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Supplying Southern California with Dependable Supplies of Water

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**SUPPLYING SOUTHERN CALIFORNIA WITH
DEPENDABLE SUPPLIES OF WATER**

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Water Organizations in a Changing West

**Natural Resources Law Center
University of Colorado School of Law
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I. INTRODUCTION

A. Summary

At the turn of the century the population of Southern California continued to grow and local water sources could not keep pace with the need for water. The City of Los Angeles constructed the Los Angeles Aqueduct in 1913 and began importing water from the Owens Valley east of the Sierra Nevada mountain range. By 1920, additional sources of imported water were being investigated with emphasis on the Colorado River.

In 1928, The Metropolitan Water District of Southern California (Metropolitan or MWD) was created by a vote of the people. The primary purpose of Metropolitan was and is to provide a supplemental supply of water to the coastal plain of Southern California. Metropolitan's first task was to design and construct the Colorado River Aqueduct.

Southern California has a highly diversified economy with a value of goods and services produced of approximately 400 billion dollars a year. The six county region, which includes Metropolitan's service area, has a gross regional product in excess of the gross national or gross domestic product of all but eight nations of the world. This economy is dependent on Metropolitan's ability to supply over 60 percent of the water used in Southern California.

Approximately one-third of the water used in Southern California is produced locally from groundwater resources.

Production of this important source of water is being threatened by contamination of groundwater aquifers. Metropolitan offers financial incentives to its member agencies for implementing reclaimed water projects in the District's service area. Reclaimed water is used for landscape irrigation, groundwater recharge, commercial and industrial use. Metropolitan also provides financial assistance to encourage local agencies to treat undeveloped groundwater degraded by minerals and other contaminants. Water is also imported by the Los Angeles Aqueduct, the California Aqueduct, and the Colorado River Aqueduct (Figure 1). Since the mid-1970s, pressures have come to bear on each of these imported sources of surface water, throwing into question the dependable supply of water that can be expected. Yet the population of Southern California continues to grow at a rate of approximately 300,000 people annually.

