

acwua  
association of california water agencies

The Water Districts  
Of California

031.5

# **The Water Districts of California**

**April 1979**

**This report was prepared for the  
Association of California Water Agencies**

**by**

**Charles D. Hobbs**

# TABLE OF CONTENTS

INTRODUCTION .....	1
I. HISTORY .....	3
Example: Metropolitan Water District of Southern California	
Example: Imperial Irrigation District	
II. DISTRICT ORGANIZATION .....	13
Example: East Bay Municipal Utility District	
Example: Glenn-Colusa Irrigation District	
III. DISTRICT SERVICES .....	23
Example: Mesa Consolidated Water District	
Example: Modesto Irrigation District	
IV. DISTRICT FINANCING .....	33
Example: Arcade County Water District	
Example: Fresno Irrigation District	
V. DISTRICTS AND THE LOCAL GOVERNMENT SYSTEM .....	41
Example: Yorba Linda County Water District	
Example: San Diego County Water Authority	
VI. THE FUTURE OF WATER DISTRICTS .....	47
Example: Coachella Valley County Water District	
FOOTNOTES .....	51

# INTRODUCTION

Water has always been a challenge to California. Alternating between flood and drought, the state has had either too much water or too little. And what there was has always seemed to be in the wrong place. Whether for mining, or farming, or urban and industrial development, water has had to be moved in large quantities over long distances to where it was needed.

Remi Nadeau, in his book *The Water Seekers*, tells a story symbolic of California's water distribution problems. During a drought in the 1950s a state legislator stopped to talk to a farmer filling water cans at a town faucet.

"How far do you have to take that water?" asked the legislator.

The man at the faucet straightened up and pointed to a farmhouse on the far horizon.

The legislator was appalled. "That's a long way to haul water. Why don't you dig a well?"

The farmer shrugged, "It's the same distance either way."<sup>1</sup>

Rapid development since the 1950s has made the distances longer and the quantities larger. California has become the number one state in both population and agriculture, despite having to support more than half of its people and crops on arid and semi-arid land.<sup>2</sup> Its annual water needs are enormous: 32 million acre-feet for agriculture, 5 million acre-feet for urban areas.<sup>3</sup> To meet these needs, California draws from a storage capacity of 90 million acre-feet of water in 155 major reservoirs, and transports it to farms and cities through more than 2,200 miles of major aqueducts.<sup>4</sup>

In numbers of people served, delivery capacity, and value of facilities, the California water system is one of the largest in the history of the world.

This report is devoted to a vital and integral part of that system—California's independent water districts. These districts are special purpose local governments which have as their primary, and often sole, function the delivery of water to the public at cost. They do not belong to cities and counties, but are separate entities, legal subdivisions of the state, nearly all of which are

governed by locally elected boards. There are currently 591 of these districts actively delivering water to every major urban and agricultural area of the state, and together they comprise the largest and most important source of local water services.<sup>5</sup>

The first of these districts were irrigation districts, formed in the late 1800s to meet the agricultural water needs of the eastern San Joaquin Valley. As other agricultural areas came into production, and as urban development began to take place, it was found that the district model could be adapted to almost any local or regional situation in which water had to be stored, treated, and delivered. Districts were formed to serve the cities and suburban areas of Southern California and the San Francisco Bay; the central and northern coastal communities and inland valleys; and the agricultural and urban areas of the Imperial, Coachella, western San Joaquin, Sacramento, and Salinas valleys.

As further development took place, many of the earlier districts were consolidated for greater efficiency. The newly consolidated districts often included within their boundaries, in addition to the smaller and earlier districts, smaller and no longer efficient city water departments and mutual water companies. Regional districts also were formed to store and treat large quantities of water and to "wholesale" it to smaller districts and other water providers. Still other districts were formed to manage water basins, control floods, and reclaim used water.

As a group, the independent water districts are the embodiment of local initiative and control of government. They are usually formed through a vote of the people affected, dedicated to a single service—water—or to a small set of water-related services, governed by directors elected specifically to see that water service is provided, prevented by law from diverting water revenues away from limited district purposes, and operated primarily on a fee-for-service, non-profit basis.

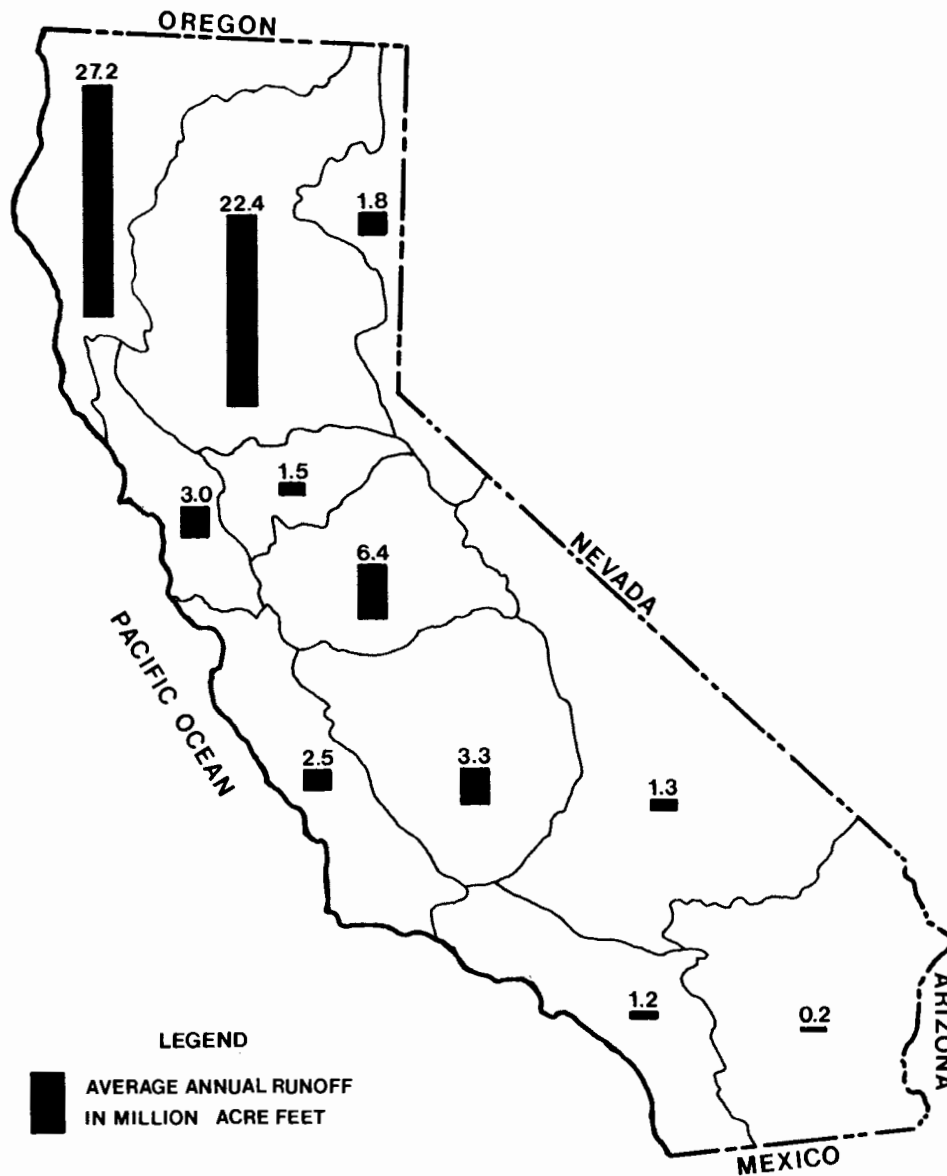
Public satisfaction with water service in general and with the service of water districts in particular is extremely high. In a statewide

survey in September 1978, 72 percent of those surveyed rated their water service either good or excellent. When the survey was focused on water district customers, the good or excellent rating rose to 88 percent.

Yet the public visibility of the districts is not nearly as high: only about half of those surveyed could correctly identify independent water districts as the source of their water service. It would appear that the districts do their jobs well, but unobtrusively.

Thus, there is a need to tell the story of the

water districts: why they were formed, how they are organized and operated, and what role they can be expected to play in California's future. In a time when all levels of government are being criticized for waste, complexity, overspending, and excessive bureaucracy, water districts stand as models of relative efficiency, simplicity, fiscal prudence, and local democracy. It is as important to recognize good government as it is to criticize bad, so that when reform is proposed, the public will know the difference.



**REGIONAL RUNOFF DISTRIBUTION**

# I. HISTORY

## The Water Problem

The independent water districts of California have developed along with the state, in response to the need for dedicated local governments to acquire, store, treat, and deliver water efficiently and equitably. The problem has been a scarcity of water in those areas of the state where agricultural and urban development has taken place; the solution has been the gradual development of an integrated statewide water system that moves the water to where it is needed.

California has been said to be “strong on climate (but) weak on weather”.<sup>6</sup> The west coast’s weather originates in the Gulf of Alaska and sweeps south and east over the coasts of British Columbia, Washington, Oregon and California. But normally only the edges of the larger storms hit California, and even these storms drop the bulk of their precipitation on the northern and eastern mountains. Little rain falls on the flatlands of the state, and the farther south one goes, the less moisture one encounters. Southern California, the 50,000-square-mile area south of the Tehachapi Mountains, has 60 percent of the state’s population, but less than six percent of its precipitation, and less than three percent of its runoff.<sup>7</sup>

From the beginnings of its development, California has had to meet the twin challenges of scarcity and maldistribution of water. It has done so principally through local initiative, with local organizations and ideas stimulating changes in state law and the development of a statewide water system.

## Water Rights

The first independent water districts were created in the late 1800s to acquire and distribute water for irrigation in the eastern San Joaquin Valley. The need arose in part from disputes over water rights and conflicting doctrines of appropriative rights and riparian rights, but mostly from the desire of people to have a governmental

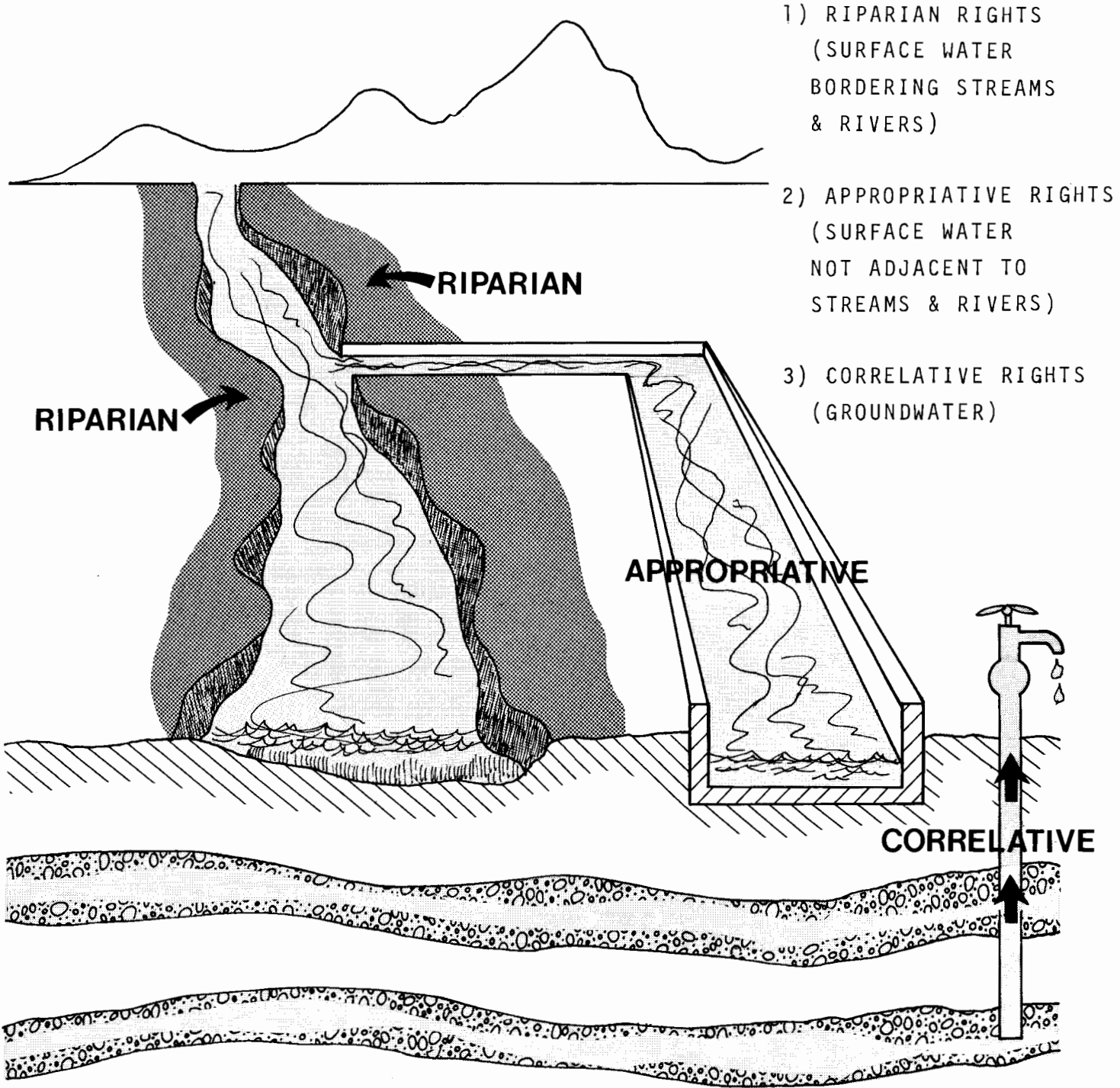
mechanism through which they could collectively develop water supplies from a common source to meet their growing needs.

The doctrine of riparian rights, stemming from English common law, entitles the owner of land that borders a natural stream or lake to take its water for use on his contiguous, or “riparian,” land. The right is acquired with the land and is based solely on the location of the land with respect to the water supply. The right is not created by use of the water, and is not lost by non-use. However, the riparian right extends only to the smallest tract under one title in the chain of title leading to the present owner.<sup>8</sup>

The doctrine of appropriative rights, stemming from “first come, first served” principles adopted by the early gold miners in the absence of other law, entitles one who shows a need for water to divert it from a stream and to use it beneficially on a particular tract of land, regardless of whether the land borders the stream. The right is based, not on land ownership, but on use, and is lost by non-use. Each right has a date of priority based on the date use was initiated, and when water is scarce, those with earlier rights have preference—the “first in time, first in right” principle.

These doctrines have coexisted and conflicted in California since the early 1850s. By the 1880s disputes over rights to irrigation water were deterring agricultural development and, in 1887, the State Legislature moved to solve the problem by enacting the Wright Irrigation Act. The Wright Act authorized the establishment of irrigation districts to distribute water equitably to all landowners. Formed by a majority vote of the landowners, the districts had elected boards, the power to acquire riparian rights by condemnation, and the right to sell bonds to finance purchase of water rights and construction of dams, canals, and pipelines. Ten districts were formed in the first year of the Act, and by 1911 there were 50 irrigation districts serving California’s explosive agricultural development.<sup>9</sup>

Between the time of the Wright Act and the late 1920s, the economy of the state changed material-



## TYPES OF WATER RIGHTS

ly. Mining was replaced by agriculture as the state's principal industry, and urban centers began to develop along the coast. The irrigation district became the model for other types of independent districts to serve agricultural and urban water needs. Between 1911 and 1921, laws were enacted to authorize the creation of municipal water districts (1911), county water districts (1913), California water districts (1913), municipal utility districts (1921), and public utility districts (1921). In 1927, the Legislature enacted the Metropolitan Water District Act, under which was created the largest district of all—the Metropolitan Water District of Southern California.<sup>10</sup>

As development continued, development of water resources shifted from surface water only to a combination of surface and groundwater (water in the ground). Riparian and appropriative rights adhere primarily to surface waters; groundwater rights stem from the right of owners of land overlying a groundwater basin to pump water from the basin for use on the overlying property. This is known as a correlative right and is a right analogous to the riparian right. The correlative groundwater right is subject to the limitation of "reasonable and beneficial" use and permits each landowner above a common source to take all water that may be reasonably and beneficially used upon the overlying property. This right is limited to a "reasonable share" of the available supply when it

is insufficient to meet the needs of all users from a common groundwater source. The doctrine was enunciated by the courts in 1903.<sup>11</sup>

The method by which a user acquires rights to surface waters have also been subject to change. In 1914, the state established a procedure by requiring a person desiring to appropriate water to file an application to appropriate water with the state. After review, a permit is issued authorizing the applicant to place to beneficial use the amount of water specified in the permit. Such permits may be subjected to various terms and conditions. Upon issuance of the permit, the appropriator is required by law to proceed with "due diligence" to place the appropriated water to beneficial use. When full use is accomplished a "license" is issued confirming the right.<sup>12</sup>

In 1928, the voters of California ratified a constitutional amendment limiting a riparian owner to only as much water as was "reasonably required for the beneficial use to be served",<sup>13</sup> and thus made all water rights subject to the limitation of reasonable and beneficial use. This amendment was a factor permitting federal, state, and local agencies to appropriate surplus waters—waters not "reasonably required" by water rights holders—for the massive water projects that were to characterize the next 50 years. It is in the context of those projects that the present system of independent water districts was developed.



**Shasta Dam and Reservoir of the Central Valley Project was major facility in proposal of first**

**State Water Plan. Financing difficulties led the state to turn plan over to the federal government.**





**Oroville Dam on the Feather River is starting point for the California Water Plan approved by**

**the Legislature in 1957. Today it provides water for the Central Valley and Southern California.**

## **Water Projects**

California's water system is the product of a series of water projects involving the coordinated efforts of federal, state, and local governments. Most of the local government efforts have been made through independent water districts.

The State Water Plan of 1930 proposed two major projects for the ultimate development of California's water resources. One was to increase the agricultural potential of the San Joaquin Valley with surplus water from the Sacramento Valley; the other was to provide water from the Colorado River for the urban development of the Los Angeles area. The first—the Central Valley Project—was designed to be carried out by the state, but because of the state's inability to finance the project due to the Depression, it was turned over to the federal government for implementation. The second was implemented by an independent water district—the Metropolitan Water District of Southern California.

