WATER CONFLICTS IN THE WESTERN UNITED STATES

Water development and use in the Western United States has been fraught with conflicts, primarily because most areas west of the 100th meridian are water deficient. This is exemplified by California where the majority of available water is in the northern part of the state, while most of the population is concentrated in the semi-arid south. Several examples of past conflicts are cited Three current conflicts are examined in detail: the so-called Miller-Bradley Central Valley Project Improvement Act that instituted water marketing; the efforts by agricultural interests to reorder the allocation of water during shortages of the State Water Project pursuant to its contracts at the expense of urban interests; and the attempts by urban interest groups in Southern Nevada and Southern California to reallocate ***Colorado River*** water.

Water development and use in the Western United States since the first settlers has been fraught with conflicts, sometimes violent, sometimes never ending. The basic reason for the conflicts is readily apparent--with the exception (most of the time) of the Pacific Northwest, most areas west of the 100th meridian are water deficient. Nowhere is this more clearly demonstrated than in California, where the bulk of the available water is in the northern part of the state, and the heaviest population is in the semiarid south. Given that, conflict would seem to be inevitable, and it has been. A few examples follow.

State Water Project and the Sacramento--San Joaquin Delta. In 1960, California voters narrowly passed the Burns-Porter Act authorizing $1.75 billion for construction of the State Water Project (SWP). Butte County, where the SWP's Oroville Dam was being built, was the only Northern California county that voted in favor of the act. There has been strong opposition in Northern California against building a project to move Northern California water to Southern California.

Since construction and operation of the chief components of the SWP in the '60s and '70s, the

Sacramento-San Joaquin Delta export site has become the focus of the water conflict between Northern and Southern California. In 1982, California voters rejected, in a referendum, legislation that would have provided a delta transfer facility capable of protecting the declining fisheries while still supplying water to Southern California users. The referendum passed in the southern counties by a margin of approximately two to one, but was overwhelmingly rejected in the northern counties by a margin of about nine to one. Since then, delta fisheries have continued to decline to the point that federal regulatory agencies have taken action to set water quality standards for the delta.

Hydraulic mining. During the height of the Gold Rush in California in the nineteenth century, miners found it economically feasible to use hydraulic mining (placer mining)--namely, using water cannons to blast the soil and rock layers of the ***river*** banks in the Sierra Nevada Mountains--to reach the gold. Frequently, water was transported from one mountain watershed to another for placer mining purposes, resulting in water rights fights. A long-term result of the placer mining activity was the deposition of tons of debris downstream in the Sacramento Valley, destroying great swaths of farmland and adding to the existing annual flood threat from the Sacramento ***River***, all to the consternation of and demands for cessation by farmers and city dwellers.[1]

Owens Valley/Mono Lake--Los Angeles aqueduct. Early in the twentieth century the city of Los Angeles acquired water rights in the Owens ***River*** in Inyo County on the eastern side of the Sierra Nevada, and over time acquired most of the farm, ranch, and townsite land in the Owens ***River*** Valley. The construction and later operation of the aqueduct from the valley to Los Angeles was opposed by the citizens of the valley, who sometimes resulted to violence.[2] In addition, there has been continuing litigation led by valley and environmental organizations over the quantity of water the city may divert and pump from the valley.[3]

In the 1930s, Los Angeles extended its aqueduct northward into Mono County to divert water from streams flowing into Mono Lake, a highly saline sump. The only life the lake can support, because of its saline content, are brine shrimp, which feed large numbers of nesting California gulls. The diversions have resulted in the lowering of the level of Mono Lake to the effect, it is claimed, that the bird populations are threatened. Extensive litigation and political action by local and environmental interests against the city has resulted in a substantial decrease in the city's diversion rights.

Other water wars. Throughout this century California has experienced many other water conflicts, such as the city of San Francisco, over determined opposition, damming the Tuolumne ***River*** and flooding the Hetch Hetchy Valley in Yosemite Park;[4] the New Melones Dam on the Stanislaus ***River***, where two environmentalists chained themselves to boulders in the channel to stop the filling of the completed reservoir (rains mooted the effort); or the Auburn Dam project on the American ***River***, whose purposes included flood control for Sacramento as well as substantial water storage and power production. (Although the federal government spent many millions in preparing the dam site, the persistent opposition of environmental organizations prevailed when it was determined that the site overlay a seismically unstable area, thereby requiring redesign of the dam and greater costs.[5])

Nor have California's water conflicts been confined within the state. The ***Colorado River***, draining 246,000 square miles in seven states of the Western United States, has been the focus of contention between the Upper and Lower Basin states. That battle was settled by the division of the waters between the two basins by an interstate compact. Additional disputes between ***Colorado*** Basin states over allocation of the water required litigation in the U.S. Supreme Court. The longest pending suit is Arizona v. California, filed in 1952, where the respective rights of the two states were determined years ago, but not all Indian Reservation claims have been resolved.[6]

This article is intended to outline and discuss three current water conflicts with which the authors have in some capacity been involved:

1. The changing dynamics in California water conflicts leading to the so-called 1992 Miller-Bradley Central Valley Project Improvement Act.[7]

2. The efforts by agricultural interests to reorder the allocation of water during shortages of the

California State Water Project pursuant to its contracts at the expense of urban interests.

3. The attempts by urban interests in Southern Nevada and Southern California to reallocate ***Colorado River*** water.

Changing Dynamics in California Water Conflicts

Sources of California Water Conflicts

As in most western states the traditional water disputes in California were between users or would-be users of an insufficient water supply. The competing uses may be farming, mining, industry, municipal, or a combination, and would generally be local in scope--adjacent landowners, downstream municipalities, riparian versus appropriator, groundwater overlying landowner versus adverse user.

A second major basis for water conflicts in California is the broader, political one--a North/South rivalry rising to outright hostility from time to time. Of course, the North/South rivalry has not been limited to water distribution matters, but its strongest emotions have been reserved for that subject.

Disputes of individuals or business entities are occasionally quite significant in modifying water law.[8] But it is the historic northern opposition to the export of substantial quantities of water to meet the needs of agricultural and urban areas hundreds of miles away that has been, in the last several decades, the more important source of conflict.

An analysis of water conflicts from a North/South perspective alone, however, will prove inadequate. Cutting across the traditional North/South water antagonism is the remarkable increase in the public and political strength of the environmental movement in the last three decades. Its generally anti-resource development philosophy finds ready and substantial support in the north when it comes to developing water for transport to Central and Southern California.

Still another more recent phenomenon must be taken into consideration in understanding California's water conflicts. An offshoot of the success of the environmentalists' anti-water development efforts has been the creation of a major disagreement between urban and agricultural interests, longtime allies on both water policy and projects. Concerned with increasing, serious water shortages, major urban agencies, statewide, supported federal water marketing legislation pertaining to the huge Central Valley Project (CVP). That legislation also addressed environmental and financial issues and was strenuously opposed by affected irrigation districts and the agricultural community generally. Since that dispute, although common interests remain, a joint position of California's urban and agricultural water users can no longer be taken for granted.

Thus, to understand current water conflicts, it is necessary to focus upon the major protagonists--environmental organizations, urban agencies, and the agricultural community--for, in a real sense, they have preempted the field. The developing philosophies, strategies, and political activities of these three protagonists will determine water policy and projects for the foreseeable future.

California's Historic Water Development Policy

To put California water controversies in context, we must look briefly at the state's hydrology. California has a long-term average annual precipitation of some 200 million acre-feet (maf), of which some 70 maf could be available for diversion, storage, and use. Only 34 maf has been so developed.[9] The great bulk of the precipitation that is economically developable takes place in the far northern and relatively sparsely populated areas of the state. Most of the heavily populated and rapidly growing areas, however, are in the lower two-thirds of the state, particularly urban Southern California. Thus, planners, engineers, and politicians have long regarded California's water resources as being properly managed by the redistribution of "surplus" waters of the north to water-short areas of Central and Southern California. This, it was believed, would benefit the economy of the state as a whole.

This surplus water redistribution policy had resulted in a number of federal water projects, initially under

the Reclamation Act of 1902, designed to encourage and support the development of public lands for farming. The largest federal project in California is the CVP, authorized by Congress in 1937. It delivers a long-term average of some 7 maf annually.

In the '50s, studies by state authorities concluded that there was substantial surplus water in the north that could be stored and delivered throughout water-short areas of the state. A detailed report called for damming of the Feather ***River*** for that purpose and flood control. The newly elected governor, Edmund G. "Pat" Brown, who had demonstrated his long-held interest in water supply issues while he was the state's Attorney General, made a comprehensive state water plan one of his first priorities. Over great opposition from northern legislators, he pushed through project-enabling legislation in 1959, the so-called Burns-Porter Act.[10] That legislation was backed by a majority of the voters in 1960 in authorizing the necessary bond financing for the construction of the SWP. Of great significance, and perhaps a harbinger, was the fact that only a slight majority approved that bond issue.