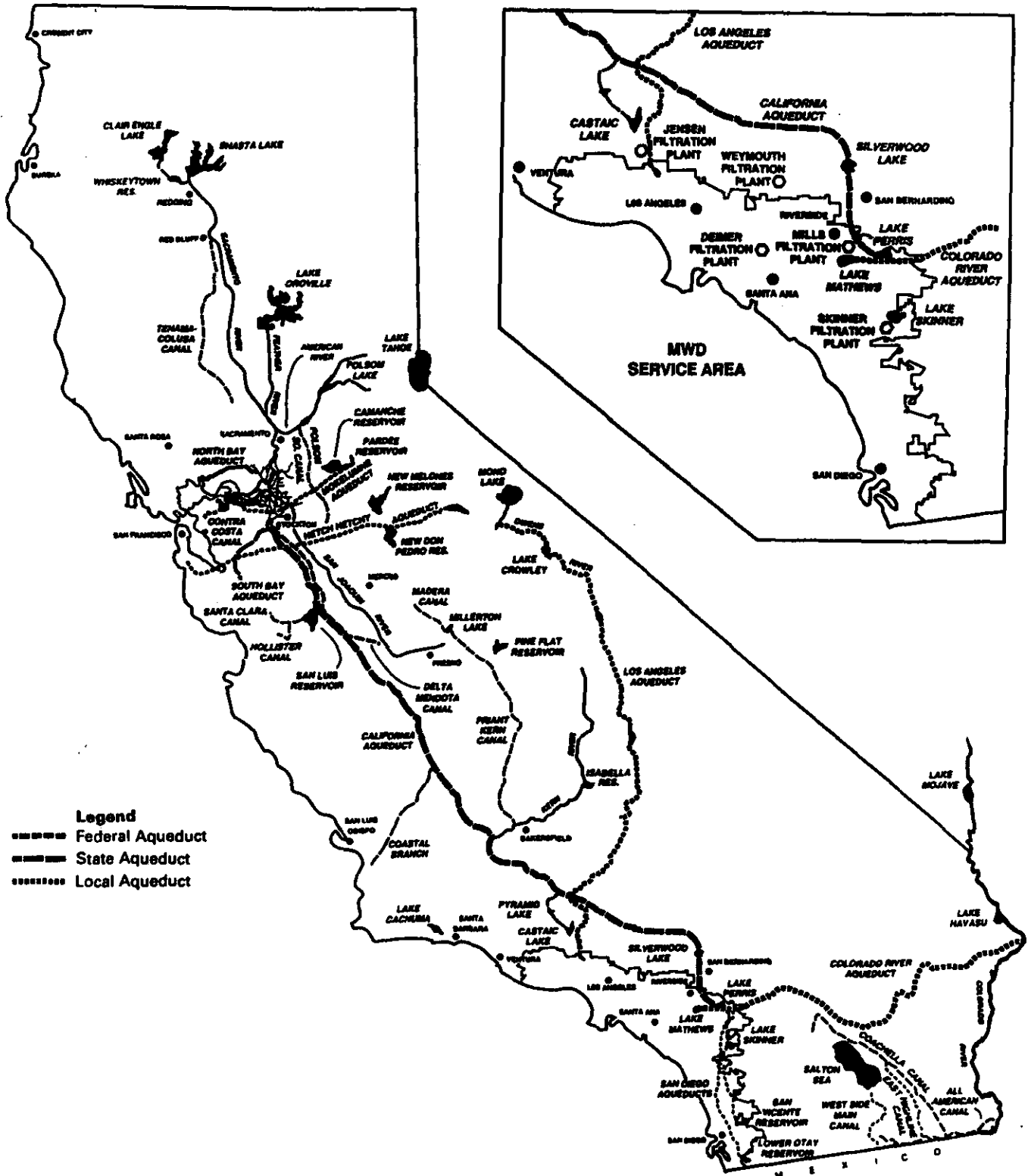
B. References

Schwarz, Joel, A Water Odyssey: The Story of The Metropolitan Water District of Southern California (MWD, 1991)

Official Statement, \$168,759,889, The Metropolitan Water District of Southern California, Water Revenue Refunding Bonds, 1993 Series A (MWD February 12, 1993)

Figure 1

MAJOR WATER CONVEYANCE FACILITIES IN CALIFORNIA



II. HISTORY OF WATER SUPPLY DEVELOPMENT IN SOUTHERN CALIFORNIA

A. Origin

1. In the early 1900s under the leadership of William Mulholland, the City of Los Angeles constructed the Los Angeles Aqueduct from the Owens Valley in the Eastern Sierra Nevada mountains 240 miles to the outskirts of Los Angeles. It was later extended 100 miles to the north to the Mono Basin.
2. The Los Angeles Aqueduct diverted water that historically flowed to Mono Lake and the Owens River. From the turn of the century to 1940, this was the only imported water supply for the City of Los Angeles.
3. By 1920 there were almost 1 million people in Los Angeles, and surrounding communities continued to grow. Southern California was becoming an industrial center and its agricultural base continued to grow, putting more pressures on water supplies.
4. To satisfy the growing demand for water in southern California, William Mulholland began surveying a route in 1923 for an aqueduct from the Colorado River to Southern California.

B. The Formation of The Metropolitan Water District of Southern California

1. Building an aqueduct from the Colorado River to Southern California required the combined resources of Southern California cities.

2. In 1928, The Metropolitan Water District of Southern California (District or Metropolitan) was created by a vote of the electorates of several Southern California cities. The District is a public agency and a quasi-municipal corporation.
3. The purpose of the District was and is to provide a supplemental supply of water for domestic and municipal uses and purposes at wholesale rates to its member public agencies. Its initial task was to design and construct the Colorado River Aqueduct. The District imports water from two sources: the Colorado River via the Colorado River Aqueduct and Northern California via the California Aqueduct of the State Water Project (SWP).
4. The District's charges for water sales and availability are fixed by its Board of Directors, and are not subject to regulation by the California Public Utilities Commission.
5. The District can levy taxes on property within its service area, establish water rates, impose charges for water standby and service availability, incur general obligation bonded indebtedness, issue revenue bonds, and certificates of participation, issue notes and short term revenue certificates, execute contracts, and exercise the power of eminent domain for the purpose of acquiring property.