The Central Valley Project—which has gone through several stages of development in the past 40 years—consists of four major dams and

reservoirs, with two more presently under construction, and a series of canals which deliver 6 million acre-feet of water annually to local districts in the Sacramento, San Joaquin, and Tulare basins and adjacent areas. Its total reservoir storage capacity is more than 10 million acre-feet, and it accounts for about three percent of the state's total electric energy capacity.<sup>14</sup>

The second project, carried out by the Metropolitan Water District, resulted in construction of the 242-mile Colorado River Aqueduct to carry water from the Colorado River to the Southern California coastal plain. Completed in 1941, this aqueduct provides water to 27 member agencies in a 5,900-square-mile area from Ventura County to San Diego, delivering more than one million acre-feet annually.<sup>15</sup>

In the late 1940s the state began work on an update of its earlier plan, and presented the California Water Plan to the Legislature in 1957. The Legislature accepted it two years later, and with it authorized construction of the State Water Project. An initial bond issue was approved by the voters in 1960. Since then the Project has built 25 dams and reservoirs, eight power plants, 22 pumping plants, and 640 miles of aqueducts,



**East Bay Municipal Utility District transmits water from Pardee Reservoir, above, via three**

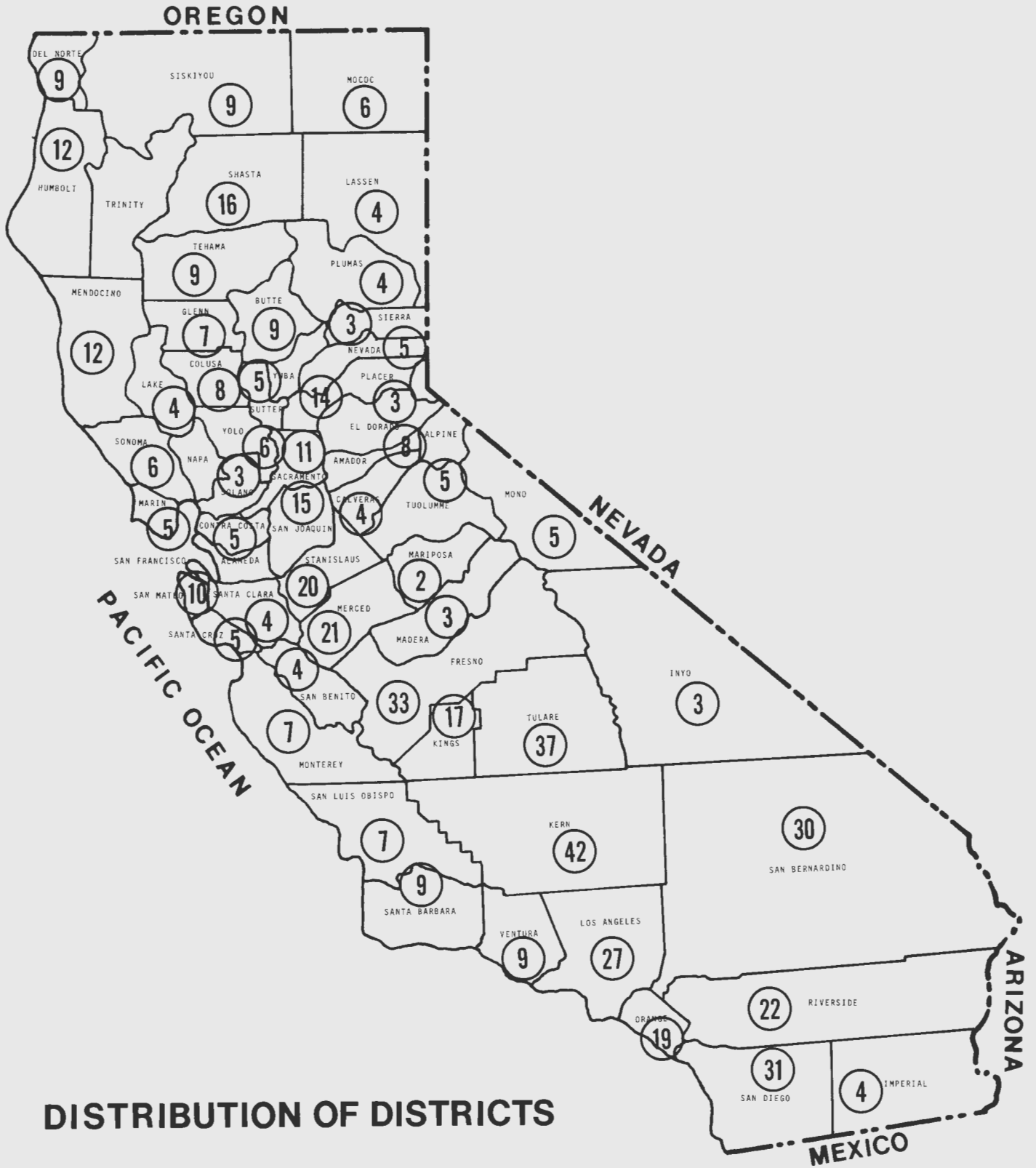
**aqueducts from the Sierra foothills to the East Bay counties of Alameda and Contra Costa.**

including the 444-mile-long California Aqueduct to transport water within the Central Valley and to Southern California. Project deliveries now total more than two million acre-feet annually.<sup>16</sup>

The massive redistribution of water associated with these projects produced a need for local distribution agencies and facilities—a need that was met in large part by the creation of independent water districts. Some of these districts created their own redistribution projects, such as Imperial Irrigation District's All-American Canal, which delivers Colorado River water to the agriculturally rich Imperial Valley; and the three 82-mile aqueducts built by the East Bay Municipal Utility District to bring water from the Sierra foothills to Alameda and Contra Costa Counties. In the 60 years in which water districts had existed in California before 1950, fewer than

250 had been formed, and almost all of these for agricultural purposes. In the 25 years following 1950, nearly 500 more districts were formed, two-thirds of them to serve urban and suburban areas.<sup>17</sup>

Another feature of district development in the past 25 years has been consolidation, particularly in urban areas. As communities have grown together, the districts serving them have merged to form larger districts, often including within the new boundaries smaller city water departments and mutual water companies. Since 1887, approximately 750 independent water districts have been formed, but consolidations and dissolutions have decreased the number actually delivering water to 591, as of July 1, 1977. Their distribution, by county, is shown in Figure 1.1.<sup>18</sup>



**DISTRIBUTION OF DISTRICTS**

## Metropolitan Water District

# Responding To Growth In Southern California



**Metropolitan Water District of Southern California crew prepares pipe for installation.**

The formation of the Metropolitan Water District of Southern California more than 50 years ago was the result of the people in coastal communities surrounding Los Angeles realizing that they needed to pool their strengths to meet their common needs through what was to be one of the most monumental water feats up to that time.

In the mid-1920s, California was faced with drought—1924 was one of the driest years of record—and much of Southern California was parched with a desperate thirst. The situation was complicated by the fact that an artesian area of more than 300 square miles surrounding Los Angeles had shrunk to about 55 miles as population and related growth over a 40-year period required more water than could be restored to the underground naturally.

By the mid-1920s, representatives of the City of Los Angeles were already proposing that water be brought to Los Angeles from the Colorado River. While water from the Owens Valley provided the city with a basic water supply, drought and expansion had brought home the point that an additional supply was needed. In the meantime, the surrounding communities, learning they no longer could rely on

groundwater to meet their total needs, became supportive of the concept of developing Boulder Dam (later called Hoover Dam) and tapping the Colorado River.

While Congress was involved for several years in political in-fighting until the Boulder Dam project was approved in December 1928, the people of the cities surrounding Los Angeles prepared to undertake the monumental task of developing an aqueduct from the Colorado River, across California's great desert to the water-short coastal communities. By 1925, there was popular sentiment for the formation of a metropolitan water district to undertake this chore. However, the California Legislature that year refused to grant a charter for the proposed district. In the next election those legislators from Southern California who had voted against such a charter were not reelected. In 1927, the Metropolitan Water District Act was enacted, authorizing the establishment of a special district by two or more public agencies to develop, store and distribute water for municipal and domestic purposes. By December 1928—coincidentally, in the same month that Congress authorized the Boulder Dam project—the Metropolitan Water District was formed.

The next step was the financing of

the huge aqueduct that would stretch 242 miles from the Colorado River, across the California desert and into the Los Angeles Basin. While water rights agreements were being worked out with other states claiming Colorado River water, the Metropolitan Water District began the task of getting approval of the people for \$220 million in bonds to pay the cost of developing the aqueduct. The election came in September 1931—in the midst of California's seven-year drought—and support for the project was overwhelming. As a result, the people at the polls expressed approval for the bond measure by a ratio of five-to-one.

After overcoming some legal obstacles and effects of the great Depression that slowed bond sales, the District was able to break ground on the Colorado River Aqueduct in January 1933. It turned out to be a slow, difficult project as Metropolitan had to overcome the elements of nature, a difficult terrain of mountain and desert and political issues with the State of Arizona that threatened to turn into actual war.

In 1941, the aqueduct was completed and Colorado River water began to flow to Southern California's coast. As eventually expanded, the aqueduct is capable

today of delivering more than one million acre-feet of water a year.

But Southern California has continued to grow since the early 1940s, and Metropolitan—to meet the needs of the millions of Southern Californians who depend on it for a water supply—has had to find another source of water. In California there is a maldistribution of water relative to where people have chosen to live—two-thirds of the water occurs naturally to the north of Sacramento, but two-thirds of the population and the need for water occurs south of Sacramento. Thus, the California Water Plan and its Feather River Project (later called State Water Project) were spawned in the 1950s and approved in 1957. California's voters approved a \$1.75 billion bond measure in 1960 to finance the project

Metropolitan signed a contract with the state in 1960 for an eventual 1.5 million acre-feet (this was expanded to more than 2 million acre-feet later) annually from the State Water Project. In 1966 Metropolitan's voters approved a bond issue of \$850 million to finance an expansion of the District's distribution system for delivery of water that would arrive from Northern California via the State Water Project. The first deliveries of state water to Metropolitan began in 1972.

Today Metropolitan consists of 27 member agencies, including 14 cities, 12 municipal water districts and one county water authority. The District serves 11 million people and an area of about 5,900 square miles, reaching into the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura.

The District is governed by a 50-member Board of Directors. Each member agency has at least one representative on the board. Representation and voting strength on the board are based on individual agency's assessed valuation. In the case of cities, directors are appointed by the mayor and confirmed by the city council. Directors representing other agencies are appointed by the agencies' boards of directors.

In the fiscal year ending June 30,

1978, Metropolitan received \$74,404,658 from water sales; \$69,063,979 from tax collections; \$14,321,992 from interest on bank time deposits and U.S. Government and other securities; and \$619,939 from miscellaneous receipts; as well as \$146,069,250 from proceeds from the sale of refunding bonds.

As the District goes into the future, it is embarking on an operation auxiliary to its primary responsibility of water delivery: hydroelectric generation. This step was authorized in 1976 as the State Legislature amended the Metropolitan Water District Act. The

District has identified 14 locations where it will install hydroelectric recovery plants that will generate 71.5 megawatts of power annually. The first plant is expected to go on line in the summer of 1979 with the remaining 13 scheduled for completion in the early 1980s. Most of the power plants will be installed at existing pressure control structures on the District's distribution system where water pressure is currently being reduced through a system of valves. The power plants will convert this energy now being wasted into useful electrical energy.



**Metropolitan Water District's Board of Directors shown above has 50 directors appointed to represent the district's 27 member agencies.**



**Above is headquarters building of the Metropolitan Water District of Southern California in the heart of the City of Los Angeles.**

# Turning a Desert into an Oasis

Survival in California's Imperial Valley—and the difference between a desolate desert and an imposing agricultural economy—depends on an adequate and dependable water supply. Since the Imperial Irrigation District was formed in 1911, the desert it serves has become one of the world's most productive agricultural areas. The history of the District illustrates the type of impact independent water districts have had throughout California during the 20th century.

The formation of the District stemmed from a desire to put the fate of the valley into the hands of the local people. Outside forces, primarily the California Development Co., had attempted to reclaim the Imperial Valley with Colorado River water, and in the process had developed the Imperial Canal that first delivered water to the valley in 1901. However, rapid settlement in the valley and silt build-up in the intake canal resulted in serious water shortages in the winters of 1902-03 and 1903-04.

The company tried to solve the problem by opening another intake from the Colorado River to the Imperial Canal further downstream in Mexico. The intake was considered a temporary diversion to be closed before the 1905 spring flood season, and no control gate was built. But 1905 winter floods poured out of Arizona's Gila River into the Colorado, and the river changed its course and poured its full flow down the Imperial Canal and into the Salton Sink, forming the Salton Sea. The California Development Co. and Southern Pacific Co. worked together to turn the river back into its former channel in 1907, but by this time the California Development Co. was in a state of financial ruin.

It was this circumstance that brought about the formation of the Imperial Irrigation District in 1911, bringing the future of water

and the valley into the hands of the local settlers. By 1916 the District had acquired the company properties—including the main canal, levees and equipment. And by 1922, the District had absorbed the 13 mutual water companies then distributing water in the valley.

One of the first chores of the District was to secure its water supply—an obvious need considering that its main canal and levees were located in Mexico. District representatives went to Washington to negotiate with the U.S. Bureau of Reclamation for an agreement under which the valley's need for an All-American Canal would be investigated. In 1919 the Bureau issued a report recommending construction of the All-American Canal along with a federal storage reservoir on the Colorado River.

The result was the passage of the Boulder Canyon Project Act in 1928, which authorized construc-

tion of the history-making Boulder (Hoover) Dam, the Imperial Dam and the All-American Canal. In 1935 Boulder Dam was dedicated, in 1940 water was first delivered to the Imperial Valley through the All-American Canal, and by 1942 the Valley was drawing its entire water supply through the canal.

Throughout its history the District has worked hard and innovatively to meet the growing needs of the valley. One of the most impressive feats has been the installation since 1929 of 24,700 miles of tile drains on Imperial Valley farms by landowners. The District, in cooperation with the U.S. Department of Agriculture Soil Conservation Service, pioneered in the design of tile drainage systems suited to Imperial Valley conditions and in the design and construction of the gigantic machines that install tile. For more than 30 years a favorable salt



**Crew of Imperial Irrigation District proceeds with installation along the district's distribution canal in agricultural rich Imperial Valley.**



**An Imperial Irrigation District hydroelectric generation plant on the All-American Canal is shown above. It is one of five such facilities.**

balance has been maintained in Imperial Valley, meaning that more salt is removed by the drainage system than is brought in by irrigation water, an essential factor in maintaining the agricultural capability of the desert lands.

Since the 1960s, the District has been installing concrete lining in its canals, and now more than 700 miles of canal are lined, preventing a loss of more than 130,000 acre-feet of water annually from seepage. Main canals that are not scheduled for lining are being equipped with parallel water recovery lines and pumping stations for salvaging water lost by seepage, as the people of the desert learn to preserve their most precious resource.

Today 476,000 acres of irrigated farmlands are served by the District's gravity-flow canal and drainage systems. The total area within the District's boundaries is 1,062,290 acres, including undeveloped areas, cities, towns, airports, feedlots, the area below the -230 contour Salton Sea Reserve Boundary, and areas covered by the Salton Sea. About 2.7 million acre-feet of water per year flow into the District system.

While water service is its primary function, the Imperial Irrigation District also supplies electric ener-

gy to about 140,000 people—more than 48,000 power customers—in the Imperial and Coachella Valleys. The District entered the power business in 1936, at a time when a private utility was supplying energy to the valley by what the utility itself called “the longest transmission line in the world—with double the line losses of any other power company.” The company's rates were extremely high and its service undependable. The District found it could establish rates 20 percent less than the company and still assure

better service.

Power generation and distribution was a natural for the District. There are five drops—places where water falls—on the All-American Canal. Such places are perfect sites for hydroelectric generation plants. Revenue from power sales provided the District with an additional source of income to help repay the federal government for the District's share of the construction costs of the All-American Canal.

The City of Brawley, was the first to receive District-supplied power on May 18, 1936. In 1943 the District purchased the properties of a private utility covering the Imperial Valley and a large part of the Coachella Valley. The District expanded its generation capabilities in subsequent years to keep pace with the area's rapidly increasing load. The District also purchases power from the U.S. Bureau of Reclamation Parker Davis Project and from the Southern California Edison Co.'s (Axis) Yucca Plant in Arizona.

Today the District is taking steps to meet the ever-increasing demands for energy by supporting research and development of geothermal and nuclear power by the federal government and by private interests. In the meantime, the District has in existence an efficient power system that provides reliable service to its customers at rates substantially less than those of other utilities in the area.



**Above is headquarters building for Imperial Irrigation District, providing the base from which staff serves the Imperial Valley.**

## II. DISTRICT ORGANIZATION

### Special Districts: Independent and Dependent

California local government consists of counties, cities, school districts, and special districts. Many people are familiar with how counties, cities, and school districts are organized and operated, but the scope and significance of special districts in providing local public services is not as widely recognized.

Special districts are limited purpose local governments with substantially the same general powers as cities and counties. These powers include autonomy and continuous corporate life; the ability to sue and be sued; the right to acquire real and personal property; the power of eminent domain; and the authority to employ a work force, to enter into and perform contracts, to adopt a seal, and to tax and levy user charges, including assessments based on benefit. Most districts also have the statutory power to issue bonds, and some have the power to adopt ordinances.<sup>19</sup>

As of June 30, 1977, there were 4,745 special districts in California performing 30 separate functions ranging from fire and police protection to cemetery, park, and street maintenance, to waste disposal and sewer maintenance, to library, hospital, port and airport operations, to conservation, storage, and delivery of water.<sup>20</sup>

Special districts can be classed as independent and dependent. Dependent districts are legal subdivisions of counties or cities: those that belong to a county are governed by the county board of supervisors; those that belong to a city are governed by the city council. The board of supervisors or the city council may appoint a board to oversee the operations of a dependent district, but such boards are ultimately responsible to the governing county or city.

Most dependent districts have been established to enable a city or county to apply a specific tax to a specific area of benefit. Thus, for example, a city might have located a lighting district in an area in which new street lights are being installed, and required the district residents to pay an additional increment of property tax—

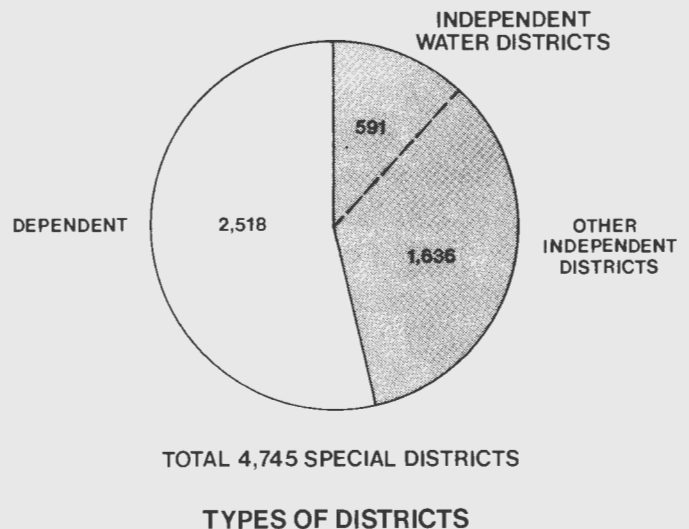
over and above that paid in the rest of the city—to cover the costs of the lighting project.