The long-established policy of utilization of nature's water resource was but a manifestation of a larger philosophy: wilderness existed to be "tamed," and natural resources were to be exploited for the benefit of society. Thus, waste of water was defined in the law as allowing it to flow freely to its ocean destination without diverting it for beneficial use.[11]

Impact of the Environmental Movement

This institutional policy of water development, which had prevailed through most of California's history, had come into serious question and growing opposition by the late '50s based on both environmental and fiscal concerns.[12] The close public vote authorizing the SWP in 1960 did not end opposition to the project. Reacting to that growing opposition and fiscal problems, Governor Ronald Reagan's administration in the early '70s abandoned an important water supply source for the project, the proposed Dos Rios Dam on the Eel ***River***. In addition, protection of the state's "wild and scenic" ***rivers*** (particularly on the north coast) became available under state legislation as well as federal law.[13] The succeeding administration of Governor Edmund G. "Jerry" Brown, Jr., acted in 1980 to place a number of northern streams or portions of them within federal protection against development.[14]

These various political actions removing sources of surplus water from SWP potential use demonstrated a growing preservationist philosophy and the increased political strength of the environmental movement. Environmental opposition to various water projects had existed to one degree or another for many years, but, for the most part, the opposition campaigns were narrowly focused and sporadic. Even the extraordinary efforts of John Muir and his supporters early in this century, fighting the city of San Francisco's Hetch Hetchy Valley Reservoir may be so regarded.[15]

Today, one cannot ignore the environmental movement as a full party in water policy development as well as its position on particular projects. Dispelling any doubts is the movement's stunning success (with the help of Northern California, generally, and two of the state's largest agricultural companies) in the public referendum in 1982 regarding the state's proceeding with important elements of the SWP. Specifically, the referendum canceled supplemental legislation directing construction of a peripheral canal to bypass the delta, regarded by many as a critical component of the SWP.

Thus, in recent decades, the chief contestants in water disputes have been the environmentalists on the one hand and the allied agricultural and urban interests on the other--preservationists versus users.[16] The agricultural interests and large urban water agencies, principally in Southern California, were allied for many years because they shared the philosophy of economic growth through water development and because major new water projects could be designed for both interests, and costs shared. Environmentalists were seen by both as their common enemy.

The defeat of efforts to go forward with the peripheral canal was seen as a major setback by leaders of the water community--agricultural and urban alike--but only a setback. California's historic growth and prosperity followed closely its water projects, and many in leadership positions believed that the traditional policy must continue for the well-being of the state. The political alliance to meet environmentalist opposition continued.

The Emerging Policy of Water Transfers Through Marketing

Legislative Frustration. A number of events occurred following the peripheral canal rejection that led urban leaders to question the wisdom and practicality of the policy favoring additional water projects and the agricultural-urban alliance that supported it.

After initial hesitation of some in the water community, fearing abandonment of a peripheral canal, considerably more modest state project legislation was introduced in 1984, a so-called "through Delta" facility authorization. Opposition formed quickly, and the bill, supported only reluctantly by some, failed to pass out of the legislature. A second effort a year later also failed. It thus became evident that the defeat of the canal was more than the rejection of that facility; it was a signal that a significant segment of the public was taking issue with the traditional policy favoring large-scale water development. This was not lost on government officials: Congress, federal officials, municipalities, and the California legislature became increasingly responsive to the arguments and positions of environmental organizations. By this time, water development in California had come to a virtual standstill.

Threatened Deficiency in Urban Water Supply. Although no new major projects had been authorized following the approval of the SWP in 1960, that project and the Los Angeles aqueduct facility had come under severe legal and political pressure to curtail exports.[17] Yet, projected future water requirements were increasing--the rate of population increase throughout the state had been unprecedented in the '70s, and was expected to continue at a high rate.[18] As if this were not enough to cause grave concern to those responsible for urban water supply, by the mid-1980s there commenced what turned out to be one of the worst droughts in California's history.[19]

In many cities, programs for water conservation, wastewater reuse, and groundwater protection were introduced or intensified, but it was clear that these efforts would not meet anticipated, substantial shortfalls. It was also clear that adequate new water development projects could not be expected in the foreseeable future.

Consideration of Agricultural Water for Urban Use. By the late '80s, it was becoming more and more clear to urban water officials that if devastating economic losses from recurrent long-term water shortages were to be avoided, urban areas must have access to some of the vast amounts of developed water presently devoted to irrigated agriculture.[20] Early discussion of such a program included reallocation of project yield by legislative fiat. Apart from the legal questions posed, this idea was quickly dismissed as inequitable and politically infeasible. The conclusion reached was that long-term transfer of some agricultural water to urban use (and, indeed, to alternative agricultural use) could best be accomplished by legislative authorization of voluntary water marketing.[21]

Although this conclusion was driven by the circumstance that there was no reasonable alternative, in fact, the economic case for such water reallocation is overwhelming. According to a 1991 economic study, agriculture uses about 80 percent of the developed water of the state, yet directly accounts for less than 3 percent of its economy; 1000 acre-feet of water used on a farm supports on average 9 jobs, while the same amount in industry supports about 2600 jobs; an acre-foot of water used in San Joaquin Valley fanning accounts on average for a product valued at $350, whereas an acre-foot used in major industry accounts on average for a product valued at over $300,000.[22] One would be hard-pressed to justify today California's agricultural-urban water allocation.

When one considers these startling figures and that less than 10 percent of the water used in agriculture would satisfy urban requirements for the next several decades, the question may be asked, why did not urban agencies seek this solution earlier and avoid the rationing and severe economic loss to certain industries during the drought?

On reflection, it can be seen that a number of factors acted to inhibit what is essentially a major conceptual and political reassessment. To start with, water has not historically been regarded as a commodity, such as minerals, agricultural products, or manufactures. Thus, although transfer of water

among agricultural districts was not uncommon, most people did not think of water, already put to beneficial use, as something that was, or should be, subject to our market economy. Moreover, urban agency leadership, for the most part, believed that eventually public opinion would shift to support additional on-stream reservoirs, and at the same time, were not eager for political confrontation with a longtime ally. In addition, close relationships that had developed between influential representatives of agricultural interests and those of urban agencies, through many joint activities over the years, acted as a psychological barrier to an earlier adoption of water marketing as an additional strategy to help meet urban water needs. Finally, the negative image of Los Angeles in its obtaining water from Owens Valley, however lacking as an analogy, made some reluctant to support water marketing.[23]

The Miller-Bradley Central Valley Project Bill and Shifting Alliances

By 1990, as conditions worsened during the continuing severe drought, water marketing was carefully considered by leaders of the urban water community, particularly at the Metropolitan Water District (MWD). Such a program had been urged at least a decade earlier, by the Environmental Defense Fund and advocated from time to time by university economists and others, but was given short shrift as improvements on the SWP were being pursued. Some regarded such initiatives merely as tactics of opponents to divert attention from those efforts.[24]

Fortuitously, in 1991 Senator Bill Bradley of New Jersey, then Chairman of the Water and Power Subcommittee of the Senate Energy and Natural Resources Committee, proposed legislation to reform the huge federal CVP, which distributes about 20 percent of the developed water of the state, principally for irrigation. More than half of the irrigation water is devoted to high-water-use, low-economic-value crops.[25]

The chief objective of the Bradley bill was the reallocation of a substantial portion of CVP yield for environmental purposes, to the detriment of existing beneficiaries of the project. A second important purpose was economic reform, including increases in water charges and reduction of the term of contract renewals. A minor provision of the bill set aside a small amount of the project yield for sale by the Secretary of the Interior. This rather cryptic provision turned out to be of critical importance, for it provided the catalyst for urban water agencies to come out publicly for water marketing legislation, thereby signaling a major policy shift and a fundamental political realignment.[26] Importantly, the urban agencies involved were from the San Francisco Bay area of Northern California, as well as from the metropolitan areas of Southern California. This statewide character of the urban coalition added to its credibility and effectiveness.[27]

The trek through both houses of Congress in achieving this legislation was itself an intriguing, emotional adventure too lengthy and diverting for this article. In summary, key agricultural representatives invited urban agencies to support a substitute bill to be introduced in the Senate that omitted several reform provisions but included an acceptable water marketing section. For a while this seemed a viable alternative and was supported by MWD along with the Bradley effort. The agricultural community, however, was divided on this course, and California Governor Pete Wilson failed to support it. Ultimately agriculture's main effort was to defeat any reform bill.[28] The major urban water agencies in California, with support from urban agencies in other western states, aligned themselves with what became known as the Miller-Bradley bill after the legislative battle shifted to the House.[29] This urban support, added to that of the strong environmental coalition, assured passage of that bill. Agriculture continued its opposition to the legislation in unavailing efforts to bring about a presidential veto.[30]

The enacted legislation represents the fruition of many years of effort by Congressman George Miller of Martinez, California, to modify the water contract provisions, address environmental problems, and, indeed, expand the purposes of the CVP.

A recent agreement of MWD and the Arvin-Edison Water Storage District, an irrigation agency near Bakersfield, will enable the first major transfer of water from the CVP to urban Southern California under the water marketing provisions of the Miller-Bradley legislation. Under the July 9, 1996, agreement, Arvin-Edison will buy water from the CVP during "wet" years, store it in a vast natural basin underlying its service area, and make up to 75,000 acre-feet per year (afy) available to MWD. Some

$22,000,000 will be paid by MWD to Arvin-Edison for necessary storage and system improvements, which will benefit Arvin-Edison as well as MWD.