6. The mission of the District is to provide its service area with adequate and reliable supplies of high quality water to meet present and future needs in an environmentally and economically responsible way.
7. The District delivers water to 27 member agencies consisting of 14 cities, 12 municipal water districts and a county water authority. It is governed by a 51 member Board of Directors appointed by the member agencies. Each member public agency has at least one representative on the Board. Representation and voting rights are based upon each agency's assessed valuation.
8. The District's service area covers 5,149 square miles, including some 240 cities and unincorporated communities in portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Of the 10 most rapidly growing counties in terms of population in the United States, five are in the District's service area. The District provides nearly 60 percent of the water used within its service area, and is expected to provide water for nearly all of the increases in future demand. Currently over 15 million people reside within the District's service area, about half of the state's population.
9. Effective July 1, 1993, the District's rate for treated noninterruptible water service is \$385 per acre-foot. An acre-foot of water is 326,000 gallons,

about the amount used by two families in and around the home in one year.

C. Economic Development

1. Southern California has a highly diversified economy with a value of goods and services produced of about 400 billion dollars a year. The entire State of California represents a 750 billion dollar economy, a significant portion of the economic activity in the nation. The six county region, which includes the District's service area, has a gross regional product in excess of the gross national or gross domestic product of all but eight nations of the world. More than 80 percent of the economic activity in the six-county region occurs in the manufacturing, commercial services, finance, banking, and real estate sectors. The remaining 20 percent, includes farming, construction, utilities, and transportation.
2. Water is an extremely important ingredient in nearly every aspect of producing this gross regional product. If significant water shortages were to occur, the gross regional product and employment would be significantly impacted.

III. CURRENT WATER SUPPLIES

A. Local Supplies

1. California's basic water problem is one of maldistribution rather than inadequacy. Most of the State's water occurs in the form of rain and snow north of Sacramento and also along the eastern Sierra, and most of the demand is along the coast, San Francisco to southern California, and also the Central Valley of California.
2. Southern California's local water supplies consist of groundwater, as well as surface runoff diverted from rivers, and reclaimed wastewater.
3. Ground water resources are a major element of Southern California's water supply. Approximately 1.4 million acre-feet, nearly one-third of the annual water demands of nearly 16 million residents of the District's service area, are met from groundwater production. Of this amount, 1 million acre-feet is naturally replenished from precipitation falling on local watersheds, 200,000 acre-feet is replenished with imported surface water, and 200,000 acre-feet is replenished with reclaimed water. Virtually all of Southern California's rivers have been controlled by a comprehensive system of dams, flood control channels, and percolation ponds for serving local water needs and recharging groundwater basins. The basins are managed through a variety of programs designed to

maintain their usability, avoid overdraft, and maximize their ability to meet local water demands.

4. Contamination of local groundwater basins is an increasing threat to groundwater production.

The District is addressing this problem through technical assistance to member agencies, legislative and regulatory advocacy, research and development funding for new cost-efficient treatment processes, and guidance to improve local basin management practices.

B. Owens Valley - Mono Basin Supply

1. The City of Los Angeles (City) has imported water through the Los Angeles Aqueduct from the Owens Valley and Mono Basin, which are located to the east of the Sierra Nevada mountains.
2. This supply represents approximately 10 percent of the total available to the coastal plain of Southern California.
3. The aqueducts have historically supplied 450,000 acre-feet per year to the City. However, the continuing ability to deliver that much water is unlikely because of litigation aimed at reducing the City's diversion. In the Mono Basin, litigation centers on whether the City must provide minimum flows in creeks to sustain trout habitat and whether the City must adjust its diversions so that a minimum Mono Lake level will be maintained.