As of June 30, 1977, there were 2,518 dependent special districts in California. County boards of supervisors directly governed 1,868 of them; city councils directly governed 122 of them; the remaining 528 were governed by boards appointed by boards of supervisors or city councils.<sup>21</sup>

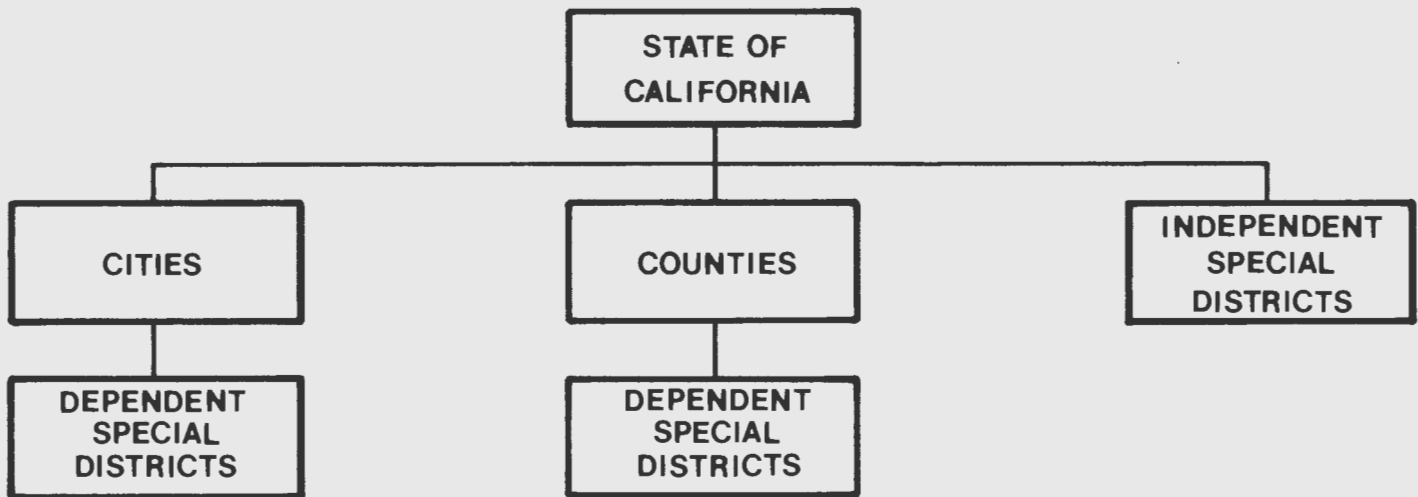
Independent districts are legal subdivisions of, and derive their powers directly from, the state. They do not “belong” either to cities or counties. They are governed by independently elected local boards responsible not to another government, but to the voters of the district. They have independent authority, under state law, to tax, spend, issue bonds to finance capital improvements, and establish their own administrative structures.<sup>22</sup>

Independent districts have been created primarily to perform public services either not feasible or not cost-effective for cities and counties to perform. Thus, independent districts are most frequently found in suburban and rural areas. In 1972, the 12 most populous counties, which contained 72 percent of the state’s population, had less than 20 percent of the state’s independent districts, and 60 percent of the independent districts were in areas of the state with less than 40 percent urban development.<sup>23</sup>

As of June 30, 1977, there were 2,227 indepen-







## DISTRICTS ORGANIZATION CHART

Figure 2.1: Independent and Dependent Special Districts in the California Local Government Structure.

dent special districts in California, including the 591 water districts which are the subject of this report.<sup>24</sup>

Figure 2.1 shows how dependent and independent special districts fit into the general organizational structure of California local government.

### Types of Independent Water Districts

Water districts have been formed in California under two kinds of laws: one a general act under which one or more districts may be formed in accordance with a procedure set forth in the act, and the other a special act creating a specific district and prescribing its powers. In the 100 years of water district law, there have been 38 general acts and 100 special acts creating or authorizing districts concerned directly or indirectly with the development, control, or distribution of water.<sup>25</sup>

However, of the 591 districts delivering water to the public or to other water agencies, 548, or 92.6 percent, are of just six types created under the same number of general laws. Figure 2.2 shows the major types of independent water districts and their incidence as of June 30, 1977.

Type of District	Number of Districts
County Water Districts .....	157
California Water Districts .....	108
Community Services Districts .....	106
Irrigation Districts .....	89
Public Utility Districts .....	49
Municipal Water Districts .....	36
Others .....	46
<hr/>	
Total .....	591

Figure 2.2: Major types of independent water districts.

**Irrigation districts** were the first of the major types to be authorized, by the Wright Act of 1887 and later by the Irrigation District Law of 1897. The area of an irrigation district may encompass any land irrigable from a common source and by the same system, including non-contiguous land, but not including land in another irrigation district without that district's consent. Although the basic purpose of the irrigation district is to furnish water for agriculture, the area of the district may include residential and business property, and, in fact, many irrigation districts now serve areas that have become predominantly

urban.

An irrigation district is formed by a petition of the landowners within the proposed district to the board of supervisors of the county where most of the land is located, followed by a majority vote of the voting residents of the proposed district. The district is governed by a board of three or five directors, who may be elected by divisions or at large, and who must be freeholders in the district.<sup>26</sup> Any registered voter living in the district is eligible to vote in any district election.

Irrigation districts are empowered to put water, including wastewater, to any beneficial use; to provide drainage; to develop and distribute electric power; to make water allocations to crops and acreage in certain situations; to operate flood control facilities (if district is 200,000 acres or more); and to construct and operate incidental recreational facilities.<sup>27</sup>

Irrigation districts are spread throughout the farming areas of the state, but most are concentrated in the eastern San Joaquin and Sacramento Valleys. Tulare County has 16, Fresno County, 8; Butte County, 6; San Joaquin and Stanislaus Counties, 5 each; and Sacramento County, 4. The largest irrigation district, however, is the Imperial Irrigation District, serving more than 550,000 acres of farmland close to the Mexican border.<sup>28</sup>

The creation of **California water districts** was authorized by the California Water District Law of 1913. Like irrigation districts, California water districts serve areas that are predominantly agricultural, but some of them also serve urban and suburban areas. They can serve any land within an area capable of using water beneficially for irrigation, domestic, industrial, or municipal purposes, and which can be served from a common source by the same system of works. Non-contiguous parts of the district can be separated by no more than two miles. The area of the district can include land in other water districts having different purposes.

A California water district is formed by petition of landowners holding a majority of the area of the proposed district, if all lands are contiguous, or a majority of the assessed value within each non-contiguous segment, followed by a vote of landowners at an election. Voting is based on one vote per dollar of assessed value of land owned, although there are provisions for changing to resident voting (one person - one vote), and resident voting is required for bonds if

50 percent or more of the inhabited assessable area is zoned for other than agricultural use. The district forms with four to six directors, elected by division and the number can be increased after four years to seven, nine, or eleven. Directors must be landowners in assessed value-voting districts, residents and registered voters in resident-voting districts.

California water districts are empowered to produce, store, and distribute water; drain lands and reclaim water for public use; collect, treat, and dispose of sewage, waste, and stormwater upon approval of the electorate; and allocate water under certain circumstances to crops and acreage.<sup>29</sup>

The 108 active California water districts are spread fairly evenly across the rural areas of the state. Fresno, Merced, and Stanislaus Counties have 12 each, Kern County has 8, and Riverside, San Diego, and Tehama Counties, 6 each.<sup>30</sup> Because of their power to contract for their lands to become parts of federal and state irrigation and reclamation projects, many California water districts have been formed to serve water from the federal Central Valley Project and the State Water Project.

**County water districts** are the most popular of the major types of independent water districts: as of June 30, 1977, there were 157 of them delivering water throughout the state.<sup>31</sup> They differ from irrigation districts and California water districts in that they are designed primarily to serve water to urban and suburban areas, although they are not limited to such areas. They are also somewhat misnamed, in that they are legal subdivisions of the state and not the counties. In fact, they are legally empowered to serve areas in two or more contiguous counties.

Their creation was authorized by the County Water District Law of 1913. Their primary functions are to acquire, appropriate, control, conserve, store, and supply water for any present or future beneficial use. They also may drain and reclaim lands; generate and sell at wholesale hydroelectric power; use district land and water for recreational purposes; and operate sewer, sanitation, and fire protection facilities. These districts have powers similar to those of California water districts to contract with the state and federal governments in irrigation and reclamation projects.

County water districts are formed by petition

of 10 percent of the registered voters in the area of the proposed district to the board of supervisors of the county in which the greater part of the district will be located, followed by a majority vote at an election. The governing board consists of five directors, elected at large or by division. Directors must be registered voters and residents of the district or division, but need not be landowners. Voting is based on one person-one vote, and generally all registered voter residents of the district can vote in district elections.<sup>32</sup>

County water districts are spread fairly evenly in urban and suburban areas throughout the state, with some districts serving agricultural areas. The largest of these districts—Coachella Valley County Water District—encompasses 637,000 acres of land in Riverside, Imperial and San Diego Counties. San Bernardino County has 21 county water districts, Los Angeles County, 11; Orange County, 9; Kern County, 8; and San Mateo and Riverside Counties, 7 each.<sup>33</sup>

**Municipal water districts** were authorized by the Municipal Water District Law of 1911. Because of their wide-ranging powers to manage large basins and delivery systems, and because they are able to sell water to other districts, cities, and other water agencies, they have developed primarily as wholesale water agencies for the metropolitan areas of Southern California. Despite their name, however, they do not belong to cities, but are legal subdivisions of the state and can serve incorporated or unincorporated territory in non-contiguous areas of one or several counties.

They have the power to acquire, control, distribute, store, spread, sink, treat, purify, reclaim, recapture, and salvage any water, including sewage and stormwater, for beneficial uses of the district. They can sell water to cities, public agencies, and persons within the district. They can sell surplus water outside the district. As subsidiary functions, they can construct and operate recreational facilities connected with district reservoirs; provide fire protection, ambulance, and paramedic service; collect and dispose of garbage; and produce and sell hydroelectric power.

Formation is by petition of 10 percent of registered voters in the proposed district to the board of supervisors of the principal county, followed by a majority vote at an election. Five directors are elected by division. All registered voter residents of the district may vote at district elections.<sup>34</sup>

The 36 municipal water districts are concen-

trated in Southern California. San Diego County has 13; Los Angeles County, 7; Riverside County, 4, and Orange, San Bernardino, and Ventura Counties, 3 each.<sup>35</sup>

**Public utility districts** are not primarily water districts, although 49 of them serve water in California.

These districts are empowered to provide residents with light, water, power, heat, transportation, communications (including telephone), garbage collection, sewage disposal, fire protection, street lighting systems, parks, playgrounds, golf courses, swimming pools, public buildings, and drainage works. All of these powers transfer to a city or town when all district territory becomes part of an incorporated community.

Public utility districts are formed by petition of 15 percent of votes cast in the proposed district at the last gubernatorial election, followed by a majority vote of district resident voters. A three- or five-person board of directors is elected, but the board may be larger if the district includes area in two or more counties. All registered voter residents of the district may vote in district elections.<sup>36</sup>

Most of the public utility districts were formed before 1950, and they are spread throughout the rural counties, mainly in the northern part of the state. Tulare County has 8; Kern County, 6; and Shasta, Calaveras, Mono, and Placer Counties, 3 each.<sup>37</sup>

**Community services districts** are somewhat similar to public utility districts. They are not primarily water districts, although 106 of them serve water in widely dispersed areas of California; they provide a wide range of municipal services; and they serve unincorporated areas. The basic differences lie in the precise services provided and the fact that community services districts do not automatically lose their powers when a city is formed.

Authorized by the Community Services District Law of 1951, these districts are formed to provide inhabitants with water for all purposes, fire and police protection, garbage collection, public recreation, street lighting, mosquito abatement, libraries, streets, electric and communication facilities, airports, and ambulance service.

Formation is by petition to the county board of supervisors, followed by election, but an election is not required if 80 percent of the registered voters sign the formation petition. Three or five directors are elected at large. All registered

resident voters can vote in district elections.<sup>38</sup>

Although community service districts are found throughout the state, they are most prevalent in the rural counties of the San Joaquin and Sacramento Valleys and the extreme northern part of the state. Del Norte County has 9; Fresno, Kern, Shasta, and Tulare Counties, 8 each; and Amador County, 5. It appears that many of these districts were formed in circumstances in which, prior to 1951, public utility districts would have been formed.<sup>39</sup>

There are nine other types of independent water districts in California, but together they number only 46 districts. Several of them, individually important because of their size, functions or accomplishments, are discussed in other sections of this report. The nine types, and the number of individual districts of each type, are as follows:<sup>40</sup>

Reclamation Districts .....	11
Independent County Water Agencies .....	8
Water Storage Districts .....	8
Water Conservation Districts .....	7
Municipal Utility Districts.....	3
Municipal Improvement Districts .....	3
County Water Authority .....	1
Metropolitan Water District .....	1
Water Replenishment District .....	1
Undetermined (probably community services)	3

Since 1964, the powers of all districts to form, change boundaries, or consolidate have been modified by the creation of Local Agency Formation Commissions in each county. These commissions, called LAFCOs, are made up of county, city and, in six counties, independent district representatives who review all changes of government organization or boundaries within the county. They assign spheres of influence to each local government unit; approve annexations; and make recommendations to the board of supervisors as to formation, dissolution, or consolidation.

## Organizational Features

It is often contended that there are too many special districts in California, that they cause wasteful overlap and duplication in provision of public services, and that reducing their number would make local government simpler, more efficient, and more acceptable to the public. This argument overlooks the diversity of needs which

districts have been formed to meet and the relative efficiency of district organization in providing essential public services.

Although there are 4,745 special districts in California, 53 percent of them are not separate governments at all, but special taxing areas of counties and cities. Removing these dependent districts from the count leaves 2,227 independent districts, each formed to provide specific services to specific areas. Of the independent districts, 591 are independent water districts, each formed by district residents or landowners to provide water and perhaps one or two other services to a carefully defined area of need.

Organized to accomplish a specific public purpose, these districts concentrate their efforts on that purpose, in contrast with cities and counties which must spread their energies and revenues among a variety of competing plans and programs. There is no duplication of services among water districts: the same water cannot flow through two pipes simultaneously. In cases where there are overlapping jurisdictions of two or more districts, it will be found that each performs a different function: one may treat water and distribute it to several water agencies, another deliver water directly to the public, and a third manage the groundwater basin.

But the outstanding organizational feature of water districts is their lack of bureaucracy. Delivery of water is a capital-intensive, as opposed to labor-intensive, public service, with extensive facilities which can be operated by a relatively small staff. The elected directors of a district are readily accessible to the public. In many districts the district manager directly supervises all of the district employees. In these circumstances there is neither incentive nor rationale to construct the complex bureaucratic structures associated with city and county governments.

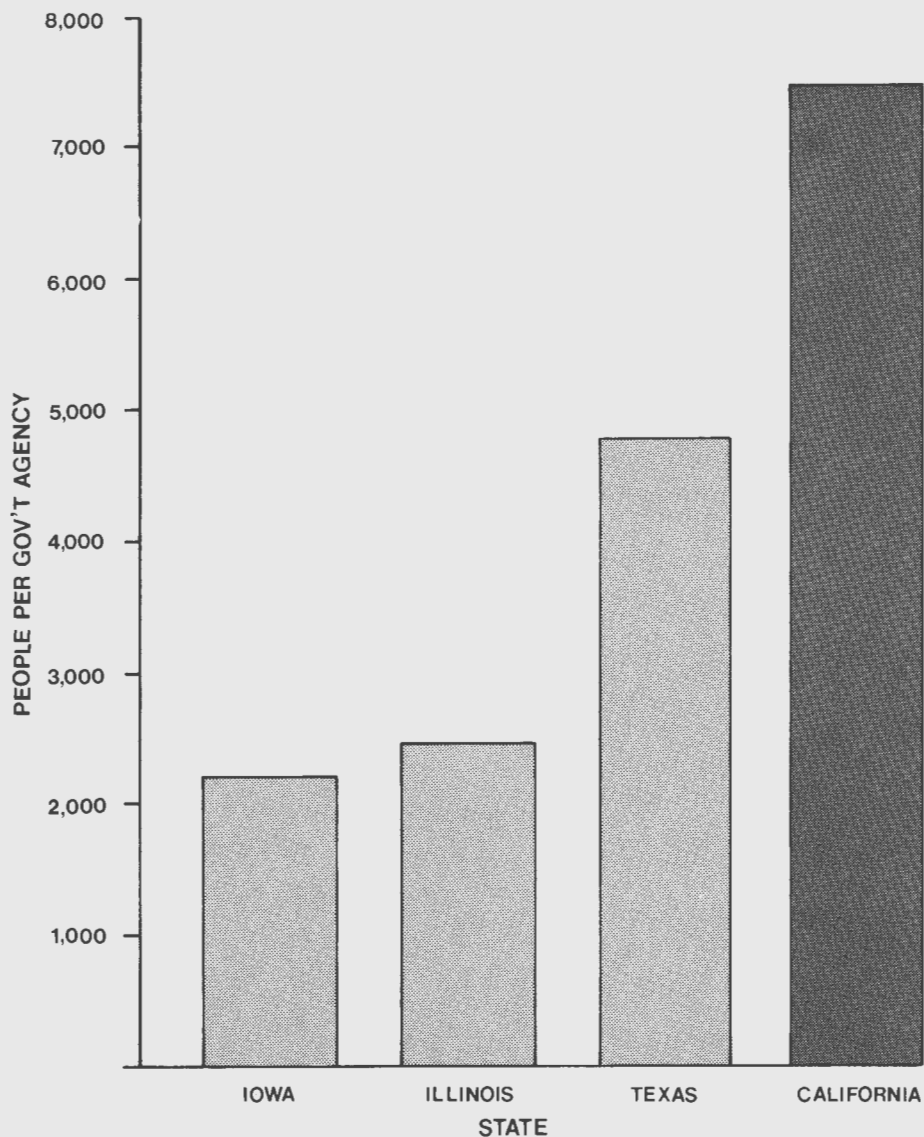
Moreover, the steady and usually predictable revenues from water sales make districts appealing targets for takeover by cities and counties afflicted by inflationary program growth and tax limitations. To survive, water districts must be responsive to the public, and bureaucracy is not conducive to responsiveness. Thus the organizations of the districts have been kept simple, the staffs small and informal, and the attitudes toward the public helpful.

Are there, then, too many districts? The final answer must rest with the public, which has the

power to create and dissolve them. But for government planners and politicians who wish to influence the public's judgement, and for whom simplification and centralization often seem to be synonymous, a few comparisons between California and other states might be useful.

In 1972, California had 2,688 independent local governments other than school districts.<sup>41</sup> Its population that year was 20,413,000.<sup>42</sup> Thus there was one local government unit for every 7,594 Californians. In the same year Iowa, a state with one-third the land area and one-seventh the population of California<sup>43</sup> had 1,355 local governments other than school districts, or one local government unit for every 2,128 residents.<sup>44</sup> It had only 305 special districts, in contrast to California's 2,223, but it had 99 counties to California's 58 and 951 incorporated municipali-

ties to California's 407,<sup>45</sup> and thus a ratio of local governments to population 3.6 times greater than California. Texas, with two-thirds more land than California and about one-half the population, had 254 counties, 981 cities, and 1,215 special districts, for a local government to population ratio of one to 4,736, 1.6 times that of California.<sup>46</sup> Illinois, with one-third the land area and one-half the population of California, had 102 counties, 2,699 municipalities and townships, and 2,407 special districts, for a local government to population ratio of one to 2,159, 3.5 times that of California.<sup>47</sup> Forty-two of the other 49 states had higher local government to population ratios than California,<sup>48</sup> which at least indicates that California does not have an unusually high number of local governments in general and special districts in particular.