Reflections and Prospectives

By the mid-1980s, it should have been apparent that the long-established alliance of urban and agricultural water users, principally Southern California water agencies and Central Valley agriculture, was not working. The traditional approach to meeting growing water needs by simply constructing additional impoundment and distribution facilities, dominant in the first half of this century, was no longer suited to the public's increased respect for environmental values and recognition of alternatives. The construct, relied on so long for water development, that undeveloped or "surplus" water exists merely as untapped storage available for growing agricultural and urban needs had given way to an understanding that there is no "surplus" water, that all the water resources of the state are at all times devoted to essential public needs--agriculture, urban areas, and the natural environment.

Moreover, it is well to note that the environmental movement, generally, and its various organizations share, essentially, the same constituency with urban water agencies--the general public, whose support is at issue. Thus, East Bay Municipal Utility District's long-planned Buck Horn Reservoir project was halted by the district's own constituency, through election of project opponents to the agency's board of directors. So, too, substantial support by the residents of Los Angeles for the environmental campaign to reduce exports from Owens Valley and the Mono Lake area certainly undermined the city's resolve and contributed to the environmentalists' success.

Similarly, the Peripheral Canal vote in 1982 demonstrated, on a statewide level, the growth of public support for environmental protection. Although one cannot ignore the bearing of Northern California's historic animus on exporting water south, the northern opposition was greatly increased and Southern California's potential support was, at the very least, held in check by this shift in public sentiment throughout the state.

By the late 1980s, with new major water development projects politically impossible despite existing and anticipated water shortages, the economic imperative of limited water marketing could no longer be ignored by urban leaders. Although differences had arisen from time to time in their relationship, the actual break in the historic agricultural-urban alliance took place when urban agencies and the agricultural community took opposing positions on the Miller-Bradley legislation authorizing, inter alia, marketing of irrigation water for urban use. As a consequence of that strategic political realignment, each of the three interest groups are more clearly defined as potential competitors. They would henceforth be expected to form political partnerships on different issues as their respective interests dictated.

In fact this has occurred in several situations. Thus, when a comprehensive, if not overly ambitious, water marketing bill was introduced in the California legislature, it was supported by a coalition of environmental organizations and urban agencies, and strenuously opposed by agricultural interests and the governor's office. In 1991, the bill passed in the California General Assembly, but failed in the Senate. Efforts in the following year, too, were unavailing.

Another occasion where urban agencies sided with the environmentalists was in response to the proposed Sacramento-San Joaquin Delta interim water quality standards distributed in 1992 by the State Water Resources Control Board (SWRCB). The standards were generally favored by environmentalists, cutting back sharply on water exports and modifying the delta operations criteria of the SWP. For those very reasons, the proposed standards were opposed by the project's agricultural contractors. Urban water contractors traditionally had joined their agricultural brethren in like situations. This time, in the comments submitted to the SWRCB, they stood apart, recognizing the legitimate concern of the SWRCB for protection of the delta fishery, and merely urged modifications that would reduce the impact on exports, but, for the most part, allow the board's objectives to be pursued. The issue was mooted when the SWRCB terminated that proceeding at the direction of the governor's office.

On the other hand, many urban agencies still call for construction of particular water supply facilities,

especially those to improve delta transfer and augment the deficient yield of the SWP. In this, they would expect to find common cause with many agricultural contractors of the project and continued opposition among the various environmental groups.

Recently, to the chagrin of the environmentalists, urban agencies expressed interest in working on a bill in Congress, backed by agricultural interests, that would revise the Miller-Bradley legislation.[31] The environmental groups have fought this bill, believing it would significantly weaken the Miller-Bradley environmental and economic reform provisions. The new bill made only limited progress in the 1995-96 session, but is expected to be reintroduced in the next session, unless differences are resolved by agreed administrative interpretations of the Miller-Bradley legislation.

It is clear that the positions of the major parties in California's water conflicts will be more dynamic and less predictable than in the past. Agriculture cannot assume urban support on water issues; urban agencies must be sensitive to the environmental protection sentiment among its constituents; and environmental entities must recognize the continuing common interests between urban and agricultural agencies.

Although differences are expected to continue among the three interest groups, it is encouraging that, on occasion, they are able to achieve consensus. This occurred following the SWRCB's aborted efforts to issue interim standards for bay-delta water quality protection. In response to the Environmental Protection Agency's (EPA) 1993 draft regulations to protect the water quality of the San Francisco Bay-San Joaquin Delta, urban agencies took the lead in gaining support of agricultural agencies and environmental organizations for an alternative set of regulations. These, it was believed, would accomplish EPA's goals with less reduction of water for agricultural and urban uses. This united stance by California interests resulted in the state and federal agencies pledging to cooperate and creating a joint agency, "Cal-Fed," to work on bay-delta issues.

The celebrated Bay-Delta Accord was signed on December 15, 1994, by state and federal officials and a host of interested parties, including representatives of the three major interest groups and business leaders throughout the state.[32] In effect, the accord dedicated more than a million afy of SWP and CVP yield to the environment, but created a far more stable and certain regulatory regime for these projects; it also set the stage for negotiating long-term solutions in the bay-delta system.

One would hope the accord can be a paradigm for the future? California's water problems are too interrelated to allow for a "solution" that addresses only narrowly defined interests. Only a comprehensive approach can produce long-term solutions. Demonstrating respect for environmental values, continuing viable agriculture, and assuring reliable urban water supply are not inherently incompatible goals.

Shortages in the California State Water Project

The recent extensive drought in California, combined with the fact that the SWP has not been constructed to the full extent contemplated when authorized, resulted in severe shortages within the SWP, which had to be shared among the contractors in accordance with the shortage provisions of the contracts. The key provision, and the one that caused discord, is a requirement that in a temporary shortage year, before all contractors share shortages in proportion to their contract entitlements to water, the state shall reduce deliveries of "... water for agricultural purposes by a percentage, not to exceed fifty percent (50%) in any one year or a total of one hundred percent (100%) in any series of seven consecutive years. ... "[34]

The agricultural contractors (six contractors with a total entitlement of 1,235,000 afy out of a total SWP contract entitlement of 4,217,000 afy) claimed (1) the temporary shortage provision is unfair and (2) because the recent shortages were due more to the failure to complete the SWP to produce the planned 4.23 million afy than to the drought, the provisions of Article 18(b), permanent shortages, should be invoked. This would have three significant effects:

1. There would be no first reduction to agricultural users of up to 50 percent.

2. The contractual entitlements of all contractors would be reduced proportionally, but there would be no reduction in the existing payment provisions, thereby increasing the per acre-foot cost of entitlement water to all contractors.

3. The SWP would produce surplus water in many years, depending on how much of a reduction is made in the minimum project yield of 4.23 million afy. This surplus would be available for agricultural use on a priority basis at the cost of pumping the water to the contractors.

Needless to say, the 23 urban use contractors were united in their opposition to the agricultural contractors' proposal. To understand this disagreement it is necessary to delve into the history of the SWP and its contracts.

Background

Beginning in 1947, the California Legislature funded water resource studies resulting in The California Water Plan, which set forth the rudiments of the SWP, designed to transfer Northern California water to the South. The heart of the SWP consists of a dam and lake on the Feather ***River*** in Northern California (Lake Oroville), a joint federal-state storage reservoir in Merced County (San Luis Reservoir), a South (San Francisco) Bay aqueduct, a North (San Francisco) Bay aqueduct, and the California aqueduct running from the Delta to Riverside County in Southern California. The legislature approved the project in 1959, and the voters approved a $1.75 billion general obligation bond issue for the project in November 1960. It was recognized at the time that in order to reach the minimum project yield of over 4 million afy, additional conservation facilities, including a delta transfer facility, would be needed. The dispute under discussion stemmed in part from the failure, for a variety of reasons, to construct those facilities.[35]

In January 1960, then-Governor "Pat" Brown announced a set of "Contracting Principles for Water Service Contracts under the California Water Resources Development System." Of importance here:

1. Over the life of the water service contracts (75 years) the state will recover all of its costs, capital and operating, plus interest, for the conservation, transportation, and delivery of the water to the contractors.

2. Conservation costs, that is, the cost to develop the entitlement water, are to be pooled ("The Delta Pool") and recovered by an annual charge based on the proportional entitlements of each contractor. This ensures that no contractor obtains an advantage because it is geographically first in line. In contrast, fixed transportation costs are allocated on proportional maximum requested use of each of a series of reaches in the aqueducts. Thus the Southern California contractors, being at the end of the line, pay substantially more in transportation costs than do the agricultural contractors in the San Joaquin Valley. Variable transportation costs (i.e., the cost of power to pump the water) are shared proportionally on an actual use basis.

3. Capital and fixed operation and maintenance costs, both conservation and transportation, must be paid each year, irrespective of the quantity of entitlement water ordered or delivered.

These principles, as well as others, were carried out in the contracts with the state beginning with MWD's contract (now for 2,011,500 afy) in 1960.[36] The first (and largest, 1 million afy) agricultural use contract was made in 1963 with the Kern County Water Agency (KCWA). The uniformity requirement led to the first significant amendment to MWD's contract.[37]

Additional Contract Provisions

Minimum Project Yield. "Minimum project yield" (MPY) is the estimate of what the project will produce, and it serves as a limit on the total entitlements of all contractors. It was initially 4.0 million afy and in 1964 raised to the current 4.23 million afy. The studies used to determine MPY are to be based upon, among other items:

An allowable reduction in the agricultural use portion of the minimum project yield, due to drought, of not to exceed fifty percent (50%) in any one year, nor a total of one hundred percent (100%) of one year's supply in any series of seven consecutive years.