4. The El Dorado County Superior Court has issued a preliminary injunction requiring the Mono Lake water level to be maintained at elevation 6,377 feet. It is expected that in 1993 the California State Water Resources Control Board (State Board) will determine the amounts of water needed in the Mono Basin necessary to protect the public trust.
5. Ground water pumping in the Owens Valley is also being limited to 50 percent of capability under the terms of an interim groundwater management agreement between the City of Los Angeles and the County of Inyo. Future groundwater pumping and surface water management practices are the subjects of an agreement between the City and Inyo County. The agreement establishes management areas in the Owens Valley and provides for maintenance of existing vegetative cover and the prevention of long-term groundwater mining. The proposed agreement was the subject of an environmental impact report (EIR) completed by the City and the County of Inyo, but the State and environmental groups have threatened to oppose the EIR in court.
6. The current best estimate of supply during years of average runoff is 365,000 acre-feet while in years of drought, the probable minimum supply could drop to as low as 215,000 acre-feet.

7. As the City has purchased water from Metropolitan to replace the water that it can no longer divert through the Los Angeles Aqueduct, the environmental burden has been shifted to Metropolitan's supply sources.

C. Colorado River Supply

1. The Colorado River Aqueduct was the District's original source of water. Owned and operated by the District, the Colorado River Aqueduct transports water from Lake Havasu on the Colorado River 242 miles to its terminus at Lake Mathews in Riverside County. After deducting evaporation and seepage losses in transporting the water, the amount currently available for delivery by the District to its member agencies is approximately 1.2 million acre-feet a year.
2. In the early 1930s, Metropolitan signed a contract with the Secretary of the Interior (Secretary) for a water supply from the Colorado River. Metropolitan's basic contract entitles it to 1,212,000 acre-feet per year. A number of other California water agencies also signed contracts. Each of the contracts contains priorities to the use of Colorado River water in California. Three agencies -- which serve irrigation water in the California desert -- negotiated a priority over Metropolitan to 3.85 million acre-feet per year, since they had prior rights and two of the three agencies were already using Colorado River water.

3. The District currently diverts water from the Colorado River under its fourth priority right of 550,000 acre-feet per year and its fifth priority right of 662,000 acre-feet per year.
4. However, a 1963 United States Supreme Court decision limits California's diversions of Colorado River water to 4.4 million acre-feet, unless the Secretary of the Interior declares a surplus or permits California to divert water apportioned to but unused by Arizona and Nevada.
5. As a result, California's diversions have been determined on a year to year basis since the Central Arizona Project began diverting Colorado River water in 1985. Should California be restricted to the first four priorities totalling 4.4 million acre-feet per year, Metropolitan's diversions could be limited to about one-half of its contractual entitlement.

D. State Water Project Supply

1. In 1960, in order to meet future demands, Metropolitan signed the first contract with the California Department of Water Resources (DWR) for water service from the State Water Project (SWP) for the ultimate delivery of 1,500,000 acre-feet of water per year. This amount was later increased to 2 million acre-feet to partially offset the impending loss of a portion of the District's dependable Colorado River supply resulting from the

United States Supreme Court decision in Arizona v. California.

2. The District is one of 29 agencies which have contracts for water service with the State, but is by far the largest in terms of the number of people it serves, the quantity of SWP water to which it is entitled (approximately 48 percent), and the total payments made to the State (approximately 70 percent).
3. The SWP transports Feather River water that has traveled to the Sacramento-San Joaquin Delta (Delta), south via the California Aqueduct to four delivery points near the northern and eastern boundaries of the District. The total length of the California Aqueduct is 444 miles.
4. The initial SWP facilities, Lake Oroville on the Feather River, San Luis Reservoir, and the California Aqueduct were completed from the early 1960s to the early 1970s. They currently provide a dependable supply of only a little more than one-half of the water the State contracted to deliver.
5. The reduction in the District's dependable supply of Colorado River water and anticipated growth in Southern California's population, increases its reliance on the SWP. Metropolitan's planned construction program aims to increase the District's capability to store, treat, and distribute water from this source.

