17, 1902 (32 Stat. 388). The contract called for the U.S. and CAID to supply the City with up to 7,000 af of water annually from the Kendrick Project. The contract required the water supply be developed through water conservation measures, thereby not impairing irrigation water supply. The City in return, agreed to provide sufficient funds for CAID to repay its entire debt to the United States and to rehabilitate the irrigation system. The cost to Casper included \$750,000 in three annual installments of \$250,000 each to cover CAID's debt to the USBR. The \$750,000 debt consisted of \$600,000 for construction costs as established by the amended repayment contract of 1957, and \$150,000 for the rehabilitation and betterment contract of

1966. Casper was also obligated to pay a minimum of \$150,000 annually for the irrigation system improvement program. Article 9 further required the City to pay the United States a water service charge of \$24 per af to be credited to repayment of the capital costs of the Kendrick Project as allocated to irrigation. Article 10 obligated Casper to pay the U.S. its pro rata share of the estimated annual operation, maintenance and replacement costs.

The contract states that the total water delivered to the city over the first 10 years may not exceed the total amount of water declared available from the completed water conservation measures. The City may, however, request up to 7,000 af in a single year during this 10-year period, if the water is available. After the initial 10-year period has expired, only the annual amount of water declared available due to completed conservation measures can be delivered to Casper with an upper limit of 7,000 af of water per year. It is the duty of the Contracting Officer to determine the actual amount of water saved by each segment of work. The contract calls for all rehabilitation work to be completed within 15 years.

Casper's water use is designated in the contract for municipal and domestic purposes only. If the City uses the water for industrial purposes, Article 14 requires the City to pay water service charges equal to the prevailing charges for industrial users. The contract is clear that the water transfer does not constitute a water right vested in the City, but rather a water supply through a contractual right. The contract also does not allow Casper to carry over storage water from one year to the next. The contract remains effective for 40 years and may be renewed upon request by the City. The amendatory repayment contract of 1957 between CAID and the USBR remains in force.

The water service contract expresses a strong federal interest in water conservation. Article 27 states:

[t]he City and District shall develop and implement an effective water conservation program for all users of water which is provided from, or conveyed through, federally constructed or federally financed facilities. That water conservation program shall contain definite goals, appropriate water conservation measures, and time schedules for meeting the water conservation objectives.¹⁴

Agreement between CAID and Casper

In addition to the water service contract entered into between the U.S., CAID and Casper; a separate agreement was reached between Casper and CAID on the same date. The latter agreement is expressly made subject to the provisions of the Water Service Contract. The agreement between Casper and CAID established a Betterment and Rehabilitation Fund to utilize the system improvement funds paid for by Casper. CAID agreed to give Casper the first right to negotiate a contract to purchase additional or supplemental water which could become available. The agreement further stipulated that the city must share with CAID in case of an overall water shortage, but CAID must allow the City to use 5,000 af of water if that much is available. Once the 7,000 af of water are saved by the system improvement program, the parties agreed to a minimum \$25 per af charge to be used to increase overall system efficiency and eliminate waste. Both parties agreed to complete work on the system improvement program within 12 years if possible.

Secondary appropriation permits

Casper's application for permits to appropriate surface water from Seminole Reservoir (permit #27689) and Alcova Reservoir (permit #27690) were approved by the State Engineer on July 12, 1982. The permits expressly limit appropriations to the quantity of water conserved or a maximum of 7,000 af per year at a rate not to exceed 42 cfs. Limitation set forth in the permits state that during years of deficient water supply, the City is limited to the water conserved that year. The quantity of water conserved is to be determined by the USBR, subject to approval by the State Engineer. Limitations stated within the permit are controlling if they conflict with provisions of the Water Service Contract.

Wyoming legislative funding and authorization for the water transfer

In 1985, the Wyoming Legislature passed special legislation allowing the rehabilitation project to proceed. Chapter 90, Session Laws of Wyoming, 1985. The Act provided for funding from the state of Wyoming for the purpose of assisting construction costs. Wyoming agreed to contribute \$1,263,000 or fifty percent of the construction costs, whichever is less.

The Act also impliedly exempts the project from any conflicting provisions of state law by specifically setting out the intention to provide the City of Casper with a water supply equal to the amount of water saved by improvements to the irrigation system.¹⁵

Project Implementation

Preliminary investigations

CAID and Casper were required by the Water Service Contract to furnish the

USBR with a developmental plan for the System Improvement Program and an annual work schedule. CAID requested technical assistance from the U.S. Soil Conservation Service (SCS) in order to accomplish these goals. CAID employed SCS to do a long-range development plan for the System Improvement Program which could accomplish 7,000 af of water savings within 12-15 years. SCS identified specific project areas which could result in the required 7,000 af of cumulative water savings and determined which sections of the distribution system were most cost effective to rehabilitate. In doing so, the SCS estimated seepage loss for different sections of laterals using the Moritz equation. This equation uses the permeability rate of the soil texture type present in that segment to determine water loss per square foot of wetted canal area. The SCS report identified costs ranging from \$55 per af to \$4,099 per af of water conserved for different sections of the irrigation system. In general, laterals appeared more cost effective to rehabilitate than the main canal.

Ongoing studies and system improvements

Yearly hydrological studies were conducted starting in 1983 to quantify CAID's water losses so as to determine how much water was saved by the various improvement projects. These studies were conducted by a CAID hydrologist in cooperation with the USBR, city of Casper, SCS, and Wyoming State Engineer. The most important method used in these studies to determine transmission losses was the inflow-outflow method. This technique simply measures water volume as it enters and leaves a canal section, taking into account any irrigation diversions. The difference between the amount of water measured entering and leaving the reach is the volume of water lost in that stretch. Rainfall and evaporation were also quantified. Although evaporation exceeded precipitation resulting in a net loss,

these factors were not used in transmission calculations because they accounted for only about 3% of the total water loss. Two other methods were also employed to measure water loss, the ponding test and infiltration study. Both of these methods directly measure the rate of water infiltration into the canal or lateral bed.

The progress report describing work done in 1983 concluded that transmission losses were dependent upon four principle variables: (1). length of time that the water resides in the ditch; (2). the quantity of water in the ditch; (3). the hydraulic conductivity of the soils, and (4). the geologic setting.¹⁶ Future studies showed that seepage rates varied seasonally depending upon the moisture content of the soils.

The 1983 progress report focused primarily on five lateral segments. Generally, measurements of transmission losses were similar to estimates obtained using the Moritz equation. The factors considered in choosing laterals to be studied included infiltration rates, water use history, and geologic setting, combined with the findings of the Long Range Plan concerning cost effectiveness.

As a result of the 1983 study, construction was initiated on lateral #41. A pipeline was used to replace 15,435 feet of earthen ditch which resulted in a water savings of 382 af per year. The USBR certified the transfer of this water to the City in a letter dated January 18, 1985.¹⁷

The 1984 Progress Report described more studies on transmission losses within different canal and lateral segments. Phase I of a rehabilitation plan for lateral #210 was initiated. This involved lining the upper 14,283 feet of the lateral with concrete for an estimated water savings of 333 af per year. Included in the estimated water savings was a correction for any continued water loss after

construction was completed. Post-construction losses include seepage through the concrete and evaporation. Work on lateral #210 was to be completed in 1985. A shift in research emphasis was planned for 1985 which involved examining more sublaterals in addition to lateral segments.

Similar progress reports have been released every year giving data on transmission losses and the implementation of the system improvement program. In addition to lining canals for water savings, the annual progress reports describe other improvements such as siphon construction which also translates into calculated water savings attributable to the City. Most construction to date has focused on the smaller laterals. Rehabilitation of main canal segments may be considerably more expensive. As of the 1989 Progress Report, the total volume of water available to the city of Casper for municipal use on an annual basis totaled 1,852 af.¹⁸ Presently, the City has taken no water out of the Project. The water is viewed as insurance for the City's water demands.¹⁹ An analysis of improvement costs through 1989, indicated a cost to the city of \$542 per af of water.

Impacts of Irrigation on Environmental Quality

A study was conducted to determine if irrigation drainage in the Kendrick Project area had adversely impacted or could potentially affect water quality, fish and wildlife populations, or human health. The study was conducted because of growing concerns that irrigation can lead to increased concentrations of potentially toxic elements in surface and subsurface waters. The most noteworthy documentation of such environmental degradation occurred at the Kesterton National Wildlife Refuge in the San Joaquin valley. Elevated selenium levels from irrigation drainage were linked to reproductive failure of waterfowl in the

Refuge. The Kendrick Project lies within a geological formation that has a potential for large selenium content in the bedrock and soils. The Kendrick investigation was conducted by an interdisciplinary field team of scientists from the U. S. Geological Survey, U. S. Fish and Wildlife Service, and USBR with cooperation from the Wyoming Game and Fish Department.²⁰

Reconnaissance sampling was conducted on the water, sediments, and biota of the Kendrick Project. Concentrations of toxic compounds in the surface and groundwater were generally at safe levels. The biggest exception was selenium. Dissolved selenium concentrations were greater than the National Standard of 10 ug/L for public water supplies in nearly 50% of the water samples. Several samples exceeded the 50 ug/L limit for livestock watering. Concentrations of selenium in the North Platte River, which supplies drinking water to Casper and several adjacent communities, were always less than 5 ug/L. High concentrations of boron, cadmium, and mercury were reported from a few sampling locations within the Project.

Livers and eggs from birds captured in the Project area were analyzed for trace elements and pesticide residuals. Potentially toxic concentrations of selenium were found in these tissues. High levels of selenium were also reported from fish and aquatic plants taken from within the Project boundaries. Concentrations of arsenic, boron, and mercury were generally low in all tissue samples; however, boron was found in aquatic macrophytes at levels that could pose a danger to consumer organisms.

Fish and invertebrates captured in the North Platte River had very low concentrations of arsenic, boron, mercury, and selenium in their tissues. These low levels indicate no potential for physiological harm.

A slight increase in selenium was found in fish tissues downstream from the Kendrick Project compared with upstream. No similar increase in other contaminants was noted in a downstream direction. Although high selenium concentrations were found from several trophic levels within the Kendrick Project, the relationship between irrigation drainage and the elevated concentrations is unclear. Potential environmental impacts from irrigation drainage can be an important factor to consider when examining the feasibility of transferring water to non-irrigation uses.

ENDNOTES

1. 1986 Summary Statistics Vol. 1, Water, Land and Related Data, U.S. Dept. of the Interior, p.67.
2. 36 Stat. 836.
3. 43 Stat. 702
4. 1984 Summary Statistics, Vol. III Project Data, U.S. Dept. of Interior, p.159.
5. See Nebraska v. Wyoming, 325 U.S. 589, 666-67 (1945).
6. Summary Report, Wright Water Engineers, Inc., "Use of Kendrick Project for Casper's Future Water Needs," prepared for Casper Board of Public Utilities, (Feb. 1979), at 8-11.
7. *Id.*
8. *Id.* at 11.
9. Public Law No. 85-283.
10. Project works, as defined in the amended contract, consist of works below the Casper Canal headgate used in the "delivery and distribution of water to the irrigable lands in the first unit of the District and the drainage of water therefrom." Project works also includes project headquarters and other specified buildings.
Reserved Works include all works that are part of the Kendrick Project but are not included in the above definition of project works.
11. Personal Communication, Carlton Hunter, Manager of Casper-Alcova Irrigation District.
12. Wright Water Engineers, Report on Proposed Municipal Use by Casper of Kendrick Water Supply (1980).
13. 43 USCS §§ 485h(c).
14. Article 27(a), Water Service Contract Among the United States, The Casper-Alcova Irrigation District, and the City of Casper, 1982.
15. In Basin Electric Power Co-op v. State Board of Control, 578 P.2d 557 (Wyo. 1978), the court held that the statute limiting transfers to the historic amount consumptively used refers only to the amount beneficially used and not to water wasted in the system. See Wyo. Stat. § 41-3-104. See also, Squillace, Water Rights Transfers in Wyoming, in The Water Transfer Process as a Management Option For Meeting Changing Water Demands, Vol. 2, pp. 33-34 (1990).

16. 1983 Progress Report, Hydrologic Investigations CAID-City of Casper System Improvement Program, at 24.
17. 1984 Progress Report. Hydrologic Investigations CAID-City of Casper System Improvement Program.
18. 1989 Progress Report, CAID-City Of Casper Water Conservation Project.
19. Personal Communication with Dave Hill, Board of Public Utilities, City of Casper, WY.
20. Peterson et al., Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Kendrick Project Reclamation Area, Wyoming, 1986-1987.

NEWLANDS PROJECT,

NEVADA

NEWLANDS PROJECT, NEVADA

Authorized by the Secretary of the Interior in 1903, the Newlands Project was one of the first projects constructed by the Bureau of Reclamation. Water from the Truckee and the Carson Rivers supports irrigation on land in western Nevada. This case study presents the physical setting including the sources of water supply, a discussion of the Newlands Project and the Truckee-Carson Irrigation District, a description of the water rights, and a summary of efforts to transfer project water to wetlands maintenance in the Stillwater Wildlife Management Area.

Physical Setting

The project area is located in west central Nevada in the vicinity of Fallon. See Figure NL-1. It is a very arid area with an annual precipitation of about five inches. Two rivers flow through the general area: the Truckee and the Carson. Both of these rivers begin in the central Sierra Nevada mountains of California and flow east into the Great Basin. The Truckee River flows ultimately into Pyramid Lake. The terminus of the Carson River is the Carson Sink. The annual average flow of the Truckee River at the California-Nevada state line is about 590,000 acre-feet. The annual flow of the Carson River averages about 290,000 acre-feet.

Newlands Project

Shortly after Congress passed the Reclamation Act in 1902 the Secretary of the Interior withdrew 232,800 acres of public land in Nevada from homestead entry for possible development in association with a reclamation project. In 1903, the Secretary formally approved a plan for a reclamation project that would irrigate 240,000 acres of land. The lands to be irrigated were located along

the Truckee and the Carson Rivers. At the time, some of these lands were being irrigated by direct diversions from the rivers. The Bureau of Reclamation first constructed the Derby Diversion Dam on the Truckee River and the Carson River Diversion Dam on the Carson River as well as the main distribution canal for the Carson Diversion. With the completion of the Truckee Canal in 1906, water from the Truckee River became available for use on project lands in the Lahontan Valley. Water storage for project use followed with the completion of the Lake Tahoe Dam in 1913 and Lahontan Reservoir in 1915.

Funding of \$1,250,000 was originally authorized for construction of the project. As of September 30, 1988 construction costs for the various project features totalled nearly \$21 million.¹ Payments under repayment contracts totalled about \$3.8 million with a remaining obligation of about \$1.5 million scheduled to be paid out by the year 2017. Most of the remaining costs will not be reimbursed.

Truckee-Carson Irrigation District

Originally the Bureau contracted directly with the irrigators for the supply of water. Subsequently, the Truckee-Carson Irrigation District (TCID) was formed. In 1926, TCID assumed the repayment obligation for the reimbursable costs of the Newlands Project. It also took over the operation and maintenance of the project.

Between 1967 and 1987 an average of about 63,000 acres of land were irrigated in the Truckee-Carson Irrigation District.² Total average diversions of water from the Truckee and Carson Rivers for use in the Newlands Project during this period were about 370,000 acre-feet.

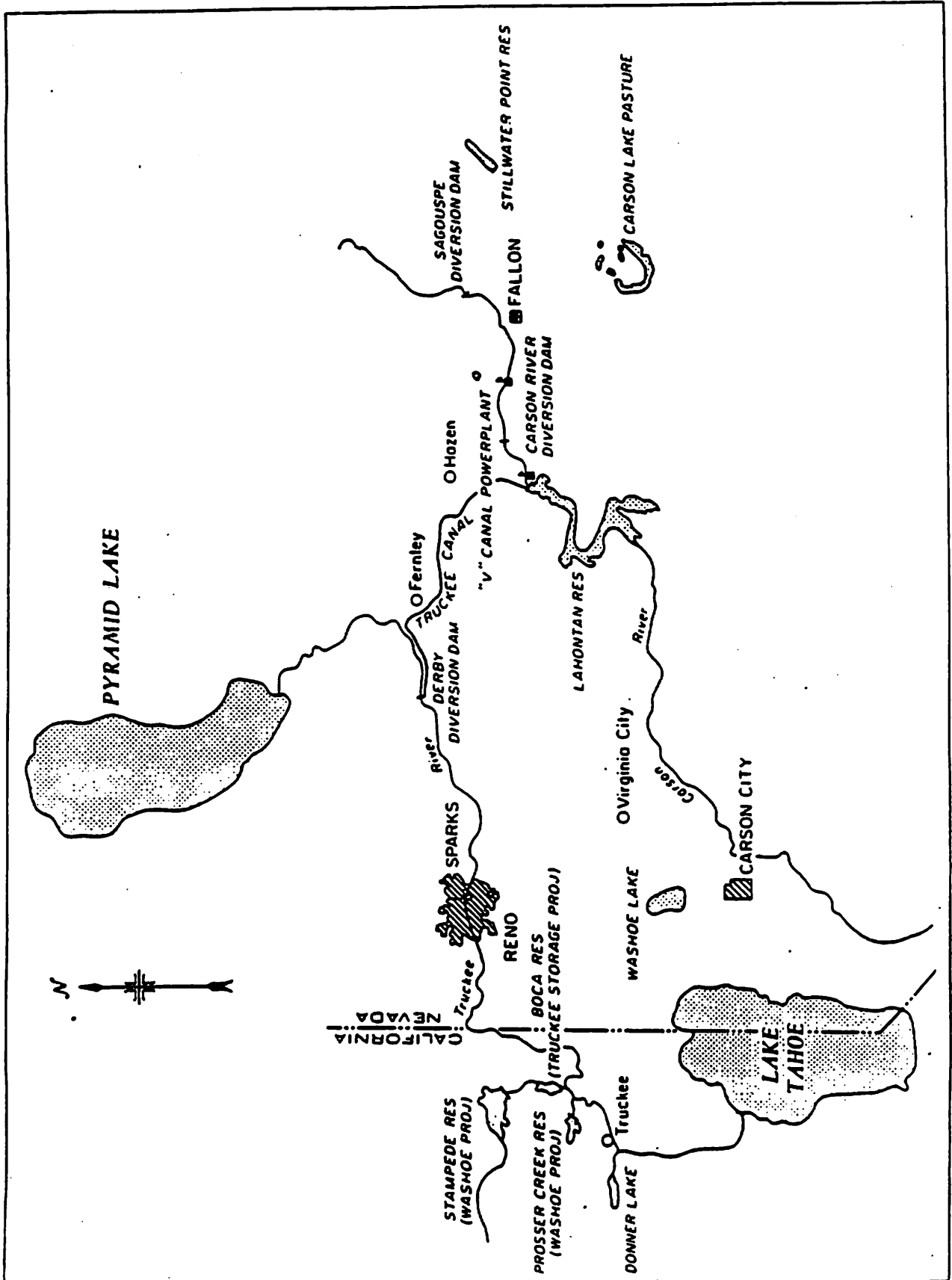


Figure NL-1. Newlands Project, Nevada.

There are 1,200 farms within the project service area with a total irrigable area of 73,859 acres. The farm population is about 8,000.³ The gross value of agricultural production on these lands in 1986 was about \$21,000,000 with an average value per irrigated acre of about \$330. Alfalfa was grown on about 70 percent of the irrigated acreage.

Water Rights

In 1913, the United States brought an action in federal district court seeking to establish its rights to the use of water from the Truckee River for both the Pyramid Lake Indian Reservation and the Newlands Project.⁴ Known as the *Orr Ditch* litigation, this action sought a right to divert 10,000 cubic feet per second (cfs) for the Project and 500 cfs for the Reservation. The final decree in 1944 awarded the Reservation with an 1859 priority date for water to irrigate 5,875 acres on the Reservation. It also provided the Newlands Project with a 1902 priority date for 1,500 cfs from the Truckee River for the irrigation of land within the Project, for power generation, and for municipal and domestic water supply and other purposes.

In 1973, the United States filed an action in federal district court seeking additional water rights in the Truckee River on behalf of the Pyramid Lake Indian Reservation. These claims were based on the need for water to maintain the fishery in Pyramid Lake which water, the government asserted, was impliedly reserved when the Reservation was created. Evidence was presented that between 1920 and 1940 the surface area of Pyramid Lake had shrunk by about 20,000 acres. One consequence was the creation of a delta at the point where the Truckee River enters the lake. The delta prevented two fish species indigenous to the lake from reaching their spawning grounds in

the river, resulting in the near extinction of both species. The U.S. Supreme Court denied the reserved right claims, however, on the basis that all tribal rights had been determined in the *Orr Ditch* decree.

In 1925, the United States filed a quiet title action to determine its water rights in the Carson River. A final decision was not forthcoming until 1980.⁵ The federal district court held that irrigators within the Newlands Project with project water rights are entitled to a maximum 3.5 acre-feet per acre for lands that are "bottom lands" and 4.5 acre-feet per acre for lands that are "benchlands."⁶ Net consumptive use was determined to be 2.99 acre-feet per acre.

Project Water Allocation

Efforts by the Pyramid Lake Paiute Tribe to ensure that the maximum possible quantity of water in the Truckee River reaches Pyramid Lake caused the Secretary of the Interior to begin issuing annual regulations known as Operating Criteria and Procedures (OCAP) in 1967. The OCAPs govern Truckee River diversions to the Newlands Project and the annual allocation of water available from both rivers for irrigation use and for other purposes. In 1970 the Tribe brought suit against the Secretary alleging that the OCAP inadequately provided for the needs of Pyramid Lake.

The federal district court in Washington, D.C. agreed with the Tribe that the Secretary had a fiduciary duty to the Tribe to ensure that the Newlands Project water supply is managed so that all Truckee River water not otherwise obligated by court decree or contract will flow to the lake.⁷ The 1972 OCAP had allocated 378,000 acre-feet of water from the Truckee River at Derby Dam for irrigation use. The court revised the OCAP, limiting diversions for irrigation to

about 288,000 acre-feet of water for the 1974 irrigation season. It also required that project diversions from the Carson River to serve irrigation needs should be relied on to the fullest extent possible and that diversions from the Truckee River for these purposes should be minimized. In addition, the court stated that irrigation water deliveries should only be made to lands with valid rights to receive water from the project.

In 1973, TCID intentionally violated the OCAP by diverting more water than permitted. The Secretary of the Interior announced his intention to terminate the 1926 contract under which TCID operated the Newlands Project. TCID filed suit to prevent this contract termination and to have the OCAP declared invalid as a taking of its property rights to project water without due process of law. The 9th Circuit Court of Appeals upheld the imposition of the operating criteria and ruled that the Secretary's termination of the contract did not deprive TCID of its constitutional rights.⁸ In this decision the court determined that TCID does not itself hold any water rights but rather is in the position of a manager. Further it held that its managerial position was specifically subjected in the 1926 repayment contract to the authority of the Secretary to adopt regulations affecting the management of the project.

In its 1983 decision concerning rights of the Pyramid Lake Tribe to additional water from the Truckee River the U.S. Supreme Court had concluded that the water rights established under the 1944 *Orr Ditch* decree for the Newlands Project vested only with those irrigators within the project who had applied the water to beneficial use.⁹ Moreover, the operating criteria adopted in the 1973 federal district court decision specifically limited delivery of water to lands for which a "current valid water right exists."¹⁰ These rulings placed a premium on clarifying

the status of individual water rights within the project. These rights are based on contracts and certificates issued either by the Secretary of the Interior or by TCID. Many of the entitlements were issued by the Secretary in the early days of the project prior to the creation of TCID. TCID last issued contracts in the 1950s.

In a number of cases, lands not designated in any entitlement were receiving water for irrigation. The 1980 *Alpine* decree specified that transfers of project water rights including changes in the place of use are to be made in accordance with Nevada law.¹¹ A number of project water users subsequently filed applications with the Nevada State Engineer to change the place of use of water from water-righted properties not being irrigated to those that were being irrigated without water rights. The federal circuit court upheld the approval of 129 transfer applications by the State Engineer against a challenge by the Pyramid Lake Paiute Tribe.¹² In particular, it agreed with the State Engineer that the transfers would not injure the Tribe's water rights or prove detrimental to the public interest -- the review standards set forth in Nevada statutory law. An unresolved question is whether the transferred project water rights may have been abandoned, forfeited, or never perfected.¹³

Transfers to Wetlands

In its natural state the Carson River flowed east to a desert terminus in an area known as the Carson Sink. Flows from this river produced a number of marshes in the Lahontan Valley. In 1900, the wetlands area in the valley totalled about 85,500 acres.¹⁴ Much of this area was encompassed in the Stillwater Wildlife Management Area established in 1948. Of the 33,400 acres of wetlands thought to be in this area at the turn of the century, only about 5,000 acres

remain. Stillwater and other Lahontan Valley wetlands provide an important habitat for Pacific flying waterfowl, for wildlife in Nevada, and are one of only 13 sites in North and South America to be classified as a hemispheric reserve within the Western Hemisphere Shorebird Reserve Network.¹⁵

The loss of these wetlands resulted in large part from increased upstream use of the Carson River, primarily by agricultural users including those in the Newlands Project. Currently the only water reaching the Stillwater Marsh comes from Project irrigation return flows and infrequent precautionary spills from Lahontan Reservoir. Efforts by the Pyramid Lake Paiute Tribe to increase flows of the Truckee River into Pyramid Lake have decreased diversions from that river into the Carson basin and have increased the reliance of Project irrigators on remaining Carson River flows for project purposes.

The need to directly supplement inflows into Stillwater, without further importing the already overburdened Truckee-Carson system led the U.S. Fish and Wildlife Service, the Nevada Department of Wildlife, The Nature Conservancy, the Environmental Defense Fund, and others to initiate a program to acquire water rights from willing sellers in the Newlands Project area. Congress has appropriated more than \$6 million in support of these efforts to date, under which the FWS and The Nature Conservancy have acquired more than 7,000 acre-feet of Newlands Project water rights. The FWS estimates that more than 40,000 acre-feet of water must be made available to support the minimum desired 14,000 acres of wetlands to achieve the wildlife objectives for the Stillwater Wildlife Management Area.¹⁶

Transfer Issues

The transfer of water from irrigation use in the Newlands Project to wetlands use in the Stillwater Wildlife Area raises several issues of interest for this case study. These include: (1) the change in project purposes and (2) the nature of the transferable interest.