Although the agricultural interests dispute it, the contract definition of MPY compels the conclusion that the studies are to include not only existing facilities but also future planned facilities. To exclude such facilities would result in a much smaller MPY.

Entitlements. The entitlement article of each SWP contract provided for a buildup period, with most contractors to reach their maximum entitlements in the early 1990s. For example, MWD's initial annual entitlement was 154,772 acre-feet for the year 1972, and it reached its maximum of 2,011,500 acre-feet in 1990. KCWA had an initial annual agricultural entitlement of 46,600 acre-feet in 1968 and reached a maximum of 1,018,800 acre-feet in 1990.

The concept of the build up was based on several factors, such as the pace of construction and availability of project facilities and growth of demand within each contractor's service area. In the case of agricultural contractors, particularly KCWA, a third factor was involved, that of ability to pay. It was contemplated that many of the subagencies of KCWA and other contractors would need to build new facilities to handle the new SWP water. This would involve incurring further debt to finance the necessary distribution facilities. Thus the build-up entitlements were kept well below expected demand for these contractors. Instead of entitlement water and its attendant mandatory payments, the contractors would count on a virtually assured surplus water supply during those early years, available at cheaper prices, to meet the demand. Thus, in the initial phases of the SWP, surplus water was a key factor.

Surplus Water. The governor's "Contracting Principles" contained a provision that project water surplus to the needs of contractors could be sold on a non-dependable basis under short-term contracts. The original MWD contract in 1960 contained this provision with additional provisos designed: (1) to gain the best price (and a minimum of recovery of the state's cost), (2) to prohibit the sale of surplus water to a contractor that had not taken its full entitlement for that year, and (3) to prohibit the sale of surplus water to any contractor that, in the judgment of the state, had set its entitlement for that year unrealistically low in order to avoid the full cost for entitlement water.[33]

The KCWA contract, executed in 1963, contained a revised surplus water provision which gave a priority in the supply of surplus water to use for agriculture and groundwater replenishment and further gave a right to the San Joaquin agricultural contractors to 69 percent of surplus water available. Individual contractors were entitled to a quantity of such surplus water, to the extent available, based on the amount of entitlement water used for the priority purposes in the previous 3 years.[39] Deliveries were limited to the difference between the contractor's annual entitlement and its maximum annual entitlement. The price of surplus water was to be the state's variable cost, i.e., the cost of power. A contractor could not receive surplus water unless it scheduled delivery of its entire annual entitlement for that year.[40]

The Problem

As we noted, the SWP is not complete. When initially designed, it was contemplated that additional conservation facilities would be constructed as well as a delta transfer facility. The most likely candidate for a storage reservoir was the Eel ***River*** along the Northern California coast. Vehement opposition from a variety of interests--Northern Californians in general, environmentalists, and Native Americans--caused that approach to be abandoned. Since then, the North Coast ***rivers*** have been given wild and scenic ***river*** status by both Congress and the California Legislature. The agricultural contractors of the SWP have also complained that they cannot afford some facilities that have been proposed, including proposals to build storage facilities south of the delta. As always, environmental interests object to any more water leaving the delta.

The net effect of not building more facilities is that the SWP cannot, even in normal rainfall years, produce the water for which it has contracted. Although some urban contractors do not yet take their full entitlements,[41] there will be years when the SWP will of necessity need to impose cuts, even without a

repeat of the 1987-91 drought.

Although we do not intend in this article to analyze the legal merits of either side of the shortage dispute, some comment is needed. First, as to the claim that the 50 percent agricultural water cut in temporary shortages is unfair, this overlooks the history of the SWP. From the beginning, it was contemplated that agricultural use would take the first cut in a shortage. It was thought that agriculture, particularly those contractors that overlie the vast San Joaquin Valley groundwater basin, could survive a drought or other temporary shortage better than urban contractors. In turn, agricultural contractors were given several contractual benefits, such as a priority for purchasing cheap surplus water and an extended payment period for transportation facilities.

The agricultural contractors suggested that the minimum project yield may be as low as 2 million afy. A permanent shortage based on that figure would immediately result in a cut of more than 50 percent in all contractors' entitlements, resulting in a doubling of the delta charge, since the cost of the conservation facilities must still be paid. Most agreed, however, that if entitlements are limited to something around 2 million afy, in many normal years the SWP would produce substantially more than that. The surplus water would be subject to first call by the agricultural contractors at the cost of pumping the water. The net result would be that agricultural contractors would receive quantities of water closer to their present entitlements at lesser cost per acre-foot than the water delivered to the urban contractors.

In contrast, even the Department of Water Resources believed that the true MPY is closer to 3.6 million afy if some planned facilities are taken into account in calculating MPY, as required by the SWP contracts. The resulting impact of reduced entitlements on urban contractors is substantially less. The urban contractors believe that the present MPY of 4.23 million afy could be reached with water purchases and transfers. They insist, however, that any agreement to change either the temporary shortages or the MPY must be accompanied by other contract changes desired by the urban contractors.[42]

There were discussions between the agricultural contractors and the urban contractors under the auspices of the Director of the Department of Water Resources. Ultimately, the parties brought in a facilitator from out of state to bring some order and direction to the discussions. All sides put their desired contract changes on the table and discussions continued. Of many issues raised, the major objectives of each side included:

Agricultural contractors:

1. Equality in shortage sharing

2. A "rainy day" financing system to cover mandatory costs during shortage periods when reduced agricultural production revenues are inadequate to cover fixed costs

Urban contractors:

1. The ability to buy and transfer unwanted (uneconomical) agricultural entitlements

2. Equality in access to surplus water

3. The ability to wheel purchased non-SWP water through available SWP facilities

4. The ability to store entitlement water outside the contractor's service area

A negotiating team met often, and on December I, 1994, agreed and signed a document known as the "Monterey Agreement."[43] The agreement sets forth 14 principles for amending the SWP contracts and for future operating of the SWP. It took nearly a year to reach agreement on the wording of the amendments and a Monterey Amendment White Paper designed to explain and illustrate the amendments.[44] The highlights of the amendments follow.

1. Article 18(a), the temporary shortage provision is changed to provide that all contractors will share shortages equally in proportion to their annual entitlements.

2. Article 18(b), the permanent shortage provision, is eliminated.

3. The MPY is changed to eliminate consideration of agricultural contractors taking a 50 percent cut in shortages. Also, the estimated MPY is reduced by 45,000 afy, given up by KCWA.

4. The agricultural contractors agree to approve sales and transfer between willing buyers and willing sellers of up to 130,000 afy of agricultural entitlements.

5. Contractors are given the right to use available SWP facilities to wheel non-SWP water. Contractors may also store SWP water outside their service areas.

6. As part of several complex capital financing provisions, an Agricultural Rate Management Trust Fund is created to provide the desired agricultural "rainy-day" fund.[45]

The resolution of these issues took a great deal of time, but with some good will and, perhaps more importantly, with each group gaining some long-desired objectives, these issues have been resolved.[46]

Reallocation of *Colorado River* Water

The ***Colorado River*** Basin drains roughly one-twelfth of the geographical area of the continental United States.[47] The regulation and allocation of the water in this great basin has been as contentious and litigious as any western basin. There is the beginning of what may be another conflict: the reallocation, whether by purchase or otherwise, of water from agricultural or other use to urban uses in the burgeoning areas of Southern Nevada and Southern California.

The present allocation system of the ***Colorado River*** is contained in a series of state and federal statutes, compacts, court decisions, an international treaty, and the regulations and contracts of the Secretary of the Interior, collectively referred to as the "Law of the ***River***." An understanding or outline of the Law of the ***River*** is necessary to comprehend the obstacles and possible fights urban Nevada and California will face as they each seek a substantial increase, on a firm long-term basis, of their respective present allocations.[48] The most important item to remember is that the ***river*** is oversubscribed. When the basin states (Wyoming, ***Colorado***, Utah, New Mexico, Arizona, Nevada, and California) divided up the ***river*** with the ***Colorado River*** Compact in 1922, they assumed an average annual flow of the ***river*** that was substantially greater than it is. This guaranteed future conflicts.

The Present Allocation System

The *Colorado River* Compact. The ***Colorado River*** Compact came about when the people of the sparsely settled Upper Basin states (Wyoming, ***Colorado***, Utah, and New Mexico[49]) noticed the Lower Basin, and particularly California, were developing the use of ***Colorado River*** water, and they feared they would lose the right to develop in the future by the law of prior appropriation, The representatives of the seven basin states and the United States (Secretary of Commerce Herbert Hoover) attempted to divide the water of the ***river*** among the seven states, but were unable to agree. What they did agree on was to divide the ***river*** between the Upper and Lower Basins.

The compact allocates to each basin the beneficial consumptive use of 7,500,000 afy of ***Colorado River*** water. The Lower Basin was allocated an additional 1,000,000 afy if available (presumably from the flow of the Gila ***River*** in Arizona). Of great importance is the obligation given to the Upper Basin to release 75,000,000 acre-feet of water every continuing 10-year period at Lee Ferry, Arizona. Finally, the compact provided that water to satisfy any future Mexican Water Treaty would come from surplus waters. If there is no surplus water, each basin will share the obligation equally.[50]

The compact was not ratified by all parties, namely due to the obstinancy of Arizona, which wanted to settle its allocation against California. In 1929, as authorized by the Boulder Canyon Project Act,

Congress approved the compact and recognized it if approved by six of the basin states. That happened immediately, and Arizona finally ratified it in 1944.