**COMPARISON OF STATE AGENCIES REPRESENTATION**

# Intergovernmental Cooperation Is Goal

In 1921 the Legislature enacted the Municipal Utility District Act to allow districts with broad powers to provide utility services without reference to county or city boundaries. In 1923, citizens of nine cities voted to establish, under that Act, the East Bay Municipal Utility District (EBMUD), one of the nation's largest special districts, to solve mutual chronic water problems. Today the District provides water for 30 communities (16 incorporated cities) in a 304.5 square-mile area in both Alameda and Contra Costa Counties, with a population of more than one million people.

Historically, EBMUD has been

supported by water revenues, service charges, voter-approved general obligation bonds for large capital improvements, and property taxes.

Within the pre-existing boundaries of the District, the voters in six cities voted in 1944 to form Special District One (SD-1) to solve another sub-regional problem, water pollution control, by providing for combined sewage treatment facilities. The bond-financed SD-1 began operating in 1951. Following a second voter-approved bond issue in 1970, full secondary treatment facilities were built, reaching full operation in 1978. Charges are computed on both volume and "strength" of sewage. A property

tax partially supports SD-1, which now serves 575,000 people in nine communities.

An example of intergovernmental cooperation is seen in the exercise of water rights on the Mokelumne River. EBMUD's water rights include 325 million gallons a day from the river, stored at Pardee Dam Reservoir and transmitted by the three Mokelumne Aqueducts 82 miles to the East Bay, where it is stored in five terminal reservoirs or processed by one of six filter plants. EBMUD works closely with other agencies and districts with Mokelumne water rights. Agreements and contracts involve Pacific Gas & Electric Co.'s hydro facilities, City of Lodi, Calaveras Public Utility District, Calaveras County Water District, Amador County, Woodbridge and Jackson Valley Irrigation Districts, Pioneer Community Service District, North San Joaquin Water Conservation District and Woodbridge Water Users Conservation District.

California's drought of 1976-77 provides an example of how a special district is able to cooperate for the public good during unusual circumstances. From June 1977 to January 1978, EBMUD's emergency Middle River Pumping Plant supplied water—reallocated by the State Department of Water Resources—via one of the District's aqueducts to Marin Municipal Water District and Contra Costa County Water District. The City of Hayward, the City and County of San Francisco Public Utilities Commission, Metropolitan Water District of Southern California and the U.S. Bureau of Reclamation were also involved in the complex transfer of state water originally targeted for Southern California to other areas of need. This is but one of a number of emergency situations in which EBMUD has assisted neighboring local governments.



**Recreational activities—such as boating at Lafayette Reservoir—are among important by-products of East Bay M.U.D.'s facilities.**

The District maintains close cooperation with the Alameda and Contra Costa County Offices of Emergency Services, and participates in regular test exercises.

EBMUD also cooperates with cities, fire districts, and other entities in fire emergencies and in fire prevention efforts. "Red Hydrants" provide emergency links between EBMUD hill area pressure zones. All the fire districts can hook pumper trucks up between pressure zones to boost pressure to fight large-scale fires. In a major alarm, a water operations supervisor is routinely dispatched from the District to assist in locating hydrants and valves and to maintain maximum pressure. Fire prevention measures include providing information to developers concerning city and local fire department requirements and EBMUD's estimated delivery rates. The District also supplies maps and training for fire department personnel in 19 fire districts.

District personnel work closely with city building inspectors to make sure that any project involving a building permit will meet city codes and provide adequate water pressure and volume for fire fighting. Construction personnel work with directors of public works to coordinate pipe installation and maintenance with the cities' planned street reconstruction, maintenance and relocation/renewal projects. Water quality experts exchange information with state and county public health departments when District or state public health rules are being violated by improper installation or usage of water facilities.

A joint powers agreement during the 1976-77 drought made reclaimed wastewater distribution possible for a variety of purposes: landscape irrigation, sewer flushing, dust control at building sites, and earth compaction. Five sanitary districts participated. Washwater from Walnut Creek Filter Plant and main flushing water were also recycled.

The District is also a member of the East Bay Dischargers Authority, which was formed to help find a single discharge point for the combined effluents of treatment

plants serving San Leandro and Hayward, Union Sanitary District, Ora Loma Sanitary District and Castro Valley Sanitary District. This need arose in the early 1970s when U.S. Environmental Protection Agency discharge standards were becoming more stringent and cities in the south Bay were growing rapidly, increasing the volume of treated wastewater entering the shallow lower Bay where there is little flushing action. The authority's joint study resulted in a plan to build a "super sewer" to a discharge point near Oakland International Airport,

EBMUD is also lead agency in a sub-regional wastewater solids study begun in 1976 with four other entities—San Francisco, the City of San Jose, Santa Clara County, and Contra Costa County Sanitation District. Alternatives to the current sanitary landfill—including incineration, composting and reclamation of marginal crop land—are being examined.

In November 1978, EBMUD's Special District One became the



**Trencher above opens the way for East Bay's Moraga Aqueduct during project's construction.**

lead agency in a two-phase study on wastewater reclamation and reuse involving six other governmental entities. Phase one will determine the potential market for reclaimed water in industrial cooling and other uses. The balance of the two-year study will produce a plan for distribution, possibly as far away as the Central Valley. State and federal grants support the project, and both state and federal governments are parties to the agreement. EBMUD is also providing technical advice for a similar study underway in western Contra Costa County.

Another joint powers study—to include the nine communities within SD-1—is designed to end excessive stormwater infiltration into sanitary sewer systems, thereby eliminating the few occasions each year when wastewater must be discharged untreated. The joint exercise of powers agreement makes federal and state grants possible.

EBMUD's centralized data processing provides low-cost joint billing for SD-1. Ora Loma Sanitary District and Dublin-San Ramon Services District also put their sewage treatment charges on EBMUD bills. The City of Oakland includes its sewer service charge, which yields \$500,000 more per year for Oakland than the city's previous system. In December 1978 the City of Piedmont's utility tax of \$1 per month per water service also began appearing on the EBMUD bill. In each case, the joint billing avoids duplicate postage, handling, and record keeping.

The District's income in the 1978 fiscal year totaled about \$42 million, with only about \$6 million coming from a tax on property. The District's policy has been to use tax money to pay the system cost of providing water for public fire protection. The amount of money raised from taxes has been about the same in recent years, but the tax rate itself has declined steadily because of the increasing assessed value of property. During the current fiscal year, EBMUD expects to receive only about a third of the \$6 million in tax revenue that it would normally expect because of the limitations of Proposition 13.

# Adapting To Meet Valley Needs

The Glenn-Colusa Irrigation District can trace its origins to the 1880s, and its water system is one of the oldest and largest in the west. Yet it is keeping pace with the needs of the Sacramento Valley area it serves, through an adaptive process that has included consolidation of agencies, reorganization of people, and modernization of methods. Indeed, its success can be attributed to intelligent management and a far-sighted board of directors who continually monitor the needs of the people they serve and the capabilities of the District to meet those needs.

More than 150,000 acres of farm land in Glenn and Colusa Counties depend on the District for irrigation water. A wide diversity of crops is grown, but rice is the primary crop, accounting for more than two-thirds of the District's total irrigated crop acreage.

Glenn-Colusa Irrigation District was organized in 1920, but its origins trace back to 1883 when Will S. Green, a pioneer water developer, filed for appropriative rights to Sacramento River water (these rights are the basis of Glenn-Colusa's rights to Sacramento River water today). In 1887 he formed the Central Irrigation District to serve water to much of the land that is in today's Glenn-Colusa District. But Green ran into some opposition, litigation, and finally lack of funds, which brought his efforts to a halt in 1891. Eleven years later the privately developed Sacramento Valley and Irrigation Co. continued the project, but by 1915 it too failed financially.

Hearings before the State Railroad Commission (predecessor to the California Public Utilities Commission) resulted in recommendations for public district organization to serve water to the area. Five districts were formed: the Princeton-Cordora-Glenn Irrigation District, Provident

Irrigation District, Jacinto Irrigation District, Compton-Delevan Irrigation District, and Glenn-Colusa Irrigation District. Formed separately, but within the same area, was the Williams Irrigation District.

Several of the districts shared use of a common pumping plant and main canal, and the directors gradually came to recognize that consolidation promised more efficient operation of facilities and reduced administrative costs. Thus, in 1926 the Williams Irrigation District consolidated with Glenn-Colusa; in 1958 Compton-Delevan Irrigation District was consolidated into Glenn-Colusa, and Jacinto Irrigation District was consolidated into Glenn-Colusa in 1962.

Over the years the District has had to adjust often to major changes and the problems they produced: the financing problems of the Great Depression, manpower and material shortages of World War II, and water rights conflicts resulting

from the construction of Shasta Dam and the Central Valley Project.

In 1967, it became evident to the District directors that District facilities were in need of rehabilitation and modernization. Major portions of the District's pumping plant and conveyance system were more than 50 years old, aging during a period when modern technology was providing major advances in construction design, engineering techniques, mechanical and electronic equipment. Major master planning efforts were undertaken to assure that the District would be able to continue to meet its service demands within requirements of the State Water Code and withstand the pressures of newer philosophies of water management that were developing.

Within the past 12 years the master plan developed by the District directors and staff has resulted in significant improvements in facilities, operations and



**Glenn-Colusa Irrigation District crew installs radial gates to complete enlargement and modernization of check and siphon structure.**





**Glenn-Colusa directors (l-r) Peter Mirande, Roy Otterson, Charles Wischropp, Ralph Nissen and Ben Johnson study district service area.**

organization. The District has undertaken more than a dozen major projects along its 65-mile main canal at a cost of more than \$2.2 million. These projects include the replacement of major structures, installation of automated gates, metering and measuring devices, and extensive excavation of the canal to improve its carrying capacity.

The largest rotating drum-type

fish screen in existence is located ahead of the District's Sacramento River pumping plant. It is designed to protect the anadromous fishery and was completed in 1972 at a cost of \$2.3 million. It is jointly operated and maintained by the District and the California Department of Fish and Game.

Planning for future improvement of facilities continues. The District is now negotiating with the federal

government for a \$17 million loan to replace its main pumping plant and continue with other modernizations specified in the master plan. The loan is contingent on the approval of District voters, which would follow successful negotiation of a contract that meets with full approval of District directors.

Modernization has also occurred within the office, from which is managed a staff of 65 to 70 full-time people based throughout the service area. A major improvement has been a computerized system of accounting that enables staff to process and monitor operations and meet increasing demands with maximum efficiency.

District revenues come primarily from project water sales and delivery charges, and from assessments. Operating expenses are about \$2 million annually, with 40 percent going to the operation and maintenance of the transmission and distribution system, 20 percent to pumping and other water supply costs, and the balance for administration and general costs. Any excess of revenues over expenditures is combined with funds generated from depreciation charges and applied to needed capital improvements.

### III. DISTRICT SERVICES

Water districts are empowered to perform only those services prescribed in the laws by which the districts are created. Although the range of authorized services may be broad, as in the case of community services districts, most districts are limited to one or a few services. This limitation is one of the essential differences between special districts and general purpose city and county governments, which have broad powers to define and create new services and programs.

In practice, most water districts perform only a few of the services for their type of district. The remainder are held as "latent powers", to be exercised if and when the district residents need additional services.

#### **Water Acquisition and Delivery**

The basic service provided by water districts is the acquisition and delivery of water for agricultural, domestic, commercial, and industrial uses. In urban areas the basic service normally includes water for fire protection. Districts may acquire water from local ground or surface sources or import it from distant sources. The output of reclamation facilities is a small but growing additional source. Districts may make "retail" deliveries directly to the public or "wholesale" deliveries to other water agencies. Some districts are both wholesalers and retailers.

In theory, California has plenty of water. Its average annual precipitation is 200 million acre-feet, the equivalent of 65 trillion gallons, and enough to cover all the land in the state to a depth of two feet. Although 65 percent is consumed by evaporation and transpiration, the remaining 35 percent—71 million acre-feet—is more than twice the net annual demand of 31 million acre-feet. About one-third of the demand is met from local surface sources and import sources developed locally, one-fourth by extraction of groundwater, and the remainder from state and federal water projects.<sup>49</sup>

In practice, California has severe problems of distribution: 75 percent of the state's runoff is north of Sacramento, while 75 percent of the demand for irrigation and urban water is south of

Sacramento.<sup>50</sup> The need for "wholesaling" of water has resulted from the maldistribution of water supplies and the desire to realize economies of scale in the redistribution of those supplies. Most of the initial expense of water is in the capital cost of the facilities to acquire and transport it, and it is generally much cheaper and more practical to build one large dam and aqueduct system under the control of one agency than to build several small systems to do the same job.

The bulk of redistribution, particularly since the 1930s, has been accomplished by the state and federal governments. But several important redistribution systems have been built and operated by independent water districts. The Metropolitan Water District of Southern California was formed by communities in the Los Angeles metropolitan area to bring water across the desert from the Colorado River. The East Bay Municipal Utility District was formed by communities on the east side of San Francisco Bay to bring water from the Mokelumne River in the Sierras.<sup>51</sup>

The greater the scarcity of natural water supplies in a developing area, the greater the need for transporting and wholesaling water, and the less likely it is that any individual agency can economically integrate the functions of production and delivery to the public. In the Sacramento Valley more than 90 percent of the water is produced from local ground and surface sources by the same agencies that deliver it to the public. In the Los Angeles and San Diego areas nearly 50 percent of the water is imported from the Colorado River or northern California, and virtually every agency delivering water directly to the public gets at least part of its supply from wholesalers. In the San Diego area the San Diego County Water Authority, a cooperative-type wholesale district formed by water districts and cities, buys water from the Metropolitan Water District for redistribution to its member agencies. In the Los Angeles basin there are two tiers of wholesalers. Metropolitan imports and treats the water and sells it to a dozen municipal water

districts, which in turn wholesale it to local retail agencies.<sup>52</sup>

To best serve their customers, "retail" districts seek to acquire water at the best available combination of quality and price. Local surface water is usually cheaper than local groundwater, which has pumping and well costs associated with it; and both are usually cheaper than imported water, which has off-site production, transportation, and treatment costs associated with it. Thus, for the sake of economy, a retail district will usually try to acquire as much local surface and groundwater, and as little imported water as possible.

Water quality requirements in some parts of the state can make the cheapest water unusable and force a blend of local and imported water as the least expensive practical alternative. For example, water imported to the Los Angeles area from the Colorado River is high in total dissolved solids but low in bacteria, while water imported from northern California is high in bacteria but

low in total dissolved solids. Blending the two produces water of improved quality. In addition, some of the groundwater in the Los Angeles area is high in nitrates but low in total dissolved solids and bacteria. Blending local groundwater with a blend of imported waters produces the most economical water of acceptable quality.

This search for economy, coupled with fluctuations in level and quality of groundwater from place to place and from time to time even within the same basin, produces wide price variations among local agencies. In a recent study of Orange County retail water agencies—water districts, city water departments, and private water companies—it was found that the actual cost to the customer of 9,000 gallons of water (a typical monthly family supply) varied among the 25 agencies from \$4.10 to \$10.17, despite the fact that all but two of the agencies paid the same price for imported water.<sup>53</sup> The primary reason for the wide variation in price was the variety of quality and extraction problems in groundwater.

A feature of the basic water service in urban areas, and a significant capital cost factor in urban delivery systems, is the provision of water for fire protection. While relatively little water is used to put out fires, it must be provided on demand and at much higher volume than needed for normal domestic use, necessitating larger and more costly pipes and other equipment, as well as larger reservoir capacity.

In providing basic water service, water districts try to match high quality with low cost. Since the acquisition and delivery of water is their primary function, the satisfaction of the public with their service is their primary goal.

### **Customer Satisfaction**

By definition, public agencies exist to serve the public, and the ultimate measure of the performance of a public agency is public acceptance or rejection of that performance. Water service is an essential and visible function: one which the public can easily judge based on everyday observations. Thus public opinion surveys are valuable tools with which to measure the acceptability of water service and the performance of water districts.

In the fall of 1978, two statewide surveys were conducted which show a high degree of public satisfaction with water service throughout the state, and an even higher degree of satisfaction with the performance of water districts.



**The 242-mile Colorado River Aqueduct brings water from the Colorado into L. A. urban areas.**

The first, a telephone survey by a national polling firm, DMI Inc., taken in September 1978, polled a scientifically selected random sample of 800 registered voters throughout California.<sup>54</sup> In response to the question, "How would you rate the job your water supplier does in servicing your water needs—excellent, good, only fair, or poor?", 77 percent answered either "excellent" or "good",<sup>55</sup> indicating that more than three-fourths of the voters in California are satisfied with their water service and water provider, be it a water district, city water department, county agency, or private water company.

In the second survey only water district customers were polled. Conducted in late October and early November 1978 by 64 member districts of the Association of California Water Agencies, this telephone survey obtained responses from a scientifically selected random sample of more than 16,000 district customers throughout the state.<sup>56</sup> In response to the identical question asked in the earlier DMI survey, 88 percent answered "excellent" or "good", indicating that those served

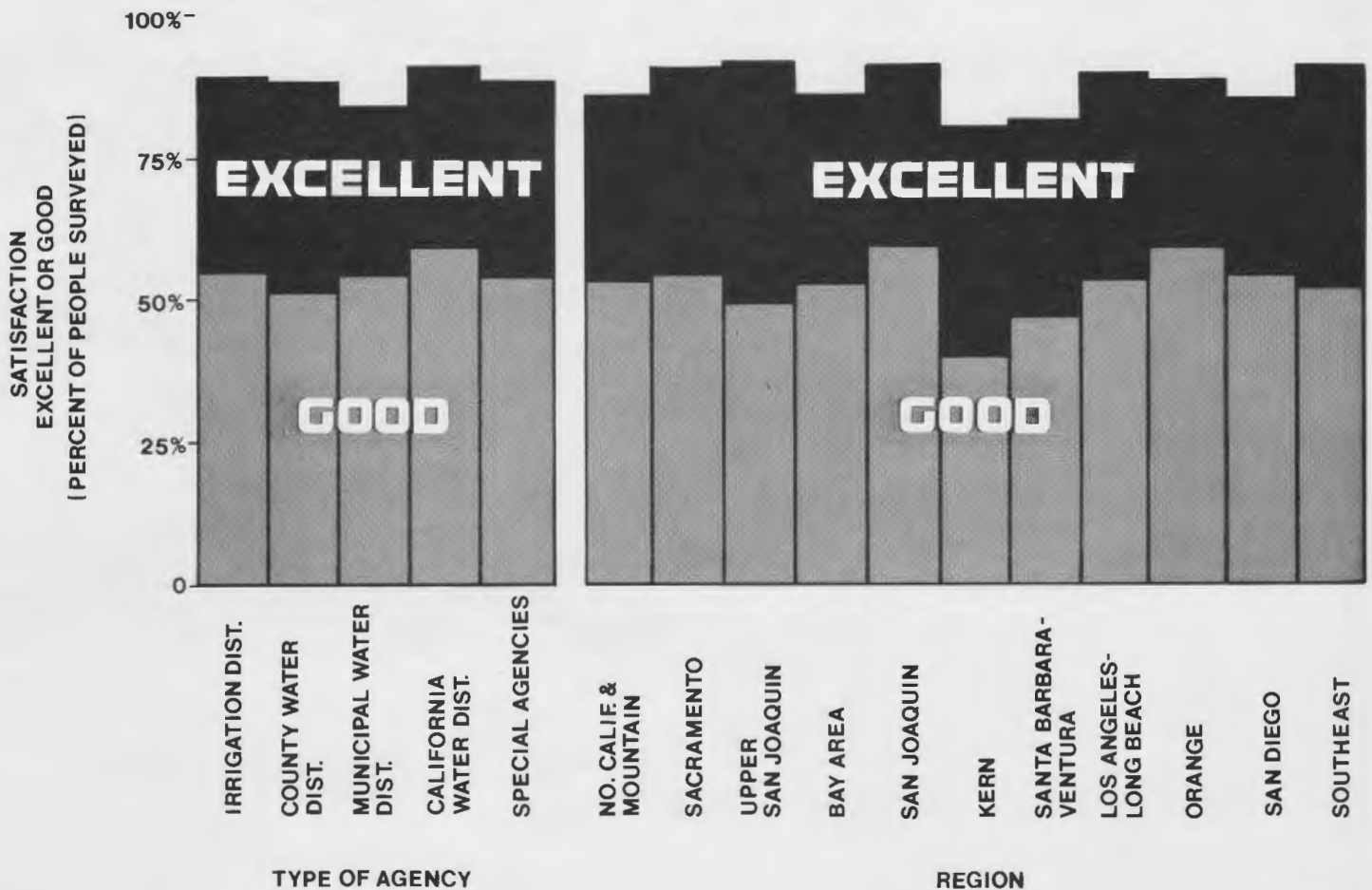
by water districts have an even higher level of satisfaction with their water service than those served by other types of water providers. There were no significant differences in levels of satisfaction among different types and sizes of districts or among different areas of the state.