Changes in project purposes

The Secretary of the Interior originally authorized the Newlands Project for purposes of supporting an irrigation-based agricultural development in a 232,800 acre area of western Nevada. The project service area subsequently has been reduced to about 135,000 acres and only about 74,000 acres are entitled to receive project water. Lahontan Reservoir now is managed for recreation uses but the only direct use made of water delivered under this project has been irrigation.

The Stillwater Wildlife Management Area is within the originally intended service area of the Newlands Project.¹⁷ Thus, water transferred for wetlands use in this area would still be used within the originally contemplated service area.

Certainly the project was never intended to supply water for wetlands maintenance. In fact, project facilities and uses have been responsible for the loss of much of the original wetlands area. It may be argued that the transfers do not really involve a change in purpose of use since water will still be used for "irrigation" of wetlands vegetation. Nevertheless, there is little question that this new use of water is for very different purposes than those envisioned when the project was authorized.

A 1989 Solicitor's Opinion considered the authority of the Secretary of the Interior to acquire Newlands Project water rights for use in the Stillwater Wildlife Management Area and to use project facilities to transport this water.¹⁸ This opinion concludes that fish and wildlife uses were authorized by Congress when it authorized the related Washoe Project in 1956.¹⁹ Additional authority was found in a section of the 1939 Reclamation Project Act concerning the ability of the Secretary to enter contracts for the adjustment of water rights "necessary and in the interests of the United States and the Project."²⁰ Still further support arises out of the Water Project Recreation Act of 1965 which authorizes the Secretary to operate reservoirs to provide for fish and wildlife enhancement.²¹ The opinion references an earlier Solicitor's Opinion concluding that "when the project report and legislation authorizing the project are unclear, the Secretary has broad discretion to use the facilities or even modify the features of a project so long as those modifications are consistent with the legislative descriptions of the project."²² Otherwise, projects must be operated consistent with legislative authorization(s) and any feasibility reports submitted to Congress at the time of authorization.²³

In 1990, Congress enacted a statute (discussed in greater detail below) containing a section specifically authorizing the Secretary to operate the Newlands Project for fish and wildlife purposes as well as for recreation, water quality, and "any other purpose recognized as beneficial under the law of the State of Nevada."²⁴ This Congressional action removes any uncertainty that may have existed regarding new uses of Newlands Project facilities.

Transferable interests

As discussed, primarily because of litigation by the Pyramid Lake Paiute Tribe the legal status of water entitlements held by irrigation users receiving water from the Newlands Project has been the subject of several federal court decisions. The basic project water rights for the Truckee and Carson Rivers have been adjudicated. Specifically recognized beneficial uses in the adjudication are irrigation, power generation, and municipal and domestic water supply. The Carson River adjudication provided "bottom land" irrigation with 3.5 acre-feet per acre and "benchland" irrigation with 4.5 acre-feet per acre.²⁵ Net consumptive use was determined to be 2.99 acre-feet per acre.

The courts have held that the beneficial interest in the rights to receive water from the Newlands Project "reside[s] in the owners of the land within the Project to which those water rights become appurtenant upon the application of Project water to the land."²⁶ Thus the United States may not seek a reallocation to the Tribe of the water right decreed to the U.S. in the *Orr Ditch* decree for the Newlands Project since that portion of the decree aimed only at providing water for irrigation of land within the Newlands Project service area.

Nor does the Truckee-Carson Irrigation District (TCID) have any ownership of water rights from the Newlands Project. Rather TCID's interest has been characterized as "strictly managerial."²⁷ The Truckee River Agreement which was incorporated into the *Orr Ditch* decree and which gave TCID the right to dispose of a portion of Truckee River water at Derby Dam did not provide TCID with a property interest in this water. Moreover, TCID's management interest in the Newlands Project was subject to the authority of the Secretary of the Interior set forth in the 1926

repayment contract to adopt regulations concerning operation of the project and which was used to reduce the amount of water TCID was authorized to divert.²⁸ In the words of the Ninth Circuit:

The *Tribe v. Morton* decision, of course, reduced the amount of water TCID was authorized to divert. But TCID had no water rights. Only the nature of its managerial duty was affected. This does not amount to a taking of property without due process.²⁹

Only those water entitlements that have been perfected through application to irrigation use on service area land have become vested property rights.

The U.S. Supreme Court has noted that there are at least five different forms of water entitlements under which irrigation users have received water supplied from the Newlands Project.³⁰ Two involve an exchange of pre-project appropriative water rights for permanent entitlements to project water. The others involve a permanent commitment of water for irrigation of certain described lands. These various entitlements collectively provide for the delivery of water to 73,000 acres of land, although only about 60,000 acres are presently being irrigated.³¹

As discussed earlier, many of these entitlements have been used for irrigation of lands different than the lands originally identified in Project certificates or contracts. To correct this situation the present users filed 129 applications with the Nevada State Engineer to change the place of use. The Pyramid Lake Paiute Tribe challenged the change applications on a variety of grounds. The State Engineer approved the applications, finding that the transfers would not injure the tribe's water rights or be

detrimental to the public interest. The tribe also unsuccessfully challenged a subgroup of applications on the basis that the rights had either never been perfected or had been abandoned or forfeited as a matter of Nevada law.

In a 1989 decision the Ninth Circuit strongly affirmed that Nevada law applies to the transfer of the water rights held by landowners within the Newlands service area.³² Moreover, it reached this conclusion on the basis of the language in the original 1902 Reclamation Act that state law applies to "control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder...."³³ A 1980 federal district court decision concerning adjudication of the Carson River water rights of the project had stated that "the conspicuous absence of transfer procedures, taken in conjunction with the clear deference to state water law, impels the conclusion that Congress intended transfers to be subject to state water law."³⁴

Moreover, the cases hold that U.S. interests can be adequately represented in the transfer process utilized in Nevada that applies to Newlands. The notice and participation provisions in Nevada law combined with the ability to appeal the State Engineer's decision to the federal district court "provide full vindication of the admitted federal interests in the operation of federal reclamation projects."³⁵ Once the State Engineer has approved the transfer, the Secretary of the Interior cannot veto that decision.³⁶

In summary, there are water rights held by landowners in the Newlands service area that are considered vested property rights. These are rights evidenced by contracts or certificates to irrigate specified areas of land with a maximum duty of water per acre depending on whether the lands are

bottom lands or benchlands. To be valid, the rights must have been beneficially used (i.e. perfected) and not abandoned or forfeited. There is probably a presumption that the transferable consumptive-use portion of these rights is 2.99 acre-feet per acre for transfers to non-irrigation use. Changes of these rights are to be accomplished in accordance with Nevada state law and may not be prevented by the Secretary of the Interior except under Nevada state law.

By comparison, water use not based on a valid, pre-existing contract or certificate and put to beneficial use has not vested as a property right. The Secretary of the Interior may modify the quantity of water available to TCID to distribute since the right of allocation granted to the district is not a property right but a managerial right only. The legal status of project water originally allocated to irrigation but not delivered and used for that purpose remains unclear.

Public Law 101-618

In 1990, Congress enacted water-rights settlement legislation for the Truckee and Carson Rivers that touches on several of the transfer issues discussed above. The Act includes, for example, a section that authorizes the Secretary of the Interior to operate and maintain the Newlands Project for existing irrigation purposes and for fish and wildlife, municipal and industrial water supply, recreation, water quality, "and any other purposes recognized as beneficial under the law of the State of Nevada."³⁷ This provision resolves any uncertainties or ambiguities that might have remained following issuance of the Interior Solicitor's 1989 Memorandum on the use of Newlands Project facilities for delivery of Project water for non-irrigation purpose.

The Act also codifies many important features of the water-rights acquisition

program that has evolved since issuance of the Solicitor's Memorandum. Acquisitions will continue to take place on a willing-seller basis, for example, and the use of certain "selection and transfer" criteria will help to protect against increased Truckee River diversions and to incorporate other public-interest values. The Secretary also is authorized to use, modify or extend Project facilities on a non-reimbursable basis to deliver water to the Lahontan Valley wetlands, and to reimburse non-Federal entities "for reasonable and customary costs for operation and maintenance of the Newlands Project" associated with the delivery of acquired water.³⁸

Conclusion

The Newlands Project provides an important example of water originally intended to be used for irrigation purposes being reallocated to environmental protection objectives. Reallocation is being accomplished both by market-based transfers of water rights and by administrative allocation through the Operating Criteria and Procedures. Extensive litigation concerning this project has established that the rights of irrigation water users are legally protected only to the extent that these rights have vested through use of water in compliance with state and federal law. Such legally valid rights may be transferred by the appurtenant land owners in accordance with state law. Other project water originally available for allocation by the irrigation district but for which such legally vested rights have not been established is being administratively reallocated by the Bureau of Reclamation.

ENDNOTES

1. Letter from Dennis B. Underwood, Commissioner, Bureau of Reclamation to Senator Bill Bradley, Feb. 20, 1990.
2. Department of the Interior, Final Environmental Impact Statement for the Newlands Project Proposed Operating Criteria and Procedures, Table 1, December 1987 (hereafter OCAP EIS).
3. 1986 Summary Statistics, Vol. 1, p. 163.
4. Nevada v. United States, 463 U.S. 110 (1983).
5. United States v. Alpine Land & Reservoir Co., 503 F. Supp. 877 (1980).
6. *Id.* at 888
7. Pyramid Lake Paiute Tribe of Indians v. Morton, 354 F. Supp. 252 (1973).
8. Truckee-Carson Irr. Dist. v. Secretary of Depart. of Interior, 742 F.2d 527 (1984).
9. Nevada v. United States, 463 U.S. 110, 126 (1983).
10. Pyramid Lake Paiute Tribe of Indians v. Morton, 354 F. Supp. at 265.
11. 503 F. Supp. at 884 & 893.
12. U.S. v. Alpine Land & Reservoir Co., 878 F.2d 1217 (9th Cir. 1989).
13. The tribe only challenged 25 of the 129 applications on this basis before the State Engineer. He determined that there had been no abandonment because no intent to abandon the rights had been demonstrated. The federal district court upheld this determination in 1990 and this decision is now on appeal to the circuit court.
14. U.S. Fish and Wildlife Service, Environmental Assessment: Proposed Acquisition of Water Rights for Stillwater Wildlife Management Area (July 1989) at 5 (hereafter Stillwater Assessment).
15. Yargas, Water Rights Purchases for Habitat Maintenance in the Truckee and Carson River Basins (Environmental Defense Fund unpublished manuscript, March 25, 1988) at 3.
16. Stillwater Assessment at 5. The total water supply needed is 70,000 acre-feet. The FWS estimates that return flows will provide 37,600 acre-feet.
17. Memorandum from Solicitor to Secretary of the Interior, Authority to Provide Water to Stillwater Wildlife Management Area, July 10, 1989, p. 3 (hereafter Stillwater Memorandum).
18. Stillwater Memorandum.

19. *Id.* at 16.
20. 43 U.S.C. § 389.
21. 16 U.S.C. § 4601-18(a).
22. 85 I.D. 337 (May 1, 1978).
23. 85 I.D. 326 (July 31, 1978).
24. S. 3084, § 209(a).
25. *Alpine*, 503 F. Supp. at 888.
26. *Nevada v. United States*, 463 U.S. 110, 126 (1983).
27. *Truckee-Carson Irr. Dist. v. Secretary of Department of Interior*, 742 F.2d 527, 531 (1984).
28. *Pyramid lake Paiute Tribe of Indians v. Morton*, 354 F. Supp. 252 (1973); *Truckee-Carson Irr. Dist. v. Sec. of Dept. of Int.*, 742 F.2d 527, 531 (1984).
29. *Truckee-Carson Irr. Dist. v. Sec. of Dept. of Int.*, 742 F. 2d 527, 531 (1984) (emphasis added).
30. *Nevada v. United States*, 463 U.S. 110, 126-127, n. 9 (1983).
31. *U.S. v. Alpine Land & Reservoir Co.*, 878 F.2d 1217, 1221 n. 7 (9th Cir. 1989).
32. *Id.* at 1223.
33. Section 8, 43 U.S.C. § 383.
34. *U.S. v. Alpine Land & Reservoir Co.*, 503 F. Supp. 877, 884 (D. Nev. 1980).
35. *U.S. v. Alpine Land & Reservoir Co.*, 697 F.2d 851, 858 (9th Cir. 1983).
36. *U.S. v. Alpine Land & Reservoir Co.*, 878 F.2d, 1215, 1217 (9th Cir. 1989).
37. P.L. 101-618, 104 Stat. 3289, Section 209(a).
38. P.L. 101-618, Section 206, "Wetlands Protection."

NEW MEXICO CASE STUDIES

NEW MEXICO CASE STUDIES¹

Introduction

The Rio Grande Valley in New Mexico has been host to some of the earliest inhabited settlements in the United States. Today, the highest concentration of New Mexico's population lies within the valley, which contains the cities of Santa Fe, Albuquerque, Las Cruces, and Truth or Consequences. The latter three cities lie directly along the river. The region is extremely arid, which has led to water conflicts among the various political jurisdictions along the Rio Grande -- Colorado, New Mexico, Texas, and Mexico. The Rio Grande Compact of 1945, allocating water among these entities, places limits on increased water use. As a result, New Mexico now augments the flows of the river by diverting part of the state's allocation of Colorado River water to the Rio Grande Valley by means of the federal San Juan Chama Project. Another important factor in the development of the Rio Grande Valley has been the presence of vast stores of groundwater, which are heavily utilized. New Mexico law recognizes the interconnections of groundwater with surface flows--indeed procedures have been worked out under which some surface water rights from the Rio Grande River can be transferred to Albuquerque by converting them to groundwater rights. Surprisingly, however, for such an arid area, there still appears to be significant additional measures that could be taken to increase the efficiency of surface water use. For example, the surface water rights of the Middle Rio Grande Conservancy District have not been quantified, and there is a great deal of uncertainty over the possibilities for and procedures for transferring these rights.

History

The Rio Grande River arises on the slopes of the San Juan mountains in Colorado in a drainage basin that is distinct from that of the Colorado River. From there, the Rio Grande flows almost straight south through New Mexico until it strikes the international border with Mexico. Subsequently, it flows southeast along the Texas-Mexico border.

The mild climate, rich soil, and easily accessible irrigation water attracted early settlement. When the Spanish explorers arrived in the Rio Grande Valley in the first half of the sixteenth century, the Pueblo Indians were already irrigating crops (U.S. Bureau of Reclamation, 1931, p. 1051). They diverted water from the Rio Grande into ditches, now known as acequias, raising corn, beans, and squash. More extensive irrigation diversions were constructed in the valley between 1840 and 1850. One estimate is that by 1870, 125,000 acres were being irrigated. However, a major flood occurred in 1874, and additional problems, such as inadequate drainage, led to a loss of over 75,000 acres during the succeeding 40 years (Middle Rio Grande Conservancy District, 1980). Another early problem, which surfaced about 1890, was severely diminished flows due to irrigation development in southern Colorado. At El Paso, the river was dry for more frequent and longer periods during the summer months.

Developments in the lower Rio Grande Valley -- the Rio Grande Project

As a result, the lower Rio Grande Valley was one of the first areas to receive attention after passage of the Reclamation Act in 1902. Irrigation surveys began in 1903, and the Bureau of Reclamation

completed its feasibility report for the Rio Grande Project in 1904. The Secretary authorized the project in December 1905. In 1906 a treaty was signed with Mexico, guaranteeing them 60,000 acre-feet of water annually using the storage capacity of the project. As a result, in 1907, \$1 million of nonreimbursable funds was appropriated by Congress as the State Department's share for satisfying the international obligation.

The project stores water in two reservoirs--Elephant Butte Dam (constructed between 1908 and 1916 with a storage capacity of 2.2 million acre-feet) north of Truth or Consequences, New Mexico, and Caballo Dam (constructed between 1936 and 1938 with a storage capacity of 0.34 million acre-feet) south of the city (see Figure 1). In addition, the project includes five diversion dams for delivering irrigation water to irrigation districts in two states--the Elephant Butte Irrigation District in New Mexico and the El Paso County Improvement District No. 1 and the Hudspeth County Conservation and Reclamation District in Texas (refer to Figure 1). These districts lie in a narrow band along the river valley. The Elephant Butte Irrigation District contains lands to the north, west, and south of Las Cruces, New Mexico. The El Paso County Water Improvement District No. 1 lies just south of the city of El Paso, Texas (which also borders the river). The Hudspeth District in Texas lies farther to the south. Although major municipalities lie along the river, the project was designed to deliver irrigation water and to provide recreational opportunities. Clearly, there is the potential for transfers from agricultural to urban uses. Las Cruces could develop an interest in acquiring surface water. However, the principal interest in transferring irrigation water from the Rio Grande Project to date has been from the growing urban area around El Paso, Texas. Two agreements have been executed in the El Paso area -- one in 1962 and another in 1988. The potential for water

transfers within this project is complicated by controversy over interstate transfer of groundwater.

Developments in the middle Rio Grande Valley -- the Middle Rio Grande Conservancy District

Flooding, sedimentation, and rising groundwater tables caused significant problems for agriculture in the middle Rio Grande Valley. The sandy riverbed resulted in considerable sediment transport. When this sediment was deposited, it tended to raise the level of the riverbed, increasing the potential for flooding the surrounding areas. The continued application of irrigation water raised water tables, leading to irrigation drainage problems. One estimate is that in the early 1920s 72% of the lands in the valley had a water table less than 4 feet below the surface (MRGCD, 1980, p. II-2). In order to cope with these problems, the Middle Rio Grande Conservancy District was formed in 1925.

By 1936 the district had completed El Vado Dam on the Rio Chama, a tributary of the Rio Grande (see Figure 2), to store water and regulate releases, in addition to constructing 4 diversion dams on the Rio Grande River, 190 miles of levees, 350 miles of drains, and 250 miles of canals, and rehabilitating another 400 miles of privately developed irrigation ditches (MRGCD, 1980, pp. I-1 and III-3). These were all works constructed by the district, rather than by the federal government. By 1936, the district estimated that it had lowered the water table 5 feet on over 90% of its lands, as well as successfully keeping the Rio Grande River in its channel (MRGCD, 1980, p. III-3).

Today lands of Middle Rio Grande Conservancy District comprise a long, narrow band along the river, with an elevation of about 5,250 feet at the district's northern tip (Cochiti Dam) and 4,500 feet at its southern

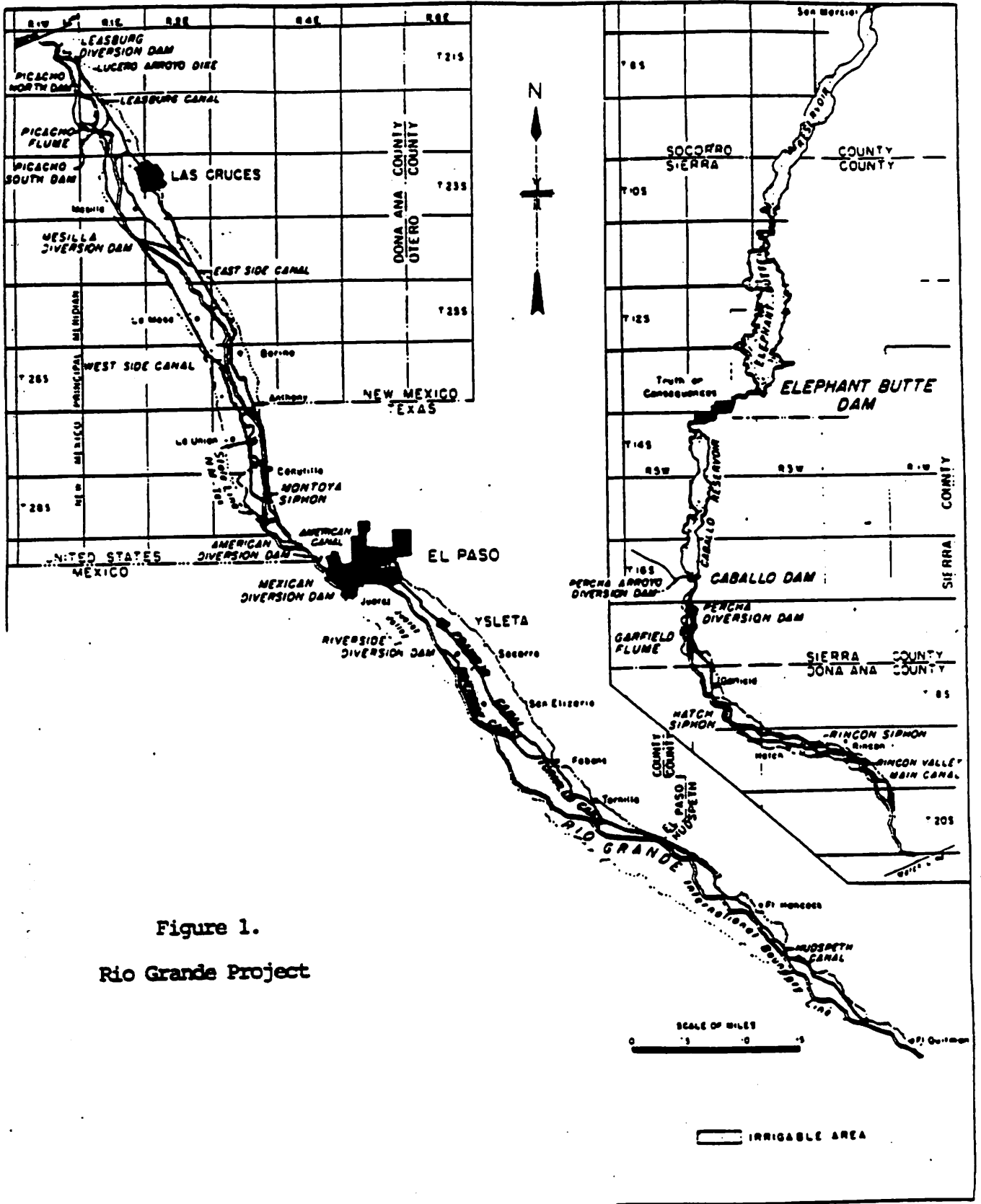
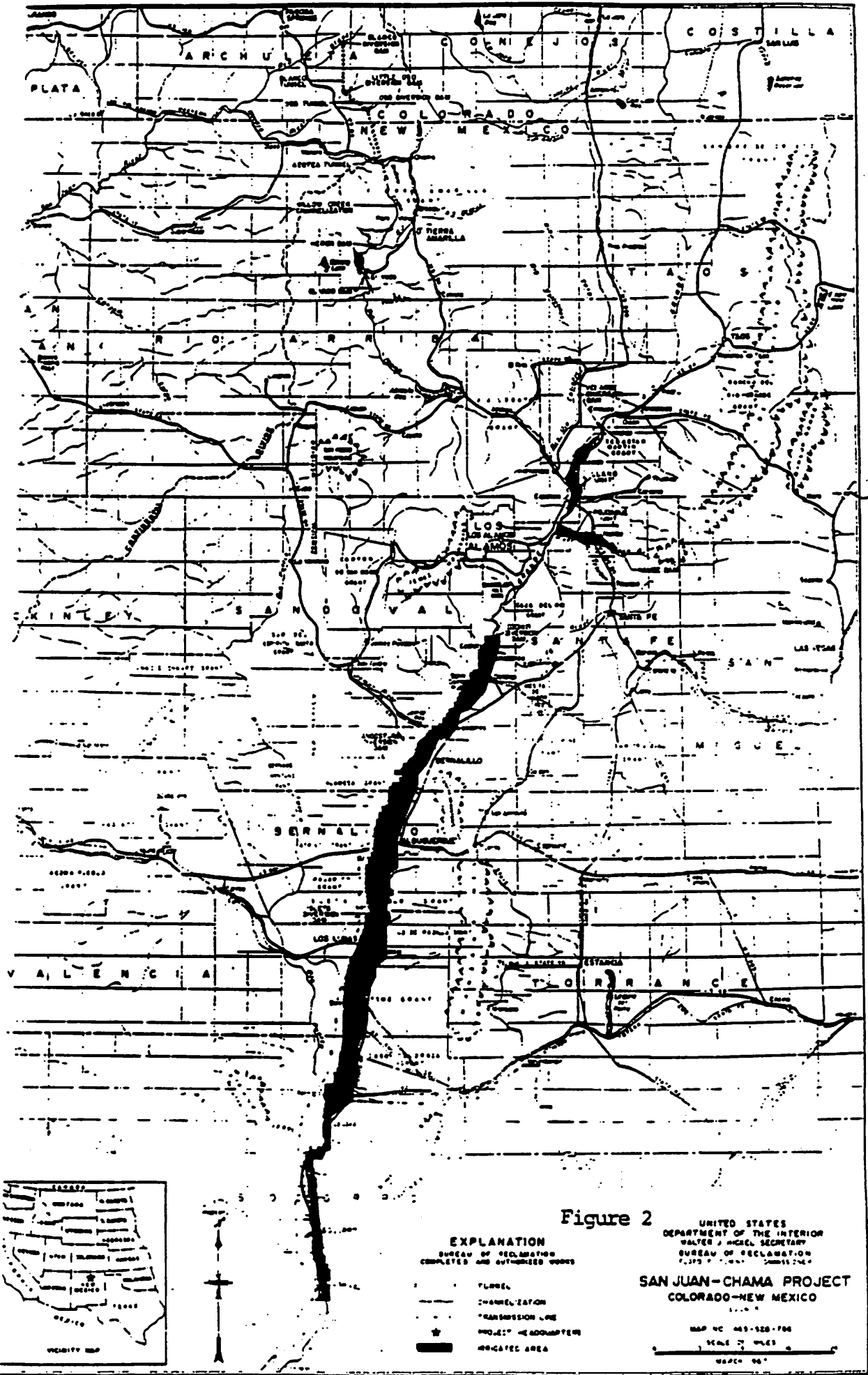


Figure 1.
Rio Grande Project



border (see Figure 2). The district extends 150 miles from north to south, but is only 1 to 5 miles wide. Today it contains some 278,000 acres, of which about 129,000 are considered irrigable. The district also contains six Indian pueblos (the Cochiti, Santo Domingo, San Felipe, Santa Ana, Sandia, and Isleta), and 28,500 of its acres lie within these Indian reservations. The district intersects the towns of Albuquerque, Bernalillo, Los Lunas, Belen, and Socorro.