The Upper *Colorado River* Basin Compact. The Upper Basin states agreed to a division of the Upper Basin's 7,500,000 afy allocation under the ***Colorado River*** Compact in a separate compact approved by Congress in 1949,[51] as follows:

Arizona:	50,000 afy, as to the balance,
Colorado:	51.75 percent,
New Mexico:	11.25 percent,
Utah:	23 percent,
Wyoming:	14 percent.

In 1956, Congress approved the ***Colorado River*** Storage Project Act,[52] which provided a comprehensive, basin-wide development plan for the water of the Upper Basin. It also provided for the construction of the Glen Canyon storage project. This dam and its reservoir (Lake Powell) are designed to provide long-term storage to meet the Upper Basin's release obligation to the Lower Basin of 75 maf every continuing 10-year period.[53]

The Boulder Canyon Project Act. In 1928 (effective in June 1929), after years of wrangling, particularly between Arizona and California, Congress passed the Boulder Canyon Project Act,[54] which authorized the construction of Hoover Dam and its reservoir (Lake Mead), designed to be the delivery point of the Lower Basin's allocation of 7.5 million afy. No one had a right to use the water stored behind Hoover Dam except by contract with the Secretary of the Interior.

The act also, among its many provisions, authorized the three Lower Basin states to enter into a compact to apportion the right to use the 7.5 million afy, if available, in a specified manner. The U.S. Supreme Court interpreted this provision, in conjunction with the water delivery contracts of the Secretary of the Interior, as an actual apportionment by Congress, as follows:

1. To Arizona, 2,800,000 afy, plus one-half of any surplus (to be reduced by 4 percent if Nevada entered into a surplus contract for that purpose).

2. To California, 4,400,000 afy plus one-half of any surplus.

3. To Nevada, 300,000 afy, plus 4 percent of any surplus if that state entered into a contract for that purpose, which it has.[55]

The California Limitation Act. As noted, the Boulder Canyon Project Act contained congressional approval of the ***Colorado River*** Compact, subject to approval of six of the seven basin states and provided California agrees with the United States and for the benefit of the other basin states to comply with the limitation of the use of 4,400,000 afy plus one-half of any surplus. The California legislature adopted the requisite ***Colorado River*** Limitation Act in 1929.[56] As we will discuss further below, when and if Arizona and Nevada utilize their full entitlements and there are no surplus waters, the California Limitation Act will haunt MWD.

The Seven Party Agreement. At the insistence of the Secretary of the Interior, the California users and potential users (mainly MWD) of ***Colorado River*** water, after much haggling, agreed to a division of California's apportionment of Lower Basin water. The Secretary of the Interior accepted the agreement and incorporated it in his contracts with California users. In simplified form, the agreement provides the following:

1. The first three priorities are agricultural contractors, in this order of priority--Palo Verde Irrigation District, the Yuma Project of the Bureau of Reclamation, and the Imperial Irrigation District and the

Coachella Valley Water District, for a combined total of 3.85 million afy for all three priorities.[57]

2. The fourth priority, to MWD, is 550,000 afy. Simple arithmetic yields a total allocation at this point of 4.4 million afy.

3. The fifth priority, to MWD, is another 550,000 afy and, to San Diego, 112,000 afy. The San Diego allocation was transferred to MWD when the San Diego Water Authority joined MWD after World War II.

4. The sixth priority, to the agricultural agencies, is 300,000 afy.

5. The seventh priority: any remaining water to agricultural use.

The Opinion and Decree in Arizona v. California. In 1952 Arizona sued California in the U.S. Supreme Court to settle the water rights to the ***Colorado River*** between the two states. In a wide-ranging opinion in 1963 and a decree the next year, the court spelled out a detailed framework for water rights and operation of the main stream (but not the tributaries) of the ***river*** in the Lower Basin. We have mentioned the determination of allocation of Lower Basin water between the three states. The court also opined that the ***river*** in the Lower Basin was under the control of the United States and that the Secretary of the Interior was in effect the watermaster for all water in the ***river*** below Lee Ferry.[58] The decree has many provisions, but of interest here, in addition to the allocations and requirement of contracts for using the water, is the provision that ***Colorado River*** water consumed in one state for any use is charged to that state's apportionment.[59]

The *Colorado River* Basin Project Act of 1968. Arizona had for years attempted to obtain congressional approval and funding for the construction of an aqueduct, the Central Arizona Project (CAP), from the ***Colorado River*** to Phoenix and Tucson, in order to utilize its apportionment of ***river*** water. Arizona finally succeeded in 1968 with the ***Colorado River*** Basin Project Act,[60] but at a heavy price. To remove California's objections (stemming from its loss in the Arizona case), Arizona had to agree to a provision in the act that, in the event of a shortage in the Lower Basin, the Secretary of the Interior shall administer the decree in the Arizona case so that no water shall be delivered to the CAP until California is assured that it will receive its full 4.4 maf apportionment for that year. The act also required the Secretary of the Interior to adopt criteria for operating Glen Canyon and Hoover Dams to provide, among other items, that to the extent practicable the active storage in Lakes Mead and Powell be kept equal. This, theoretically, could hinder large transfers from the Upper Basin to the Lower Basin and any long-term storage programs in either lake.

The Problem and Possible Solutions

Simply stated, the Las Vegas Valley in Nevada and the MWD service area (and prospectively the Coachella Valley Water District) are in search of more water for their growing areas. One source they both are considering is the ***Colorado River***, in an attempt to supplement their existing entitlements by some form of reallocation of ***river*** water, either permanently or by firm, long-term transfer agreements. We will examine some of the possibilities and weigh them against the obstacles contained in the Law of the ***River***. Keep in mind that if all the interests affected by a reallocation/transfer agree, transfers can be accomplished.[61]

MWD. MWD is faced with three fundamental problems with its water supply situation:

1. Its service area, now containing more than 16 million people who rely on MWD for more than 60 percent of their water, continues to grow in population.

2. The state has failed to complete the SWP and could not in normal years deliver MWD's full entitlement of 2,011,500 acre-feet, and the outlook for completion of the SWP is dim.

3. MWD has been making do by taking unused Arizona, Nevada, and Indian apportionment ***Colorado River*** water to keep its 1.3 million afy capacity ***Colorado River*** aqueduct full. The day is coming,

however, when the California Limitation Act will come into play, and MWD will be cut back to 550,000 afy of ***Colorado River*** water unless it acquires some long-term transfer water.

MWD has not been quiet on this front. It negotiated the Imperial Irrigation District (IID), a transfer of more than 100,000 afy on a long-term basis, wherein MWD will pay for the installation of certain water-saving facilities and practices, and MWD will receive the saved water.

MWD negotiated a 2-year pilot program with the Pale Verde Irrigation District (PVID) wherein MWD paid farmers to fallow their land, with the resulting unused ***Colorado River*** water going to MWD. Analysis of the pilot program will show whether accurate estimating of water saved can be realized. Some IID farmers have asked for a similar contract.

MWD and the Southern Nevada Water Authority (SNWA) have entered into a pilot program wherein those entities will pay Arizona to store otherwise unused ***Colorado River*** water in inland underground basins. In the event of a shortage, MWD and SNWA will take from Arizona's apportionment during that year and Arizona will pump from the underground. The up-front money will help Arizona with its CAP payment problems.

These initiatives are relatively new, and they have required that old farmercity and Arizona-California antagonisms and distrust be put aside. Note, however, that two of them involve only intrastate transfers, while the third was sparked by a financial crisis.

Nevada. The Las Vegas Valley is in the fastest growing area of the fastest growing state, Nevada. Although the valley itself has a large underground water basin, it is now badly overdrafted and subject to pumping restrictions. Most estimates show that by the turn of the century Nevada will have exhausted its meager ***Colorado River*** apportionment of 300,000 afy, which was awarded at a time when no one dreamed that Southern Nevada would grow as it has.

To remedy this impending shortfall, the water interests of Southern Nevada formed the SNWA, the main purpose of which is to acquire and share among the members additional water.[62]

The SNWA, under the initiative of the Las Vegas Valley Water District (LVVWD), has sought water from other sources. It has made filings with the state engineer to pump and export some 200,000+ afy of underground water located north of Southern Nevada's Clark County. Those filings produced an outcry from local and environmental interests and charges that this would be another Owens Valley rape. LVVWD has also filed for all the unappropriated water in Nevada in the Virgin ***River***, a tributary of the ***Colorado River*** that flows from Utah through a portion of Arizona into Nevada and empties into Lake Mead. This filing raised outcries from the town of Mesquite, Nevada (which sits astride the ***river***) and agricultural interests in the area, as well as grumbling from Utah and Arizona (which may result in the necessity that a three-state compact be negotiated). Even MWD has hinted that California may have acquired an equitable right to have an unrestricted flow of the Virgin ***River*** into the ***Colorado***. Nothing is easy in water development.