Probably because of this extremely high level of satisfaction with water service and water districts, Californians do not wish to see organizational changes in the way water is delivered made without their consent. In response to the following question in the DMI survey, "Do you believe that the people served by (a) local water district should have the right to vote on any proposal to consolidate their district into a city or county government?", 87 percent said "yes".<sup>57</sup>

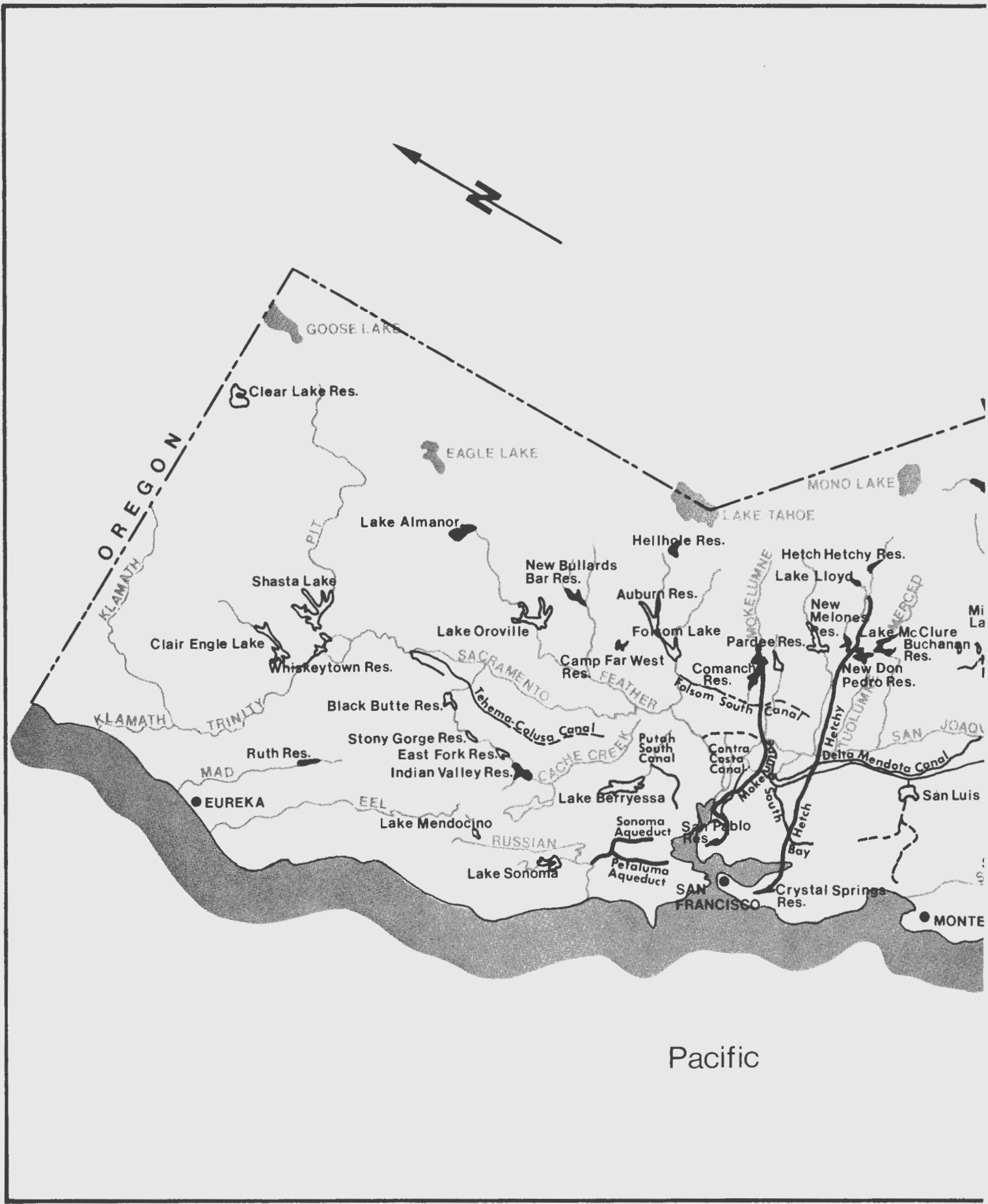
In summary, the public is generally satisfied with water service, particularly satisfied with water districts, and wants to control any changes in the status quo.

### Other Services

As agencies dedicated to the primary goal of



### USER SATISFACTION





supplying water to the public, water districts have taken a leading role in developing and managing ground and surface water resources. Twenty-six of the 100 largest dams in the state were built by districts which now operate them to store water for seasonal and emergency needs, control flooding, produce electrical power, and provide recreational facilities. The combined storage capacity of the reservoirs behind these dams is nearly 6 million acre-feet.<sup>58</sup>

Districts are also heavily involved in ground-water basin management, particularly in the Los Angeles area. Metropolitan Water District provides surplus imported water for basin replenishment at reduced prices and has recently initiated a "conjunctive" use program of storing imported water along with natural groundwater in the San Fernando Basin. Other active ground-water management districts in the area are the Central and West Basin Water Replenishment District in Los Angeles County, and the Orange County Water District in Orange County, both of which have created extensive sea water intrusion

barriers; and the Chino Basin Water Conservation District in San Bernardino County. These districts monitor basin status, levy pumping taxes to pay for replenishment needed because of groundwater extraction, and buy imported water for basin replenishment.

The operation of dams, reservoirs, and aqueducts has made provision of electricity a logical auxiliary service for some of the large irrigation districts. Imperial Irrigation District serves 48,000 customers partially with electricity generated at five "drops"—small waterfalls—on its All-American Canal, while Modesto and Turlock Irrigation Districts serve customers in their areas with electricity generated at their 568-foot Don Pedro Dam on the Tuolumne River.

Other water-related services provided by water districts include reclamation, levee maintenance, drainage projects, and wastewater collection and disposal. Some community service districts also provide services not related to water, such as parks, golf courses and fire protection.

# Keeping Pace with Intense Growth

Mesa Consolidated Water District—Costa Mesa County Water District prior to January 1, 1979—was formed in 1960 as the result of a merger of four predecessor districts to provide efficient water service to a fast-growing area in Orange County. At the time of formation, the District served 9,448 accounts in its 17.59 square-mile territory. Today the District has 19,670 accounts—residential, industrial, commercial and some agricultural—and serves a total population of about 84,000.

The District has achieved a good record of serving the needs of its customers with a high level of customer satisfaction. Two surveys have indicated that the people who depend on the District for their water are indeed satisfied. In March 1977, the District commissioned its own survey at a time when the City of Costa Mesa was proposing to take over the District. Some 94 percent of the people surveyed described District service as excellent or good. Incidentally, on the question of the city acquiring control of the District, 65 percent of the

respondents opposed such a take-over with only 15 percent favoring it. The remainder had no opinion. An October 1978 survey of customer satisfaction conducted by the District in cooperation with the Association of California Water Agencies resulted in 91¼ percent of the respondents rating District service as excellent or good.

One of the reasons the District rates so high in customer satisfaction is that it is organized to respond quickly to customer inquiries and complaints. This aspect of its operations is accomplished through the Customer Service Division. The front office clerical staff receives and responds to routine inquiries by telephone and correspondence while processing requests for turn-ons, cutoffs, and final meter readings, and preparing final billing notices. When non-routine service inquiries related to serving the consumer arise, they are referred to the customer service supervisor. Most such inquiries are related to water bills that are higher than normal. In these cases, the supervisor sends a District

representative to the consumer's home or property to investigate the requests. The District strives to provide immediate and personalized responses to non-routine inquiries and complaints.

The district also attempts to avoid customer inconvenience whenever changes in District operations are being implemented. For example, after 17 years of manual water billing, the District decided to use the billing system of an outside computer service. Two terminals were located in the main office for the purpose of entering information for billings and cash posting. The next working day, the water bills and print-outs were delivered to and bills were mailed from the office. After about a year and a half on the outside service, the District purchased a mini-computer, and established its own automated billing system. Throughout the entire two-step conversion process, it was a primary priority of the District not to inconvenience customers. As an example, the computer converts the cubic feet water usage figure on the bills to gallons, which is more



**Mesa Consolidated Water District crew prepares trench for distribution pipeline project.**



**Mesa Consolidated crew takes new pipeline from truck. System maintenance aids customer relations.**



familiar to customers. An additional benefit of the in-house minicomputer is that it will provide water billings, accounts payable, payroll, labor distribution, general ledger, accounts receivable, job costing, inventory and other functions at a cost less than the cost of outside services alone for water billings. Thus, the District is expanding its ability to provide the best possible service at the lowest possible price.

The District has learned that there is more than one way to serve its customers and to provide cost savings of direct benefit to District water consumers. The service area of the District has a class II fire insurance rating, due in large part to the outstanding rating of the water system. The District and the City of Costa Mesa have cooperated in instituting a joint fire hydrant installation program whereby new hydrants are installed to continually upgrade the fire protection system. The net result is that the citizens in the District service area have the lowest fire insurance rates in the state.

Master planning is one of the keys to the District's ability to maintain consistently good service. The District's master plan covers immediate through ultimate development of the District service area. Sources of transmission and distribution sizing are determined as well as fire flow requirements. As part of the plan, the District has an



**Above is headquarters building for Mesa Consolidated Water District, which provides service to a fast-growing area in Orange County.**

on-going mainline replacement and extension program, as well as a system expansion program.

Related to the master planning is the District's meter program administered by the customer service supervisor. This program includes replacement of damaged or non-functioning meters. Also, the master plan provides for replacement of selected meters based on their years of service or combined years of service and consumption, so that they are removed prior to becoming a problem for District customers. The program also provides for ongoing maintenance of all industrial-type meters. Key to the meter program is the District's goal of cutting unaccounted water loss to a minimum.

The District's objective of top service in meeting the needs of the community has led to the formation of a special Citizens Advisory Committee. Objectives of the committee are to inform the community of up-coming water development issues, to seek community input in matters of water management, to gain assistance in the District's relationship with the regional water systems, and to solicit and develop wide-spread community understanding of, or support for, long-

range energy and water conservation programs. Five members are selected at large and the remainder—up to a total of 25 members—are selected by District directors from their respective divisions. The committee meets monthly and acts in a consultant relationship to the board.

In the spirit of inter-agency cooperation and coordination toward providing the best possible service, the District and the City of Costa Mesa have established a liaison committee to discuss issues of common interest and concern. The committee, consisting of two elected officials from each agency and both managers, meets monthly to resolve issues and coordinate programs.

Inter-agency cooperation extends also to agreements that the District has with other water and governmental agencies concerning fire hydrant installations, construction coordination, reservoirs, joint well fields, joint powers agreements, mutual aid and similar matters.

District revenues of \$3,904,000 for the 1978-79 fiscal year will be almost totally derived from water sales, with only \$204,000 coming from miscellaneous other sources, such as interest earnings. The District imposes no property tax.



**Mesa Consolidated crewman taps into pipe on repair project.**



**Boat launch is the gateway to recreational activities at Modesto Irrigation District's New Don Pedro Reservoir.**

## Modesto Irrigation District

# Service Emphasis Is Key Objective

Modesto Irrigation District was one of the first of California's independent water districts. In 1887 the State Legislature enacted a bill by Modesto Assemblyman C. C. Wright, authorizing the formation of local irrigation districts. That same year the Modesto Irrigation District was formed under the Wright Act.

The District provides two basic services: irrigation water and electrical energy. It supplies 300,000 acre-feet of water each year to irrigate more than 65,000 acres of prime agricultural land, and it services the electrical energy needs of 60,000 customers. Energy and water often go hand-in-hand, and that has been the case in Modesto. The District, often in cooperation with its neighbor, the Turlock Irrigation District, has developed its own local supply of water through reservoirs in the nearby Sierras to catch rains and the runoff from melting snow. A natural by-product of dam and reservoir projects often is the generation of electrical energy through hydro-power plants. In the early 1920s, with the development of the Don Pedro Dam by Modesto and Turlock Irrigation Districts, Modesto's directors and the voters decided to have the District expand its service through the retail distribution of its share of the electrical energy generated by the project.

As electric demand has increased,

the District has contracted with San Francisco to purchase wholesale power from San Francisco's Hetch Hetchy project in the upper reaches of the Tuolumne River. Additional power is purchased from the Pacific Gas & Electric Co.

The directors and staff of the District are dedicated to assuring a high level of competent and efficient water and energy services for District customers. The success of their efforts was recently measured through a survey of the District customers in conjunction with a project of the Association of California Water Agencies. Some 95.6 percent of survey respondents

rated District service good or excellent, while less than one percent rated service poor.

The District has a continuing program to update and upgrade District facilities and operations. Computerized data processing has improved efficiency and accuracy in most phases of operations. For example, a program using the computer to pre-check customer billings has resulted in significant improvement in that process. A computerized inventory system has provided effective handling and control of warehouse items. With the consolidation of Waterford Irrigation District—a small



**Modesto Irrigation District service representatives have extensive circular filing system to help them respond to customer needs.**

neighboring District—into Modesto Irrigation District on Jan. 1, 1978, a major redesign of the irrigation billing and crop reporting data systems was completed. A District task force is continuing to design and implement other data processing applications to help the District meet the demands of growth and development.

Both the irrigation and electrical divisions of the District have long-range facilities improvement programs. In the electrical area, the District has rebuilt or expanded existing stations and added new substations. The District is constantly surveying new sources of energy, to help meet ever increasing power demands. Along with conservation programs, these potential sources include small-hydrogeneration plants on the District water system, a co-generation gas turbine project located in Modesto's Industrial Center, the Clavey and Wards Ferry Hydroelectric Project on the upper Tuolumne River in conjunction with Turlock Irrigation District and the City and County of San Francisco, and the Stanislaus Nuclear Plant and Fossils 1 and 2 involving Pacific Gas & Electric Co.

In the irrigation division, efforts

have been made over the years to line all the larger canals with concrete and to place the smaller laterals underground in pipelines, so as to decrease maintenance costs and the hazards of washouts and seepage. Pipeline and canal rights-of-way have been landscaped where they parallel public roads. The District has cooperated with Stanislaus County and its cities to relieve stormwater problems on streets by allowing pumping into the canal system wherever possible. Many drainage wells were installed in the late 1920s on the west side of the District to relieve high water table problems and allow the growing of deeper-rooted, higher-value crops. When pipelines are abandoned in older urban areas, all above-ground facilities (concrete boxes, air vents, valves) are removed at no cost to the property owners to eliminate eyesores and safety hazards to children. Community pipelines installed in improvement districts, administered by the District and under District specifications, have been maintained by District crews since the 1930s, at no cost to the users.

The consolidation with Waterford Irrigation District combined various water rights on the

Tuolumne River and made more efficient use of personnel and equipment, as well as opening the possibilities of additional irrigated lands.

With the exception of interest earnings, District revenues are totally derived from the sale of energy and water with no dependence on property taxes—in fact, no land taxes have been levied by the District since 1959. Rising fuel costs and growth in demands have resulted in minimal rate increases over the past years, as the area served by the District enjoys one of the lowest combined rates for irrigation water and electrical energy in the nation. In 1977 reserves were used to offset partially the impact of rising electric power costs.

While the District directors and staff grapple with the problems of inflation and rising energy costs within the context of the District's commitment to continue to provide the best possible service at the lowest possible prices, they are able to point with pride to the fact that through the far-sighted planning of nearly a century, the District has been built entirely as a local utility, relatively free from outside influences and pressures.



**Aerial view shows New Don Pedro Reservoir, dam and spillway. New Don Pedro is a joint facility of**

**Modesto and Turlock Irrigation Districts. Water to Modesto from reservoir helps irrigate 65,000 acres.**

## IV. DISTRICT FINANCING

### Accounting for Water

It is axiomatic among water providers that water itself is free—what people pay for is collecting, storing, transporting, treating and distributing it. In California that price is about \$1.5 billion annually,<sup>59</sup> two-fifths of which is paid to independent water districts.<sup>60</sup>

An analysis of how these districts get and spend their money must start with a brief description of state accounting procedures related to district finances. Under state accounting rules, water service is an “enterprise” activity which each district must account for and report annually to the state separately from other activities. These reports, compiled and published by the State Controller, provide the only comprehensive statewide financial data on water district finances.

Enterprise accounting separates operating revenues and expenses from non-operating revenues and expenses, and thus focuses attention on current service costs and charges to users based directly on the value of the water or other service delivered. The major categories of operating revenues are:<sup>61</sup>

- Water Sales
  - Residential
  - Business
  - Industrial
  - Irrigation
  - Sales for resale
- Water Services
  - Fire Protection
  - Groundwater Replenishment

The major categories of non-operating revenues are:

- Annexation Charges
- Interest
- Taxes and Assessments
- Other Governmental Agencies
  - Federal
  - State
- Homeowners Property Tax Relief
- Business Inventory Property Tax Relief

These non-operating revenues are not tied directly to the value of the service, with one notable exception. Irrigation districts and California water districts often levy on agricultural users ad valorem assessments to fund the cost of water delivered. Due to a quirk in state law and accounting rules, these assessments, which are in fact fees for service, are lumped into the “Taxes and Assessments” category of non-operating revenues, thus complicating attempts to determine an exact breakdown between user fees and general taxes as sources of water revenue.