Although El Vado Dam and all of the works on the middle Rio Grande were constructed by the district, rather than by the federal government, additional problems were to eventually bring the federal government into the picture. Under the terms of the 1945 Rio Grande Compact, New Mexico was judged to owe a debt of 150,400 acre-feet to Texas. Furthermore, problems had arisen in Elephant Butte Reservoir when it was filled in 1942: a large delta of silt formed just above the lake, making it difficult to fill the reservoir. In order to solve these and other problems, the Flood Control Act of June 30, 1948, approved a comprehensive plan for the Middle Rio Grande Project. The Bureau of Reclamation was to undertake the rehabilitation of the district's El Vado Reservoir (accomplished between 1954-55) and the district's diversion dams (accomplished between 1957 and 1958); rehabilitation work on the district's main canals, laterals, drains, and acequias (1953-61); and channelization of 45 miles of the Rio Grande River. For the purpose of facilitating this work, all of the district's facility maintenance was turned over to the Bureau in 1955 (the district reassumed operation and maintenance responsibilities in 1975) (MRGCD, 1980, pp. III-3 and III-4). Another aspect of the arrangement was that the Bureau of Reclamation paid off the district's remaining bonds, converting them to an interest-free repayment obligation under Reclamation law. This obligation was added

to the district's repayment obligation for the rehabilitation work. The Corps of Engineers was assigned responsibility for constructing flood control reservoirs and levees.

The district divides its lands into two categories for assessment purposes. "Class A" lands are those irrigable lands of a farming unit of five acres or more. All other lands are designated as "Class B" lands, including previously agricultural lands that are subdivided. The basis for charging class B lands is their benefit from the drainage and flood control aspects of the district. Class A lands are assessed charges on a per-acre basis, whereas Class B lands are charged based on the assessed valuation of land and improvements. By a district resolution adopted in 1959, 25% of the district's total assessments are made against class A lands and the remaining 75% against class B lands (MRGCD, 1980, p. III-6).

This scheme, which has generated some controversy between Class A and Class B ratepayers in the district, appears to have some drawbacks. As Table 1 shows, the amount of irrigable acreage in the district falling under the Class A rates has generally declined (from 59,467 acres in 1979 to 51,780 acres in 1989), largely due to urbanization. On the other hand, the number of Class B ratepayers has increased over the same period, (from 41,248 to 57,841). Even more dramatic is that the assessed valuation on which Class B rates are based has roughly quadrupled over the same period. The result of these trends is that the mil rate for Class B ratepayers has fallen (from 10.03 mils in 1979 to 4.87 mils in 1989), while the irrigation assessments per acre have increased (from \$14.41 per acre in 1979 to \$29.71 per acre in 1989). In other words, the requirement that Class A ratepayers shoulder 25% of district costs has meant that a greater per-acre burden falls on an increasingly smaller number of Class A ratepayers. In the

**Table 1. Middle Rio Grande Conservancy District
Water Rates**

Year	Class A		Class B				
	Acres	Total Charge	Toll Charge	Property Valuation	Mil Rate	Number of Payers	Charges Per Payer
	(acres)	(\$/acre)	(\$/acre)	(\$ million)	(Mils)		(\$)
1975	54,089	10.16		n.a.	9.18	n.a.	n.a.
1976	53,872	9.45		n.a.	8.03	n.a.	n.a.
1977	53,729	9.90		n.a.	7.10	n.a.	n.a.
1978	53,330	13.40		n.a.	7.17	n.a.	n.a.
1979	59,467	14.41		259	10.03	41,248	63
1980	58,596	17.77		344	12.45	42,763	100
1981	58,249	19.75		376	12.68	44,113	108
1982	58,034	19.75		428	9.82	45,385	93
1983	57,732	21.12		451	9.37	46,857	90
1984	57,621	25.85		451	11.15	48,142	104
1985	57,489	25.88		480	10.46	49,320	102
1986	57,396	31.34	14.66	845	3.98	51,128	66
1987	52,176	33.85	18.27	887	3.36	53,008	56
1988	51,880	22.49	0.51	1,037	4.06	56,182	75
1989	51,780	29.71	6.54	1,032	4.87	57,841	87

Notes:

Toll charges for just those acres irrigated were levied starting in 1986. These are included in the total charge.

n.a. denotes "not available."

Sources:

Data for 1975 through 1977 are from Middle Rio Grande Conservancy District Development Statement, Middle Rio Grande Conservancy District, 1980, p. III-1 (Table 1) and p. III-2 (Table 2). Data for succeeding years are from district records.

minds of some district members, this has placed increasing economic pressures on the remaining farmers, potentially forcing more out of agriculture.

Until 1986, all of the agricultural water rate (capital and operation and maintenance) was levied on a per-acre basis, regardless of how much water was delivered. Hence, the rate structure provided little incentive to conserve water. In 1986 and 1987, "toll charges" of \$14.66 per acre and \$18.27 per acre were levied on just those acres actually taking water. The result was a dramatic decrease of more than 5,000 Class A acres between 1986 and 1987 (refer to Table 1). As a consequence, the district reduced the toll charges to much smaller amounts in succeeding years. While this episode illustrates the conservation potential of higher agricultural water charges, it also illustrates the dilemma of the district under its current requirement that Class A agricultural ratepayers share 25% of the district's costs--commodity charges could force additional acreage out of production. One way for the district to avoid the drawbacks of its current rate structure would be to adopt a rate structure under which applicants desiring to transfer out of Class A status are required to prepay their Class A assessments for past capital charges, as well as the expected value of their pro-rata share of operation and maintenance costs.

The principal potential for water transfers from the Middle Rio Grande Conservancy District is to the city of Albuquerque and its suburbs. A number of small transfers of privately owned surface water from within the boundaries of the district have taken place. However, for a number of reasons, explored more fully below, no such transfers of district rights have taken place to date, even though a considerable amount of district acreage in the

Albuquerque area is no longer under cultivation.

Water augmentation from the Colorado River--the San Juan Chama Project

The San Juan Chama project was conceived of as a way to allow New Mexico to utilize a portion of its share of water under the Upper Colorado River Basin Compact in that part of the state with the greatest population and water demands. This project diverts water in southwestern Colorado from the upper tributaries of the San Juan River (which in turn is a tributary of the Colorado River) through a series of tunnels under the Continental Divide into the upper tributaries of the Rio Chama, a tributary of the Rio Grande (see Figure 2). The project was authorized in 1962 (P.L. 87-483) and was constructed between 1964 and 1971. In addition to the required tunnels and diversions dams, the project involved construction of one new storage reservoir on the Rio Chama, Heron Reservoir, and enlarging the outlet works of the existing El Vado Reservoir downstream. The project is authorized to divert a maximum of 270,000 acre-feet in any one year, limited to a total of 1,350,000 acre-feet in any consecutive ten years. The firm yield of the project is estimated at 96,200 acre-feet.

The project was designed to provide supplemental water supplies to a number of cities and irrigation entities in the Rio Grande Valley (see Table 2). The major contractors are the city of Albuquerque (48,200 acre-feet) and the Middle Rio Grande Conservancy District (20,900 acre-feet). The contracted water deliveries from the project total 79,150 acre-feet, with an additional 5,000 acre-feet authorized to maintain a recreation pool in Cochiti Reservoir. The Bureau of Reclamation is in the process of contracting for the remaining 12,050 acre-feet of San Juan Chama Project

Table 2. Allocation of Water from the San Juan-Chama Project

Water use	Quantity
	(acre-feet)
Contractor	
Albuquerque	48,200
Middle Rio Grande Conservancy Dist.	20,900
Santa Fe	5,605
Dept. of Energy	1,200
Pojoaque Valley Irrigation Dist.	1,030
Espanola	1,000
Taos	400
Los Lunas	400
Bernalillo	400
Twining	15
Total contracts	79,150
Cochiti Reservoir Recreation Pool	5,000
Total Commitments	84,150
Uncontracted	12,050
Total firm yield	96,200

Source: Bureau of Reclamation records, Albuquerque, New Mexico

water. As explained in more detail below, not all of this water is required by the current contractors in the immediate future, and so there is interest in leasing these supplies.

The legal setting

"Groundwater law and management in the Albuquerque area

New Mexico has taken several steps to ensure rationale use of its groundwater resources. Under New Mexico law, the State Engineer has the authority to "declare" a groundwater basin, after which time he can regulate pumping. To date, 32 groundwater basins have been declared covering well over 50% of the state (see Figure 3). The largest of these is the Rio Grande Basin, which was declared in 1956 and covers 26,209 square miles extending from the Colorado state line to the Elephant Butte Reservoir.

Given the porous nature of the sandy soils in the Rio Grande Valley near Albuquerque, the aquifers of the surrounding valley are considered to be intimately connected to the flow of the river. Under procedures worked out by the state, well pumping rates are evaluated by the impact they are expected to have on the flow of the Rio Grande. Wells near the river (within 1 mile) are judged to have an immediate effect, whereas wells several miles from the river would not affect its flow for several decades.

Albuquerque's water delivery system depends exclusively on high quality groundwater. The city has more than 100 wells within the city boundaries and located at varying distances from the Rio Grande. Spreading the wells out over the city also has the advantage of keeping the necessary size of delivery lines small (compared with having one central supply point). Locating wells farther from the river has two other

advantages: (1) it will be much longer before they have an impact on the flows of the Rio Grande and (2) they can provide water pressure to the higher neighborhoods farther from the river. Albuquerque is taking advantage of this arrangement by essentially mining its groundwater, especially groundwater that is at some distance from the river. As the effects of this mining on the river gradually increase, they will be offset by the city utilizing its surface water supplies from the San Juan Chama project. In the meantime, the city has interest in leasing its San Juan Chama project supplies (the city currently has no means to treat and utilize surface water supplies from the Rio Grande River in its urban delivery system).

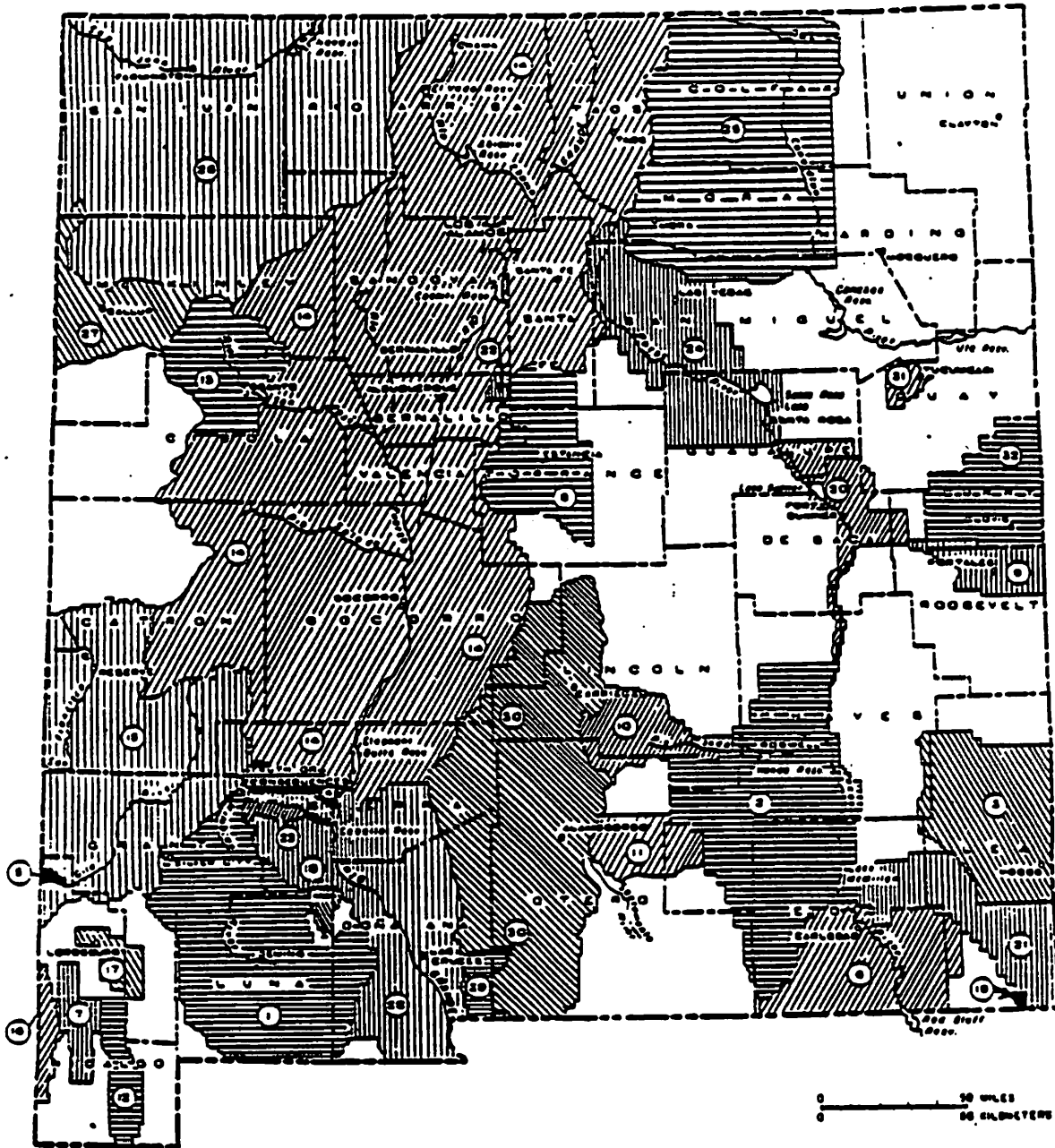
Leasing of San Juan Chama Project water

The potential for water transfers in the middle Rio Grande area around Albuquerque arises principally from two sources: (1) the surplus water brought into the Rio Grande Valley by the San Juan Chama Project and (2) the growing urban water demands of Albuquerque and the resulting pressure put on the city's groundwater supplies.

Leases by the City of Albuquerque to local entities

The city of Albuquerque has had to forgo very substantial shares of its San Juan Chama project water because it had no means for using the water or for storing it. As a result the city attempts to lease its surplus San Juan Chama Project water. Currently, the city has annual sales contracts for leasing from 1,058 to 10,824 acre-feet of its San Juan Chama Project water, where the quantity varies depending on the request of the subcontractor. The city's leasing price, \$40.70 per acre-foot, is set at the city's contract cost to the Bureau of Reclamation, plus 5% to cover city administrative expenses. A total of

Figure 3



DECLARED UNDERGROUND WATER BASINS IN NEW MEXICO

BASIN	AREA IN SQUARE MI.
1. MINERES VALLEY	4.378
2. ROSWELL	4.281
3. LEA COUNTY	2.180
4. HOT SPRINGS	284
5. VIRGEN VALLEY	18
6. CARLSBAD	1,068
7. ANIMAS	428
8. ESTANCIA	1,734
9. PORTALES	638
10. MONOCO	801
11. PENABECO	723
12. PLAYAS VALLEY	818
13. BLUEWATER	1,318
14. RIO GRANDE	28,208
15. GILA-SAN FRANCISCO	8,888

BASIN	AREA IN SQUARE MI.
16. SAN SIMON	383
17. LONGBOURNE VALLEY	328
18. NUTT-HOCKETT	125
19. JAL	18
20. FORT SUMNER	1,088
21. CAPITAN	1,880
22. SANDIA	73
23. LAS ANIMAS CREEK	131
24. UPPER PEGOS	3,708
25. CANADIAN RIVER	8,828
26. SAN JUAN	8,727
27. GALLUP	1,438
28. LOWER RIO GRANDE	3888
29. NUECO	388
30. TULAROSA	8,070
31. TUCUMCARI	177
32. CURRY COUNTY	1,350
	88,073

29 contracts have been signed with a variety of entities, such as car washes, mobile home parks, nearby subdivisions, and sod farms. The average amount of water taken under the contracts with the city would be 36.47 acre-feet if the minimum amounts were taken and 373 acre-feet if the maximum amounts were taken. Most of the contracts range in size from 3 to 100 acre-feet. However, the two largest agreements are for up to 6,000 acre-feet for the New Mexico Department of Natural Resources and from 500 to 2,000 acre-feet for an association of winegrowers near Elephant Butte Reservoir.

Leases for recreational purposes between Albuquerque and the New Mexico Department of Natural Resources

The lease for up to 6,000 acre-feet of San Juan Chama Project Water to the state Department of Natural Resource stems from an earlier arrangement. There is considerable use of the Elephant Butte Reservoir for recreational boating. But in one previous year, the reservoir level had fallen as low as 3,000 acre-feet (the reservoir's total storage capacity is 2.2 million acre-feet). Furthermore, under the Rio Grande Compact any water spilled from Elephant Butte Reservoir is considered first to be San Juan Chama project water (before any water from the Rio Grande Basin is spilled). In order to be able to use at least some San Juan Chama project water for recreational purposes in Elephant Butte Reservoir, federal legislation passed in 1974 (P.L. 93-493) authorizing storage of up to 50,000 acre-feet of San Juan-Chama Project water in Elephant Butte Reservoir for recreational purposes. However, this recreation pool was authorized only for ten years, ending in 1985. In order to extend the recreational use in Elephant Butte and to prevent extremely low lake levels, the state reached an agreement with Albuquerque to maintain a recreational pool in the reservoir by using up to 6,000 acre-

feet of Albuquerque's San Juan-Chama Project water each year. The state made a one-time payment of \$2.3 million for using water through the year 2010.

Lease between Albuquerque and winegrowers

Albuquerque also has agreements to provide some of its San Juan-Chama Project water to winegrowers who have about 1,000 acres of grapes under cultivation near Engle, New Mexico (east of Elephant Butte Reservoir). Under the initial agreement, dating from 1981, the now defunct French Winegrowers Association purchased 400 acre-feet in 1982, 1,000 acre-feet in 1983, and 2,000 acre-feet in 1984. In subsequent years the group was to purchase increasing amounts up to 16,000 acre-feet per year in years 15 through 25 (1996 through 2006). However, this agreement was terminated at the request of the Association in 1986 because the demand for water had fallen far behind the amount under contract.

The water purchased, but unused, under the 1981 agreement--some 2,720 acre-feet--was inherited in equal parts by two successor agreements, one with Zanchi and Son, Ltd. and the other with the Sierra Water Users' Association. Most of the water supplied to these two entities since 1986 has been from this inherited amount. Under the 1986 agreement with Zanchi and Son, Ltd., the growers are entitled to at least 500 acre-feet and no more than 2000 acre-feet, beginning in 1990 and continuing until 2010. In a similar agreement, also signed in 1986, the Sierra Water Users' Association is entitled to purchase at least 600 acre-feet and no more than 3,000 acre-feet annually, beginning in 1988 and ending in 2010. The maximum total under these agreements is 5,000 acre-feet, considerably less than the 16,000 acre-foot maximum under the earlier agreement with the French Winegrowers

Association. This amount was reduced still further in 1988 when, at the request of the Sierra Water Users' Association, their agreement was terminated because of lack of demand. The city expects to enter into a revised agreement with Sierra. As with its other San Juan-Chama Project water agreements, the city recovers its costs for acquiring the water, plus 5% for administrative costs.

The growers take delivery of the city's water released to Elephant Butte Reservoir by means of two pipelines, one owned by Zanchi and Son, Ltd. and the other by the Sierra Water Users' Association. The distribution systems of the two pipelines are interconnected. The winegrowers paid the costs of constructing the pipelines, as well as paying the pumping and maintenance costs. The Zanchi pipeline was constructed in 1983 at a cost of \$1.4 million. It lifts water about 600 acre-feet from Elephant Butte Reservoir. Operation and maintenance costs, excluding depreciation, are estimated at \$105 per acre-foot. The Sierra Water Users' Association pipeline was constructed in 1986 at a cost of \$880,000. Operation and maintenance costs are estimated at \$140 per acre-foot. Taking into account the amortized cost of the pipelines, the total cost of water to the winegrowers, based on placing 1,000 acres under cultivation, is estimated at more than \$400 per acre-foot. Based on experience to date, the winegrowers estimate that their total water deliveries will be less than one acre-foot per acre in a normal year. Water is delivered to individual vines by drip irrigation, with 700 to 1,000 vines planted per acre.

A controversy has arisen between the Bureau of Reclamation on the one hand and the City of Albuquerque and the winegrowers on the other. The Reclamation Act of 1902 and succeeding acts up through the Reclamation Reform Act of 1982, place limits on the amount of land that can be irrigated

with water provided by the interest-free repayment provision in Reclamation law. The 1902 act limited land ownership to 160 acres. The 1982 act broadened the entitlement considerably: subsidized water can be delivered to land owned up to 960 acres, and a higher "full cost" rate is to be paid for water delivered to land leased above the ownership entitlement. The 1982 act also prohibits non-resident aliens from qualifying as recipients of water.

The city of Albuquerque's contract to store up to 50,000 acre-feet of San Juan Chama project water in the Elephant Butte Reservoir makes the acreage and ownership limitations of Reclamation law applicable to any subsequent use of the stored water for irrigation. Therefore, the Bureau of Reclamation asserts that it has both the authority and the responsibility to regulate the deliveries to the winegrowers--as to the acreages, the requirement to pay "full cost," and citizenship status (the requirements include filing forms certifying the acreage held, etc.). The city counters that it is taking delivery of the water as municipal and industrial water, not agricultural water, and is paying a municipal and industrial rate. Therefore, they contend, the question of limitations applying to subsidized agricultural water do not apply. To date, the Bureau of Reclamation, already under criticism for not uniformly applying acreage limitation standards (for a history of the acreage limitation controversy, see Wahl, 1989, pp. 69-106), has sought to hold the city to the requirements of the Elephant Butte storage contract and the Reclamation Reform Act. However, in order to accommodate the parties involved, the Bureau has suggested to Albuquerque that the city has other non-Bureau water stored in Elephant Butte which it could substitute under its agreement with the winegrowers and to which acreage limitation would not apply. To date,

however, the city has pursued its point with the Bureau as a matter of principle.

Whatever the technical requirements of the law, the Bureau's regulations for administering them, and the provisions of the city's storage contract, there does appear to be a broader question: should cities be restricted in transferring water to agricultural entities if they already pay municipal and industrial rates? The principal source of subsidy accorded to irrigation water users under Reclamation law is interest-free repayment. Under the "full cost" formula of the Reclamation Reform Act, interest is charged on lands over the 960-acre limit from 1982 forward, but no interest is charged for the years that have elapsed since project construction. By contrast, for municipal and industrial water, interest is amortized from project construction, including interest during the years of construction. Therefore, one would expect that the rates charged by the Bureau for municipal and industrial use to Albuquerque and passed through to the growers could exceed even the "full cost" rates under the Reclamation Reform Act. However, the municipal and industrial rate might be less than the "full cost" rate if the interest rates applicable to San Juan Chama Project municipal and industrial water were significantly lower than the interest rates applicable under the Reclamation Reform Act.²

The purpose of the Reclamation Reform Act was to limit the distribution of subsidized irrigation water to any one entity. There would appear to be no similar social purpose to placing limits on water which is already sold to municipal suppliers since the interest-free subsidy does not apply to them. Indeed, there is no legislative history in Reclamation law placing similar limits on the distribution of water for municipal and industrial purposes.

If the Bureau of Reclamation cannot work out an acceptable arrangement for supplying water at current San Juan Chama municipal and industrial rates to the winegrowers, it should consider amending its Elephant Butte storage contract with Albuquerque. If necessary the Bureau should also modify its Reclamation Reform Act regulations, or go to Congress to clarify whether it intended the Reclamation Reform Act provisions to apply in such cases. Clarifying this matter could prove important in other water transfer situations.

The potential market for surface water rights from the Middle Rio Grande Water Conservancy District

When the groundwater basin around Albuquerque was "declared" (put under regulation) by the State Engineer in 1956, the city was granted consumptive use rights from the Rio Grande River equal to its then current rate of groundwater pumping, less 50% as an estimate of the return flows to the river. The result was a right of about 18,000 acre-feet per year. Pumping above this amount will eventually require the city to utilize surface water rights to offset the effects of pumping on reducing flows in the Rio Grande. The principal surface rights that the city will devote to this purpose are its contractual rights to 48,200 acre-feet of San Juan Chama Project water. At the current rates of consumption and projected population growth, the city does not expect to need any of its San Juan Chama project water until the mid 1990s and does not expect to need the total of those supplies until 2030. Beyond that date, however, the city plans to utilize other surface water rights that it acquires during the interim.

During the 1960s and 1970s the city acquired 797 acre-feet of water rights that were incidental to land acquisitions. However, in 1982, the city adopted a more

general water rights acquisition policy: the city will purchase water rights at \$1000 per acre-foot when they are offered to the city. The quantities are measured as consumptive use, and the seller must bear the costs of getting the transfer approved by the state engineer. Under the program, the city has acquired some groundwater rights, but most of its acquisitions have been privately owned surface water rights from within the boundaries of the Middle Rio Grande Conservancy District. From 1982 through 1989, the city obtained 1,625 acre-feet, or less than 200 acre-feet per year on average (see Table 3). When the city obtains surface rights, it files for the right to convert them to groundwater rights--adding them to the pumping capacity it has at its existing wells. The city is allowed to convert the consumptive use portion of the right, taken as 2.1 acre-feet per acre.³ From 1 to 6 tracts have been acquired each year, with the average size being about 33 acres, yielding an average of 70 acre-feet of consumptive use per acquisition. To date, the city has offered a free lease-back of these rights for 10 years and expects to extend these leases until such time as it needs the water.

Albuquerque has appropriated a total of \$240,000 in funds for water rights acquisitions since 1982. In addition, the \$2.3 million that the city received from the state for maintenance of a recreation pool in Elephant Butte Reservoir and up to \$250,000 per year from any leases of San Juan Chama Project water is authorized for water rights acquisitions. Since the total amount of San Juan Chama Project water leased has been small, the city may plan to devote additional funds to water rights acquisitions in the future.

The city has some competitors for the surface rights it acquires. These include Albuquerque Utilities (serving the Rio Rancho development), New Mexico Utilities

(serving Paradise Hills and parts of the city of Albuquerque), Sandia Peak Tram (serving Sandia Heights), and the Valley Improvements Association (serving Rio Communities and areas between Los Lunas and Belen). In addition, Belen, Los Lunas, and Socorro require developers to either acquire water rights or make payments as a conditions of annexation and subdivision approval.