Areas Where MWD and SNWA Might Work Together. MWD and SNWA have common objectives: to satisfy the water supply needs of growing urban areas and look for firm, long-term water in the same area, the ***Colorado River*** Basin. There are some areas where they could look, and if they work together, it would seem that their chances of success would increase. For example, they might jointly purchase agricultural water, either Lower Basin or Upper Basin. They could seek to purchase CAP water to relieve the CAP's fiscal woes. SNWA and California interests are studying the possibility of storage in Lake Mead and in Arizona groundwater basins. Both Lower Basin and Upper Basin Indian tribes have expressed interest in leasing their ***Colorado River*** water. Finally, there is some Upper Basin water that has been apportioned but unused and unlikely to be used in the future that might be available for transfer.

To even mention some of these ideas causes some interests to become apoplectic. Yet, they are all worthy of examination if they would result in real, firm water for the urban areas and if the current rights holders are satisfied.

Obstacles

The attempt to acquire water through any of these possibilities, whether intra-state, interstate, or even interbasin, is inevitably going to run into obstacles. First among them will be the historic antagonisms in the ***Colorado River*** Basin. In 1922 when the ***Colorado River*** Compact was negotiated, the Upper Basin feared that the Lower Basin, and particularly California, was going to suck the ***river*** dry. That fear reemerges when anyone mentions an Upper Basin transfer to the Lower Basin, and shouts of the sanctity of the Law of the ***River*** are heard. The people of Arizona still do not fully trust California and are reluctant to discuss transfers. The agricultural interests in California along the Lower **I>Colorado** still suspect that the urban interests will try to deprive them of their priority and the water itself. Water interests are still reluctant to recognize Indian water rights. Memories are long in the water industry.

The Law of the ***River*** presents roadblocks, some more difficult, all possibly, ultimately, removable. The easiest of transfers, an intrastate transfer such as the IID/MWD agreement, required the approval of two parties: the Bureau of Reclamation, as the operating watermaster, and the Coachella Valley Water District, as an intermediate priority holder, which agreed, under certain conditions that it insisted on, not to gobble up the saved water as it has a right to do under the Seven Party Agreement. Similarly, in the PVID/MWD land following agreement, both IID and Coachella as higher priority holders had to agree not to take the saved water.

When we examine interstate but still intrabasin transfers, additional problems are met. We noted above that the decree in Arizona v. California requires the Secretary of the Interior to charge any consumptive use of ***Colorado River*** water in the Lower Basin in a state to the apportionment of that state. In order to transfer water and guarantee that additional water will be delivered, it is necessary that the consumption in the transferee state be charged to the transferor state. It would thus be necessary that the decree be modified implicitly or explicitly to allow the transfer. In addition, should California acquire an interstate transfer, it would run up against the California Limitation Act. A waiver by Nevada and Arizona would seem in order, and since the act was made for the benefit of the Upper Basin states as well, they might complain about use by California in excess of the Limitation Act, although they would be hard-pressed to show any harm. If Indian reservation water is involved, it is likely that congressional approval or authorization would be required.

Interbasin transfers bring even more hurdles. Some of the Upper Basin states have anti-water export statutes. Although the U.S. Supreme Court severely dampened the effect of such statutes in the Sporhase case,[63] to the extent they are applicable, they might be a serious obstacle. Priorities of use in the Upper Basin for other than Indian reservation water rights are dependent on state laws and could be a serious factor in determining whether a firm supply is being transferred. Far more difficult to overcome would be the requirement in the ***Colorado River*** Compact that commands the Upper Basin to release 75 maf every continuing 10-year period. Unless that figure is increased by the quantity of the transfer (plus losses due to seepage and evaporation?) by some means, whether by compact amendment, congressional statute, written agreement among all the states, or other means, there will be no transfer water going into the Lower Basin. Furthermore, once the water does reach the Lower ***Colorado River***, the three Lower Basin states must agree that the transferee state may take the water in addition to its regular apportionment. Otherwise, the water would be surplus available to be shared by all three states (50-46-4 percent). Finally, an unanswered question: Is the transferred water subject to call to meet the Mexican Treaty obligation, and if so will it be credited to the Upper Basin's share or the Lower Basin's? The answer to that question should be an element of the agreement itself.

There is no question that this transfer/reallocation process will be difficult. MWD wants to keep its ***Colorado River*** aqueduct full. Nevada needs an additional firm, long-term supply of water. Meeting these needs within the ***Colorado River*** Basin will take time, patience, and cooperation.

Two recent events demonstrate the types of difficulties (perhaps more political than legal) that will be encountered. Pursuant to congressional authorization,[64] the Bureau of Reclamation, IID, and MWD have been negotiating an agreement to provide for the construction and funding of the All American Canal Lining Project. As a general proposition, under PL100-675, the entity or entities providing the

funding are to receive the water conserved by lining the canal. MWD, in the proposed agreement, was to provide the funding and hoped to store the water in Lake Mead.

In December 1995 MWD and SNWA entered in an agreement[65] whereby the two parties agreed to cooperate, among other items, in the acquisition of long-term supplies of ***Colorado River*** water, and to support the continued use by both parties of unused apportionments of ***Colorado River*** water. Furthermore, the parties agreed that MWD would make available to SNWA (which would share proportionally in the costs) up to 30,000 afy of the expected 67,000 afy to be saved by the lining project, and both parties would support the other in allowing their shares to be stored in Lake Mead.

This agreement caused a furor and a turf battle involving the California ***Colorado River*** Board (which has an advisory function but no water service contracts with the Secretary of the Interior) and environmentalists. In addition, the Governor of California joined the fray and was quoted as saying "[MWD ... appears to be usurping the authority of the state [by] acting as though it has the authority to sell ***Colorado River*** water to Nevada" and "... [only the ***Colorado River*** Board] has the authority to represent California in interstate matters."[66] In March 1996, MWD rescinded the agreement. If the net result means that a state agency must be brought in when any party holding a Secretary's ***Colorado River*** water service contract seeks additional water from another state, the reallocation process will be made just that more difficult. This result should be contrasted with the cooperative effort by SNWA and MWD to put together a pilot storage program in Arizona, referred to earlier. Interstate water purveyor cooperation will be essential to achieve useful and beneficial reallocation of ***Colorado River*** water.

A second recent development is that the Bass brothers of Texas have been buying large acreage in the Imperial Valley. Reportedly, they seek to sell the water that IID would normally supply to that land. IID itself has been studying the matter of availability of IID's "apportionment" of ***Colorado River*** water for sale (and denies that a landowner can sell water other than through liD). These parties have been negotiating with the San Diego County Water Authority, a member agency of MWD, for the purchase of up to 400,000 afy of this water. This has brought much opposition from MWD.[67]

Officials of the San Diego Water Authority have long worried over the fact that it is at the "end of the pipeline" in Southern California and has little water of its own, thus being totally reliant on MWD.[68] For the San Diego Water Authority to acquire its own supply from the ***Colorado River*** it would need to either construct its own pipeline, an expensive proposition both as to construction and operation, or rent space in MWD's aqueduct. MWD, however, has a policy to keep its aqueduct full of cheaper ***Colorado River*** water, and to wheel someone else's water would mean San Diego would have to supply expensive power.

More important is the question of whether IID or its customers can sell ***Colorado River*** water outside IID's service area. IID's contract with the Secretary of the Interior provides that water will be delivered (subject to the provisions of the Seven Party Agreement) "... as reasonably required for potable and irrigation purposes within the boundaries of the District in the Imperial and Coachella Valleys in California."[69] As noted above, the Seven Party Agreement provides that water not used by IID can be used first by Coachella and after that by MWD. Again, this controversy emphasizes the need for all urban interests to cooperate in order to obtain additional supplies of ***Colorado River*** water.

Notes

1. See Norris Hundley, Jr., The Great Thirst: Californians and Water, 1770s-1990s (Berkeley, CA: University of California Press, 1992), pp. 73-77, and Robert Kelley, Gold vs. Grain: The Hydraulic Mining Controversy in California's Sacramento Valley (Glendale, CA: Arthur H. Clark Co., 1959). The disputes continue. State of California ex tel. State Lands Commission (93 Daily Journal D.A.R. 16249) is a 1993 case involving accretion to land along the Sacramento ***River*** caused by debris from hydraulic mining, and whether such accretions are the property of those who own the adjoining upland or the state as owner of the riverbed.

2. On the history of the city's Inyo and Mono Counties water diversions, see Hundley, The Great Thirst, pp. 135-168; William L. Kahrl, Water and Power: The Conflict over Los Angeles' Water Supply in the

Owens Valley (Berkeley, CA: University of California Press, 1983); Margaret Leslie Davis, ***Rivers*** in the Desert (New York: HarperCollins, 1993).

3. Hundley, The Great Thirst, pp. 342-349.

4. For a summary of the Hetch Hetchy controversy, see Hundley, The Great Thirst, pp. 169-192.

5. Recently, this controversy was reactivated, when another authorization bill was introduced in Congress by Congressman Doolittle of the Sacramento area. Drawing the adamant opposition of environmentalists, it was defeated in committee.

6. This case will be discussed further later in this article. For early congressional fights between Arizona and California, see John Upton Terrell, War for the ***Colorado River***. Vol. I, The California-Arizona Controversy (Glendale, CA: Arthur Clark Co., 1965). For the main litigation, Arizona v. California (1963) 373 U.S. 564, see Charles J. Meyers, The ***Colorado River***, 19 Stanford Law Review 1 (1966). See also Arizona v. California II, 460 U.S. 605 (1983), involving Indian reservation water rights claims.