Operating expenses are those incurred directly and currently in performance of the service of delivering water. The major categories are:

- Source of Supply
  - Water Purchases
  - Groundwater Replenishment
- Pumping
- Water Treatment
- Transmission and Distribution
- Customer Accounts
- Administration and General
- Other Operating Expenses
- Depreciation

A district reporting no operating revenues in a given year, and no operating expenses except in “Administration and General,” may be assumed not to be an active deliverer of water in that year.

Non-operating expenses are those for nondirect costs, the principal category of which is “Interest on Long Term Debt”, reflecting capital outlay financing.

### District Revenues

In the fiscal year 1976-77, the 591 active<sup>62</sup> independent water districts in California collected \$787,712,000 in total revenues, which constituted 62 percent of all water revenues—wholesale and retail—collected by local public agencies in the state. Among other local public providers, 252 cities collected \$427,342,000,<sup>63</sup> while 266 dependent or inactive districts collected \$57,061,000.<sup>64</sup>

Of the total revenues collected by independent

districts, \$464,517,000, or 59 percent, were reported as operating revenues, while at least \$48,672,000, or 6 percent, of non-operating revenues could be identified as ad valorem assessments for water delivered.<sup>65</sup> Thus, in 1976-77, at least 65 percent of total independent district revenues came from direct user charges. Additionally, the non-operating expenses for "Interest on Long-Term Debt"—which amounted to \$94,003,000 in 1976-77—reflect revenues dedicated to the retirement of that debt and thus not available to pay for current water delivery. Reducing total revenues by \$94,003,000, we find that 74 percent of revenues related to current water service in 1976-77 came from direct fees for that service.

The percentage can be expected to rise, and eventually may reach 100 percent, due to the effects of Proposition 13, passed by the voters in 1978. In the face of a permanent statewide limit on property taxes, and in anticipation of rising energy costs, independent districts can be expected to reduce their reliance on property and other general taxes by increasing the proportion of user charges to total revenues. However, despite the high overall proportion of fees to total revenues statewide, some individual districts still rely on the property tax for operation and maintenance expenses. Of the 591 independent districts, the total revenues of 148 are only from operating revenues, the revenues of 17 are only

from assessments, and the revenues of 164 are from a combination of assessments and operating revenues. Thus, 262, or 44 percent, of the districts rely to some extent on property tax as a revenue source, and while for some of these, property tax revenue may be used primarily for retirement of long-term debt, for others it supports current operations and maintenance activities.

Figure 4.1 presents total revenues, user charges, and long-term debt interest for the major types of water districts. The first thing this chart reveals is the vast range in the economic sizes of the districts, individually and by type. The overall revenues-per-district average is \$1,331,000, yet the largest district in the state—Metropolitan Water District of Southern California—itself collects \$170,268,000. The revenues of the four largest districts—Metropolitan, East Bay Municipal Utility District (\$43,083,000), San Diego County Water Authority (\$41,248,000), and Kern County Water Agency (\$26,571,000)—total \$281,700,000, or 37 percent of the revenues of all the districts. On the other hand the 49 public utilities districts that serve water collect an average of only \$234,000 apiece in water revenues, and the 106 community services districts collect an average of only \$134,000 apiece. The smallest active district—Villa Blue Estates Water District in Lake County—collected only \$494 in total water revenues in 1976-77.

Overall, the districts depend on general

Type of District	Number Of Districts #	Total Revenues \$	User Charges (Operating Revenues Plus Ad valorem Assessments) \$	User Charges as Percentage Of Total Revenues %	Interest On Long-term Debt \$	Total Revenues minus Revenue To Pay Long-term Debt Interest \$	User Charges as Percentage Of Net Revenue %
Metropolitan Water District	1	170,268,000	88,160,000	51.8	39,504,000	130,764,000	67.4
Municipal Water District	36	139,606,000	84,839,000	60.8	11,494,000	128,112,000	66.2
County Water District	157	125,924,000	69,128,000	54.9	7,502,000	118,422,000	58.4
California Water District	108	98,693,000	76,072,000	77.1	12,612,000	86,081,000	88.4
Irrigation District	89	74,801,000	63,459,000	84.8	1,536,000	73,265,000	86.6
Municipal Utility District	3	43,992,000	30,759,000	69.9	5,154,000	38,838,000	79.2
County Water Authority	1	41,248,000	25,492,000	61.8	3,222,000	38,026,000	67.0
County Water Agency	8	30,937,000	28,673,000	92.7	6,123,000	24,814,000	115.6
Water Storage District	8	23,357,000	21,672,000	92.8	4,221,000	19,136,000	113.3
Community Services Dist.	106	15,933,000	8,770,000	55.0	1,443,000	14,490,000	60.5
Public Utility District	49	11,452,000	5,861,000	51.2	693,000	10,759,000	54.5
Others	25	11,519,000	10,306,000	89.5	499,000	11,020,000	93.5
<b>TOTAL</b>	<b>591</b>	<b>787,730,000</b>	<b>513,191,000</b>	<b>65.1</b>	<b>94,003,000</b>	<b>693,727,000</b>	<b>74.0</b>

FIGURE 4.1: Analysis of 1976-77 District Revenue, by Type of District.

SOURCE: Analysis of State Controller's 1976-77 Annual Report: Financial Transactions Concerning Special Districts, Table 23.

property taxes for only about one-third of total revenues, and none of the various types has a dependence greater than one-half. The range is from less than 10 percent (water storage districts and county water agencies) to 48.2 percent (Metropolitan). The larger rural districts (irrigation districts, California water districts) appear less dependent on property taxes than the smaller and more urban districts (county water districts and community services districts). This is only true, however, if ad valorem assessments are counted as user charges and not as general property taxes. When revenues to pay long-term debt interest are subtracted from total revenues, it can be seen that some types of districts rely little or not at all on property taxes to pay current operations and maintenance costs.

Finally, the chart shows that in water delivery, as in most industries, wholesalers tend to be larger than retailers. All of Metropolitan's \$88,160,000 in operating revenues are derived from "Sales for Resale", as are all of San Diego County Water Authority's \$25,492,000. Among the relatively large municipal water districts, \$43,651,000, or 51 percent of operating revenues, are derived from "Sales for Resale", while only 1.25 percent of the combined operating revenues of the smaller county water districts, community services districts, and public utilities districts are from wholesale operations.

In summary, the independent water districts show as much diversity in revenues as they do in organization and service areas. The mix and amounts of revenues in each district are reflective of circumstances of size and service needs unique to that district. In general, however, the districts tend to be smaller if they are retailers, to depend less on property taxes if they are rural, and to rely more heavily on fees for service than other kinds of governments providing other kinds of services.

## **District Expenditures**

Independent water districts have three characteristics which combine to differentiate them from other local water suppliers. First, independent districts are non-profit, whereas commercial private water companies are in business specifically to make a profit for their investors. Second, independent water districts are dedicated to providing a single service—water—or a small set of water-related services, whereas cities and counties provide a multitude of services, of

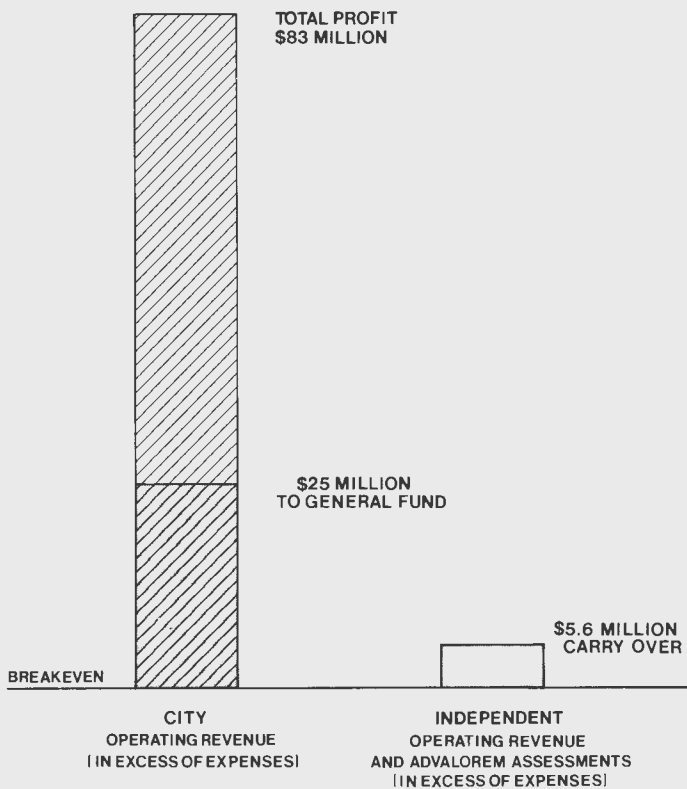
which water is only one. Third, virtually all independent water districts are governed by boards of directors elected by district voters specifically to provide water service, whereas dependent districts are governed by appointed boards or by boards elected for other purposes. The impact of these differences is seen most clearly in the area of expenditures and expenditure control.

Most of the costs of water, as it makes its way through various stages to the local supplier and thus to the consumer, are fixed costs, the results of rates set by various levels and units of government. These costs have little to do with demand. Also, the delivery of water is a capital-intensive, rather than a labor-intensive service: labor makes up much less of the total water service cost than in other public services, such as welfare or police and fire protection. As a result of fixed acquisition costs and capital-intensive operations, the cost of acquiring water to serve a specific geographical area is virtually the same no matter what type of agency is involved.

But costs are not prices, and the amount the public pays for water will vary with the structure and management policies of the supplier.

Commercial water companies are investor-owned utilities whose rates are regulated by the State Public Utilities Commission. The commission authorizes for each company a profit margin, or "rate of return." These companies thus operate at cost, plus the rate of return allowed by the commission.<sup>66</sup> Recent authorizations for rates of return have averaged about 9 percent.<sup>67</sup> This profit constitutes an additional price to the consumer that, by law, independent water districts cannot charge.

Cities, by law, cannot charge for profit either, but they can, and do, charge prices for water service that are greater than the costs of the service. In 1976-77 the operating revenues of city water departments were \$83 million greater than operating expenses.<sup>68</sup> At least \$25 million of this excess income was transferred to the cities' general funds, for uses apparently not related to water service.<sup>69</sup> With their many non-revenue producing functions, cities often subsidize other services with water revenues. That temptation does not exist for independent water districts, since all of their services relate to water and since, by law, they must spend their revenues only on the limited services they are authorized to perform. In 1976-77, the operating expenses of



**COMPARISON BETWEEN CITY WATER DEPARTMENTS & INDEPENDENT WATER DISTRICTS FUNDING 1976-77**

independent water districts exceeded operating revenues by \$43,064,000. The combination of operating revenues plus ad valorem assessments was \$5,608,000 more than operating expenses, essentially a break even situation.

Cities and counties, and their dependent water districts, have another potential difficulty related to water revenues and water systems. While many cities manage excellent water systems, in the problem-laden function environment of a big city or county government, maintenance and replacement of water facilities may be seen as a low priority. Preventive

maintenance may be deleted from the budget, capital replacements deferred until the system breaks down. Aging meters tend to register low, and if they are neither repaired nor replaced revenues decline, prices must be increased, and billing inequities occur. When a water system has been allowed to deteriorate to a certain point, it becomes a potential health hazard and costs of replacement become prohibitive.<sup>70</sup>

Independent water districts do not have the same kind of priority problems: the proper functioning of the water system is always the highest and usually the only priority. Meters are scheduled for repair or replacement based on age rather than malfunction. Many districts have adopted master plans under which they rebuild or replace portions of their systems every year, thus not allowing dangerous and expensive deterioration to take place.

Independent districts also have the advantage of the fiscal prudence of boards elected by the district voters specifically to see that good quality water is supplied at the lowest possible price. The district directors are responsible only for water, and only to the district's customers. Budgeting and expenditure control are a major interest of these directors, and their performance in holding down costs generally determines whether or not they will be reelected.

Dependent water districts, on the other hand, are governed either by the parent city council or county board of supervisors, or by appointed directors. Seldom do these appointed directors have the authority to approve their own budgets or control their own expenditures. They usually act as intermediaries between the citizens and the city council or county board of supervisors.

The type of agency that should provide water service at the lowest price and the one most likely to be responsive to the people served, is the independent water district.

# Providing Top Service at Low Cost

Like many of California's independent water districts, Arcade County Water District was formed because a predecessor utility ran into severe financial difficulty and no other governmental agency wanted to accept the financial problems. Since then, 24 years of operation with a fiscally prudent board of directors and an efficiency-minded management has resulted in a financially sound organization with one of the lowest water rates in

the Sacramento area—in fact, in the entire state.

One reviewer of the District's origins described the activity of the owners of the pre-existing company and the developers involved in the 1940s and early 1950s as "exploitation." The firm was dedicated more to profit than to rendering a public service and, as a consequence, the water system, when the District took over, was in need of drastic improvement in a hurry. Capital

investments had been minimal and the water supply had suffered the most neglect.

The goal of the Arcade District was to establish a sound financial and technical base from which to serve the growing water needs of its service area. New wells were added to supplement the water supply, and eventually the District took steps to secure surface supplies from the American River. A program was put into effect immediately to replace 150,000 lineal feet of deteriorated water mains. New mains were constructed to meet growth needs, and economies were implemented within the operations of the District.

These improvements have been made while the District was growing from 12,000 commercial and domestic services to a current 22,200. Yet the District has reduced the cost to individuals. To a limited degree, this can be attributed to the conversion to a flat rate charge basis of some users who previously were



**Crewman prepares to depart from headquarters of Arcade County Water District in suburban Sacramento in response to service request.**



**Work proceeds on line leak in Arcade County Water District system. Quick response for such repairs help maintain customer satisfaction.**



**Arcade crewman inspects flow at local fire hydrant.**



required to be metered. For example, one residential user was paying about \$100 a year for metered water service (residential users with swimming pools were metered at the time) in the years immediately prior to District formation. In 1957, this service was switched to a flat rate, and the annual charge was reduced to \$81. This and other residential users in the District have experienced other reductions subsequently. A user who was paying \$5 a month in 1953 would have paid \$4.75 in 1958 and \$4.60 in 1960. That rate remains the same today, despite many years of high inflation. Similarly, a user who paid \$2.75 in 1950 would have paid \$2.60 in 1958 and \$2.50 in 1960, which is the rate that continues today.

Because there has been a history of reductions since the District was formed—or, at the very least, a resistance to inflationary influences—the reduced charges cannot

be attributed to reduced water use. Rather, the reduction must be attributed to efficient and economic operation of the District, with the resulting savings passed on to District customers. A private utility might have siphoned the higher rates off to profit. A general government agency might have used the money to subsidize its general fund. But the Arcade District, charged with providing good service at cost, reduced the charge to its customers.

The District's rates are low in comparison to other water utility operations in the Sacramento metropolitan area, and in comparison to the City of Sacramento, which provides water service for its residents. The average single unit residential user in Arcade's area pays about 42 percent less for water than does a comparable residential user in the city.

Evidence of improved operational efficiencies is seen in a comparison

of District growth with growth of the District staff during the past two decades. When the District was formed it took over about 12,000 accounts and a work force of 14 employees. Today, there are 22,200 accounts and a work force of 17 employees. That's an 85 percent increase in the number of customers with only a 21½ percent increase in employees. Another way of looking at it is that in 1957, at the time of take-over, the District was serving 860 accounts per employee. Today the District is serving about 1,300 accounts per employee.

Total District income for the 1977-78 fiscal year was \$1,458,952, with \$1,062,370 coming from consumer revenues and the remainder from interest earnings on district reserves. Operations and maintenance costs for the same year were \$632,743, with the balance of income going to debt service, capital improvements, and reserves.

# Achieving High Results for Water Users

The Fresno Irrigation District in the heart of California's great Central Valley is a prime example of how the responsible fiscal policies and efficient operations of an independent water district can combine to produce outstanding customer service and high customer satisfaction.

In 1920 voters approved the formation of the Fresno Irrigation District under the California Irrigation Districts Act of 1897, and authorized the District to incur a bonded indebtedness of \$2 million. Immediately after the formation of the District, the water rights, distribution system and other real property of the privately owned Fresno Canal and Land Co. were purchased for \$1.75 million. After the purchase and the recording of the deed, the new District spent its remaining \$250,000 to improve the distribution system. The District at that time comprised approximately 242,000 acres and approximately 700 miles of open canals and ditches.

The first and most important change experienced by water users in the new District was in the method of operation. Instead of the landowner being required to purchase water or a water right, the

landowner now became entitled to his prorated share of all water diverted by the District from the Kings River. The water users also found that the replacement of the redwood flumes and boxes with concrete structures, valves, and water measuring devices, and the cleaning of the entire distribution system provided better regulation and efficiency.

Located entirely within Fresno County, with the City of Fresno as its geographic center, the District has been in continuous operation since its formation and has not incurred any bonded indebtedness other than the original \$2 million which was retired in 1933.

The distribution of water was significantly improved with the construction of Pine Flat Dam on the Kings River by the U.S. Army Corps of Engineers in 1954. Although built primarily as a flood control project, the dam has been highly beneficial as a storage and regulation facility. After operating under interim contracts with the federal government for several years, the 28 units on the Kings River holding water rights, including the Fresno Irrigation District, entered into permanent contracts

that were validated by the California Supreme Court for the repayment of all the costs of the irrigation benefits the project was capable of providing.

In a normal year the District imports more than 500,000 acre-feet of surface water for irrigation and groundwater replenishment. The major source of water is the Kings River, to which the District has long established water rights for a portion of the natural flow, as well as storage space at Pine Flat Reservoir. In addition, the District and the City of Fresno contract with the U.S. Bureau of Reclamation for 135,000 acre-feet of water annually from the San Joaquin River. Through this combined importation, the District provides an estimated 88 percent of the underground supply used in the Fresno urban area.

As a non-profit public corporation, the District is governed by a board of five directors. Each director represents a separate geographical division of the District and is elected for a term of four years by the qualified voters within his division. Regular board meetings are held twice each month.

The District budget is adopted by



**Above is Pine Flat Dam and Reservoir, built by the U.S. Army Corps of Engineers on the Kings River.**

**Built primarily as a flood control project, it provides irrigation water for Fresno Irrigation Dist.**

the board in August of each year. Adoption of the budget is preceded by a series of meetings at which board members work closely with management in scrutinizing proposed expenditures. During the year each disbursement is approved by two board members.

Periodically, board members arrange field trips to study first-hand major improvements proposed by staff, as well as problem areas brought to the District's attention by landowners.

For a number of years the District has maintained an "open door" policy under which the board of directors and the management are responsive to each water user's or property owner's request, complaint, or recommendation. This direct contact, plus the continuing effort to provide efficient service at the lowest possible cost, may be responsible for the high degree of user satisfaction expressed in a recent survey.