The city now estimates that its standing acquisition price of \$1000 per acre-foot is toward the lower end of the value of comparable sales in the area. In fact, since the price has stayed the same since 1982, it has actually declined in real terms (no upward adjustments were made for inflation). The city has been outbid on some water rights, with several other offers ranging up to \$1,200 per acre-foot and one up to \$1,695. However, the city continues to be made offers at its \$1000-per-acre-foot price, and feels that it will continue to be successful in attracting additional sellers. Unlike some of the other purchasers (new housing developments outside the city), the city does not need to place its water to use in the near future; leases them back to the sellers at no cost; and can afford to acquire rights slowly.

It should be emphasized that these transfers of rights to Albuquerque and its suburbs are for private water rights and not the rights of the Middle Rio Grande Conservancy District. More explanation is warranted. The State Engineer's Office was created in 1907, and anyone verifying beneficial use of water before that date is considered to have a valid water right (N.M. Stat. Ann. § 72-1-3). Furthermore, the 1927 enabling statute for irrigation districts provided that nothing in the statute was to affect prior vested rights (N.M. Stat. Ann. § 73-14-47(C)). Therefore, no consent of the Middle Rio Grande District is required for transfer of rights that date from before 1927.

Table 3. Surface Water Rights Purchased by Albuquerque

Year	Purchased ac ft	Leased Back ac ft	Number of Tracts	Average Size ac ft
1982	94.57	0	1	94.57
1983	25.81	0	1	25.81
1984	173.09	173.09	6	28.85
1985	112.75	100.17	2	56.38
1986	205.39	194.89	4	51.35
1987	57.95	57.95	3	19.32
1988	614.42	614.42	4	153.61
1989	341.33	341.33	2	170.67
Total	1625.31	1481.85	23	
Average				70.67

Source: City of Albuquerque files.

Notes:

1. All purchases were at \$1000 per acre-foot for 2.1 acre-feet of consumptive use per acre.

It is estimated that about 30,000 acres of the acres in the district presently irrigated have such rights.

When an individual seeks to sell private (pre-1927) rights, the state makes an evaluation of whether there was beneficial use of water before 1927 and whether there is adequate evidence that the rights have been in continuous use since that time. This is accomplished by utilizing a map of land use in the area dating from 1917, as well as a 1926-27 survey map when the district was formed. Subsequent record points are available from 1936-37 maps, and aerial photographs from 1947, 1955, and 1963. The water use figures commonly assigned to such rights are 3.0 acre-feet per acre of diversion, with 2.1 acre-feet per acre of consumptive use.

When it was formed, the Middle Rio Grande Irrigation District filed for the right to store water in El Vado Reservoir and divert water to irrigate up to 123,000 acres -- the amount thought to represent the maximum irrigable acreage in the valley (with an estimated diversion of 3 acre-feet per acre). A subsequent permit allowed the district to change its points of diversions to consolidate hundreds of prior diversion points. Several factors complicate evaluation of just what quantity of water rights the district has.

(1) Rights have never been perfected under the district's permits. Estimates are that since 1903, no more than a maximum of 80,000 acres has been irrigated within the district.

(2) Furthermore, under the doctrine of prior appropriation, an appropriator is subject to forfeiting rights if he does not place them to beneficial use for some period of time. The irrigated acreage in the district has generally, with about 54,000 acres irrigated in

1988 (this includes the estimated 30,000 acres with privately vested rights).⁴

(3) A single landowner may own a parcel that contains both pre-1927 private rights and district rights. If he subdivides and sells the land for urban use, he may sell his private rights. But the district has had no past practice of simultaneously attempting to sell its rights associated with the land.

(4) Under New Mexico law, water applicants can apply for an extension of time to place the water to beneficial use, provided they show diligence in doing so. In 1963 the district assigned its permit to the Bureau of Reclamation, which has subsequently made applications for extensions of time and the extensions have been granted.

(5) The State Engineer at one time took the position that the district could not sell or lease any of its water entitlements until it showed that it could first meet the needs on all of its lands. Since irrigation on district lands never developed to the extent envisioned in its original permit, there was no defined date by which this need could ever be demonstrated. More recently, however, the State Engineer appears to have modified his position somewhat--the district must show that it can meet the needs of its private water owners, as well as those of the Indian tribes which it serves, before it can sell or lease water.

In conclusion, it is not known just what amount of water the district is entitled to under New Mexico law. The State Engineer's Office has indicated that it would look favorably upon attempts by the district to assess its current uses and to solidify rights applied for in its original permit, including by means of lease or transfer to other parties. The district can probably do this for water which has not been utilized for some time. Particularly relevant in this regard is a 1964

statute (Act of June 1, 1965, N.M. Stat. Ann. § 72.5.8) under which an appropriator must be given notice of potential forfeiture of rights. After that time, the appropriator has one year to place the water in use. No such notice has yet been given to the District. This suggests that the acreage irrigated by the district in the 1961-64 period, as well as any acreage continuously irrigated since that time, is relatively secure under state law. (According to state estimates, about 49,600 acres were irrigated in 1965 and 57,000 acres in 1988.)

For several reasons, the city of Albuquerque is not presently trying to acquire water rights from the Middle Rio Grande Conservancy District. The city does not need to place additional water rights to use until after 2030, and it is acquiring some private water rights for this purpose. There is also considerable uncertainty over what procedures would apply to the acquisition of district rights, thereby lowering their value relative to private rights. Nonetheless, this discussion suggests that the district has a valuable asset in its water; that it should move to evaluate what its current and historical uses have been (at least since 1961); and that it should work with the state to determine what quantity of rights it can perfect through either continued irrigation or through leasing or sale.

The potential for transfers of water from the Rio Grande Project in New Mexico and Texas

The Rio Grande project supplies water to irrigation districts in two states, including the Elephant Butte Irrigation District in New Mexico and the El Paso County Water Improvement District No. 1 (refer to Figure 1). The Elephant Butte Irrigation District contains lands to the north, west, and south of Las Cruces, New Mexico. The El Paso County Water Improvement District No. 1 lies just south of the city of El Paso, Texas

(which also borders the river). Las Cruces, could develop an interest in acquiring surface water from the project. However, the principal interest in transferring irrigation water from the Rio Grande Project has been from the growing urban area around El Paso, Texas. Two agreements have been executed in the El Paso area -- one in 1962 and another in 1988. The potential for water transfers within this project is complicated by controversy over interstate transport of groundwater.

The El Paso controversy over interstate transfer of water

Reactions to some of the potential transfers of federally supplied surface water in this area will be colored by recent controversies concerning the desire of El Paso, Texas, to utilize groundwater pumping from wells located in New Mexico. (The material in this subsection is based upon Shupe and Folk-Williams, 1988, p. 25-26). El Paso, a city of a half-million people, diverts about 100,000 acre-feet of water annually from the Rio Grande River. About half of this amount is returned to the river after treatment. Although El Paso gets some water through transfers from landowners in the Rio Grande Project (described below), it relies primarily on groundwater pumping from the Hueco Bolson aquifer underlying Texas and New Mexico. The aquifer is estimated to contain 30 million acre-feet of fresh water, 10 million of which underlie Texas. El Paso's annual withdrawals exceed the aquifer's annual recharge rate by a factor of 20. The city estimates that it will deplete the aquifer in about 50 years, with serious water quality problems occurring before that time. The city estimates that as early as 1995, pumping from the aquifer will be inadequate to meet peak summer demand. In light of these difficulties, the city has initiated a number of water conservation and aquifer recharge activities.

In addition, El Paso initiated the appropriation of groundwater below some lands in New Mexico. In 1980, the city went to court claiming that New Mexico's ban on exporting water to other states was illegal. El Paso also filed 326 permit applications for wells in New Mexico, with a total annual pumping rate of 296,000 acre-feet. In January 1983, the federal district court ruled that New Mexico's ban on exports of water was unconstitutional, being in violation of the interstate commerce clause. In February 1983, the New Mexico legislature repealed its export ban, but enacted a new statute regulating the appropriation of water for out-of-state use. Under this statute, the State Engineer must find that the diversion "is not contrary to the conservation of water within the state and is not otherwise detrimental to the public welfare of the citizens of New Mexico" (N.M. Stat. Ann., § 72-12B-1). In 1984, the New Mexico legislature also placed a two-year moratorium on the issuance of new well permits that could affect the flow of the Rio Grande River below Elephant Butte Reservoir. In an August 1984 ruling, the federal district court generally upheld the New Mexico statute regulating out-of-state appropriations, but ruled that the moratorium was illegal. In December 1987, culminating a series of hearings, the New Mexico state engineer denied El Paso's permits on the basis that the city had adequate water for the next 40 years and that New Mexico law did not allow appropriations for needs beyond 40 years (N.M. Stat. Ann. § 72-1-9B). Resolution of these legal issues is still pending.

Given the delays and controversies surrounding the appropriation of additional groundwater, it is not surprising to find that El Paso has interest in acquiring surface water that might be available from the federal Rio Grande Project.

The 1962 water transfer agreement with El Paso

The El Paso County Water Improvement District No. 1 contains some 69,000 acres. It covers its costs principally through an assessment of \$28 per acre (such assessments comprise 90% of district revenues). This assessment entitles landowners to up to 3.5 acre-feet of water per acre, or whatever pro rata amount is available from the project for a given year.

Prior to 1962, the city of El Paso had purchased some 2,000 acres in the El Paso County Water Improvement District No. 1 for the purpose of dedicating the rights to municipal and industrial use. However, in 1962, the city engaged in a major new agreement with the district for the acquisition of water supplies. This agreement is notable for several of its features. Principal among these is that it allowed the city to negotiate with individual landowners, with the district playing the role of assuring that district facilities and the interests of other district landowners were protected. Unlike the earlier land purchases, the 1962 agreement involved the assignment of water deliveries, without the land changing ownership.

More specifically, the agreement allowed the city to reach agreements with landowners to transfer their project water supplies to the city for a minimum period of 25 years. These transfer agreements were subject to several restrictions. They were limited to 2 acres or less per landowner, unless approved by the district, and they were irrevocable. The assignments had to be recorded with the El Paso County clerk and were limited to lands lying within both city and district boundaries. The city was obligated to pay all assessments, taxes, and other charges levied by the district on the lands from which the water was transferred. Water deliveries were to be made only during

the irrigation season, and the city was responsible for installing its own diversion works and measurement devices, subject to approval of the federal project manager. The city was free to utilize the delivered water anywhere within its jurisdiction for municipal and industrial uses (but not for lease or resale to agricultural users) and could assign the rights to the water deliveries with the permission of the Bureau's contracting officer.

One interesting feature of the agreement concerns the protection afforded to community ditches within the district. The maintenance of these ditches is not the responsibility of the district. However, the agreement requires the city to participate in the operation and maintenance of such ditches, including emergency repairs, on the basis of the pro rata portion of acreage assigned to the city. In any cases where the water deliveries for all lands along the ditch are transferred to the city, the city is responsible for re-establishing a ditch at the end of the lease term.

Under the 1962 agreement, the city executed agreements to obtain about 20,000 acre-feet of water by assignment. The Bureau contract establishing the agreement references, among other acts, the authority of the Act of February 25, 1920 (41 Stat. 451; 43 U.S.C.A. 521). The act provides that

the Secretary of the Interior ... is hereby authorized to enter into contract to supply water from any project irrigation system for other purposes than irrigation, upon such conditions of delivery, use, and payment as he may deem proper, provided (1) that the approval of such contract by the water users' association or associations shall have been first obtained; (2) that no such contract shall be

entered into except upon a showing that there is no other practicable source of water supply for the purpose; (3) that no water shall be furnished for the uses aforesaid if the delivery of such water shall be detrimental to the water service for such irrigation project or to the rights of any prior appropriators.

Among the recitals to the contract are that it will be in accordance with the provisions of the 1920 act and that "the delivery of water to the City ... will not be detrimental to the water service for the project or to the rights of any prior appropriator."

The 1988 water transfer agreement in the El Paso area

In November 1988, the El Paso County Water Improvement District No. 1 entered into a somewhat similar agreement to respond to the increasing amount of land being subdivided both inside and outside the city limits of El Paso. For this purpose a new authority was created, the El Paso County Lower Valley Water District Authority, with the power to sell water outside of the El Paso city limits, as well as to El Paso. This water transfer agreement is signed by the irrigation district and the two urban suppliers, as well as the Bureau of Reclamation. Under this agreement, which is similar in most respects to the agreement with the City of El Paso, discussed above, the Authority will seek assignment of rights to project water from individual landowners. This agreement is restricted to tracts of 2 acres per owner, unless specifically approved by the district. The initial term of assignments will be for 75 years and will be irrevocable during that term. The assignments are automatically renewable after

that time, unless notice is given six months prior to expiration. Water may be delivered by the Authority anywhere within the boundaries of El Paso County, Texas. One interesting feature of this more recent agreement is that it virtually prohibits the Authority from purchasing lands in the district, limiting purchases or lease of lands to 300 acres. This contract is held as subservient to the prior 1962 agreement with the city of El Paso. The cooperation among the two urban water purveyors is indicated by the fact that the 1982 agreement allows the city of El Paso or its Public Service Board to utilize all of part of the water obtained by the Authority.

The Authority does not have to pay the Bureau of Reclamation any higher rate for the water transferred from the irrigation district (which would normally be the case under Reclamation law). The reason is that, in this case, the irrigation district has already paid off its entire repayment obligation and essentially has title to the water (see Wahl, 1989, pp. 173-176).

Role of the Bureau of Reclamation

The Bureau of Reclamation did not initially act as a facilitator in the 1988 agreement. It took the irrigation district, El Paso, and the Authority about 3 months to reach agreement among themselves on the transfer. However, after 16 months of discussions with the Bureau, the entities had still not obtained permission to proceed. The Bureau raised doubts about the transfer since the project was authorized as an irrigation project. The plight of those living in outlying areas needing urban water supplies became an issue of public concern. The district was able to deliver irrigation water, but not potable water to households. The El Paso Public Service Board was unwilling to take assignment of water for domestic delivery to areas outside the city limits. Eventually, the

question of the Bureau's permission came to the attention of officials in the Department of the Interior. This resulted in a visit to the area by the Assistant Secretary for Water and Science and the Commissioner of Reclamation. Within 30 days the agreement with the El Paso County Lower Valley Water District Authority was approved by the Bureau.

Potential transfers involving the Elephant Butte Irrigation District

As noted previously, the Elephant Butte Irrigation District in New Mexico borders the town of Las Cruces, as well as being upstream of El Paso, Texas. Clearly, it is a potential source of water for each of these cities. One indicator of the district's interest in potential transfers is its refusal to sign the 1988 agreement between the El Paso County Water Improvement District No. 1, the Bureau of Reclamation, and the El Paso County Lower Valley Water District Authority. This refusal was not based on the district's opposition to that or similar transfers. To the contrary, the district was supportive of the transfer. The source of the district's opposition to the agreement was the inclusion of the Bureau of Reclamation as a signatory. A digression is necessary to explain this point.

Both the Elephant Butte District and the El Paso County Water Improvement Districts have completed their repayment obligations for project construction to the U.S. (The El Paso district also paid off a separate loan through the Bureau of Reclamation's 1987-88 program allowing prepayment of outstanding loan balances.) This means that both districts are exempt from the acreage limitation provisions of Reclamation law. Accordingly, farming operations in these districts are not subject to a 960-acre limitation on ownership or the requirement to pay statutory "full cost" on

water delivered to farming operations having leased land above this limit. Another implication of their paid-out status is that the project water rights for irrigation should transfer to the district (see Wahl, 1989, pp. 173-176). Particularly because of this latter point, the Elephant Butte District counselled the El Paso County district that it was not necessary to make the Bureau a signatory to the contract: that to do so implied the Bureau still had some contractual or ownership interest in the water. The Bureau had also asked the Elephant Butte District, as a participating district in the project, to also be a signatory. Elephant Butte declined.

Its refusal probably indicates that the district has examined its own posture and legal standing with respect to water transfers in some detail. In the future, the district could be approached by either Las Cruces or by El Paso for assignment of some water deliveries or water rights. By its recent action, the district is probably seeking to clarify its clear entitlement to water, without the need for Bureau intervention.

The Elephant Butte District has demonstrated its desire for greater autonomy in other ways as well. At various times, the district has approached the Bureau regarding taking title to project facilities.⁵ The Bureau has resisted these requests, principally on the rationale of its responsibility for meeting the international treaty obligations to Mexico.

Conclusions and recommendations

As noted at the outset, several institutional measures have been taken, in addition to structural ones, to more carefully and efficiently utilize the limited water supplies of the Rio Grande Valley. Prominent among the institutional measures are the Rio Grande Compact and New Mexico's procedures for regulating the use of groundwater. However, it appears that much

more could be done to create incentives for more efficient utilization of surface water supplies within New Mexico. Surface water rights in the middle Rio Grande area are not adjudicated. The Middle Rio Grande Conservancy District evidently generally keeps its conveyance ditches full so that its farmers can take delivery at any time, a practice which results in some unknown amount of evaporation and seepage losses. Also, although there is a system in place for transfers of private water rights to Albuquerque, there is no similar system in place for the transfer of district water, in spite of the fact that substantial land areas in the district near Albuquerque have been converted to urban or suburban use.

1. **Procedures should be established regarding voluntary transfers of water from the Middle Rio Grande Conservancy District to growing urban entities.**

Establishing such a system would require several steps.

a. **The State and the District need to clarify that the district has the opportunity to solidify its surface water rights on converted land through lease or sale to the City of Albuquerque or other municipal suppliers. As noted, both the state water code and current state water rights administrators appear to provide some flexibility to the district in this regard. Delaying an attempt to clarify what opportunities are available to the district threatens to make the problem worse--more land will shift away from agricultural use, and the associated water rights will have been unutilized for a longer period of time.**

b. **The District needs to quantify its water rights in the Albuquerque area--its historic uses of irrigation water, its current irrigated usage, and the amount of land no longer using district surface water. The district has made some limited attempts at**

doing so in the recent past, but has not followed through. As noted in point a, delay is likely to exacerbate the problem. The district may feel that such an undertaking will be expensive, and its financial resources are limited. However, the water resources owned by the district are potentially salable. The proceeds from lease or sale could provide considerable revenues to the district, thereby more than covering the costs of hydrologic investigations. If the district feels itself unable to undertake this quantification process, it should consider entering into a cooperative agreement with the City of Albuquerque. The city would be the chief benefactor and therefore would be a likely source of funds for the quantification process, with the cost to be credited against any future purchases the city makes of the district's water.

Quantification of the district's water rights in the Albuquerque area and establishing a transfer process would appear to benefit the state generally, as well as the district, Albuquerque, and the surrounding suburban water companies. Urban conversion of lands in the Middle Rio Grande Conservancy District leaves more flows in the Rio Grande, which goes against the state's general policy of making the greatest use of water it is allowed under the Rio Grande Compact.

c. The district should require lands moving from Class A assessment to Class B to prepay their allocation of irrigation costs, or devise some other method to avoid the increasingly high assessments on the fewer remaining irrigation water users in Class A. As discussed above, due to urbanization, the proportion of district lands subject to Class A assessments (irrigated operations of 5 acres or more) has been gradually declining. However, district rules require that Class A landowners pay a fixed proportion (25%) of the total assessments. It does appear equitable that

irrigation users should pay for irrigation facilities. However, it does not appear equitable that lands that are leaving the agricultural category should be able to escape the obligations that were incurred on their behalf. One remedy would to require prepayment of their allocation of irrigation costs, both capital costs and sufficient operation and maintenance costs to avoid increasing the burden on the remaining Class A ratepayers. This prepayment could be credited against the Class B assessments of the converted land parcel.

d. The district should establish a requirement, when either private rights or surface rights are sold, that the sellers prepay their allocation of capital costs, as well as the estimated present worth of future operation and maintenance costs. A standard principle of water transfers is that there should be no injury to third parties. However, the fact that the amount of agricultural deliveries has decreased in recent years in the Albuquerque area has meant that a greater financial burden has fallen on the remaining farmers to cover both capital and operation and maintenance costs allocated to Class A lands (as explained above, Class A lands pay a fixed 25% of the total district assessments). The district is caught in something of a dilemma here, shifting a greater percentage of its revenues to property assessments would solve this problem, but would encounter opposition. One small, but important measure would be to require that costs be prepaid on lands selling water rights. Requiring prepayment of capital costs and shifting all of the O&M burden to property assessments after the time of sale would be another potential option, but, if the land has little economic value at that point, this alternative may not be a secure one.⁶

2. The management levels of the Bureau of Reclamation could do more to clarify water transfer principles to its office and field staff.

Both the water district and the Bureau personnel we spoke with in the course of the study had seen the Department's principles on water transfers. However, the Bureau personnel in Albuquerque had not received a copy of the bureau's own internal guidance for implementing the policy.

3. The management levels of the Bureau of Reclamation could do more to review and clarify the purpose of applying certain acreage limitation guidelines to the transfer of municipal and industrial water.

Bureau personnel appear to have carefully and properly insisted on the applicability of acreage limitation to the winegrowers who purchased water from Albuquerque--it is an explicit requirement of the city's Elephant Butte storage contract. Bureau personnel also offered the city some alternatives for complying with the present requirements, such as amending the contract or allowing the city to utilize nonReclamation project water--alternatives which the city rejected.

However, there are some broader policy questions raised, such as whether there is any particular program purpose in applying rules intended to regulate subsidized irrigation water to water that is sold for municipal and industrial purposes, regardless of to whom the water is resold. Bureau management could have, and still can, provide more general policy guidance on this question -- including considering such options as encouraging the preparation of an amendatory contract, clarifying Congressional intent, or seeking new legislation.

There are some other interesting aspects of water use in the Rio Grande Basin that merit future consideration and study, although they are not the direct subject of this report.

(a) Albuquerque currently relies exclusively on groundwater rights, reserving its surface rights to meet future compact requirements for surface flows. Clearly, an alternate strategy would be for the city to treat and use some portion of its surface supplies, thereby saving on its use of groundwater. This alternate strategy would rely more heavily on the renewable surface supplies, as opposed to groundwater mining, and would delay the need to use surface supplies to meet compact requirements. However, it would also incur higher treatment and delivery costs, especially given that the current urban distribution system is designed to use wells. The city should consider studying the relative cost of this alternate strategy. An optimal strategy that minimizes cost may involve using a mix of the two water sources.

(b) The state does not prohibit transfers of water past the Otowi gauge, which lies north of Albuquerque, but it requires that any transfer past that point first quantify the historical consumptive use (of all parties) above the gauge. This is a tremendous expense to be imposed on the first transferring parties. If there are expected benefits to such transfers, upstream water users might want to consider banding together to finance such a quantification. Alternatively, they might elect to be taxed to allow the state to undertake such a quantification.

(c) There will undoubtedly be future pressures for interstate transfers of water from the area below Elephant Butte Reservoir to the El Paso, Texas, area. So far, New Mexico has resisted such transfers, at least of groundwater. But there is also the potential to lease surface supplies, which could result in additional income to state residents. If New Mexico considers that, over the long-term, pressures may mount for

interstate leasing, it might consider whether leasing surface supplies would be less objectionable than leasing groundwater. The state might consider undertaking studies of how such leasing would function.

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ENDNOTES

1. The case studies in this chapter were completed in the winter of 1989 and the spring of 1990.
2. The rates mandated by the Reclamation Reform Act might be higher for a given year since they are current yield rates on long-term government debt. Rates applying to repayment of construction charges for municipal and industrial use are usually established as coupon rates on all outstanding government bonds as of a given date. Furthermore, such rates would be fixed by the years of project construction, when interest rates were likely much lower than the rates applying under the Reclamation Reform Act's "full cost" formula.
3. This system evidently does not take into account that when the pumped water is used, some portion, perhaps as much as 50% results in return flows to the river.
4. The decline in Class A acreage (agricultural use on operations of 5 acres or more) in Table 1 also reflects a decline in irrigated acreage. The irrigated acreage figure reported here is somewhat larger than in Table 1 since some irrigation takes place on Class B lands.
5. Title to project facilities ordinarily remains with the Bureau of Reclamation, even after project repayment is complete, unless otherwise provided by Congress (for additional discussion, see Wahl, 1989, pp. 153-54, and 171 and Wahl and Simon, 1988).
6. Note that since Albuquerque has leased back the water associated with all of its acquisitions, the district would presumably be receiving its Class A revenues on the associated land, at least until such time as land was actually removed from agricultural use.

PROVO RIVER PROJECT

PROVO RIVER PROJECT, UTAH

Background

The Provo River Project is located in north-central Utah. Water is diverted from the Weber River and the North Fork of the Duchesne River and delivered through a canal and tunnel, respectively, to the Provo River. The water flows down the Provo River where it is then stored in Deer Creek Reservoir. From the reservoir, some of the water is delivered to Salt Lake City, Orem City and Salt Lake County through aqueducts. Provo City receives its share of project water by releasing its storage water in Deer Creek Reservoir into the Provo River and by exchange diverting springs tributary to the Provo River. The balance is released downstream for irrigation and power uses (See Figure PR-1).