7. Reclamation Projects Authorization and Adjustment Act of 1992, Title 34, PL 102-565.

8. In re Determination of Rights to Waters of Long Valley Creek System (1979) 24 Cal.3d 339; Niles Sand and Gravel Company, Inc. v. Alameda County Water District (1974) 37 Cal.App.3d 924.

9. For a more detailed description of California's water resources, see bulletin 160-92, California Water: Looking to the Future, California Department of Water Resources, 1992.

10. The California Water Resources Development Bond Act (Burns-Porter Act), CA Water Code sec. 12930 et seq.

11. Herminghaus v. Southern California Edison Company (1926) 200 Cal. 81.

12. Harrison C. Dunning, "Dam Fights and Water Policy in California: 1969-1989," Journal of the West 29, no. 3 (July 1990): 14-27.

13. 16 U.S.C.A. sections 1271-1287; CA Pub. Resources Code, sections 5093.5-5093.69.

14. The questionable circumstances of this action are set forth in litigation it produced; County of Del Norte v. United States (1984) 732 F.2d 1462.

15. See Note 4, supra.

16. Reference to an urban position, historically, must be understood, as excluding the San Francisco Bay area, Sacramento, and other northern municipalities, which generally adhered to the region's anti-water export sentiment. Reference to agriculture's position is generally that of California's huge Central Valley, which typically finds support from the agricultural community throughout the state.

17. Exports from the delta have been curtailed by regulatory actions of the State Water Resources Control Board (SWRCB). See SWRCB, Water Rights Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh (August 1978), and SWRCB, Draft Water Rights Decision 1630: Sacramento-San Joaquin Delta Estuary (April 1993). Federal listing of the Delta Smelt and the Winter Run Chinook Salmon have also acted to reduce the amount of water available for export from the delta. See Determination of Threatened Status for the Delta Smelt, 58 Fed. Reg. 12,854 (1993) (to be codified at 50 CFR Part 17) and Endangered Status for the Winter-Run Chinook Salmon, 57 Fed. Reg. 27,416 (1992) (to be codified at 50 CFR Parts 222 and 227). Exports from the Mono Lake Basin by the city of Los Angeles have also been curtailed as a result of litigation. See Audubon v. Superior Court of Alpine County (1983) 33 Cal.3d 419.

18. Since approval of the SWP in 1960, California's population has increased dramatically from 15.9

million to more than 30 million inhabitants. The California Department of Finance expects the state's dramatic growth to continue and has forecasted the state's population to reach 36.4 million by 2000 and surpass 40 million by 2010.

19. By the sixth year of the drought, reservoir storage in the SWP system reached a dangerously low 2 mar or 59 percent of storage capacity. Reservoir storage on the CVP system was even lower, reaching 3.9 maf, or 46 percent of capacity. As would be expected, precipitation throughout the state was also significantly below normal. From 1987 through 1992 average annual precipitation in the state ranged from normal in 1989 (49.8 inches) to a low of 57 percent of normal in 1987 (28.56 inches). See Current Drought Conditions, Western Water (Sacramento, CA: Water Education Foundation, September/October 1992).

20. A report by Spectrum Economics highlights the potential cost to industry for a 30 percent supply shortage. It is estimated in that report that economic losses to selected Southern California industries for a 1-year water supply shortage would be as follows:

Refining	$ 3.2 billion
Computer and electronics	$ 2.2 billion
Beverages	$ 1.6 billion
Combined food industry groups	$ 1.3 billion
Subtotal	$ 8.3 billion
Miscellaneous industry groups	$ 3.5 billion
Total	$11.8 billion

Spectrum Economics, Inc., Cost of Industrial Water Shortages (San Francisco, October 25, 1991) Table 2-3.

21. Occasionally, reference has been made to the Department of Water Resources' water bank used in the recent extended drought as an example of water marketing. Although it served a useful purpose, it was the antithesis of water marketing. Rather than consisting of open transactions between buyers and sellers, the state agency set the price water sellers would obtain, the prices water buyers would pay (a two-tier schedule), and priorities among buyers. For an analysis of the water bank experience, see Lloyd S. Dixon, Nancy Y. Moore, and Susan W. Schechter, California's 1991 Drought Water Bank (Santa Monica, CA: RAND, 1993).

22. Water Marketing in California: Resolving Third Party Impact Issues (San Francisco, CA: The Bay Area Economic Forum and the Metropolitan Water District of Southern California, February 1993); Spectrum Economics, Inc., Cost of Industrial Water Shortages (San Francisco, CA: October 25, 1991), Table 2-3; Carl Boronkay and Timothy Quinn, Water Transfers: An Urban Perspective, Land Use Forum 1, no. 5 (Fall 1992), (Continuing Education of the Bar, Berkeley, CA). See also Spectrum Economics report at Note 20.

23. So widespread in the water lore of the state is the "theft" by the city of Los Angeles of the water rights in Owens Valley, that this author had to spend considerable time in the Imperial Valley explaining to local public officials, farmer organizations, and others that the Metropolitan Water District's (MWD) water conservation proposal neither sought nor interfered with the valley's rights to water from the ***Colorado River***. The proposal contemplated the funding by MWD of the costs (many millions of dollars) of improving the Imperial Irrigation District's outdated, inefficient distribution system. At completion, the program would save more than 100,000 acre-feet of water annually lost, principally by seepage from unlined canals; the conserved water would become available to MWD. Years in the making, an agreement was executed in 1989, which was lauded by environmental organizations and water agency officials.

24. Carl Boronkay and Thomas Graff, Water Marketing, California Real Property Journal, State Bar of California 4, no. 4 (Fall 1986). Somewhat ironically, this author, in the above article, urged caution and identified a number of impediments to water marketing while acknowledging its potential to supplement urban water supplies.

25. David Mitchell, Water Marketing in California: Resolution of Party Impact Issues (Foster Economics, November 1992), p. 4.

26. The fully developed water marketing provisions of the enacted Miller-Bradley legislation are discussed in The Central Valley Project Improvement Act, An Urban Prospective, San Joaquin Agricultural Law Review, 3, no. 1 (1993), pp. 61-64.

27. The cooperation and united positions of major urban water agencies of Northern and Southern California has been a long time in coming about. It can be traced back to the proposal in 1983 by Jerome Gilbert, then-General Manager of the East Bay Municipal Utility District, to this author to have periodic meetings to try to identify and address common urban agency problems without regard to North/South politics. Meetings were held, other urban agencies of both Northern and Southern California joined, and eventually the informal organization was legally incorporated as the California Urban Water Agencies (CUWA). There followed a number of important studies--urban water quality, seawater desalination, drought water supply, etc.--which were widely distributed. In the process, there developed the realization that urban agencies had substantial interests in common, irrespective of their geographic locations, and their combined efforts would enhance their effectiveness. Equally important is that the process allowed development of trust and confidence among the representatives of these agencies. MWD has continued its strong role in the activities of CUWA and the political coalitions of its member agencies.

28. The opponents were successful in keeping the Bradley bill and its iteration authored by Committee Chairman J. Bennet Johnston in committee. The initiative for the legislation then moved to the House where Congressman George Miller successfully guided the legislation to eventual enactment.

29. Reclamation Projects Authorization and Adjustment Act of 1992, Public Law 102-575 (30 October 1992).

30. Very helpful to the success of the legislation and particularly in avoiding a veto by President George Bush was the almost unprecedented letter of support signed by a number of major business leaders, from both Northern and Southern California, The disruption and harm to the economy from recurrent extended water shortages and the economic soundness of water marketing were persuasive arguments in gaining their participation.

31. HR 3270 (Doolittle et al.), 104th Congress 2nd Session, April 18, 1996; "The Disaster Prevention and Fiscal Responsibility Act of 1996."

32. The coming together of the three major interest groups in bringing about the accord has its antecedents in the so-called three-way process. This was an extended effort of representatives of the agricultural community, urban water agencies, and environmental organizations to address the problems of the bay-delta, both environmental and water transfer, and present alternative solutions. The effort included numerous lengthy meetings, well-attended by the leadership of the three interest groups. It had the early support of Governor Wilson and key legislators and produced consensus on a useful statement of principles. The process foundered, in large part, when representatives of three of the major environmental organizations indicated they would not support construction of any delta transfer facilities irrespective of the conclusions in the scientific studies contemplated. Politically, this position precluded the other environmental groups from supporting such a recommendation and undermined the very basis for the process--that all would support the conclusions reached by eminently qualified outside experts chosen by the three-way participants themselves.

33. Even as this is written, a dispute has arisen among parties to the accord. Recently the city of San Francisco intervened in a lawsuit, filed by several Central Valley-based water and irrigation districts,

joining them in challenging the delta flow standards set by the SWRCB, whose standards correspond to that element of the accord. By terms of the accord, upstream diverters agreed to give up a portion of their water to help restore the bay-delta system and replenish dependent fish and wildlife. The city of San Francisco, even though a signatory to the accord, seems to be balking at giving up some of the water it intercepts from the Tuolomne ***River*** flow to the delta. Environmental organizations, also signers of the accord, are irate and question the city's good faith.