In recent years the District has joined in cooperative agreements with other agencies to handle specific projects and problems, and to obviate the need of forming more special districts to handle these functions.

Some examples are:

1. A cooperative agreement with

various local agencies for the operation and maintenance by the District of the big Dry Creek flood control project.

2. A stormwater agreement with local agencies, including the Fresno Metropolitan Flood Control District, for a coordinated use of the District's distribution system to handle local rainfall and excessive runoff from the foothills.
3. Cooperative agreements with the City of Fresno, the City of Clovis, and several other public entities for their proportionate share of the surface water imported by the District, including arrangement for lump sum payments by those agencies and public entities in lieu of individual billing for service charges. The agreement with the City of Fresno also provides for the delivery of its Central Valley Project water from the Friant-Kern Canal.
4. A cooperative agreement with the City of Fresno for the recycling of groundwater at the city's sewage treatment plant.
5. A cooperative agreement with the Fresno Metropolitan Flood Control District for the use of

its stormwater detention basins for groundwater recharge purposes.

The District's budget for 1979 is \$2,867,735. The rate to landowners has remained unchanged for three years. Financing is generated entirely through user fees, with no contributions to operations or improvements by other government entities. In turn, fees are based entirely on the cost of services provided to the users. Inasmuch as the surface water is considered to be appurtenant to the land, there is no charge for the water itself.

While agricultural production within the District is valued in excess of \$300 million annually, the compact nature of its service area enables the District to avoid a layered administration. During a normal year approximately 80 office and field employees are required for operations and maintenance purposes. Day to day operations are the responsibility of a manager appointed by the board, backed up by a watermaster-superintendent and a District engineer, and their staffs. Approximately one-half of all employees are ditchtenders who are responsible for directing water to users under the rotational system of distribution in effect for the District.

Two-way radios and the use of automatic control equipment in diverting water from source points into major conveyance channels have been a big asset to the District in controlling storm and flood waters, in addition to providing constant contact with ditchtenders and field workers.

The District's staff is largely trained for and specializes in the delivery of water and related services to agricultural lands. This capability is available to cooperating agencies and is deferred to and often called into use by these other entities. Their expertise also is available to water users on an individual basis. As a matter of policy the District provides engineering services for any on-farm projects resulting in improvements to the District's canal system. Thus, the landowner is provided with a professional service on a cost-only basis.



**Fresno Irrigation District provides irrigation water for land in Fresno County with an annual production value in excess of \$300 million.**

## V. DISTRICTS AND THE LOCAL GOVERNMENT SYSTEM

### Incentives to Cooperate

In 1973, the National Advisory Commission on Intergovernmental Relations (ACIR) declared that “local government is fractionated and confusing . . . small units lack appropriate incentives to cooperate and no technique for combining them has been found.”<sup>71</sup> This theme has been a constant one for proponents of more highly centralized governments, who equate consolidation of government units with simplification, and simplification with economy and responsiveness.

The flaw in this logic is that in practice fewer governments seldom mean less government. Instead, consolidation breeds complex bureaucratic structures which cost more and are less responsive. In 1973, a proposal to consolidate the more than 130 government units in Sacramento County, including 11 independent water districts, was placed before the voters. During the campaign it was discovered that consolidation would significantly increase labor costs and would require hundreds of millions of dollars of modifications to the water delivery systems.<sup>72</sup> The citizens voted three to one against the proposal.<sup>73</sup>

Does the fact that Sacramento County remains “unconsolidated” mean that its governments are inefficient or unresponsive? Do they lack “appropriate incentive” to cooperate? Robert Hawkins begins his book *Self Government by District* with a description of the close and systematic coordination of two fire districts and two private water companies, backed up by the water supply of several interconnected independent water districts, in fighting a hospital fire in Sacramento County.<sup>74</sup> It is doubtful whether a consolidated government could have improved on the cooperative performance of these small units. And, as a sizable body of research evidence indicates, it is even more doubtful whether a consolidated government could have performed as well at the same or at lower cost.<sup>75</sup>

The incentives of independent districts to cooperate are threefold. First, most of them were

formed locally to provide specific public services to their own communities. They are close to the people they serve, and their natural desire to do their best for their own communities forces recognition that cooperation with other districts and agencies improves the service to everyone. Second, their continued existence depends upon cooperation. Few districts are self-sufficient in emergency situations; cooperation is essential to prevent service interruptions, and other providers—cities, counties and private water companies—stand ready to assist when there are opportunities for mutual cooperation.

Third, and specifically in regard to water, the basic supply itself depends on cooperation and coordination. An example is the southeast corner of Los Angeles County where two regional independent water districts, three local independent water districts, two cities, and a community college district have participated in various cooperative ventures to get and maintain an



**Two districts and a city joined together to build this pipeline to assure their water supply.**

adequate water supply for the area's 175,000 people.<sup>76</sup> The cooperation began in the mid-1950s, when the inadequacy of local groundwater supplies forced the area's suppliers to seek imported water. The Walnut Valley Water District, the Rowland Area County Water District, and the City of Pomona formed a Joint Water Line Commission to construct a transmission main linking the area to the closest source of imported water—Metropolitan Water District of Southern California's Weymouth Filtration Plant. Twenty years later, the line is still the area's major water supply facility. Over the years the three agencies have built interconnections among themselves and with the City of West Covina and the Mount San Antonio Community College District to meet the threat of temporary outages. Recently, the Walnut Valley Water District initiated a reclamation project which will involve cooperative arrangements with the City of Pomona, the Rowland Area County Water District, the La Habra Heights Municipal Water District, and the Pomona Valley Municipal Water District, to supply reclaimed water for industrial and landscaping uses.

## **Response to Development**

Since the first irrigation districts were formed to provide equitable water distribution to the farmers of the eastern San Joaquin Valley, independent water districts have been an essential ingredient in meeting California's agricultural and urban water needs. The role of the districts, however, has been one of response rather than promotion.

Historically, the tax structure of the state has

encouraged cities and counties to promote commercial and residential development, by providing these local governments with a portion of sales taxes collected and, until recently, permitting unlimited growth of local property taxes.<sup>77</sup> Also, the legal tools to encourage or discourage development—zoning power and general plan requirements—have been in the hands of cities and counties.

Water districts, on the other hand, have had neither the incentives nor the power to promote development. They receive none of the sales taxes collected, and they rely on property taxes to meet only about one-fourth of current operating expenses.<sup>78</sup> Their land use powers are limited to eminent domain power for their own facilities and water supplies. Their function has been to respond to development by predicting water needs and by providing water for whatever land uses are determined by cities and counties.

In fact, in making that response water districts have often had to resist state legislative proposals that would have prevented development of needed water resources—proposals based on the short-sighted theory that stopping water development is the best way to stop growth.<sup>79</sup>

Their performance in meeting development needs has been outstanding. Virtually all of the surface water used for agriculture in California is delivered through independent water districts: two-thirds of the state's cities get at least a part of their water supply from independent districts. In addition, districts provide direct water service to residents of many cities and most unincorporated developments.<sup>80</sup> More often than not, independent water districts have proven the best type of agency to serve water to developing areas.

# Meeting the Challenge of Rapid Growth

The community of Yorba Linda nestles among the hills in the northeast corner of Orange County. It is not a new community—Richard Nixon was born there in 1913—but accidents of location and topography kept it, until recently, out of the main stream of Orange County's explosive residential development. Through the 1960s and early 1970s, as the flatlands around it built up rapidly in housing tracts, Yorba Linda grew slowly and steadily, carefully blending new housing into a predominantly agricultural and rural setting.

But by the mid-1970s the flatlands were full of houses and Yorba Linda found itself a prime target for residential development. Almost overnight, it seemed, more than 8,000 acres of farming and grazing ranches were sold to developers, and Yorba Linda became one of the most rapidly developing residential communities in Southern California.

The Yorba Linda County Water District—the area's independent

water district—was taken somewhat by surprise. Formed in 1959 to replace a private water company that had served the area since 1909, the District had more than adequately kept pace with early residential developments, providing water and sewer service to the City of Yorba Linda, as well as to portions of Anaheim, Brea, Placentia, and some unincorporated areas. The ranches, depending on wells and small reservoirs to collect run-off waters, had never sought water from the District and were outside its service area. In early 1977, as the ranches east of the City of Yorba Linda were being sold to developers, the District encompassed an area of 5,400 acres, and provided service to 9,400 water connections, 7,200 sewer connections, and a population of about 30,000 people. The District expected, as most people living in the area expected, that because of hilly terrain development of the ranches would be slow.

But by mid-1977 the District

found itself bombarded by requests for water from the developers who had bought the ranches: requests for grading water, fire protection water, and water for service to new homes. With its locally elected five-man board, its small staff of 30 employees, its history of outstanding service, and its philosophy of providing water wherever and in whatever quantity it is needed, the District organized itself to respond.

Between mid-1977 and mid-1978 the District annexed, with land-owner consent, approximately 7,500 acres of land within the developing area. Thus in one year the District more than doubled its size. It also doubled its maximum water source capacity, from 23 to 55 million gallons per day, by buying into a new major transmission line to bring more Colorado River and California State Water Project water to Orange County. It divided the newly annexed territory into two improvement districts to facilitate planning and financing of the facilities needed to supply water to



Yorba Linda County Water District crew prepares trench for repair of a major water line.



Yorba Linda crewmen install a new line as part of activity to repair major water line.

an estimated 10,000 new housing units.

The magnitude of the planning effort is reflected in the magnitude of the facilities designed. In order to make sure it could meet all future needs, the District prepared a master plan to cover not only the original District and newly annexed areas, but geographically logical areas for additional future development. Plans call for 88 miles of pipeline to be added to the District's current 130 miles by the year 2000, and for reservoir storage capacity to be increased from 16 million gallons to 37 million gallons. Because of the hilly terrain, 27 pressure reducing stations and an additional 25,000 gallons per minute pumping capacity are also proposed.

Concurrently with and as part of the master planning effort, the District designed, initiated financing for and began construction of the facilities to meet current development needs. In June 1978 voters in the two improvement districts authorized \$67 million of general obligation bonds to finance new facilities to be built by 1990. The bonds will be issued on an as-needed basis, so that financing will keep pace with, but not precede, residential development. The first bonds, worth \$2.3 million, were issued in August 1978 to pay for the facilities to serve several residential development projects. To date no development has been delayed because of lack of water.

The District, long known for the

quality of its services and its fiscal prudence, has made few organizational changes to meet the enormous development challenge. One of its staff was made project manager to coordinate District efforts in the developing areas and two employees were added to the staff to handle the increased workload. Accounting procedures have been strengthened to keep track of the surge of capital outlay expenditures.

The Yorba Linda County Water District clearly demonstrates the inherent ability of independent water districts to respond to the needs created by urban development, and to respond with the least possible delay to the developers and the least possible cost to the public.

# Organizing To Meet Common Needs

From its earliest history to the present time, the citizens of San Diego have recognized that its future depended upon having a dependable water supply.

Each succeeding generation met the challenge of an ever-increasing population by making improvements to existing local water facilities. History shows that water development in San Diego has always been the result of an organized community effort. Knowingly or unknowingly, early water pioneers were creating the forerunners of the San Diego County Water Authority.

Planned water development took on a greater significance in 1850 when the New Town (San Diego) emerged. The first planned development came with the organization of the San Diego Water Company in 1873. The population was about 2,000. A well was sunk in the area, now known as Eleventh and "A" Street, and 50,000 gallons of water were pumped daily into two nearby reservoirs and piped to the immediate area. Throughout the ensuing years other companies were formed with varying degrees of success.

The City of San Diego purchased the San Diego Water Company holdings within the city limits in 1901. This was the beginning of a step-by-step program of municipal ownership that by 1947 included dams, water rights, distribution lines and other facilities.

In the early 20th century, civic leaders realized that local water supplies again were rapidly becoming inadequate. A supplemental water supply would soon be needed to serve the growing community. In 1926, the City of San Diego applied to the California Division of Water Resources for the right to divert 155 cubic feet of water per second from the Colorado River for use within the city. By mutual agreement that right was extended to include the County of San Diego.

The legislative struggle to secure the Boulder (Hoover Dam) Project legislation, without which there would be no Colorado River water

available for use by San Diego and Southern California, continued for the next several years.

Inability of small local water companies to provide adequate water to the entire region was self-evident. There was a need for a county-wide organization to administer the rights to distribute the water to a scattered group of public corporations within the county. The County did not have legal authority. It, likewise, was impossible for the City of San Diego to assume full responsibility and sell to other agencies within the county. The only solution was the establishment of a legal entity which was authorized by state law to develop, store and transport, and deliver such water county-wide.

The San Diego City and County officials and a group of civic leaders requested that the California State Legislature adopt an enabling act, which was prepared by Phil D. Swing and introduced by Senator Ed Fletcher, establishing the procedure for the organization of county water authorities. The County Water Authority Act was

signed by Governor Earl Warren on May 17, 1943. Under the Act, an authority can be organized by two or more "public agencies" which have the power to acquire and distribute water for domestic and irrigation use.

Various public agencies petitioned the county to call for an election to establish a water authority in San Diego County. The election was held on May 16, 1944. The result was an overwhelming vote in favor to organize a San Diego County Water Authority. The formal incorporation was effected on June 9, 1944, with an original membership comprised of the cities of Chula Vista, Coronado, National City, Oceanside and San Diego; the Fallbrook Public Utility District; and Lakeside, La Mesa, Lemon Grove, Spring Valley and Ramona Irrigation Districts.

The population of the Authority during that period represented 78 percent of the total population of San Diego County. Water consumption was 70,524 acre-feet of water.

Today the Authority is comprised of 23 member agencies: five cities,



**Crews from San Diego County Water Authority and Otay Municipal Water District repair pipeline failure near Sweetwater Reservoir.**



two irrigation districts, two water districts, 12 municipal water districts, one public utility district and one military reservation. Seven other cities lie within the Authority's service area but are not separate member agencies. Some 98 percent of the total population of San Diego County, or 1,600,000 people, are served daily. More than 90 percent of all water used by its member agencies was provided by the Authority.

The Authority is governed by a 32-member board of directors composed of at least one director from each member agency who is appointed by its chief executive officer with the consent of its governing body. Members hold office for a term of six years. They are subject to recall by a majority vote of the legislative body they represent.

The member agencies are entitled to one additional representative for each full five percent of assessed value of property taxable by the Authority within their area. The voting power, however, is distributed on the basis of one vote for each \$5 million or major fraction thereof of assessed valuation of taxable property within the Authority's area, with the important provision that no agency shall have more than 50 percent of the voting strength of the board.

The total investment in plant for the Authority at June 30, 1977, was \$209,243,744. Long-term debt

totaled \$71,293,025. This debt consisted of general obligation bonds, contractual obligations to the United States Government and annexation charges.

Heretofore, debt service requirements have been provided by revenues from ad valorem taxes levied against all taxable property within the Authority. The tax rate has varied from a low of 4 cents per \$100 to 12 cents per \$100 assessed valuation. With the enactment of Proposition 13, legislative clarification and new directions will be required in the future for all financing of water projects.

Annual tax levies by the Water Authority for voter approved debt incurred prior to Proposition 13 may be met by a member agency from any funds available, including water revenue. The City of San Diego follows this procedure: landowners in the City of San Diego do not pay ad valorem taxes for Water Authority levies. The City of San Diego, instead, pays its Water Authority tax revenue liability from water revenues.

The Authority service area is served by two aqueducts. The first aqueduct has two pipelines which were completed in 1947 and 1955. The first pipeline of the second aqueduct was completed in 1970. A blend of water is provided through the State Water Project and Colorado River Aqueduct.

Future water needs for a growing San Diego region is the prime

concern of the Authority and its member agencies. A series of studies has been conducted in recent years to determine the best means of meeting these future demands. It was concluded that a fifth pipeline, together with sound water conservation and reclamation practices, would provide an ample supply to the year 2020.

Good relations exist between the Authority, its member agencies, other units of government, and civic, professional, business, and community groups.

This is illustrated by the recent program of water conservation. During the 1976-77 drought year, the Water Authority, the City of San Diego, the County of San Diego and various civic, business, government and professional groups formed a Water Conservation Task Force to provide direction in water conservation. The Metropolitan Water District had suggested that its member agencies reduce water consumption by 10 percent of that used the previous year. The community of San Diego, with the assistance of the Task Force, overwhelmingly responded. A net savings of 16 percent was the result, on a voluntary basis.

The creation of the County Water Authority, managed by local government, continues to provide the best vehicle for providing water to San Diego County for its domestic, industrial and agricultural use.

## VI. THE FUTURE OF WATER DISTRICTS

This report has examined independent water districts from several aspects: historical, organizational, operational, financial, and as integral parts of the California local government system.

Historically, these districts were created by local groups to meet local needs for the acquisition, treatment, and equitable distribution of water. Those needs continue to exist.

Organizationally, these districts have been individually structured to meet widely varying circumstances of population density, geography, climate, and land use, and to be responsive to the people served in each circumstance.

Operationally, these districts are dedicated to providing water and water-related services, and to making sure that water in sufficient quantity and of acceptable quality is available wherever and for whatever purposes it is needed. Measured by public opinion, they are doing an outstanding job.

Financially, these districts operate as nonprofit water enterprises, supplying their product at cost, primarily on a fee-for-service basis. Their prices are competitive and their

fiscal management is prudent.

As integral parts of the California local government system, these districts work closely and cooperatively with each other and with other public and private agencies to respond systematically to the state's growing agricultural and urban water needs.

Water will always be, as it has always been, a major concern in California's development. But what of the future of the independent water districts? Will they continue to play a primary role in meeting the state's future water needs, or will they eventually be absorbed into general-purpose city, county, and regional governments? The answer depends on two interrelated factors: the district's performance and the public's understanding of it.

Districts have been and continue to be at the forefront of innovative developments to acquire, conserve, and deliver water. Kern County, with its 42 independent districts serving varying combinations of state and federal imported water, local surface water, and local groundwater, has what is probably the most sophisticated irrigation system in the world. The Kern County Water Agency alone distributes 3.5



**Sophisticated irrigation practices together with other advances in farming techniques have**

**enabled California to experience a five-fold increase in California farm receipts in 35 years.**

million acre-feet of water each year to 14 retail districts, which in turn supply the water to irrigate a variety of crops on 950,000 acres of highly productive farmland, using, where appropriate, advanced sprinkler and drip techniques.<sup>81</sup> Advances in irrigation have been a principal reason for the five-fold increase in California farm receipts since World War II, even though total farm acreage has increased not at all.