The need for the project arose during the drought years of 1930-31. Lands previously irrigated by water from Utah Lake suffered when storage in the lake dropped from 850,000 acre feet to 20,000 acre feet. This, combined with a severe water shortage experienced by Salt Lake City, led to a concerted effort to obtain an adequate water supply. The City of Provo and five other communities in Utah County, and Salt Lake City joined together with the irrigation interests to sponsor the project.¹

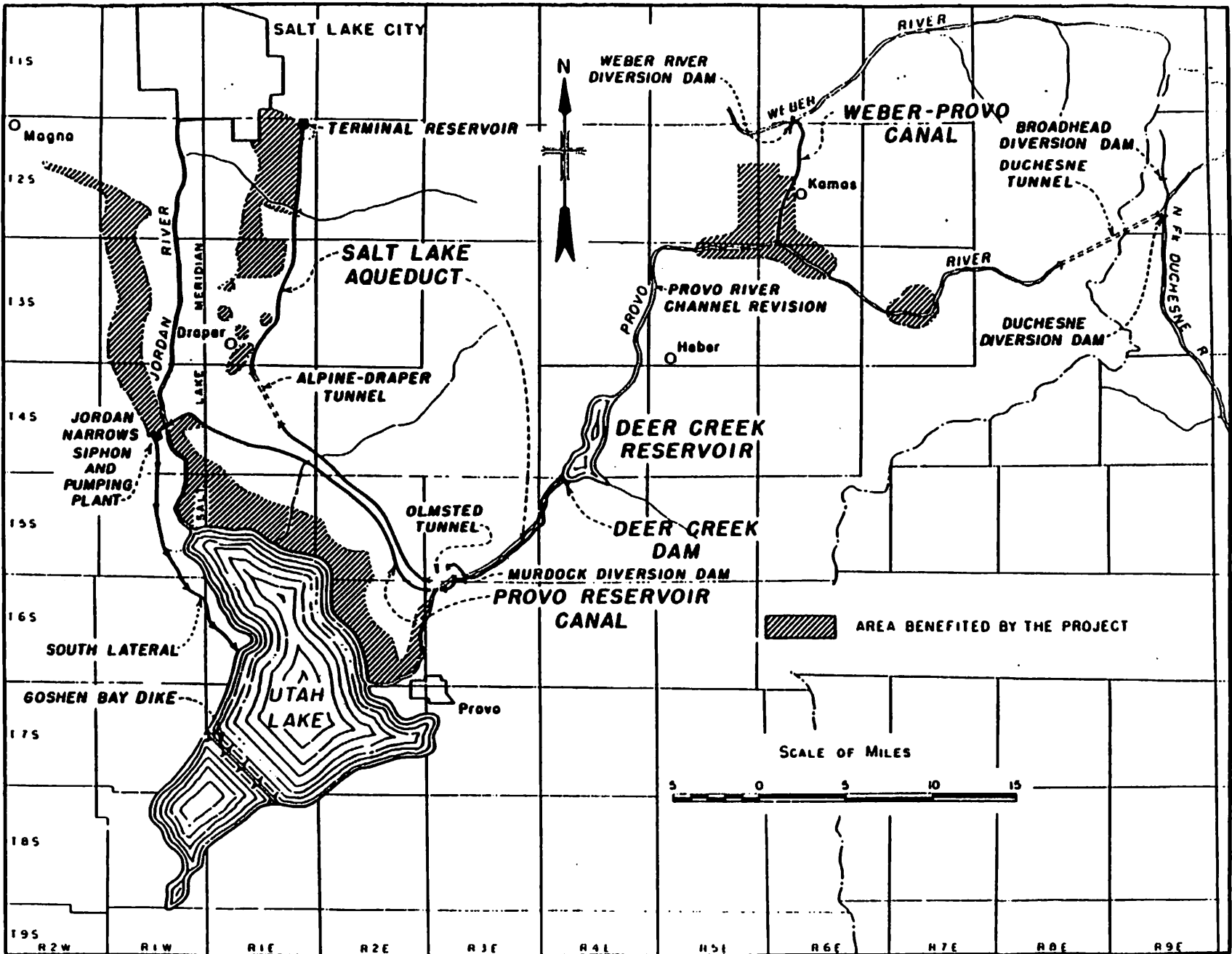
The project was authorized under the provisions of the Act of December 5, 1924² and approved by the President in 1935. The Salt Lake Aqueduct was approved in 1938 and the Deer Creek Power Plant was authorized by the Secretary of the Interior in 1952.

The Provo River Project was planned from its inception with a major municipal component. The Deer Creek Reservoir has an active capacity of 149,564 acre feet and

averages releases of 100,000 acre feet annually. Of this amount, 58.3 percent was subscribed for by municipal users and 41.7 percent by irrigation users. As discussed below, these percentages have changed.

The project facilities collect Provo River floodwaters and water from Weber River via the enlarged Weber-Provo Diversion Canal. Additionally, water from the upper Duchesne River is diverted through the Duchesne Tunnel into the upper Provo River. These waters are stored in the Deer Creek Reservoir which is situated along the Provo River about 16 miles northeast of Provo, Utah. Water released from the reservoir is either diverted into the Salt Lake Aqueduct and Olmsted Flume to supplement Salt Lake City's, Orem City's and Salt Lake County's water supply. Provo City also uses project water by exchanging its project water for water from springs in Provo Canyon. The remaining water is diverted into the Provo Reservoir Canal at the Murdock Diversion Dam, about seven miles below Deer Creek Dam. The water delivered through the Provo Reservoir Canal is used to irrigate the 46,609 acres of land that lie in north Utah County east of the Jordan river and west of Utah Lake and the Jordan River. Deer Creek Powerplant, located near the Dam, has two generators that each produce 2,700 kilowatts of power.

The project is operated by two user organizations. The features of the Deer Creek Division of the project are operated and maintained by the Provo River Water Users Association. The Association was incorporated under the laws of Utah in 1935. The Metropolitan Water District of Salt Lake City is responsible for the operation and maintenance of the Aqueduct Division.



Provo River Project

Figure PR-1. Provo River Project
Source: U.S. Bureau of Reclamation, Project Summary Report

Project Costs

There are two major project divisions, Deer Creek and the Salt Lake Aqueduct. Costs for the Salt Lake Aqueduct totaled about \$12.8 million and are the responsibility of the Metropolitan Water District of Salt Lake City.

The Deer Creek Division was completed in two phases, with distinct repayment obligations. The original project cost for this Division was \$11.4 million. Channel revisions were undertaken beginning in 1945 to protect private lands and improvements from flood damage caused by importations of water to the Provo River. These additional costs, called the "excess" obligation, totalled almost \$12 million, for a total project cost of about \$23.4 million.

Repayment obligation

The Provo River Water Users Association is the repayment entity for the costs associated with the Deer Creek Division. The original contract was entered in 1936 with five supplemental contracts dating from 1937 to 1959. The way the contracts were set up, the Association had to pay off the excess costs before the original obligation. The excess costs were paid off in 1990. In 1991, the Association will begin payments on the \$11.4 million original obligation. There is a 40 year repayment period on this original obligation beginning January 15, 1991.

Of the total Deer Creek Division obligation of \$23,406,426, the irrigators are responsible for \$6,213,470. They have paid \$2,346,044 as of October 31, 1990. As of this same date, the M&I users³ paid off their excess costs obligation of \$7,284,357. In 1991, the M&I users begin payments toward their share of the principal contract, which is \$8,373,756. Approximately \$2 million was

taken off the top of the total \$23.4 million obligation for user payments prior to 1960.⁴

The construction repayment obligation is divided equally among Association shareholders. The only difference between municipal and irrigation users' annual payments has been the rate of repayment of the excess cost obligation. The excess costs contract was in the nature of a service contract and the rate of the irrigator's repayment obligation was decided annually by the Secretary, based on ability to pay. Consequently, the irrigation users' rate fluctuated and went as high as \$3.25 per share per year. The municipal users paid a set rate of \$3.25 per share per year pursuant to a supplemental repayment contract.⁵ Under the original contract obligation, all users will pay \$2.85 per share annually.

Power revenues will provide a substantial credit against the future repayment obligation. The power facility construction costs were paid off (with no interest) in 1984. Since then, excess power revenues accumulated in an escrow account until the excess costs contract was paid off. Of the Association's January, 1991 construction repayment obligation of \$285,000, \$191,587 was credited from power revenues accumulated from 1984 through December 31, 1989. Power revenues that fluctuate from year to year are expected to reduce future annual repayment obligations as well.

The Metropolitan Water District of Salt Lake City is the contracting agency for the Salt Lake Aqueduct Division. It has been making payments on its \$12,869,151 obligation since about 1953 and has paid off about \$9.4 million to date. There is a 40 year contract term, so payout is expected in 1993. Assuming a supply of 61,700 acre feet,⁶ this Division cost added about \$208 per acre foot capital cost to the obligation under the Deer Creek Division repayment contract.

Operation and maintenance costs

The Association is responsible for operation and maintenance (O&M) of the Deer Creek Division. The users are assessed an O&M fee each year. There is a separate O&M fee assessed to users benefitting from the Provo River Canal. Operation and maintenance costs associated with the Salt Lake Aqueduct are paid by the Metropolitan Water District of Salt Lake City.

Water Rights

The Bureau of Reclamation (BOR) filed on both direct flow and storage rights for the Duchesne, Weber and Provo Rivers. Some of the water used for the powerplant is not consumptive project water (preexisting water rights), but is used downstream as nonproject water rights. About 25 cfs of Little Deer Creek water was acquired by the Association and transferred to the Bureau as a part of the project water rights.

Description of project water rights

Project water rights include about 290,000 acre feet of Deer Creek Reservoir storage water rights from the Provo, Duchesne or Weber River basins. There are some spring and seepage rights included in this amount. The priorities of project water rights range from prior to 1903 to 1960. Authorized uses include irrigation, domestic, power, municipal and industrial uses.

As a result of the Deer Creek-Strawberry Exchange Agreement with the BOR and Central Utah Water Conservancy District, the Association is able to store Provo River natural flow water even in drought years. Under its water rights, it can only take the Provo River water when the water rights in Utah Lake are being satisfied. The BOR has agreed to replace Utah Lake water from the Enlarged Strawberry Reservoir so that the

Association can store Provo River natural flow water in Deer Creek Reservoir.

The Olmsted Power Plant located near the mouth of Provo Canyon has non-consumptive power rights with priorities ahead of the Deer Creek project water rights. BOR purchases power from the Western Area Power Administration (WAPA) to replace the power loss at Olmsted caused by the storage of the natural flow winter power water in Deer Creek Reservoir. The exchange increases the annual yield of Deer Creek Reservoir to a total of 120,000 acre feet, of which 100,000 is allocated to the Association and 20,000 to the BOR as Bonneville Unit water for delivery to the Central Utah Water Conservancy District (CUWCD).

Allocation of project water

The Association does not make a decision on allocation of project water until Deer Creek Reservoir reaches its fullest or highest level in the spring. If there is adequate water, each shareholder receives one acre foot of water. If not, the water delivered to the Association's shareholders and to CUWCD is proportionately reduced.

If not for the Deer Creek-Strawberry Exchange Agreement, discussed above, there would likely have been reductions in the quantity of water delivered to the Association shareholders during the low water supplies each year since 1987. A full allocation under the Exchange requires at least about 123,000 acre feet of storage water in Deer Creek Reservoir. A reduction in the quantity of delivered Provo River project water has only occurred in 1961 (60 percent delivered) and 1977 (99 percent delivered).

Provo River Project Transfers

The Provo River Project began delivering water in 1941. At its inception, over half of the total project water supply of about 100,000 acre feet was planned for delivery to municipal users and many years in excess of 100,000 acre feet has been delivered annually when extra allotment (spill water) was delivered. Today irrigation users hold about 22,300 shares and municipal users hold about 77,700 shares.

Since the project was initiated, there have been some transfers of project water from irrigation to municipal use. The percentage of M&I water has increased from 58.3 percent to 73.454 percent. One transfer involved the acquisition of Association stock from an irrigation company by the Metropolitan Water District of Salt Lake City. A new stock certificate was issued by the Association in the name of the Metro District. All other transfers from irrigation to municipal use involved the sale or trading of stock of irrigation companies that are shareholders in the Association. These intra-irrigation company transfers are not reflected in the 73.454 percent figure stated above; they are a part of the 27.546 percent of stock classified as irrigation use. However, once these company stock transfers are finalized, the rights to an additional approximately 10,000 acre feet of project water will be held by municipal users.

Limitations on change of purpose of use

Project legislation authorized the use of project water for irrigation, municipal, industrial and power generation purposes. As stated above, municipal use has always been a major component of this project.

In addition, to the large municipal component at the project's inception, it was

apparently anticipated that conversions from agriculture to municipal use would occur over time:

The uses may from time to time change from agriculture to municipal and domestic or other uses which may require additional rediversion and conveying works and increased capacity of rediversion and conveying works.⁷

This language, taken from a project water right proof, is indicative of the scope and flexibility built into the project water certificates. The proofs and ultimately the certificates were structured so that all project water could be used for irrigation or all for municipal and industrial purposes.

Additionally, the Association's By-Laws recognize this same shift in purpose of use in the section requiring annual crop reports:

This provision...supplies a method by which the obligations...may be satisfied.... The stockholders affected ought to cooperate.... These are not the strictly irrigation subscribers alone, for a large part of the water supply intended for ultimate domestic and industrial uses will doubtless be devoted to irrigation for many years to come.⁸

The BOR's role in transfers from irrigation to municipal use is limited. The Utah Projects office has limited its review to a standard like the State Engineer. They analyze the proposal for potential harm to other water users, and may require mitigation of this harm.⁹

Interestingly, the original repayment contract expressly authorizes the Association to "dispose of its stock to parties desiring to use project water for domestic, municipal and industrial purposes as permitted by the Act of February 25, 1920."¹⁰ Every share of Association stock is entitled to its pro rata share of project water, and the delivery of such pro rata share of project water is not deemed detrimental to the water service for irrigated lands served by the project, even though water shortages are expected at times.¹¹ This language taken from the 1920 Act, seems to eliminate the need for a "detrimental" analysis when water is changed from irrigation to nonirrigation uses.

Limitation on change of place of use

There have been no apparent attempts to transfer Provo River project water for use outside of the originally contemplated service area. The project service area is large, covering almost all of Salt Lake and Utah counties, and parts of Wasatch and Summit Counties. This area encompasses all major municipal water user service areas in the project vicinity.

As with the purpose of use, the place of use for project water rights was broadly described in the project water rights proofs and certificates to include a large use area covering parts of four counties and several cities. Therefore, all changes in the place of use contemplated by the transfers to municipal use occurring to date have required no approval by the State Engineer.

Appurtenancy requirements

Project water is not tied by federal contract to specific project lands. Unlike the Strawberry Valley Project, there are no contracts between the individual water users and the BOR. The stockholders of the Association are primarily irrigation companies

or metropolitan water districts. In addition, there are two private land-owning corporations that own a total of 325 shares (about .3 percent) of the Association's stock.

Project water may be considered appurtenant to the associated irrigated lands because of liens or mortgages for the benefit of the Association against all assets of the irrigation companies. This type of security was required from all of the irrigation companies using Provo River Project water. The Association's Articles of Incorporation state that each shareholder must "give assurances, liens and/or mortgages...to secure payment" of the stock and all assessments, as may be required by the Association's Board of Directors.¹² From the information provided, however, the Association has not required liens or mortgages specifically on project lands. In contrast to the Strawberry Project, the Bureau did not file liens on Provo River Project lands.

Adjusted repayment and profits

Municipal users pay the same price per acre foot of project water as the irrigation users. The only difference in the repayment structure of M&I and irrigation users has been the rate of repayment for the excess costs. This was done in accordance with current Bureau policy that costs should be repaid at rates approximating the users' repayment ability. Since the excess cost contract is now paid off, all users will be paying the same rate beginning with the 1991 payment.

There has been no regulation of money received from the leasing or sale of project water. Since the 1950s the Metropolitan District of Salt Lake City has been leasing project water to the Salt Lake County Conservancy District and to some farmers in Utah County and Salt Lake County. Metro has been receiving revenues

from these lease arrangements for almost 40 years. The Bureau has never raised the issue of regulating leases or sales of project water in this situation nor in any of the transfers described below.

Metro District of Salt Lake City transfer

Between the late 1930s and the early 1940s Metropolitan Water District of Salt Lake City (the District) subscribed for 46,500 shares of project water in two separate blocks. Then, in 1958, the District entered an agreement with the Utah Lake Distributing Company (ULDC) for an exchange of water. Under this agreement, the District received 15,200 shares of Provo Water Users Association stock from ULDC. The stock was endorsed by ULDC and turned in to the Association, which then issued new certificates to the District. In exchange, the District constructed a pumping plant at the Jordan Narrows (See Figure PR-1) and annually delivers over 15,200 acre feet of Utah Lake water to ULDC shareholders formerly using the ULDC water. The District stores the 15,200 acre feet of ULDC water in Deer Creek Reservoir for use in its service area.

This transfer required little involvement by the BOR. The ULDC filed change applications with the State Engineer to change the point of diversion for nonproject water rights. Project water was to be used within the existing service area, and municipal use was already authorized by the state engineer and the project documents. The repayment requirements stayed the same.

Orem City acquisitions

In the late 1930s and early 1940s the Metropolitan District of Orem City (the District) subscribed for 2,254 shares of Association stock. Since this original subscription the District has acquired stock in

irrigation companies that were shareholders in the Association. This occurred as a result of previously irrigated project lands being developed into subdivisions and translated to an additional 2,000 shares in the Association.¹³

The irrigation company stock represented both project and nonproject water rights. The District is in the process of filing change applications with the Utah State Engineer on the nonproject water. With regard to the project water rights, the transfer to municipal use should, like the ULDC transfer, require no change in the type of use or place of use. The water will be used in the project service area for municipal purposes. Again, the repayment obligation will stay the same.

Welby-Jacob exchange

In the 1980s, Salt Lake County Water Conservancy District (SLC Conservancy District) purchased shares in two of the four districts within the Provo Reservoir Water Users Company, which is a shareholder of the Association. The purchased stock represented about 8,400 acre feet of project water. Following the purchase, the stock was transferred to a newly formed entity, the Welby-Jacob Irrigation District. The SLC Conservancy District must deliver 40,000 acre feet out of Utah Lake to users on the Welby and Jacob canals. In exchange, the Conservancy District is entitled to its share of project water, about 8,400 acre feet, plus some nonproject water for a total of about 30,000 acre feet of higher quality water. The Bureau was not involved in the transfer except to file two change of water right applications with the State Engineer for Weber River Project water.

ENDNOTES

1. Water and Power Resources Service Project Data Book 1033 (1981) [hereinafter Project Data Book].
2. 43 Stat. 701.
3. The M&I users are the Metropolitan Water Districts of Salt Lake City (61,700 shares), Provo City (8,000 shares), Orem (2,254 shares), American Fork, Lehi, and Pleasant Grove-Lindon (500 shares each).
4. These pre-1960 user payments were made under the original contract prior to the time the excess costs contract was entered.
5. See Supplemental Contract Among the United States, The Provo River Water Users' Association and Metropolitan Water Districts, dated Nov. 16, 1959, at 2.
6. This Metropolitan District of Salt Lake City originally contracted for 46,500 acre feet, then in 1958, acquired an additional 15,200 acre feet of project water.
7. Proof of Appropriation for Water Rights Application No. 12230, at 39 (filed 6-25-1936).
8. By-Laws of the Provo River Water Users Association at 3 (emphasis added).
9. This may be based on the U.S. Department of the Interior 1988 Policy Statement, Principle 3 which reads "DOI will participate in or approve transactions when there are no adverse third-party consequences, or when such third-party consequences will be heard and adjudicated in appropriate State forums, or when such consequences will be mitigated to the satisfaction of the affected parties."
10. Repayment Contract dated June 27, 1936 at 10-11.
11. Id. at 11.
12. Article XIV, Articles of Incorporation of Provo River Water Users Association.
13. The developers were required by Orem City to relinquish their stock in the irrigation companies as a pre-condition to subdivision approval.

RAPID VALLEY UNIT AND RAPID VALLEY PROJECT

RAPID VALLEY UNIT AND RAPID VALLEY PROJECT, SOUTH DAKOTA

Introduction

The Bureau of Reclamation (BOR) has constructed two projects in the Black Hills near Rapid City, South Dakota: the Rapid Valley Project and the Rapid Valley Unit. See Figure RV-1. The Rapid Valley Project consists of the Deerfield Dam and Reservoir, about 25 miles west of Rapid City, located on Castle Creek, a tributary of Rapid Creek. The Rapid Valley Unit, located 15 miles west of Rapid City on Rapid Creek, consists of the Pactola Dam and Reservoir. These facilities are operated jointly to provide water to Rapid City and for irrigation in the Rapid Valley Water Conservancy District.

This case study provides general background information concerning the project. It then considers issues related to proposals for a change of project water use from irrigation to urban and other uses.

Project Background

Setting

Rapid Creek, and its primary tributary, Castle Creek, head in the Black Hills of South Dakota and flow east through Rapid City to a junction with the Cheyenne River. An agricultural economy grew up in Rapid Valley based on irrigation diversions from Rapid Creek. By 1930 the demand for irrigation water exceeded the available supply in Rapid Creek, limiting the crops that could be grown to those that were not dependent on full season irrigation except on those lands with senior water rights.¹ In 1937, the Bureau of Reclamation completed an investigation of opportunities for water storage and supply in the area. The original authorization in 1939 to build a project contemplated construction of Pactola Dam on

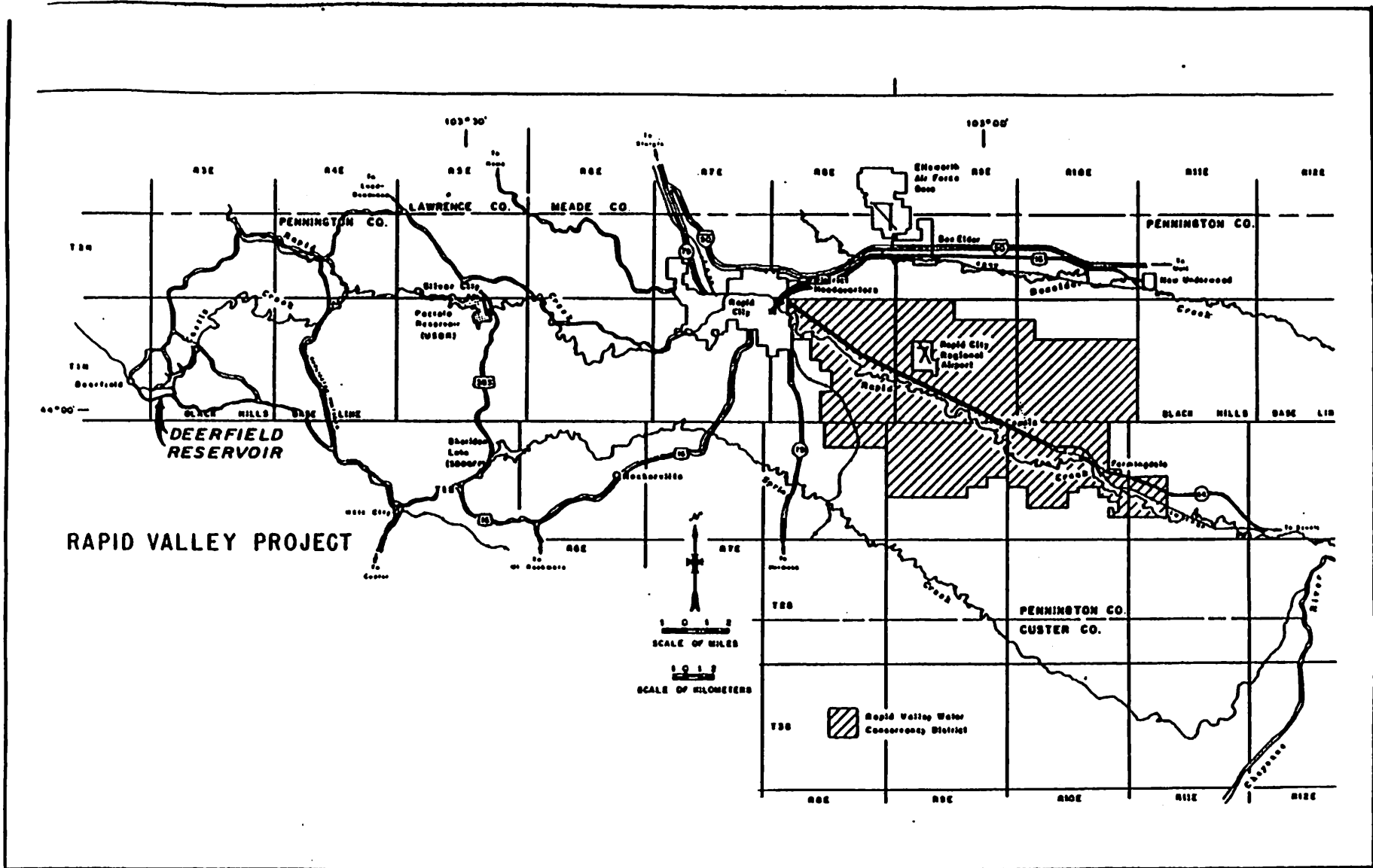
Rapid Creek. The expense of having to reroute a major highway and railroad line caused a change in plans to build Deerfield Dam on Castle Creek instead. This plan was approved in 1942 and construction began that same year. Water first became available from Deerfield Reservoir in 1948.

In 1948, landowners in the Rapid Valley Water Conservancy District and the Bureau of Reclamation agreed to resurrect plans to construct Pactola Dam and Reservoir. Growing water needs for Rapid City and for nearby Ellsworth Air Force Base increased the interest in the construction of this dam. Moreover, the abandonment of the railroad that ran through the proposed site made this option more feasible. This project was included in a larger plan for development of the Missouri River basin that had been generally authorized under terms of the Flood Control Act of 1944. Construction of Pactola Dam began in 1952 and was completed in 1956.

Facilities and water supply

Deerfield Dam is an earthfill structure that impounds Castle Creek. It has a total capacity of 15,700 acre-feet and an active capacity of 15,200 acre feet. The average annual discharge of Castle Creek at Deerfield Dam is 29,300 acre-feet.

Pactola Dam also is an earthfill structure. It directly impounds Rapid Creek. Pactola has a total capacity of 99,000 acre-feet and an active capacity of 55,000 acre-feet. The annual discharge of Rapid Creek at Pactola averages 29,500 acre-feet.



Rapid Valley Project

Figure RV-1. Rapid Valley Project, South Dakota.

Project operation and water uses

Under the Deerfield and Pactola Reservoir Operating Criteria, dated May 1978, the two reservoirs are operated on a pooled storage basis.² The primary existing commitments of water are to Rapid City and to the Rapid Valley Water Conservancy District. According to the Operating Criteria, the contracts between the Bureau of Reclamation and the Conservancy District and the city provide the following: Rapid City has a priority commitment of a maximum of 7,000 acre-feet per year of available stored water in Deerfield Reservoir and an additional amount as available in Pactola Reservoir for a total of 14,000 acre-feet in the two reservoirs. The Conservancy District is provided with a maximum of 8,000 acre-feet of stored water in Deerfield Reservoir and can purchase additional stored water from Pactola Reservoir under the terms of its contract with the Bureau. If there is less than 14,000 acre-feet of water available to Rapid City in storage on May 1, storage inflows will be credited to the city until a total of 14,000 acre-feet has been credited to the city for the year and all remaining water will be available to the Conservancy District. In addition there is a contract with the Rapid Valley Water Service Company that makes available 600 acre-feet of water out of Pactola Reservoir as a third priority. And finally there is a contract with C&J Sanders for 60 acre-feet from Pactola Reservoir which has a fourth priority.