34. From Article 18(a), Contract between the Metropolitan Water District of Southern California and the State of California Department of Water Resources for a Water Supply (1960), as amended. This contract with MWD was the prototype contract for the SWP, and Article 45 requires that all state contracts for the SWP be uniform with respect to basic terms and conditions, with certain enumerated exceptions. The shortage provisions of Article 18 appear in all SWP contracts. There are currently 29 such contracts.

35. For those interested in the minutia of the construction and operation of the SWP, the annual California Department of Water Resources Bulletin 132 series "Management of the California State Water Project" is an excellent source.

36. By design, the MWD contract, the largest of all, was not to be effective until the adjournment of the California legislature in 1961, thus giving that institution an opportunity to comment or object. The California Department of Water Resources' analysis of that contract presented to the legislature contains useful material on the meaning and intent of its provisions. See Department of Water Resources, "Analysis of Contract Between the State of California Department of Water Resources and the Metropolitan Water District of Southern California Executed November 4, 1960," February 10, 1961.

37. It has often been charged that the SWP contracts amount to a subsidy to agriculture at the expense of urban contractors. This charge was made repeatedly during the Peripheral Canal debates, usually by environmental interests. This author, at the request of the chairman of the California Senate Agriculture and Water Committee, made a presentation refuting the charge. See Warren J. Abbott, "'Myth vs. Reality': Agricultural Subsidies in the State Water Project" (Los Angeles: Metropolitan Water District of Southern California, January 21, 1986). Mr. Hundley, whose work we cite frequently in this article, cites that paper and states "MWD later argued unpersuasively that there was no subsidy." See Hundley, The Great Thirst, pp. 293, 465, n. 123.

38. Department of Water Resources, "Analysis of Contract," p. 21-1.

39. MWD objected to the surplus water (and some other) provisions in the KCWA contract. It ultimately accepted them in Amendment No. 1. There was included therein a provision that would allow MWD, in calculating its allowable share of surplus water for use for agricultural and groundwater replenishment, to count as entitlement use any water from a source nontributary to the SWP used for groundwater replenishment (i.e., from the ***Colorado River*** or Owens Valley-Mono County). To date, MWD has never purchased any SWP surplus water.

40. In 1977 further changes in the surplus water article were made, such as more clearly setting forth the priorities of use and apportionment among contractors in proportion to each contractor's use of current year entitlement water for priority use. The price for nonpriority use of surplus water by contractors was increased by a charge of one-half the current delta water charge. And if the combined volume of entitlement and surplus water used for priority uses exceeds 150 percent of the contractor's maximum annual entitlement, there would be an additional charge of one-quarter of the current delta water charge for the excess water.

41. For example, the San Luis Obispo County and Santa Barbara County contractors take no water, the coastal branch aqueduct not having been completed. Also, MWD is currently taking only a little over one-half of its entitlement. It has been able to do this by acquiring additional ***Colorado River*** water; but that route may be in peril, as we shall discuss.

42. As an example, the urban contractors wanted the surplus water provisions amended to eliminate the

agricultural priority and Article 18(b), the permanent water shortage provision.

43. The Monterey Agreement--Statement of Principles by the State Water Contractors and the State of California Department of Water Resources for Potential Amendments to the State Water Supply Contracts, December 1, 1994.

44. To illustrate the complexity of the amendments, Amendment No. 25 to MWD's water supply contract, which was approved by its Board of Directors on November 14, 1995, consists of 64 pages, accompanied by the Monterey Amendment White Paper of 41 pages and 16 attachments.

45. The funding of the Agricultural Rate Management Trust Fund, as well as several other capital funds created by the amendment, is complex. The priorities for handling revenues received from the contractors are set forth in the Burns-Porter Act. After taking care of current operations and maintenance costs, payment of current debt service, and repayment of advances from the California Water Fund, CA Water Code sec. 12937(b)(4) provides that the remaining funds shall be used for construction of water facilities. The Monterey Amendment declares that future SWP facilities will be paid for with revenue bond proceeds. The priority (4) funds, which are estimated to become available beginning in 1998, after limited payments to a new State Water Facilities Capital Account (designed to fund projects for which revenue bond funds are not available), shall be used to reduce charges to contractors. The apportionment between contractors in the early years is designed to provide that agricultural contractors will receive at least $10,000,000 in reductions first, in turn for which they will be required to pay an equal amount into the Agricultural Rate Management Trust Fund. Remaining reductions will be shared with urban contractors. After the year 2001, the urban contractors will receive a first reduction of $2,000,000 per year until the amount of the reductions deferred to finance the Agricultural Rate Management Trust Fund are recouped.

46. It should be noted that the usual lawsuit by an environmental group has been filed challenging the Monterey Amendments. Also, one urban contractor, San Bernardino Valley Municipal Water District, has sued alleging that the amendments violate the uniformity provisions of the SWP contracts.

47. Arizona v. California, 373 U.S. 546, 552 (1963).

48. No single book or document contains the entire Law of the ***River***. Two helpful texts are R. L. Wilbur and N. Ely, The Hoover Dam Documents, H.R. Doc. No. 717, goth Cong., 2d Sess., 1948, and M. Nathanson, Updating the Hoover Dam Documents (Denver: U.S. Government Printing Office, 1980).

49. A small portion of Arizona is technically in the Upper Basin, whose demarcation point is Lee Ferry, Arizona. Arizona was given a small allocation of 50,000 afy of Upper Basin water, but its main allocation is Lower Basin water.

50. There is in fact a treaty with Mexico (59 Stat. 1219 [1944]) that guarantees Mexico 1,500,000 afy delivered at the border. Later agreements provide a minimum quality of the water as delivered. There will be a conflict someday between the two basins over such matters as who bears the substantial burden of losses in transportation and storage and from seepage and evaporation to meet the obligations of the treaty, particularly when future Upper Basin development and use eliminates any surpluses.

51. 63 Stat. 31 (1949).

52. 70 Stat. 105 (1956).

53. Some of the projects contained in the 1956 Act have not been constructed and may never be. The Upper Basin has never utilized its full allocation of 7.5 million afy. Should there ever be sufficient projects to utilize the full allocation, with the Upper Basin's release obligation and its share of the Mexican Treaty obligation, balanced against the true average annual flow in the ***Colorado River*** Basin system, there would be shortages in the Upper Basin. That would undoubtedly lead to some interesting conflicts.

54. 45 Stat. 1057 (1928).

55. Arizona, 373 U.S. at 564-565.

56. 1929 Cal. Stat. ch. 16.

57. These priorities do not quantify individual allocations; rather, the priorities specify a maximum acreage or place of use. The Commissioner of Reclamation has requested the parties to agree to a quantification of the first three priorities, but no agreement has yet been reached.

58. Arizona, 373 U.S. at 564-565. The Arizona case continues to this day, with most of the disputes relating to Indian claims for Lower Basin water.

59. Decree, Arizona v. California, 376 U.S. 340, 343 (1964).

60. PL 90-537, 82 Stat. 885, 888 (1968).

61. Also keep in mind that in modem times, long-term water transfers, even if no new facilities are involved, with inevitable opposition and heavy environmental regulation, can take 10 years or more. The Imperial Irrigation District (IID)/MWD transfer discussed in the text, a relatively benign deal, took 6 years from the first serious negotiations to contract signing.

62. The members of SNWA are the five water purveyors (Las Vegas Valley Water District, the city of North Las Vegas, the city of Henderson, Boulder City, and the Big Bend Water District) as well as the two agencies that treat sewage water and have return flows to the ***Colorado River*** for apportionment credit (the County Sanitation District and the city of Las Vegas). The ***Colorado River*** contract for Nevada's apportionment, in contrast to California contracts, is technically held by the state of Nevada through its ***Colorado River*** Commission, with each purveyor holding a subcontract. The Nevada legislature in 1993 granted the new SNWA three seats on the commission, this designed to prevent the usual spats and fights between the commission (which serves no water) and the purveyors.

63. Sporhase v. Nebraska, 458 U.S. 941 (1982).

64. PL 100-675.

65. Memorandum of Understanding Between the Southern Nevada Water Authority and the Metropolitan Water District of Southern California, December 19, 1995.

66. Political Pulse, 11, no. 23 (9 February 1996): 1-2. Also, for the time being at least, IID has pulled out of the canal lining agreement.

67. See Robert V. Phillips and Steven P. Erie, "San Diego Takes Aim at L.A.'s Hegemony," Los Angeles Times, 3 March 1996, p. M1; "San Diego, MWD Water War Heats Up," Los Angeles Times, 29 April 1996, p. A3; and William Fulton, "Shifting Politics of Water," Los Angeles Times, 19 May 1996, p. MI. This is reminiscent of the "Galloway Proposal" of the early '80s wherein group from ***Colorado*** proposed to sell to the San Diego Water Authority 100,000 afy from the Yampa and White ***Rivers***, tributaries of the ***Colorado River*** in the Upper Basin. The proposal died when people recognized that the proposers had a shaky, at best, right to the water, and that the Law of the ***River*** would at that time be an unbending obstacle.

68. Ibid.

69. Contract for Construction of Diversion Dam, Main Canal and Appurtenant Structures and for Delivery of Water, December 1, 1932, Article 17; Wilbur and Ely, The Hoover Dam Documents, pp. A595, A605.

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