The Orange County Water District, manager of the groundwater basin underlying an area of rapid urban development, is recycling wastewater for injection into the basin. In its Water Factory 21, the district treats 15 million gallons a day of water which previously would have been dumped into the ocean, to bring it up to drinkable standards through the "reverse osmosis" process, which squeezes the relatively small water molecules through a membrane which will not allow the larger molecules of minerals and other impurities to pass. The reclaimed water, thus treated, is used to partially replenish the groundwater basin—a basin which provides 60 percent of Orange County's water. The district is now developing a "green acres" project to use only partially treated wastewater for maintenance of golf courses and other green belt areas.<sup>82</sup>

Sacramento County sits atop the state's second largest groundwater basin, which replenishes itself naturally each winter and spring from local rainfall and the run-off of melting Sierra snows. The Arcade County Water District has conducted experiments to improve on nature's performance by injecting a portion of its allocation of surface water from heavy winter run-offs into areas near its wells, providing itself an extra reservoir of



**Orange County water District's Water Factory 21 recycles water previously dumped into the ocean.**

groundwater to meet the peak requirements of late summer.<sup>83</sup>

In Fresno County, the Fresno Irrigation District does the same thing for the City of Fresno, injecting surplus water into a vacant area called "Leaky Acres" near the center of the city.<sup>84</sup>

With energy costs rising precipitously, the Newhall County Water District in Los Angeles County has revised its bills to show the energy costs of getting water to its customers. All of the district's water comes from groundwater sources, so it must be pumped to the surface and boosted through the hilly areas of the district. At present the "overriding energy charge" is 8.37¢ per 100 cubic feet, about 16 percent of the total cost of the water and up 32 percent in the 20 months since the charges were first calculated in April 1977.<sup>85</sup>

These are only a few recent examples of the willingness of independent water districts to try innovative methods of serving and informing their customers. Despite their outstanding performance, however, districts do not have the public visibility they deserve. In the same public opinion survey in which 88 percent of district customers rated their water service "excellent" or "good", only about half could identify that their service was provided by an independent district. More than one-third thought that their water came from a city, an agency of the county, or a private water company and 10 percent admitted they just didn't know.<sup>86</sup>

Some observers have characterized special districts as "invisible" governments. The truth of the matter is that independent water districts are not invisible, but rather unobtrusive. They serve water without fanfare and with little controversy. They meet public emergencies without confrontations or press conferences. They are always open to the public, but as long as the water runs free and clear and the price is right, the public and the press seldom find reason to scrutinize them.

But times and governments are changing. For 40 years governments at all levels have expanded rapidly, and the independent water districts could do their job, unobtrusively and well, in the shadow of that expansion. Now the public mood is for contraction of government costs and influence. To survive, the independent water districts not only must continue to perform well, they must also make sure the public knows it.

# Service, Innovation Lead to Desert Success

A glance at the past can shed light on what to expect in the future from California's water districts. In the desert of the state's Coachella Valley, there is an excellent example of how an independent water district can combine innovative techniques and a responsive attitude to the benefit of its customers.

Coachella Valley County Water District was formed in 1918 to avert a threat of depletion of regional groundwater supplies and to seek the importation of Colorado River water to supplement groundwater supplies for irrigation.

The closest county seat was, and still is, 50 miles from any District boundary. Even though the District is bigger than many counties and, in fact, approximately the same size as the State of Rhode Island, only one supervisor represents the interests of its residents in Riverside County government.

During the 1930s the District absorbed the Coachella Valley Stormwater District, adding regional stormwater protection to its water conservation and irrigation functions.

With the advent of imported irrigation water in the late 1940s came the need to provide adequate farm drainage, and CVCWD entered the drainage business with the installation of a farm drainage collector system that now serves some 40,000 of the 78,553 acres subject to irrigation with Colorado River water.

In the early 1960s, many new subdivisions were being constructed and many small private water systems were being scattered throughout CVCWD's three-county 637,491-acre service area. In 1961, CVCWD entered the urban water business by acquiring several of these small systems.

Similarly, in 1968 CVCWD acquired a private urban water system which also had a sewage



**Children play at Lake Cahuilla County Park. Lake Cahuilla is the terminal reservoir on the Coachella Branch of the All-American Canal.**

treatment plant, and the District entered the wastewater reclamation business.

CVCWD now is active in six water-related fields of service.

—It manages a 637,491-acre groundwater basin and watershed, overlapping three counties, and containing six incorporated cities, one other public water agency, and three public community service districts. It serves as a regional contract agency with the state for northern California water to be delivered through the California Aqueduct.

—It provides regional stormwater protection for 397,478 acres in two counties, in an area which includes five incorporated cities and 12 unincorporated communities with a total population of approximately 100,000 people.

—It provides irrigation water to 78,553 acres of desert land in Riverside County through an

independent contract with the federal government for Colorado River water. Some 300,600 acre-feet of water are delivered annually, through a 163-mile canal system which crosses two counties, to produce crops with a gross value in excess of \$107 million.

—It maintains 186 miles of regional collector system to carry drainage water from 2,207 miles of on-farm drains.

—It provides urban water to 20,000 users through 950 miles of pipeline to three cities and 13 unincorporated communities scattered through the desert area of two counties. Wells and pressure zones often supply more than one city or community, and water supplying five communities in Imperial County must be piped from Riverside County due to the lack of good groundwater supply in Imperial.

—It maintains four wastewater reclamation plants serving 7,000



**Coachella Valley County Water District crew installs an urban water line in Palm Desert, part of the district's system upgrading program.**

customers with 150 miles of collector system that traverse the boundaries of the three cities and four communities served. Reclaimed water is being used for golf course and green belt irrigation and for groundwater recharge. An effluent pipeline system is being developed to deliver the reclaimed water to more of the three dozen golf courses which dot CVCWD's service area.

When State Water Project contracts were negotiated, the state sought to deal with regional representatives instead of small local suppliers for northern California water. CVCWD represents all but the Palm Springs, Cathedral City and Desert Hot Springs area of the Coachella Valley in its contract with the Department of Water Resources.

Also, the District negotiated and maintains a contract directly with the federal government for irrigation water imported from the Colorado River. No state agency is involved in this contract and, since the river's waters are firmly divided among specific lower river basin water agencies, it is unlikely that any other water purveyor could

obtain rights to Colorado River water.

Because most District services traverse city and even county

boundaries, it would be difficult for any other existing political subdivision to provide similar services with existing facilities.

Most of the Coachella Valley is subject to flash flooding, so regional stormwater protection facilities are necessary. The District maintains dike systems in mountain canyons with drains leading to a central stormwater channel designed to carry most stormwater harmlessly to the Salton Sea. This channel, some 50 miles long, runs the length of the valley.

As part of the District's groundwater management duties, it maintains a spreading area where water entering the valley is encouraged to percolate into the groundwater supply. This groundwater basin serves the people living in many political subdivisions, including portions of two counties.

Despite the fact that there are no user fees generated in the District's stormwater division, user fees pay for nearly 70 percent of CVCWD's operations. The 1978-79 District budget calls for financing 30.83 percent through taxes, mostly to repay bonded indebtedness in the District's irrigation and wastewater reclamation divisions.



**Colorado River water delivered via the Coachella Branch of the All-American Canal irrigates over 4,000 acres of Coachella Valley dates.**

## FOOTNOTES

<sup>1</sup>Remi A. Nadeau, *The Water Seekers* (Santa Barbara and Salt Lake City: Peregrine Smith, Inc., 1974), p. 253.

<sup>2</sup>U.S. Bureau of the Census, *Statistical Abstract of the United States, 1978*, 98th Edition, October 1977, Tables 10 and 1144. State of California, *California Statistical Abstract: 1976*, 17th Edition, 1976, Tables A-7 and B-6.

<sup>3</sup>State of California, *The California Water Plan: Outlook in 1974*, Department of Water Resources Bulletin No. 160-74, November 1974, p. 2.

<sup>4</sup>State of California, *The 1976-77 California Drought: A Review*, Department of Water Resources, May 1978, p. 10.

<sup>5</sup>California State Controller, *1976-77 Annual Report: Financial Transactions Concerning Special Districts of California*, (hereafter referred to as *1976-77 Special Districts Report*), Table 23.

<sup>6</sup>Carey McWilliams, *California: The Great Exception* (Santa Barbara and Salt Lake City: Peregrine Smith, Inc., 1976), p. 269.

<sup>7</sup>*California Stat. Abs. 1976*, Table B-3, and Robert B. Hawkins, Jr., *Self Government by District* (Stanford, California: Hoover Institution Press, 1976), p. 89.

<sup>8</sup>This and the following water rights definitions were derived from a composite of sources: *Western Water*, July/August 1978, Published by the Western Water Education Foundation, p. 6; Gavin M. Craig, "California Water Law in Perspective", *West's Annotated California Water Code*, 1968 Edition, LXIX et seq.; David B. Anderson, *Riparian Water Rights in California*, Governor's Commission to Review California Water Rights Law, Staff Paper No. 4, November 1977; Marybelle D. Archibald, *Appropriate Water Rights in California*, Governor's Commission to Review California Water Rights Law, Staff Paper No. 1, May 1977; Anne J. Schneider, *Groundwater Rights in California*, Governor's Commission to Review California Water Rights Law, Staff Paper No. 2, July 1977.

<sup>9</sup>Walton Bean, *California: An Interpretive History* (New York: McGraw-Hill, 1968) pp. 278-280.

<sup>10</sup>State of California, *General Comparison of Water District Acts*, Department of Water Resources Bulletin 155-77, May 1978.

<sup>11</sup>Schneider, *Groundwater Rights in California*, p.6.

<sup>12</sup>Archibald, *Appropriate Water Rights in California*, p. 15 et seq.

<sup>13</sup>Constitution of the State of California, Article XIV, Section 3.

<sup>14</sup>State of California, *The California Water Plan: Outlook in 1974*, Department of Water Resources Bulletin No. 160-74, November 1974, pp. 142-143. Senate of the State of California, *Feasibility of State Ownership and Operation of the Central Valley Project of California*, March 1952, pp. 25-52 and Plate 1.

<sup>15</sup>The Metropolitan Water District of Southern California, *Annual Report Appendix: 1977*, pp.29, 31 and Figure 19.

<sup>16</sup>*The California Water Plan: Outlook in 1974*, pp.144-147; State of California, *The California State Water*

*Project—1977 Activities and Future Management Plans*, Department of Water Resources Bulletin 132-78, October 1978, pp. 183, 254-255.

<sup>17</sup>Bean, *California*, pp. 279-280; Merrill R. Goodall, John D. Sullivan, Timothy DeYoung, *California Water: A New Political Economy* (Mountclair and New York: Allanheld, Osmun/Universe Books, 1978), p. 8.

<sup>18</sup>1976-77 *Special Districts Report*, Table 23.

<sup>19</sup>1976-77 *Special Districts Report*, p. I-6.

<sup>20</sup>Op. Cit., pp. I-7, I-11.

<sup>21</sup>Op. Cit., pp. I-30.

<sup>22</sup>Robert B. Hawkins, Jr., *Self Government by District* (Stanford, California: Hoover Institution Press, 1976) p. 11.

<sup>23</sup>Op. Cit., p. 14.

<sup>24</sup>1976-77 *Special Districts Report*, Table 23; and U.S. Bureau of the Census, *1977 Census of Governments*, Vol. 1, Governmental Organization, Table 12, p. 71.

<sup>25</sup>State of California, *General Comparison of Water Districts Acts*, Bulletin 155-77, Department of Water Resources.

<sup>26</sup>Choudhry vs. Free, 17 CAL 3rd, 660.

<sup>27</sup>Ibid., pp. 49-51

<sup>28</sup>1976-77 *Special Districts Report*, Table 23.

<sup>29</sup>*General Comparison of Water Districts Acts*, pp.100-103.

<sup>30</sup>1976-77 *Special Districts Report*, Table 23.

<sup>31</sup>Ibid.

<sup>32</sup>*General Comparison of Water Districts Acts*, pp. 33-36.

<sup>33</sup>1976-77 *Special Districts Report*, Table 23

<sup>34</sup>*General Comparison of Water Districts Acts*, pp. 62-64.

<sup>35</sup>1976-77 *Special Districts Report*, Table 23.

<sup>36</sup>*General Comparison of Water Districts Acts*, pp. 73-75.

<sup>37</sup>1976-77 *Special Districts Report*, Table 23.

<sup>38</sup>*General Comparison of Water Districts Acts*, pp. 16-19.

<sup>39</sup>1976-77 *Special Districts Report*, Table 23.

<sup>40</sup>Ibid.

<sup>41</sup>U.S. Bureau of the Census, *Statistical Abstract of the United States, 1978*, 98th Edition, October 1977,

Table 479. Source excludes dependent special districts which, as indicated, are not really separate governments.

<sup>42</sup>State of California, *California Statistical Abstract, 1976* (Sacramento: State of California, 1976), Table B-2, p. 6.

<sup>43</sup>*U.S. Stat. Abs., 1977*, Tables 10 and 303.

<sup>44</sup>*U.S. Stat. Abs., 1978*, Table 479.

<sup>45</sup>*Ibid.*

<sup>46</sup>*U.S. Stat. Abs., 1977*, Tables 10 and 303, *1978*, Table 479.

<sup>47</sup>*Ibid.*

<sup>48</sup>State of California, *Local Government Reform Task Force Report* (Sacramento: State of California, 1974) pp. 7, 67.

<sup>49</sup>State of California, *The California Water Plan: Outlook in 1974*, Department of Water Resources Bulletin No. 160-74, November 1974, pp. 5, 142, 146-147. Figures are as of 1972. Net demand is total demand reduced by groundwater extractions which constitute reuse of water percolated from distribution systems and excess surface applications.

<sup>50</sup>*Op. Cit.*, p. 139.

<sup>51</sup>Hawkins, *Self Government by District*, p. 91.

<sup>52</sup>*Op. Cit.*, p. 90.

<sup>53</sup>Louis F. Weschler and Harry C. Dennis, *The Cost of Water Service in Orange County*, A Report to the Costa Mesa County Water District, 1976.

<sup>54</sup>*A Statewide Survey of Voter Attitudes in California, (DMI Survey)*, unpublished survey for the Association of California Water Agencies as part of the ACWA Local Government Reform Project by Decision Making Information, Inc., 2700 North Main Street, Santa Ana, California, September 1978.

<sup>55</sup>*Op. Cit.*, p. 11.

<sup>56</sup>*A Survey of Water District Customer Attitudes, (ACWA Survey)*, an unpublished survey conducted by member districts of the Association of California Water Agencies as part of the Public Information Program of the ACWA Local Government Reform Project, November 1978.

<sup>57</sup>*DMI Survey*, p. 12.

<sup>58</sup>*California Statistical Abstract-1976*, pp. 73-74.

<sup>59</sup>Author's estimate, based on 1976-77 city water revenues of \$427 million (California State Controller, *1976-77 Annual Report: Financial Transactions Concerning Cities of California* (hereafter called 1976-77 Cities Report), Table 6, p. 225, special district water revenues of \$650 million (\$845 million total revenues minus \$195 million in "Sales for Resale" revenues: *1976-77 Special Districts Report*, Table 23, p. 847, private water companies revenues of \$160 million (*California Public Utilities Commission 1977-78 Annual Report*, p. 35, author's estimate of \$150 million for power costs of private pumping of groundwater, plus federal and state expenditures for water projects in California.

<sup>60</sup>1976-77 total revenues to the 591 independent water districts actively engaged in water service were \$787,712,000. In calculating the percentage of total water price represented by independent district



revenues, this number must be reduced by \$188,424,000, the value of water "Sales for Resale" by these districts (*General Comparison of Water Districts Acts*, Table 23).

<sup>61</sup>This and the following lists in this section are abstracted from Table 23, *1976-77 Special Districts Report*.

<sup>62</sup>Districts reporting operating revenues and/or non-operating "Taxes and Assessments" and also reporting operating expenses other than for "Administration and General" and "Depreciation" were classified as active purveyors of water service. Districts reporting no operating expenses other than for "Administration and General" and "Depreciation" were classified as inactive: that is, not an active deliverer of water in that year.

<sup>63</sup>*1976-77 Cities Report*, Table 6, pp. 183-225.

<sup>64</sup>Derived from *1976-77 Special Districts Report*, Table 23, pp. 764-847. The number includes 154 active dependent districts and 112 inactive independent and dependent districts. It would appear from the financial reports that most of the inactive districts exist to pay off long-term debt.

<sup>65</sup>In Table 23 of the *1976-77 Special Districts Report*, non-operating revenues reported as "Taxes and Assessments" in districts which did not record state payments for "Homeowners Property Tax Relief" were counted as ad valorem assessments rather than general property taxes. This method uncovered assessments only for districts which did not levy both general property taxes and ad valorem assessments in that year, and thus the figure it produced—\$48,672,000—is probably low and certainly deserving of the modifier "at least".

<sup>66</sup>California Public Utilities Commission, *1977-78 Annual Report*, p. 8.

<sup>67</sup>Op. Cit., p. 34.

<sup>68</sup>*1976-77 Cities Report*, p. 225.

<sup>69</sup>Ibid.

<sup>70</sup>A recent case is the water system of Cleveland, Ohio, which, by court order, was taken away from the city on October 26, 1978, because a Cleveland judge found that the city's neglect had threatened the water supply for two million persons. His ruling declared "The Cleveland water system is and has been for years in a dilapidated state resulting from neglect, mismanagement, disorganization and lack of planning. It presents unusual hazards of incalculable proportions. A state of emergency actually exists . . . funds supposedly dedicated for water purposes have been placed in other uses, and (the system's) general maintenance is deplorable." Estimates of costs of needed replacements as of 1972 were \$2 billion. (*The Cleveland Press*, October 27, 1978, p. A4).

<sup>71</sup>Advisory Commission on Intergovernmental Relations, *Striking a Better Balance* (Washington D.C.: U.S. Government Printing Office, 1973). Quoted in Hawkins, *Self Government by District*, p. 4.

<sup>72</sup>Charles D. Hobbs, *Bigger Government for Sacramento?*, Prepared for the Independent Water Districts of Sacramento County, August 15, 1974; *The Costs of Fire Service in a Consolidated Sacramento City-County Government*, Prepared for the Sacramento County Fire Directors' Association, September 3, 1974.

<sup>73</sup>Hawkins, *Self Government by District*, p. 6.

<sup>74</sup>Op. Cit., pp. 1-2.

<sup>75</sup>Op. Cit., pp. 28-30, Note 3 on p. 47.

<sup>76</sup>Based on information supplied by Gary Arant, Assistant to the General Manager of the Walnut Valley Water District.

<sup>77</sup>Property tax rate limits were enacted by statute (SB-90) in 1973; rate and base limits were enacted by constitutional amendment (Proposition 13) in 1978.

<sup>78</sup>See Figure 4.1

<sup>79</sup>See Assembly Bills 3412 and 3440 of the 1978 California Legislature.

<sup>80</sup>Estimates by author based on data in State Controller's reports and reports of the State Department of Water Resources.

<sup>81</sup>Information from Stuart T. Pyle, Engineer/Manager of the Kern County Water Agency.

<sup>82</sup>Information from Gordon Elser, Public Information Officer of Orange County Water District.

<sup>83</sup>Information from Gail Bash, Manager of Arcade County Water District.

<sup>84</sup>*Western Water*, March-April 1977.

<sup>85</sup>Information from Pauline Norris, Office Manager of Newhall County Water District.

<sup>86</sup>*ACWA Survey*, November 1978.

**ASSOCIATION OF CALIFORNIA WATER AGENCIES**  
1127 11th Street, Suite 305  
Sacramento, California 95814

**(916) 441-4545**