Both Deerfield and Pactola Reservoirs are used as recreational facilities. There are picnic grounds, campgrounds, and boating and fishing access. Rapid Creek sustains a good trout fishery. Reduced water availability in recent years has impaired the recreational uses of the reservoir and has stressed the fishery in Rapid Creek. Castle Creek also supports a good trout fishery.

In ordinary years Rapid Creek and its tributaries contain enough water to meet the existing water needs in Rapid Valley and fill Deerfield and Pactola Reservoirs. The water available to the Conservancy District is considered a supplemental supply. Therefore, users are supposed to have their own primary water supply. Between 1958 and 1988 average annual diversions to the Conservancy District were 13,710 acre-feet. Of this amount about 88 percent came from the native flows in Rapid Creek and the remaining 12 percent came from storage out of Pactola. During this same period the storage system provided about 3,751 acre-feet on an annual basis to Rapid City. The city's diversions from Rapid Creek during this period averaged 8,490 acre-feet. The average total intake during this period to the Rapid City water system was about 9,347 acre-feet. This included an average delivery of 1,362 acre-feet to Ellsworth Air Force Base. In 1988 the Rapid Valley Service Company began taking 100 acre-feet of stored water under its contract for the first time. Since 1986 C&J Sanders has been taking 40 acre-feet per year.³

The Rapid Valley Water Conservancy District encompasses about 8,900 acres of irrigable land. At this time about 7,203 acres are in irrigation. There has been little change in irrigated acreage in recent years. Water users in the District include members of six ditch companies as well as other irrigators. The Bureau of Reclamation places the value of the crops grown in this area in 1987 at \$808,650.

Rapid City is South Dakota's second largest city, with a metropolitan population in 1990 of about 81,000 people. The city has been growing at a modest rate and is expected to continue to grow into the near future. The demand for water for Ellsworth Air Force Base is expected to remain fairly constant.

Payment status for the project

Under the 1943 contract involving water from Deerfield Dam, Rapid City was to repay \$500,000 as its share of the construction costs for this dam. Payments were to be made in 40 equal installments of \$12,500 each. This obligation was completed in 1987.

The Conservancy District was not obligated with any specified repayment obligation for the construction costs of Deerfield. Rather, it was to pay \$1 per acre-foot for water delivered to it from the reservoir. The contract is written in a form that suggests that the payments by the District are meant to go towards construction costs in excess of \$500,000. There is a provision that states that when the "actual costs of the joint works in excess of the Municipality's obligation have been returned to the United States in full the District's obligation under this article shall cease."⁴ In fact, officially the District does not receive water from Deerfield so it is not making any payments to the U.S. for this facility.

Under the 1952 contract for water supply to Rapid City from Pactola Dam, Rapid City is required to make payments based on the city's "basic total annual intake." The contract assumes an increasing quantity of water intake through time and uses a correspondingly increasing basic annual payment requirement. At present the city is in the year 31 to 35 of the contract obligation which assumes a basic total annual intake of 10,700 acre-feet of water and requires a basic annual payment of \$96,000. A second schedule in the contract sets payment for any water that is used beyond the basic intake. In the year 31 to 35 category the next increment of water goes from 10,700 to 13,600 acre-feet. Any water in this increment of use must be paid for at the rate of \$15.86

per acre-foot. For water beyond 13,600 acre-feet there is an additional charge of \$5 per acre-foot. According to Bruce Laymon of the Bureau of Reclamation in Newell, South Dakota the city's contract payment obligation is \$1,800,000.⁵ Of this amount the city has paid about \$930,000. The Bureau uses a formula to divide up the payments and attributes 36 percent of the payments to the operation and maintenance charges with the remainder going towards repayment of the construction cost portion of the obligation.

A separate contract signed in 1961 governs the sale of water to the Rapid Valley Water Conservancy District from Pactola. Under this contract the District is obligated to pay a fixed charge of \$1,000 per year. In addition, the District must pay \$1.25 for each acre-foot of water that is delivered to it from Pactola. Since this is a service contract, it does not specify a total repayment obligation for the construction costs of Pactola attributable to the irrigation use. However, the Bureau has established a formula by which the District payments are divided into 27 percent for O&M charges with the remainder going towards the construction cost obligation. Again, according to Bruce Laymon, the construction cost repayment obligation for the District for Pactola Reservoir was \$2,139,214. Of this amount the District has repaid about \$29,000. Deliveries of water to the District over the past 30 years have averaged about 1,500 acre-feet per year. The payment required for that water usually has not covered even the associated O&M costs.⁶

Project water entitlement

As mentioned, the parties have agreed to the operation of Pactola and Deerfield Reservoirs on a pooled storage basis. The 1943 contract governing Deerfield Reservoir specifies that Rapid City is to have a "preferred" use of 7,000 acre-feet of water for

domestic, municipal and industrial purposes and that the Conservancy District is given a "junior priority" to 8,000 acre-feet of water for domestic and irrigation purposes. Under this contract, water only becomes available to the District if there is sufficient water in storage to supply the full 7,000 acre-feet entitlement of Rapid City. The city's water entitlement extends over a full water year while the District's entitlement is only for the irrigation season. Any portion of the entitlement not used at the end of the water year is subject to disposal by the United States so long as there is "no reasonable likelihood" that such disposal will result in less than full availability of the following season's water supply.⁷ This contract is in the form of a "repayment" agreement.

The 1952 contract involving water supply from Pactola for Rapid City states that water is to be made available to the city in the quantities "requested but not in excess of the City's needs for the then current water year...."⁸ Section 5 of the contract specifies a schedule of an agreed "basic total annual intake" for a series of 5 year blocks. The basic total annual intake includes "all metered water from every source taken by the City into its water system...."⁹ The contract further provides that if Rapid City's need exceeds the designated basic total annual intake, the Bureau will "furnish to the City its needed additional water to the extent that water is available."¹⁰ The contract further provides that the City will furnish Ellsworth Air Force Base with up to 1,810 acre-feet of water per year.¹¹ The contract also recognizes the continued existence of the city's priority right to 7,000 acre-feet of storage in Deerfield Reservoir and recognizes the right of the United States to pool the stored waters of the two reservoirs.¹² This contract is in the form of a "service" agreement. The contract expires at the end of the 40 year term (in October 1992), but the city has a right to renewal.¹³

Under the 1961 contract for water supply to the Rapid Valley Water Conservancy District from Pactola, water is available to the District in an undefined amount but subject to the senior rights of Rapid City. The city's rights are specified to require an estimated storage reservation of 14,000 acre-feet.¹⁴ This includes the 7,000 acre-feet of water in Deerfield Reservoir. Under this contract the Conservancy District explicitly agrees to the operation of Pactola and Deerfield Reservoirs on a pooled storage basis. Thus, the District may receive water from Pactola on the basis of availability which is a function primarily of satisfaction of the city's requirements. The District pays \$1,000 per year and an additional payment of \$1.25 for each acre-foot of water requested. The contract is for a 40 year term but specifically provides for renewal.¹⁵

The 1982 contract with the Rapid Valley Water Service Company contemplates a supply of up to 600 acre-feet of water per year from Pactola Reservoir as supplemental supply for the company's domestic and residential purposes.¹⁶ Expected water use is based on an estimate of the demand for water during the 10 year life of the contract (between 1982 and 1992) during which population is expected to increase in the service area. The service company agrees to make an annual payment of \$2,600. The first 100 acre-feet of water that is supplied costs \$16 an acre-foot. Additional water costs \$2 an acre-foot.

Changes of Project Water Use

For several reasons there is considerable interest in developing new arrangements for the use of the water available from the Rapid Valley storage system. A drought in the Black Hills region has caused water levels in the reservoirs to decline sharply. Between September 1987 and September 1989 reservoir storage in

Pactola dropped from 49,495 acre-feet to 25,547 acre-feet.¹⁷ In February 1991, levels dropped to about 24,000 acre-feet. A second factor is the continued growth of population in Rapid City and a corresponding need to ensure a water supply for that growth. At the same time, agricultural activity in the area downstream of the city has been changing. In some areas residential development has been taking the place of irrigated farms. There has been some shift from full-time farming to part-time farming in certain areas. Perhaps most importantly, the 1952 contract between the Bureau and Rapid City will come up for renewal in 1992.

In 1989 the governor of South Dakota requested the Bureau of Reclamation to study ways in which the water supply in the Rapid Valley could be better managed to meet present and future demands. In its March 1990 report, "Rapid Valley Water Management Study," the Bureau identified eleven alternatives that would either conserve the water supply, augment the water supply or in some other way improve water availability. Of particular interest for this case study was the reservoir management alternative. The report points out that existing water contracts commit an annual right of delivery to the four primary contractors rather than a commitment of storage space in the projects. The report notes the expectation that the annual water supply from Rapid Creek normally will be enough to meet most of the area's needs and that the storage supply was to serve as a supplemental supply. The report recommends renegotiation of the contracts to establish storage rights for the users.

Rapid City has expressed its interest in increasing its share of the water supply from the storage projects. It has not committed to any particular strategy for accomplishing this objective. For purposes of this case study, we here analyze the possibility

of purchasing the water entitlements held by users in the conservancy district and transferring these entitlements to urban use. Among the issues to be considered are the nature of the legal entitlement to water in Bureau facilities held by users within the conservancy district, and under what circumstances if any these entitlements may be transferred out of the District for urban water use.

Nature of the district's entitlement

The Rapid Valley Water Conservancy District has entitlements to the supply of water based on two contracts. The 1943 contract involves the Bureau, Rapid City, and the Conservancy District. This contract provides the District with a junior priority of up to 8,000 acre-feet of water from that available out of Deerfield Reservoir. This is a permanent commitment of water in the nature of a repayment contract and clearly not a service contract. With the approval of the Secretary of the Interior, the Conservancy District may be able to assign some or all of its interest in this contract to another party including the city. The interest is in the stored water that is available during the period of time between April 30 and October 1 beyond the 7,000 acre-feet that is committed to the city and the 600 acre-feet that is reserved to the Bureau.

The 1961 service contract for the supply of water from Pactola Reservoir introduces considerable ambiguity into the position of the District. This contract provides that Pactola and Deerfield are to be operated as pooled reservoirs. The contract recognizes the entitlement provided under the 1943 contract to up to 8,000 acre-feet of water stored in Deerfield. No particular water supply is specified for the District from Pactola. The contract provides that on May 1st of each year the United States will notify the District concerning the amount of water

available for consumptive use in both reservoirs. The notice is to state in which reservoir the water is stored and to specify the amount held in each reservoir that is for the use of Rapid City in that year. Subject to the city's rights, the District then can request the supply of water as available from the system.

The 1961 contract requires the District not to supply water under this contract "to anyone other than an owner or operator of irrigated lands within the District, or for other than domestic, stockwatering, or agricultural uses."¹⁸ This provision also specifies that if there is water available to the District "in excess of the amount required for the irrigation of its lands," the District may supply water "for minor industrial uses at points or places where it is not economically feasible to obtain water from other sources."¹⁹ District water supplied for such industrial uses must be paid for at the rate of \$14.61 per acre-foot.

In evaluating the transferability of a normal appropriative water right it is customary to consider the extent of the historical use under the right to determine the quantity of water that may be transferrable. The 1989 summary of storage water available in the system shows the amount of water in the two reservoirs considered to be available to the District between 1958 and 1988.²⁰ It also summarizes the diversions of water by the Conservancy District from these reservoirs. Over this 30 year period, the average quantity of water stored in Deerfield available to the District was 6,335 acre-feet and the average quantity of water available in Pactola was 41,561 acre-feet. However, the actual diversions from these reservoirs during this time period taken by the District present a very different picture. The District has not officially taken any water from Deerfield since 1960. And, between 1960 and 1988, the District took

only an average of 1,493 acre-feet of water from Pactola Reservoir.

Under the 1943 Contract it is clear that the District holds the right to receive deliveries of up to 8,000 acre-feet of water out of storage in Deerfield. No one else has rights to receive this water. This contract is of the repayment form, ordinarily contemplating a permanent commitment of water delivery. Since the permanent right to the supply of water is committed to the District, the District and its users should be considered to hold the water right. The transferability of this water right then would turn primarily on South Dakota law, subject to contract provisions and other federal law.

This analysis is made less certain, however, by several other factors. First, the 1943 Contract contemplated the possible construction of another storage project that was to be for the primary benefit of the Conservancy District. In fact, this facility never was built under this contract. Deerfield Reservoir was expected to cost \$500,000.²¹ In return for receiving a priority right to 7,000 acre-feet of water from this reservoir the city agreed to pay to the U.S. this \$500,000 over a 40 year period.²² The District was obligated only to pay \$1.00 per acre-foot for water actually delivered to it from the reservoir. Apparently, the District is not considered to receive water from Deerfield under this arrangement. Since the District members have never beneficially used water from Deerfield it does not appear that water rights associated with Deerfield have ever vested with the District or its members.

The District's interest in water from Pactola Reservoir is based on a water service contract. Unlike a repayment contract, this agreement does not require that the cost of the storage facilities attributable to the user's water supply be repaid within 40 years. Rather, these contracts, authorized under the

1939 Reclamation Project Act, provide a commitment from the U.S. to a supply of water for an indefinite period but under contract terms subject to renegotiation at the end of the original contract term. The District has a clear statutory right of renewal for the water supply but this right applies only to contracts such as these that are for irrigation use.²³

The nature of the water right held under such an arrangement is not clear.²⁴ On the one hand, it can be argued that the water rights have vested with the District and the users, at least to the extent that the water has been applied to beneficial use. The U.S. is simply the "carrier" of the water to the District. The carrier arrangement is defined by the contract. The contract also may place certain limitations or requirements on the use of the water but the fundamental right to divert the water derives from the beneficial use made by the irrigators themselves.

Alternatively, it can be argued that the irrigators themselves have not made a permanent commitment to the use of the water since they elected to take a service contract rather than a repayment contract. Almost certainly this choice was made because of a determination that the District could not pay the full cost of its share of the construction expenses for Pactola within the required 40 year period. Especially since this supply represents only supplemental water for the District which it uses rather erratically,²⁵ full repayment in the original contact would have made for some very expensive water. Vesting of a right based on use is complicated by the fact that use during the 30 year period from 1960 to 1989 ranged from 0 to 8,638 acre-feet and averaged about 1,500 acre-feet.²⁶

Thus, the District and its users may be viewed as having a continued right of service from the water stored in Pactola junior to the

rights of Rapid City but senior to any subsequent water service commitments. Moreover, that right appears to extend to whatever water is available in Pactola Reservoir beyond that committed to Rapid City. No particular quantity is specified. This arrangement may be continued under the upcoming contract renewal if the District wishes to do so. Under these circumstances the transferable interest held by the members of the District appears to be in the contract rather than in water rights that may have vested as a matter of state and federal law.

Other issues

In addition to determining the nature of the water rights held by the District and its members, there are at least four other factors that must be considered: possible limitations affecting a change in the purpose of project water use; possible limitations affecting a change in the place of use of project water; possible changes in the payment for project water; and environmental protection.

Purpose and place of use

The Rapid Valley projects are somewhat unusual Bureau of Reclamation projects in that the irrigation function has always been secondary to the municipal water supply function. The authorizations for both Deerfield and Pactola specifically include municipal and industrial use as well as irrigation. The contract for Deerfield provides a first priority to Rapid City's use of stored water. Interestingly, the contract provides a means of making unused municipal water temporarily available for irrigation but does not have a provision for shifting unused irrigation water to municipal use.²⁷

Because the projects clearly envisioned a municipal use by Rapid City, there should be no direct barriers to changes that would allow some additional use of project water by

Rapid City. The primary consideration would be whether any type of transfer would "impair the efficiency of the project for irrigation purposes."²⁸ Unfortunately, there is no guidance concerning this standard. Changes to other types of water use, such as for fishery purposes, are less certain because of the lack of authorization for the use of project facilities for this purpose.

Charges for project water

The actual construction costs for Deerfield and Pactola Dams have not yet been repaid. Only about half of the actual costs are considered reimbursable and less than 20 percent of these costs have recovered to date. Payments made by the Conservancy District have not even been enough to cover the full O&M costs associated with the water delivered.

Under these circumstances there may be a basis for the Bureau to establish a municipal and industrial rate for any additional water that is delivered from the project for these purposes. One approach would be to establish a rate based on a schedule that would accomplish the desired repayment of construction costs (and cover O&M costs) during some specified period of time. Another would be to price this water as "Additional Water" under the existing contract for Pactola. A third possibility would be to price the water to be competitive with other water supply options for the city. At present there is no guidance concerning the approach the BOR should take.

Environmental considerations

Any arrangement that involves a change in the existing commitment of water from the Rapid Valley projects will require the approval of the Bureau of Reclamation. Such a federal action raises the need for at least an environmental assessment under the

National Environmental Policy Act. We have little information about the fishery in Castle Creek, Rapid Creek, or the reservoirs but there may be a need to address issues related to instream flow values in considering the effects of an increased consumptive use of project water. Very likely, any arrangement allowing for increased municipal use of project water would need to address reservoir and stream conditions and mitigate any adverse effects on these values associated with the new arrangement.

ENDNOTES

1. Water and Power Resources Service, Project Data--Rapid Valley Project, p. 1041 (1981).
2. The pooled storage approach originally was instituted under the 1952 contract between Rapid City and the U.S. regarding water supplied from Pactola Reservoir. It also was included in the 1961 contract between the Conservancy District and the U.S. concerning water from Pactola.
3. Memorandum from Richard E. Brohl, Project Manager, to Les England, July 24, 1989 with attached table, Storage Water Available to Rapid City, Rapid Valley Water Conservancy District and other water service contractors.
4. Contract between the United States, Rapid City, South Dakota, and the Rapid Valley Water Conservancy District, Rapid Valley Project, South Dakota, United States Department of the Interior, Bureau of Reclamation, July 27, 1943, § 13 (c) [hereafter 1943 Contract].
5. Telephone conversation with Bruce Laymon, Bureau of Reclamation, Oct. 23, 1990.
6. Id.
7. 1943 Contract, § 15 (f) (iv).
8. Rapid Valley Unit, Contract for Purchase of Water Between the United States of America and the City of Rapid City, South Dakota, Oct. 20, 1952, § 2 (a) [hereinafter 1952 Contract].
9. Id. § 5 (a).
10. Id. § 2 (a).
11. Id. § 3.
12. Id. § 4 (b).
13. 43 U.S.C. § 485h. Congress provided this right of renewal in 1963 but made it subject to renegotiation concerning the charges for the water service and any other matters which the contract identifies for renegotiation.
14. Rapid Valley Unit, Missouri River Basin Project, Contract for the Purchase of Water Between the United States of America and the Rapid Valley Water Conservancy District, January 6, 1961, § 3 (a) (i) [hereafter 1961 Contract].
15. Renewal is to be upon "mutually agreeable" terms and conditions. Id. § 2.
16. Pactola Reservoir, Rapid Valley Unit, Water Service Contract Between the United States and the Rapid Valley Water Service Company, Nov. 15, 1982, § 2 a.

17. U.S. Bureau of Reclamation, Rapid Valley Water Management Study (March 1990).
18. 1961 Contract, § 3 (c).
19. Id.
20. U.S. Bureau of Reclamation, Storage Water Available to Rapid City, Rapid Valley Water Conservancy District, and Other Water Service Contractors, July 24, 1989.
21. 1943 Contract, § 8(a).
22. Id., § 12(a).
23. 43 U.S.C. § 485h-1. See also *Ivanhoe Irr. Dist. v. McCracken*, 357 U.S. 275 (1958).
24. For an extended discussion of this general issue see volume I of this report.
25. In the 30 year period between 1960 and 1989 the District took no water from Pactola in nine years, less than 600 acre-feet in another nine years, and more than 3,500 acre-feet in six years. Bureau of Reclamation, Storage Water Available to Rapid City, Rapid Valley Water Conservancy District, and other Water Service Contractors, July 24, 1989.
26. Id.
27. 1943 Contract, § 18.
28. Reclamation Project Act of 1939, § 9(C).

STRAWBERRY VALLEY PROJECT

STRAWBERRY VALLEY PROJECT, UTAH

Background

The Strawberry Valley Project (SVP) irrigated acreage is located in the Spanish Fork area about 3 miles south to 25 miles southwest of Provo (See Figure SV-1). The project area covers about 43,000 irrigable acres and project features include the Strawberry Dam and Reservoir, several feeder canals and a four mile long tunnel that carries the stored water from the Colorado River basin into the Bonneville basin. There are three project power plants, one constructed by the Bureau in 1906 and the other two by the Strawberry Water Users Association in 1937 and 1942, the project operating agency. The old Strawberry Reservoir had a capacity of 283,000 acre feet.¹ Project water was authorized primarily for irrigation, with incidental domestic, power and stock watering uses.

The Project was one of the first Bureau of Reclamation projects, authorized in 1905.² Agricultural use in the area had begun almost a half century earlier, with low summer river flows limiting development of the irrigable lands. The project was intended to provide a much needed supplemental water supply for about 23,000 acres of existing farmland and 20,000 acres of new farmland, thus improving the economic conditions of the area. Additionally, the initial hydroelectric generating plant was built to provide power for construction of the tunnel. Now all three plants provide power for project operations, residential and commercial uses.

Between 1914 and 1917 the U.S. entered into three contracts with the cities of Payson, Springville (through the Springville Irrigation District) and Spanish Fork for large blocks of project water. The U.S. also entered individual contracts with each water

user, whereby the users agreed to pay the U.S. in exchange for project water and benefits.

The irrigation distribution portion of the project was completed in 1915 and the first water delivered that year. Operation and maintenance of the storage portion of the project was initially handled by the United States until 1926 when the Strawberry Water Users Association took over operations. The Association, formed in 1922, brought together many of the individual irrigators and irrigation districts that had been receiving water from the project. It traded shares of stock in the Association in exchange for a deed of conveyance from persons holding rights to receive project water on the basis of one share of stock for each acre foot of project water entitlement.³ The Association entered a repayment contract with the United States in 1926, and supplemental and amendatory contracts in 1928 and 1940.⁴ The Association now has about 1200 stockholders representing about 95 percent of the rights to receive water from the project.

Project Costs

The original project construction costs totaled \$3,502,479. Of this amount, \$3,352,698 was repaid by the irrigators, with the balance attributable to contributions by other entities. The final irrigation payment was made in 1974.

The Association has taken out a rehabilitation and betterment (R&B) loan with the Bureau in the amount of \$7,372,000. The loan is being used to replace a diversion structure on the Spanish Fork River and to line a canal and replace some sections with pipe. The Association began making payments on this loan in 1988 and has paid \$171,200 to date. The loan payments

Strawberry Valley Project

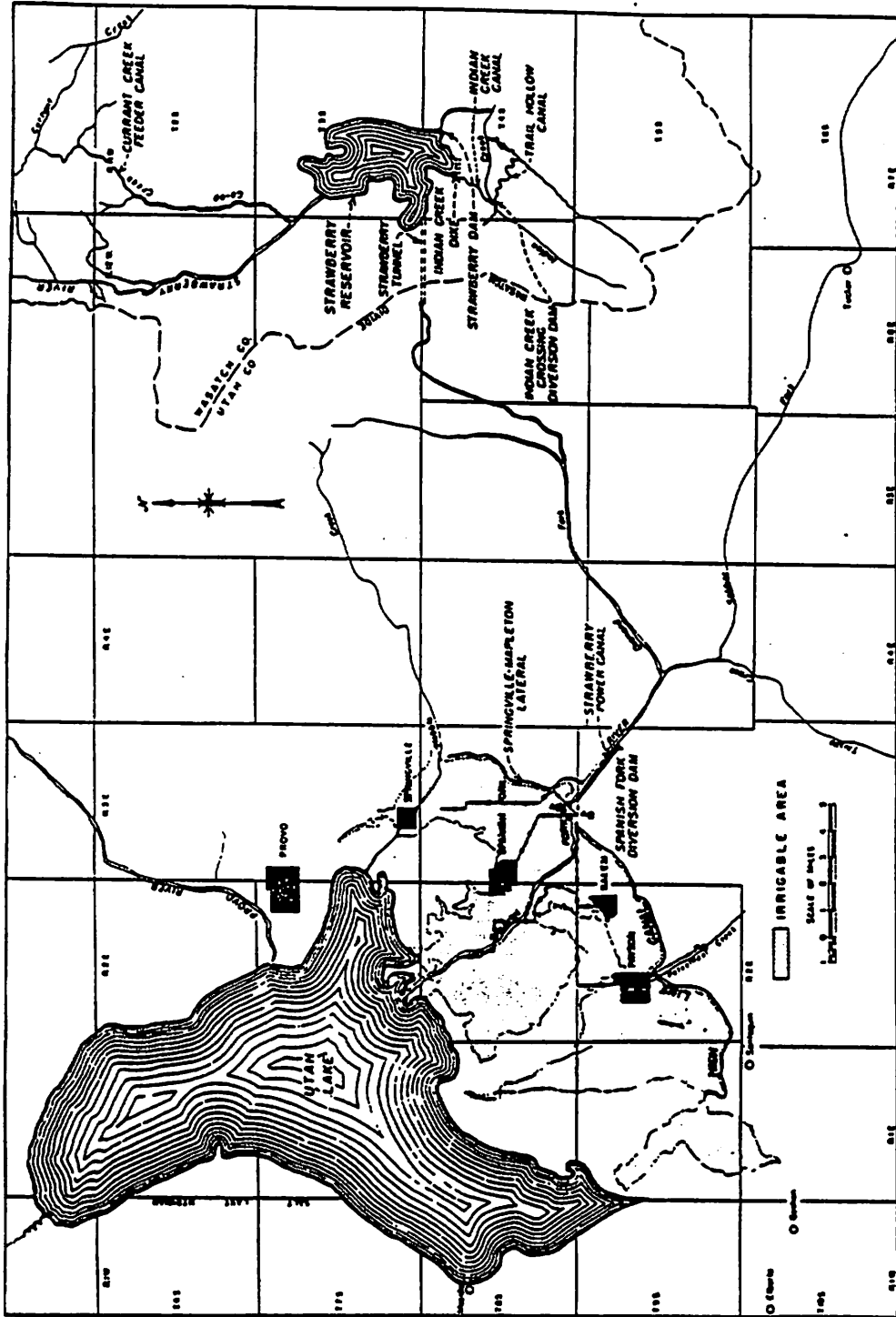


Figure SV-1. Strawberry Valley Project, Utah

increase over time with a 22 year payout term. The increases correspond to the satisfaction of other, private loans taken out by the Association and the Springville and Mapleton Irrigation Districts.⁵ Payment comes from power revenues.

The water users currently pay to the Association \$1 per share (acre foot) annually for construction and for their share of operation and maintenance costs. They also pay to their respective canal company an assessment for delivery to the farmers. In addition, the Association receives substantial revenues from the three project hydroelectric power plants to use for project improvements. All power facility construction costs have been repaid by the Association. The plants have been operated by the Association for several years.

Water Rights

Description of water rights

The Association manages both direct flow and storage rights. Project water rights include over 166,000 acre feet of Strawberry Reservoir storage rights, and over 500 cfs of direct flow rights from Spanish Fork River. Since the Central Utah Project is being constructed over the area covered by the original SVP, it has become necessary to negotiate an operating agreement that will preserve the original project water supply and power rights. These agreements are currently being negotiated between Strawberry Water Users Association and Central Utah Water Conservancy District.

Title to project water rights

Title to project water rights is in the name of the United States, even though the project is now paid out. According to the position taken by the Bureau and the Regional

Solicitor, project water rights are "owned" by the United States, and remain subject to all terms of the repayment contract except for the repayment obligation.⁶ The original application for Strawberry Reservoir storage was filed by the Strawberry Valley Water Users Association in 1906.⁷ The application was subsequently assigned to the U.S. and resulted in a final certificate for 100,000 acre feet of storage. The U.S. filed additional applications for 60,000 acre feet of storage in about 1910, and 9,000 acre feet in the 1930s. This 9,000 was reduced to 6,779 during the application process.⁸ The U.S. also holds title to over 500 cfs of direct flow rights from the Spanish Fork River.⁹ There is a very small amount, about 3 percent, of project water that is owned by individual users. In addition, the Association holds title to direct flow rights for stock watering, domestic use and hydro-electric power generation.

Between about 1908 and 1914, the Bureau had each water user sign a water application that was essentially a contract to guarantee that the user would pay his share of the construction repayment obligation and by placing a lien on the property and water. Once the project was paid out in the 1970s, the Bureau began issuing each user a certificate recognizing that they had paid in full for a specific amount of project water and releasing the liens.¹⁰

Allocation of project water

In March of each year, the Association reviews the projected water supply and makes a decision as to whether project users will get 100 percent of their allocated project water, or something less or more. Each share of Association stock is entitled to one acre foot of water annually if the supply is 100 percent. Even 100 percent may not provide adequate irrigation in some project areas. Users served by the HighLine Canal, for example, are entitled to only two

acre feet per acre if the supply is 100 percent. This amount is only 50 percent of what the Utah State Engineer considers a full water supply for that land. Following the Association's March assessment and determination, each canal company is sent notice of the decision, along with a list of water users and the number of shares held by each user. The canal companies must notify the Association if there is any change to the user list.

Historically, the Association has been able to deliver 100 percent of users allocated project water about two-thirds of the time. During the drought years of 1934 and 1963, 25,700 acre feet and 40,000 acre feet, respectively, were released from storage and delivered to users. Between 1920 and 1982, an average of 61,000 acre feet of project water was delivered from storage to an average of about 41,000 acres of land.

Strawberry Valley Project Transfers

Strawberry Valley Project was developed at a time when primarily irrigation and some domestic, power and stockwatering uses were contemplated. Recently, some of the local municipalities have expressed an interest in using additional project water. In some cases, they want to use the water only for lawn and garden irrigation. In other cases, they would like to be able to exchange or trade the water for higher quality water that can be used for domestic purposes. It is unclear whether the water can be transferred to M&I use, how such a transfer should be effected and how much the municipality should be charged for the use of the water. The Association is presently conducting a study of how transfers might be carried out and developing a policy to submit to the Secretary of the Interior for approval.

Proposed Spanish Fork exchange

The City of Spanish Fork, with a population of about 13,000, originally purchased 440 shares of Strawberry Valley project water. Subsequently, the city has tried to acquire an additional 1100 shares by contract or through the annexation of project lands. Spanish Fork currently is entitled to about 440 acre feet annually of project water and has requested approval from the Association for the use of about 1160 acre feet. The city is supplying water to about 750 acres of annexed project lands. On the 440 acre feet, the city pays the irrigation maintenance rate and \$1 per share. The water is delivered through ditches, and is used for lawns, gardens and other irrigation-related uses.

A few years ago, the city contacted the Strawberry Water Users Association and proposed an agreement that would allow the city to exchange project water for higher quality spring water and deliver the cleaner water through the city's domestic or culinary pipeline. This exchange would occur only during the irrigation season. Because the city's predominant water use during this period is for irrigation of lawns and gardens, the city argued that the project water effectively would remain in irrigation use. Presently, all city domestic water is run through a single pipeline.¹¹

The proposal was submitted by Spanish Fork City to the Bureau of Reclamation for approval. Initially, the Bureau took the position that the proposal would cause the delivered water to be classified as domestic water.¹² As a result, the proposal would need the approval of the Secretary of the Interior. Further, the water would have to be declared "surplus" to project needs and the new use could not impair the efficiency of the project for irrigation purposes.¹³ One month later, the Bureau

changed its position, following a meeting between the city and Bureau staff. The proposal was referred to as a delivery contract only, and, the Bureau agreed, would involve no change in use. Rather, the change was defined as a change in the method of delivery to subdivided tracts. In addition to the lack of change of use, the Bureau relied on the fact that the original project repayment obligation had been fully repaid by the Association.¹⁴

Spanish Fork City patterned its proposal after the agreement between the City of Phoenix and the Salt River Water Users Association. This agreement gives the City of Phoenix the right to take and deliver project water within the city limits to Salt River Project lands to which the water is appurtenant, and the obligation to collect and pay all assessments and charges on behalf of the individual land owners.

Following approval by the Association, and signature by the City of Spanish Fork, the agreement was submitted to the Bureau's Utah Projects Office. The Bureau withheld approval pending an amendment that would clarify that the water would be used to irrigate a specific plot of land with appurtenant project water rights. Spanish Fork drafted a change to address this concern, and the change is now before the Association's Board for approval. The most current information received is that the Association's Board has delayed the decision and at the present time will not sign the revised agreement until the adoption of a policy and approval of the policy by the Secretary of the Interior. As mentioned above, the Association has undertaken a study of its transfer policy and will likely require cities to convert the water historically used for commercial irrigation to municipal use and require conditions to protect the Association's contractual agreements.

Association rules and policies

The Strawberry Valley Water Users Association is governed by federal reclamation laws, contracts, Articles of Incorporation and By-Laws. Under Article VI of the Articles of Incorporation, water rights are transferable to another parcel of land only by and with the consent of the Association. There are no provisions governing transfers except transfers to different project lands or to a new owner of the same project lands.

Limitations on change of purpose of use

Project legislation does recognize domestic (municipal and industrial) uses of project water. Therefore, the Bureau could look to the 1906 Act¹⁵, 1920 Act¹⁶ or the 1939 Act¹⁷ for authority to change the use to nonirrigation purposes. The 1906 Townsite Act states that the Secretary of the Interior shall "provide for water rights in [an] amount he may deem necessary" for the towns established under the Act.¹⁸ No findings of nonimpairment of other project purposes are required. In contrast, the 1920 Act requires a finding that there is no detriment to the water service for the irrigation project and no detriment to the rights of prior appropriators. There must also be a showing that there is no other practicable source of water supply for the new purpose and there must be approval by the repayment entity.¹⁹ Similarly, the 1939 Act requires a finding that the nonirrigation use will not impair the efficiency of the project for irrigation purposes.²⁰

In various letters to the Association and municipalities between 1975 and 1990, the Bureau has taken somewhat different positions on what is required prior to the transfer of project water from irrigation to M&I uses. In response to general Association inquiries in the late 1970s, the Bureau stated that any transfer of project

water to M&I use would have to be pre-approved by the Secretary of the Interior.²¹ A few years later the Bureau reiterated this view that project water may be transferred to M&I purposes with the approval of the Secretary, under the general authority of Section 9(c) of the 1939 Act.²² However, the Secretary may not approve a transfer of M&I water until there is a finding that the new use would not impair the efficiency of the project for irrigation purposes. Even with this finding, the new uses would be subject to Secretarial review and approval, and M&I uses would be subject to terms and conditions consistent with the Reclamation Project Act.²³

In the mid 1980s, the Association entered a temporary agreement to sell water for public health purposes to the Strawberry Recreation Company for use at the Company's summer cottages at Strawberry Reservoir until the Central Utah Project took over the operation in 1984. When asked to approve the agreement, the Bureau stated that a change of use to municipal and industrial use would require a determination that the irrigation water supply to agricultural lands would not be adversely affected.²⁴ This standard is most likely from the 1939 Reclamation Project Act.²⁵ In the same year, the Bureau stated that if project water were acquired by a municipality, the cost for the right to use such water would be determined by the Bureau.²⁶

Restrictions on change of place of use

Project water is appurtenant to specific parcels of land according to the Articles of Incorporation of the Association.²⁷ Shareholders of the Association have a right to use a specific quantity of water on their lands. The water may be transferred to other lands (to which they become appurtenant) only with the consent of the Association. The Association's rules prohibit the use of project water except on project lands.²⁸

Under the repayment contract, the Association is granted the right to transfer project water rights from marginal lands to better lands, or to the project water supply for use in the project generally until it is transferred for use on other project lands. No such transfer is effective unless the transfer agreement is pre-approved by the Secretary of the Interior.²⁹ In a 1986 letter, a Bureau official indicated that water in the project supply may be marketed by the Association for nonirrigation as well as irrigation uses with the approval of the Secretary of the Interior.³⁰

In the 1970s, some of the municipalities in the project area annexed project lands and assumed that they thereby acquired Project water shares. This practice was terminated when the Bureau raised objections, but the cities' still maintain a separate accounting system for the water tied to the subdivided project lands. In effect, the cities have been delivering some water for the benefit of those holding water entitlements from the Association, and collecting the assessments for this project water.³¹

Near the project's inception, the Bureau filed liens on all project land with the county recorder. This was done to assure repayment of the construction obligation. These liens have just recently been released as the user certificates, described above, were issued. However, the power to assess a lien upon a shareholders interest in the Association is retained by the Association by virtue of its contractual agreements with each user.³²

Nature of interest held by user

According to a 1986 letter from the Bureau, holders of the right to use Strawberry Valley Project water have the right in perpetuity for irrigation purposes on a specific parcel of land. The users can

transfer this right to another parcel of land for irrigation use but cannot transfer this right to municipalities or other water districts absent express Secretarial approval.³³

Adjusted repayments and profits

To date, there has been no transfer of project water involving an adjustment of the payment obligation. The project has been paid out since 1974. The R&B loan payments are expected to come from power and investment revenues, and from irrigator payments. All irrigators pay an annual assessment to the Association, one dollar per share or acre foot, to cover their share of the R&B loan. This obligation has stayed the same in all past irrigation to irrigation transfers, but is subject to change if the repayment obligation changes.

The Bureau has indicated that there may be an increase in the cost of project water if there is a transfer to municipal use. In a 1986 letter to the City of Payson, the Bureau stated generally that, under Reclamation Law, municipal use must be repaid with interest while irrigation use must be repaid without interest. Additionally, at the time project water is acquired by a municipality, "the cost for the right to use such water will be determined."³⁴ Since the project was paid out in 1974, it is not clear why the interest provision would be relevant.

Both the Bureau and the Association are in the process of developing policies, rules, and guidelines to govern future requests for municipal use of project water. The Utah Projects office has recently indicated that any future exchange or transfer proposal by municipalities for Strawberry Valley Project water will likely be subject to a higher municipal repayment rate as well as Secretarial approval.³⁵ However, the Association is approaching the subject with care to avoid a problem with existing

contracts, deeds of conveyance and Articles of Incorporation. The Association has undertaken a comprehensive study on the overall water supply and demand in the project vicinity, with a view towards future transfers of project water to municipal use. The Association anticipates requiring a formal change to domestic use under contracts, state law and the 1920 Reclamation Act. The Bureau has not taken a position on who should receive any additional revenues collected from new domestic uses.³⁶

Effect of Reclamation Reform Act

Although the RRA's requirements may be triggered by future transfers to municipal users that would confer supplemental or additional benefits on the Association, the current proposal by Spanish Fork City was determined by the Bureau not to require certification under the Act. The reason given was "[s]ince the City is only delivering water for the benefit of those holding water deeds (project entitlements), there are no additional benefits provided."³⁷ Therefore, the Bureau saw no need to require certification.

If the Bureau follows through with plans to make all future municipal users pay a higher rate for the water, or the Association imposes such a requirement, the cities will likely be prohibited from structuring the transfer to appear as if there is no change in use. Any use by the cities, even for lawn and garden irrigation, will be subject to the new rate. This type of change, to allow municipal use, may require an amendment to the repayment contract in light of a Solicitor's opinion that the original contract remains in effect.³⁸ There has also been correspondence from the Bureau indicating that a transfer to municipal use would be subject to terms and conditions imposed by the Secretary of the Interior.³⁹ If the repayment contract is amended, the

Reclamation Reform Act would be applicable. Additional revenues to the Association would seem to be a clear additional or supplemental benefit under the RRA.

Other potential municipal users

Spanish Fork is not the only municipality in the area that may be interested in using project water. In 1916, the City of Payson purchased 1,200 shares of project water. Later, the city proposed the additional purchase of 722 shares that it had acquired when project lands were annexed. However, the Association and the Bureau never approved of the city's acquisition of this additional 722 shares, and no project water has been delivered to the city under these shares. Currently, the city is growing and is actively looking for an additional domestic water supply. Payson would be interested in acquiring project water depending on the cost. Additionally, the nearby cities of Salem, Springville and Mapleton are growing and will likely be needing additional domestic water.

For these communities, there are not many alternatives to trying to transfer project water. All of the cities have been growing and their original water supplies are no longer adequate. Most rely on springs and wells fed by annual precipitation. There has been a drought for four years now, and the springs and wells are producing at about 20 percent of their normal capacity. The Association anticipates that the cities' needs will first be satisfied by transfers of private agricultural water rights and then by Central Utah Project M&I and irrigation water, prior to any transfer of Strawberry Valley Project water.⁴⁰

ENDNOTES

1. The Central Utah Project enlarged the reservoir to over one million acre-feet as a part of the Bonneville Unit by construction of the Soldier Creek Dam.
2. Authorized by the Secretary of the Interior on Dec. 15, 1905 under the provisions of the Reclamation Act of 1902.
3. *Strawberry Water Users Ass'n v. United States*, 611 F.2d 838, 840 n. 2 (Ct. of Claims 1979).
4. See contracts dated Sept. 28, 1926, Nov. 20, 1928 and Oct. 9, 1940 between the United States and Strawberry Water Users Association.
5. The private loans were used to cover replacement of facilities since these costs are not permitted under federal laws authorizing R&B loans.
6. See Letter to Strawberry Water Users Association from John W. Jensen, Project Manager, U.S. Bureau of Reclamation (Sept. 14, 1977); Memorandum to Project Manager, Central Utah Projects Office, Water and Power Resources Service from Roland G. Robinson, Asst. Regional Solicitor, U.S. Dept. of the Interior (May 28, 1980) and Letter to Milton Theobald, Manager, Strawberry Water Users Association from N.W Plummer, Regional Director, Water and Power Resources Service (Feb. 13, 1981).
7. This earlier Association disbanded in 1914, and there was no Association representing users again until 1922 when Strawberry Water Users Association was formed.
8. See Utah State Engineer File Nos. 43-3102 and 43-1259.
9. See Utah State Engineer File Nos. 51-1002, 51-1004 and 51-1016.
10. In their individual contracts with the Bureau, the users agreed to join any future association that might be formed, and to surrender their project rights to the Association in exchange for an interest in the Association. However, the users individual repayment obligation remained intact, and when they paid out this obligation, the Bureau issued each user a "final water right certificate" stating that the user has paid in full for his water right. In these final certificates, the water right is tied to a specific parcel of land, subject to the annual O & M charges.
11. The exchange plan would not be implemented if the city converts to a dual delivery system. The city is currently studying this possibility. If it converts, the lower quality project water could be delivered for irrigation-only use.
12. The term "domestic use" is defined to include "household, stock, municipal, mining, milling, industrial and other like purposes," but does not include the generation of electrical power. See Colorado River Compact of Dec. 21, 1928, at art. II (h).

13. *See* Letter to John W. Anderson from Clifford I. Barrett, Regional Director, U.S. Bureau of Reclamation (Apr. 13, 1988).
14. *See* Letter to John W. Anderson from Clifford I. Barrett, Regional Director, U.S. Bureau of Reclamation (May 17, 1988).
15. 34 Stat. 116, 43 U.S.C. § 567.
16. 41 Stat. 451, 43 U.S.C. § 521.
17. 53 Stat. 1187, 43 U.S.C. § 485.
18. 34 Stat. 116, 43 U.S.C. § 567. A 1911 Land Decision found that this statute prohibited the Secretary from entering contracts with individuals whose lands had been subdivided into town lots; that project water may be supplied only to towns that will handle the distribution to its inhabitants. *See* Instructions, 39 L.D. 591 (1911). However, a later Solicitor's Opinion clarified that the Secretary has the discretion to contract with towns or directly with water users owning lots or tracts of land within the towns. Opinion, Chief Counsel, Reclamation Service, Feb. 22, 1916, Commission Minutes 147, Docket 658.
19. *See* 43 U.S.C. § 52.
20. 43 U.S.C. § 485h(c).
21. *See* Letter to Strawberry Water Users Association from John W. Jensen, Project Manager, U.S. Bureau of Reclamation (Sept. 14, 1977).
22. 43 U.S.C. § 485h(c).
23. *See* Letter to Milton Theobald, Manager, Strawberry Water Users Association, from N.W. Plummer, Regional Director, Water and Power Resources Service (Feb. 13, 1981).
24. *See* Letter to Mr. Milton V. Theobald from P. Kirt Carpenter, Projects Manager, U.S. Bureau of Reclamation (July 21, 1986). It should be noted that the Association has a current agreement with another developer, Bryant's Fort, for the same purpose. There apparently was never a change of use request with the Bureau or with the State Engineer.
25. *See* Letter to Rodney W. Watkins, Administrator, Payson City from P. Kirt Carpenter, Projects Manager, U.S. Bureau of Reclamation (Sept. 2, 1986).
26. *Id.*
27. *See* Article VI, Articles of Incorporation, Strawberry Water Users Association.
28. *Id.* at Article XV.

29. See Amendatory Contract dated Oct. 9, 1940 at Article 24; and Letter to Mr. Milton Theobald, Manager, Strawberry Water Users Association, from N.W. Plummer, Regional Director, Water and Power Resources Service (Feb. 13, 1981).
30. And subject to imposed conditions and terms, see Letter to Rodney W. Watkins, Administrator, Payson City from Lawrence G. Moore for P. Kirt Carpenter, Projects Manager, U.S. Bureau of Reclamation (Sept. 2, 1986).
31. See Letter to Mr. John W. Anderson, Attorney for Spanish Fork City from W. J. Hirschi, for Clifford I. Barrett, Regional Director, U.S. Bureau of Reclamation (May 17, 1988).
32. See deeds of conveyance between each user and the Association; most are dated between 1922 and 1926.
33. See Letter to Rodney W. Watkins, *supra* at 1. The users right is conditioned on the users compliance with the terms of the Association's Articles of Incorporation, By-Laws, Contract and Deeds of Conveyances.
34. See Letter to Rodney W. Watkins, *supra*.
35. Telephone conversation with Lee McQuivey, Utah Projects Office, Bureau of Reclamation (Oct. 16, 1990).
36. Telephone conversation with LaVar Richmond, Utah Projects Office, Bureau of Reclamation (Oct. 30, 1990). The Bureau has discussed whether the money should go to the Bureau to recoup lost profits or to pay off the R&B loan, or to the Association.
37. See Letter to John W. Anderson, *supra* at 1.
38. Memorandum from Regional Solicitor Reid W. Nelson to Projects Manager, Central Utah Projects Office (Jan. 15, 1980).
39. See *Id.*, see also Letter to Rodney W. Watkins, *supra* at 1.
40. The cities of Salem, Provo and Spanish Fork may be acquiring some additional water supply from rights held by the Utah Municipal Power Agency (UMPA). These are all members of UMPA. The agency acquired some rights in Spring Creek that it no longer needs and has offered the water to its members.

TRINIDAD PROJECT, COLORADO

TRINIDAD PROJECT, COLORADO

Background

The Trinidad Dam and Reservoir Project is located on the Purgatoire River in southeastern Colorado, approximately three miles upstream from the City of Trinidad (see Figure TR-1). Prompted by a 1955 flood that extensively damaged the City of Trinidad, Congress authorized the project's construction in 1958.¹

The project was originally planned for flood control only, and was authorized for construction by the Army Corps of Engineers. Because of the long history of irrigation in the area and the erratic nature of the Purgatoire River flow, conservation storage for irrigation was added to the final plan. The project plan ultimately included fish and wildlife and recreation purposes as well. With a total reservoir storage capacity of 114,500 acre feet, 51,000 was allocated to flood control, 20,000 to irrigation, 4,500 to a permanent fishery pool, and 39,000 to a joint use pool for both irrigation and sediment accumulation.

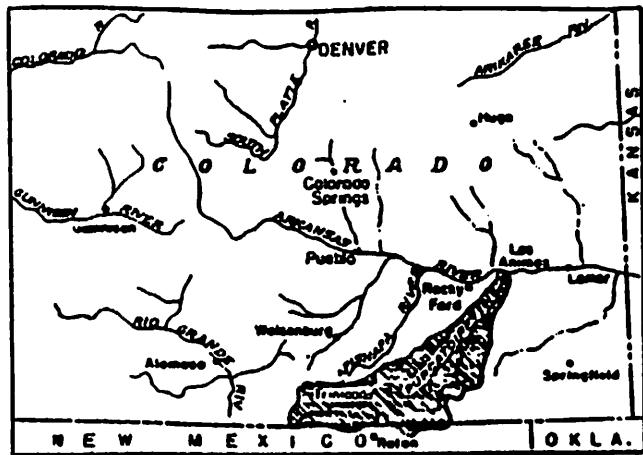
For the project's irrigation features, the Corps coordinated with the Bureau of Reclamation. The Bureau was assigned the responsibility for negotiating and entering into a repayment contract with the irrigation users.² Operating Principles, intended to obtain a maximum beneficial use of irrigation storage,³ were drafted and became exhibits to the repayment contract. The Governor of Kansas proposed five conditions to be added to the principles to protect Kansas water users from flow depletions. These conditions were approved by the Conservancy District.

Project Costs

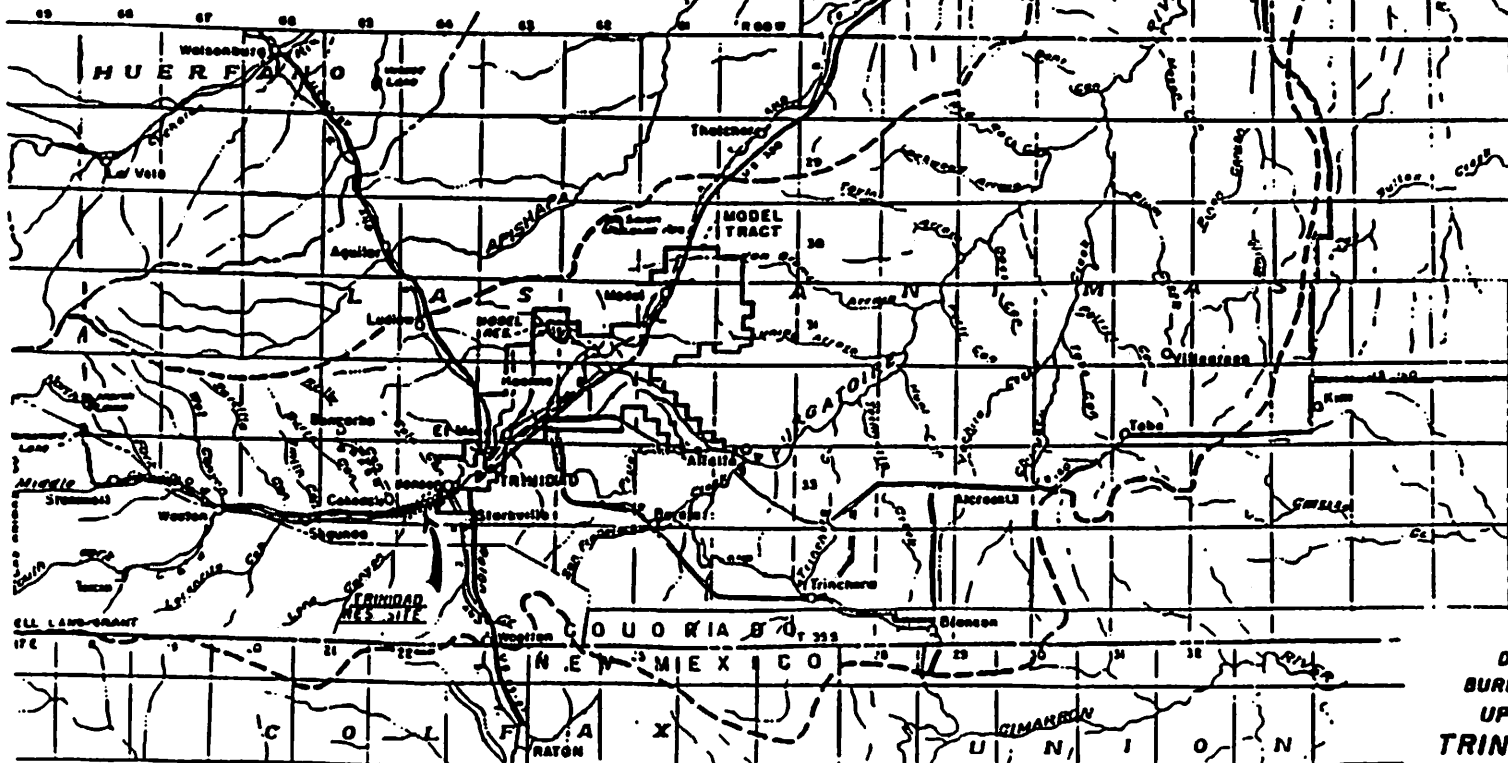
The project's total construction costs were estimated at \$21,980,000. Of this amount, \$15,544,400 was allocated to flood control and fish and wildlife purposes and \$6,435,600 was allocated to irrigation purposes. Actual construction costs totalled \$44,910,000. The participating irrigation water users agreed to reimburse the Bureau the \$6,435,600 originally attributed to the irrigation portion. This leaves about \$37.5 million in nonreimbursable costs allocated by the Corps of Engineers to flood control and fish and wildlife purposes. To represent local irrigation users and to establish the repayment terms, the Purgatoire River Water Conservancy District was formed.

The repayment contract provides for variable annual payments over a 70 year period that commenced in 1985. As of 1989, the irrigators had repaid \$402,774, leaving a balance of \$6,042,823 on their repayment obligation. Each of the ditch companies, associations or corporations must pay the district a share of the annual construction repayment obligation. Each user's annual repayment obligation is fixed by their contract with the District. The contracts set forth a formula for determining the obligation that takes into consideration the user's priority, the total amount of project water delivered that year, and the amount of water delivered to the user that year.

The District is also responsible to the Corps of Engineers for its share of the operation, maintenance and replacement (O,M&R) costs associated with the project. The water users themselves will be responsible for the annual O,M&R charges if revenues received from the City of Trinidad and available from the District's annual ad

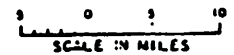


LOCATION MAP



EXPLANATION

- Purgatoire River Water Conservancy District
- Gaging Station in Operation
- Gaging Station Abandoned
- Dam and Reservoir



UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION - REGION 7
 UPPER ARKANSAS RIVER AREA
 TRINIDAD PROJECT - COLORADO
GENERAL MAP

Figure TR-1.
 Trinidad Project.

JANUARY 1964 MAP NO. 823-706-5

189A

valorem tax is insufficient to cover the O,M&R obligation.⁴

Water Rights

The Trinidad Project is unusual among federal projects in that the project water rights are entirely based on preexisting water rights owned by the ditch companies; no new rights were established for the project itself. The companies assigned regulation and management of the water rights to the District but retained title. The District acquired some storage rights, and the City of Trinidad acquired some storage and direct flow rights.

Description of project water rights

Project water includes both direct flow and storage rights. The water rights of 11 ditch companies totalling about 650 cfs were assigned to the District for administration. These rights have been the basis of irrigation in this area for many years and are tied to the irrigation of about 19,717 acres of land. Three ditch companies withheld a portion of their water rights from the project, and instead take their rights as they did before under the priority system on the river.⁵ As part of the project development plan, the Model Land and Irrigation Company transferred to the District ownership of its 20,000 acre feet Model Reservoir storage decree which has a rate of flow not to exceed 700 cfs. The District also filed for and was decreed a 39,300 acre feet conditional storage right under what is referred to as the "joint use" or "silt control section" decree. The decree allows for the storage in Trinidad Reservoir, in addition to the transferred Model right, any flood flows originating on the Purgatoire River above Trinidad Dam that would otherwise spill from John Martin Reservoir.⁶

The reservoir capacity has also been filled by out of priority inflows to the reservoir that were exchanged with transmountain water. Some of this transmountain water was purchased in 1980 by the City of Trinidad for the permanent fishery pool, discussed ahead. Since this time, Purgatoire River flows above Trinidad Reservoir have periodically been stored out of priority under the direction of the Division Engineer, and an equivalent quantity of transmountain water simultaneously delivered to John Martin Reservoir.⁷

Allocation of project water

Direct flow water rights are managed by the District except when the irrigation capacity of the reservoir is empty.⁸ When the reservoir capacity is empty the District relinquishes its control and the individual irrigators temporarily exercise their rights under the priority system.

Project water is to be equitably allocated to each acre of the District's irrigable area in wet years and dry years with two exceptions.⁹ First, since the Model Company was providing essential water storage rights to the project, the company was granted the exclusive use of 6,000 acre feet of storage space within the irrigation capacity of Trinidad Reservoir, for storing water, as available.¹⁰ Second, under the District's Contract with the Hoehne Ditch Company the District must deliver 95 percent of the irrigation requirements of the Hoehne Ditch Company's 1,200 irrigable acres.¹¹

Pursuant to the guidelines in the Operating Criteria, the District's rules and regulations set out the distribution procedures for the project water supply. Specifically, the District distributes water to ten ditch companies, two water users' associations and one corporation. Each year, by March 1, each company notifies the District of the

number of irrigable acres that will require water during the irrigation season. Normally, the irrigation company will request water for the maximum number of irrigable acres, although individual farmers may decide not to plant all of their irrigable acres. The District then allocates water to the companies according to a formula that factors in the minimum aggregate water supply expected to be available. If there is more runoff than anticipated, additional allotments are made available.

Permanent fishery pool

Under the project Operating Principles, 4,500 acre feet of reservoir capacity is allocated to fishery and recreation. The State of Colorado is responsible for acquiring the water needed for the original filling of this permanent pool, as well as for subsequent fillings and replacement of evaporation and seepage losses. However, the water for the fishery pool may not interfere with the District water supply or create any additional financial burden to the District or United States.¹²

In 1978, the state contracted with the City of Trinidad to have the City assume responsibilities for the permanent pool. The City has been working on acquiring the necessary water supply since this time. As mentioned above, the City purchased transmountain water in 1980, and has been supplying the pool with out of priority river diversions in exchange for simultaneous releases of the transmountain water. This transmountain supply is nearly depleted. The City is working on obtaining a more permanent water supply for the pool, and has recently implemented a temporary supply plan.

The city's long term plan is to convert nonproject water rights, and some project water rights in the Johns Flood Ditch for use

for the permanent pool. The nonproject water rights are Antonio Lopez Ditch rights acquired by the Corps of Engineers in the 1960s in connection with lands condemned for the bed of the reservoir. These rights were first leased to the State of Colorado for use in the permanent pool and then subleased to the City as part of the 1978 contract. The change of water right applications for both the nonproject and project water rights are pending, and are discussed below.

As a short term solution, the city has worked out a temporary supply plan with the State Engineer to use 140 acre feet of the Antonio Lopez Ditch rights acquired by the Corps. This is nonproject water and the temporary supply plan will likely be agreeable to the State Engineer on a temporary basis for the next few years but this will not be sufficient for the pool after 1991. The 140 acre feet covers about one half of the evaporation and seepage losses and the city anticipates needing to implement its long term plan by 1992.

Trinidad Project Transfers

As mentioned above, the Trinidad Project was planned primarily for flood control and irrigation purposes. The small amount (4,500 AF) of water to be stored as a fishery pool was to come from nonproject supplies. Future municipal use by the City of Trinidad or any other entity was generally recognized by the enabling legislation¹³, but not contemplated by the Operating Principles or Operating Criteria. Future use by the City of Trinidad was recognized in the project Repayment Contract.

The City of Trinidad is now seeking to change the use of its project water rights. Additionally, a group of users are looking at the sale of project water to the state to expand the fishery pool in Trinidad Reservoir,

develop wetlands and for fish propagation. Other ditch companies in the project have indicated that they are willing to consider a sale of their ditch rights that are part of the project to nonirrigation users.

City of Trinidad change application

The City of Trinidad owns both direct flow and storage project water rights that it acquired from the District and from the Model Land and Irrigation Company (See Table TR-1). From the District, the City purchased 3,000 acre feet of storage in the joint use pool. In order to overcome the Model Company's resistance to the Trinidad project, the City purchased 51 percent of the Company's stock, thereby acquiring an interest in both direct flow and storage water rights.

In a 1981 agreement between the City of Trinidad and the Model Company, Trinidad exchanged its shares of Model Company stock for (1) direct flow water rights and shares of stock in the Johns Flood Ditch Company (representing the water for about 1,000 acres of land); (2) contractual rights to project water associated with those water rights; and (3) a prior right to 500 acre feet out of Model Company's 1,200 acre feet storage account in Trinidad Reservoir. The City's primary purpose in acquiring Model Company stock in the mid 1960s was to gain project approval. However, even then the City also had the intention of acquiring the associated water rights for possible future municipal and industrial uses.

Table TR-1

Interest of City of Trinidad in Project Water Rights

<u>Priority Number</u>	<u>Priority Date</u>	<u>Amount</u>	<u>Name</u>	<u>Nature of Interest</u>
5.	3-20-1862	2.0 c.f.s.	Johns Flood	Model Company conveyance of 2.0 c.f.s. of their 5.0 c.f.s. water rights
9	1-1-1863	1.28 c.f.s.	Old Riley Dunton	Model Co.
15	4-10-1864	3.42 c.f.s.	Salaz North	conveyed 242 shares
20	10-7-1865	4.95 c.f.s.	Hoehne	in Johns Flood Ditch
27	5-31-1866	2.25 c.f.s.	Salaz North Enl.	representing 60% of
145	10-20-1902	100.0 c.f.s.	Johns Flood	the stock and project water of the Johns Flood Ditch
		500 AF	Model Account	500 AF of the first 1,200 AF of water stored or storable in the Model Account

The City of Trinidad has recently filed an application for a change of its project water rights. The City seeks to change (1) the type of use from agriculture to municipal; (2) the point of diversion; and (3) the place of use. At the same time, the city has proposed amendments to the Operating Principles and the Operating Criteria to reflect the change to municipal and industrial use. Kansas is reviewing the City's proposed amendments as provided in the five conditions of approval of the Operating Principles.

In addition to the usual change case issues relating to quantification and terms and conditions under which the change will be administered, this case presents an interesting additional issue: whether quantification of project water for the purpose of transfers should be based on irrigable acres, on underlying direct flow water rights, or some combination of the two. The Operating Principles require the District to allocate project water to the ditches within the District so that each acre of land receives an equitable share of project supply.¹⁴ Under the Principles, individual water right priorities become relevant only when the reservoir capacity is empty and the water is administered under the original priorities.¹⁵ The City of Trinidad, however, points to the contracts between the ditch companies and the District in support of their position that water rights must also be owned in proportion to irrigable lands as a prerequisite to project entitlement.¹⁶

Picketwire Ditch Company proposed transfer

The Picketwire Ditch Company is a consortium of mutual ditch companies that collectively own 99.21 cfs of ditch rights that are part of the Trinidad Project. These water rights have historically been used for irrigation purposes. Since the fall of 1989,

the Picketwire company has been negotiating with the Colorado Division of Wildlife regarding a sale of their water rights to the Division for use in game preserves and for fish propagation. The Division plans to acquire Picketwire Ditch Company lands and possibly other nearby lands to be used as game preserves, and the acquired water would be used in connection with these preserves and to expand the permanent fishery pool in Trinidad Reservoir.

The Bureau sees three requirements that would be necessary before such a transfer could be final. First, the repayment contract, which does not provide for this type of use, would need to be amended to allow this use. Second, the Operating Principles and Operating Criteria would have to be amended to permit the new use. This would require approval by Kansas, as well as the Bureau and the District. Finally, environmental compliance will be required under NEPA. Because of the need to amend the repayment contract, and because wetlands have been created as a result of historical irrigation practices, compliance will likely require at least an environmental assessment with possible mitigating conditions attached to the transfer. The Bureau has not yet decided whether the repayment terms would change.¹⁷

The Conservancy District will not oppose the change if there is no harm to the local economy and to the other project water users. The District anticipates three potential problem areas. The first has to do with changes in return flow patterns. The Picketwire Ditch is the highest ditch on the north side of the project service area. The Picketwire Ditch's return flows currently feed into several down gradient ditches. Also, to the extent the transfer dries up the Picketwire lands, there will be an impact on the water table in the lower lands. Secondly, the District will need to consider the long term effect from increasing the capacity of

the permanent fishery pool in Trinidad Reservoir. Such use may impair the District's ability to fully utilize its rights under the Model storage decree and the joint use or sediment control section decree. Finally, as mentioned above, there may be economic harm from a change in the tax base because irrigated lands are assessed higher than nonirrigated lands. There may also be increased maintenance charges assessed by the Corps of Engineers for maintaining a fuller reservoir.¹⁸

The Picketwire Ditch Company anticipates having to jump through several procedural hoops before the transfer would be final. These include obtaining approval of (1) shareholders in the consolidated ditch companies; (2) the Bureau of Reclamation; (3) the District; (4) the Colorado Water Court; and (5) the State of Kansas. The latter approval, necessary because the Operating Criteria and Operating Principles must be amended, is expected to present the most difficult obstacle. The other requirements are seen as cumbersome but not prohibitive.¹⁹

The State Division of Wildlife expects to share the financial risk of obtaining all the necessary approvals. If negotiations proceed as expected, the state will probably front money to the Picketwire Company to cover legal and engineering expenses that will be incurred in connection with gaining the federal, state and local approvals. This outlay would then be deducted from the final purchase price. The Division sees its role in obtaining the necessary approvals as primarily one of financial assistance.

Restrictions on change of purpose of use

The Trinidad project is authorized for navigation or flood control²⁰ and irrigation purposes.²¹ The project was authorized in

accordance with recommendations of the Chief of Engineers, Department of the Army, published in House Document 325. These recommendations included recognition of other project benefits, such as fish and wildlife and recreation.²² They also suggest that the project may provide a water supply for possible future domestic and industrial uses.²³ Municipal storage space in the reservoir was anticipated: "[I]f it is deemed advisable in the future to provide municipal water supply storage in the Trinidad Reservoir project, a small storage reserve could be made available."²⁴

In a discussion of the recreational and fish and wildlife aspects of the project, House Document 325 illustrates that administrators and Congress were aware of the demand for nonirrigation uses of project water, but were also concerned about impairing the already insufficient irrigation water supply:

[T]he reliable water supply available for irrigation in the project area would satisfy only 84 percent of the estimated requirements in the project area. Since the demand exceeds supply to this extent, water for any additional [type of] use could be obtained only by transfer from some present use.²⁵

This language would seem to be strong support for transfers of project water from irrigation to nonirrigation uses.

Even without a clear Congressional authorization for municipal use, the 1939 Reclamation Project Act provides authority for the Bureau to make water available to municipal use provided certain conditions are met. The Bureau must determine that the new use will not impair the efficiency of the project for irrigation.²⁶ The Bureau will likely

require proof that the previously irrigated lands are dried up, and that there are conditions attached to the transfer if necessary to prevent harm to the remaining irrigators.

The repayment contract specifically acknowledges that the City owns a portion of project water rights that are intended for future use, should the City's population grow.²⁷ However, for any new type of use, the Operating Principles and Operating Criteria would need to be amended. This likely presents a minor obstacle in terms of Bureau approval but may present a major transfer barrier if it is determined that Kansas has a veto power over proposed amendments. Whether Kansas has such power appears to be an issue in the pending transfer negotiations and proceedings,²⁸ and is tied to the pending *Kansas v. Colorado* litigation.

In December of 1985, Kansas filed a complaint alleging that Colorado and its water users had materially depleted the usable and available stateline flows of the Arkansas River in violation of the compact. Deliberations recently commenced in federal court in California, and Kansas filed a motion asking the Special Master to prohibit the Colorado courts from going forward with cases filed in state water court regarding Trinidad Project water. One of these cases is the City of Trinidad application to change the use of its project water rights. The Special Master refused to order a stay of any Colorado proceedings indicating that the issues are not the same as the issues pending in the federal case.²⁹

The most significant effect on transfers of the *Kansas v. Colorado* litigation may be Kansas's unwillingness to consider proposed changes in the Operating Principles and Operating Criteria until the federal case is final. There has been some suggestion that Kansas may not unreasonably withhold

approval of the proposed changes.³⁰ This issue, whether Kansas has absolute veto power over changes to the Operating Principles and Operating Criteria, is likely to be raised in the pending Colorado water court cases.

Regardless of whether the proposed new use is municipal or fish propagation, change of use applications would need to be filed with the state Water Court. Many of the water rights decrees representing project water limit the type of use to irrigation. These decrees would need to be changed, where necessary, to permit new types of uses. The City of Trinidad has already initiated the change process for Johns Flood Ditch water rights, as discussed above. While the Colorado water courts have no authority to change the Operating Principles and Operating Criteria, as a practical matter the court cannot approve a change decree unless the decree is compatible with the language of the Operating Principles and Operating Criteria.³¹

Any change of use that anticipates use beyond the irrigation season will also require a change in the District's rules to permit carryover storage. Currently, any water that has been allotted to a Ditch Company and remains unused at the end of the irrigation season reverts to the Project Account for reallocation in the next irrigation season.³² This is likely no problem for the City of Trinidad's use of Johns Flood Ditch water, because of the 1966 agreement between the District and the City that grants the City up to 3,000 acre feet of carryover storage in the reservoir.³³ If the Picketwire transfer requires carryover storage, the District expects that all remaining irrigation users will demand a change in operations to give each user a separate account and allow carryover storage. Separate accounts would also encourage conservation. Under the current system, many users would rather apply water that may

not be beneficially needed than lose it to the general Project Account at the end of the irrigation season.

Limitations on change of place of use

The authorizing legislation does not describe the place of use, but the accompanying House document describes the project area:

The project area...comprises about 19,500 acres of presently irrigated land in the valley of the Purgatoire River, from the Trinidad dam site downstream to the mouth of San Francisco Creek. The bulk of the project land is north and east of Trinidad on the rolling plains area.³⁴

The Picketwire transfers may, however, require that the District allow a special carryover account. The project Operating Principles seem to limit the distribution of the irrigation capacity in Trinidad Reservoir to the "District irrigable area." The District irrigable area is defined as "only the 19,717 acres of class 1, 2 and 3 irrigable lands to be served lying within District boundaries."³⁵ The water rights managed by the District can be used on any lands within the District for project purposes.³⁶

Nature of interest held by water user

As mentioned above, the Trinidad Project is unusual among federal reclamation projects in that all project water rights had been previously held and used by the users. The ditch companies have transferred the management of these rights to the District, but retained their ownership interest. Because of this unusual arrangement, the users do not have merely a contract right to

receive project water, and at the same time they do not have typical water rights ownership interests.

The Picketwire Ditch Company anticipates two issues related to defining the user's interest. First, what is the farmers or shareholders' title, or what do they have to sell. Although they have retained title to the direct flow water rights, the title is subject to their agreement with the District. Second, if the farmer or ditch company no longer has a use for their allotted share of project water, does the allotment revert to the general Project Account for reallocation to other ditch companies and farmers within the District? There is a District rule that prohibits carryover storage; any part of an allotment remaining unused at the end of the irrigation season reverts to the Project Account for reallocation in the next irrigation season.³⁷ However, there is another rule that allows a user to transfer all or part of his allotment to other irrigable lands within the District. The original allottee remains liable for his share of the construction cost payment.³⁸

Adjustment to repayment obligation and profits

The Bureau believes it would be difficult to increase the construction obligation for municipal use by the City of Trinidad unless the Repayment Contract was reopened. The current contract recognizes future municipal use by the City and says nothing about increasing the cost. The contract does provide, however, that the District must pay interest at the rate of 3.225 percent per annum on the portion of the remaining unpaid balance of the District's repayment obligation that is attributable to the City's municipal use of project water.³⁹

The Bureau has not been a party to any of the Picketwire Ditch Company -

Division of Wildlife negotiations to date.⁴⁰ Neither the Bureau nor the Corps of Engineers has decided whether there will be a reallocation of costs if the parties agree to the transfer. Any reallocation may depend on whether existing Bureau contracts are amended or new Bureau contracts entered. Use by the Division of project water will likely require an amendment to the repayment contract to allow this new type of use, thus opening the possibility of a reallocation of construction costs. If there are amendments to the contract or a new contract is entered the NEPA process may be triggered, requiring an assessment of the environmental effects of the agency action.⁴¹

While the District is concerned that the parties to transfers of project water adequately compensate the remaining irrigators for harm caused by a change in the tax base and any increased maintenance costs, the District has no plans to make the transferees pay an increased construction repayment obligation.

Effect of the Reclamation Reform Act

By special statutory exemption in 1982, the Trinidad Project is no longer subject to federal reclamation laws related to land classification or acreage limitations.⁴²

ENDNOTES

1. Flood Control Act of 1958, Pub. L. No. 85-500, § 203, 72 Stat. 297, 309 (amended by the Act of Oct. 27), 1965, Pub. L. No. 89-298, § 204, 79 stat. 1073, 1079.
2. See H.R. Doc. No. 325, 84th Cong., 2d Sess. (1956) (hereinafter House Doc. 325).
3. See Report of the Board of Engineers for Rivers and Harbors, in House Doc. 325, at 4.
4. See Rules & Regulation of the Purgatoire River Water Conservancy District (hereinafter District Rules), at Section 12.
5. See U.S. Department of the Interior, Bureau of Reclamation, Review of Operating Principles, Final Report at 42-43 (1988) (hereinafter 1988 Review of Operating Principles). The withheld water rights are tied to about 278 acres of land.
6. Id. at 5. Storage is limited to the portion of the 39,300 acre feet of reservoir capacity that is unoccupied by sediment. This 39,300 acre feet is projected to fill with sediment over the project repayment term.
7. As of December of 1990, the City had only 90 acre feet left of the 14,000 acre feet purchased in 1980. Exchange potential is really rare and requires a great surplus of water supply. Therefore, it is not a viable long term solution to providing the water needed for the permanent fishery pool.
8. "Empty reservoir capacity" is determined by the District according to specific factors set out in the Operating Criteria in Part E.
9. See Operating Principles at C.2. and Operating Criteria at Part B. In many years, the Trinidad Project has insufficient water to supply the full irrigation requirement of all project lands. See Baca Ditch Co. v. Purgatoire River Water Conservancy Dist., Case. No. 86CW25, Water Div. No. 2, Dist. Court of Colo., Finding of Fact, Conclusions of Law, Judgment and Decree (March 15, 1989), at 17 [hereinafter 1989 Decree].
10. See Operating Criteria, at Part A 2. The water stored in this 6,000 acre feet is referred to as the Model Account and receives preferential treatment in filling during the irrigation and nonirrigation seasons. Id. at Part C 2.
11. See Contract Between the Purgatoire River Water Conservancy District and the Hoehne Ditch Company dated Nov. 26, 1966. This contract has been interpreted to require the District to insure the delivery of 5,028 acre feet of water to the headgate of the Hoehne Ditch. See 1989 Decree, supra at 21.
12. See Operating Principles at Art. V.
13. See House Doc. 325, at 7 and 32.

14. See Operating Principles at Article IV C.2.
15. Id. at Article IV, D.3(c).
16. The pertinent language reads: "[water] shall be delivered by the Company only...[t]o those who, by reason of ownership, lease or otherwise, control the use of as many shares of the Company's stock, in relation to the number of acres of the Company's irrigable area they may irrigate, as may be necessary to assure the equitable delivery from the Company's ditch system of a sufficient amount of water, within crop requirements, for the proper irrigation of their land;" e.g., Contract Between the Purgatoire River Water Conservancy District and the Model Land and Irrigation Company, dated May 28, 1966, at 6-7.
17. Telephone conversation with Don Quakenbush, Contract and Repayment Specialist, Eastern Colorado Projects Office, U.S. Bureau of Reclamation (Oct. 24 and 31, 1990).
18. Telephone conversation with M.E. (Sandy) MacDougall, Attorney for Purgatoire River Water Conservancy District (Nov. 7, 1990).
19. Telephone conversation with William Mattoon, Attorney for the Picketwire Ditch Company (Oct. 31, 1990).
20. Pub. L. No. 85-500, 72 Stat. 297.
21. Pub. L. No. 89-298, 79 Stat. 1073, 1079.
22. See House Doc. 325, at 34.
23. House Doc. 325, at 7.
24. House Doc. 325, at 32.
25. House Doc. 325, at 31.
26. 43 U.S.C. § 485 h(c).
27. See Contract between the United States and the Purgatoire River Water Conservancy District, dated Feb. 10, 1967, at 17 (hereinafter Repayment Contract). This contract was amended Aug. 1, 1986 (hereinafter Amended Repayment Contract).
28. Telephone conversations with David Harrison, Attorney for the City of Trinidad, William Mattoon, Attorney for the Picketwire Ditch Company and Grady McNeil, Colorado Division of Wildlife (Oct.-Nov., 1990).
29. Telephone conversation with M.E. (Sandy) MacDougall, Attorney for the Purgatoire River Water Conservancy District (Sept. 24, 1990).
30. Specifically, the Bureau has stated that "Kansas is obligated to approve any proposed

amendment that will not cause 'material depletion' in the context of the Arkansas River Compact." See 1988 Review of Operating Principles, at 25.

31. Meeting with David Harrison, Attorney for City of Trinidad (June 21, 1990).
32. See District Rules, at Section 7.
33. See Agreement between the City of Trinidad and Purgatoire River Water Conservancy District dated April 20, 1966, at Exhibit A, § 15(a).
34. House Doc. 325, at 19-20.
35. See Operating Principles at Article II (10).
36. This is implied from the court's decision in *Purgatoire v. Kuiper*, 197 Colo. 200, 593 P.2d 333 (1979).
37. District Rules, at Section 7.
38. Id., at Section 9.
39. Repayment Contract, at § 14.
40. The Picketwire Ditch Company did contact the Bureau before negotiations began and asked generally whether it would be legal for the Company to sell their water rights. The Bureau advised the Company that the approval process would likely be complex, but that there was no prohibition on such a sale. Telephone conversation with Tom Gibbens, Chief, Water and Land Operations Division, Eastern Colorado Projects Office, Bureau of Reclamation (Jan. 9, 1991).
41. Telephone conversation with Don Quakenbush, Contract and Repayment Specialist, Eastern Colorado Projects Office, Bureau of Reclamation (Oct. 24, 1990).
42. See 96 Stat. 1269, 43 U.S.C. § 3901l.