6. There are provisions in the State Water Contract for an allocation of water in the event of a shortage in water supply. If there is a temporary shortage, water deliveries for agricultural purposes are reduced first. This reduction is not to exceed 50 percent in any one year or a total of 100 percent of one year's supply put to agricultural use in any seven consecutive years. The maximum 100 percent initial agricultural use deficiency was reached most recently in 1991.
7. Apart from completion of the Harvey O. Banks Delta Pumping Plant, no additional facilities have been built to increase the yield of the SWP since the completion of the initial facilities nearly 20 years ago. This is largely due to opposition from Northern Californians and environmental groups.
8. Facilities to transfer water from the Sacramento River, to which the Feather River is a tributary, to the California Aqueduct at the southern end of the Delta are necessary. Legislation approved by the Governor in 1980 but rejected by the voters in a referendum in 1982 had designated a Peripheral Canal as the means to do so. The Delta is located where California's two major river systems, the Sacramento and the San Joaquin rivers, converge to flow westward where they meet seawater in San Francisco Bay.

Additional facilities to store water in years of adequate water supply for later use are also needed.

9. In April 1992, the Governor issued a statement outlining a comprehensive program to meet the water needs of urban, agricultural, and environmental interests in California. The policy statement called for a number of actions and measures including development of storage and conveyance facilities, and the reallocation of supplies through voluntary water marketing.
10. The policy statement called for implementing three currently planned SWP capital programs which would allow for diversion and storage of additional water from the Delta. These include the South Delta Water Management Program, the Los Banos Grandes Reservoir, and the Kern Water Bank. Combined, these three facilities could increase annual SWP supplies by more than 300,000 acre-feet during dry periods. Draft environmental impact statements and environmental impact reports have been issued for all these projects.
11. The policy statement also called for completion of environmental documentation for a comprehensive Delta solution within three years. The Delta water transfer facility alternatives considered in this process would increase the efficiency with which water is conveyed from the Sacramento River to the California Aqueduct.

12. The policy statement also encouraged water marketing as a method for meeting California's water needs.
13. In 1978, the State Water Resources Control Board (State Board) adopted water rights Decision 1485 which required DWR and the Bureau of Reclamation to comply with more stringent water quality and flow standards for the Delta and assigned responsibility to meet those standards to the SWP and the federal Central Valley Project.
14. In 1987, the State Board began a review of the existing standards to possibly adopt new standards to protect beneficial uses of the water of the San Francisco Bay/Delta estuary. In these proceedings, which are ongoing, all water users that divert water from the estuary or upstream in the Central Valley river system are potentially responsible for meeting a portion of any new standards.
15. In his April 1992 policy statement, the Governor directed the State Board and the California Environmental Protection Agency to develop interim standards for the estuary by the end of 1992. However, on April 1 of this year the Governor requested that the State Board postpone adoption of interim standards in favor of adopting a long-term water rights decision for the estuary.
16. In 1989, the Sacramento River winter-run chinook salmon was listed as an endangered species by the

California Fish and Game Commission under the California Endangered Species Act. Also, the National Marine Fisheries Service completed emergency listing of the winter-run salmon as "threatened" under the federal Endangered Species Act. Fishery biologists are concerned that the operations of the SWP and/or the federal Central Valley Project have an adverse impact on the fish since the migration route of the winter-run salmon includes the Sacramento River as well as the Delta.

17. In October 1991, FWS proposed listing the Delta smelt as a "threatened species" under authority of the Federal Endangered Species Act. In 1993, FWS listed the Delta smelt as threatened. Consultations are underway concerning the listing of the Delta smelt and operation of the water projects.

IV. COMPARISON OF WATER SUPPLIES AND DEMANDS

- A. Given the forgoing, Metropolitan is facing shortfalls of nearly 410,000 acre-feet on average during dry periods by 1995 and 610,000 acre-feet by the turn of the century. These potential shortages are equivalent to the amount of water used in and around the home by 1.1 million and 1.6 million families respectively and they do not take into account any potential reduction in water availability as an outcome of the State Board's ongoing Bay/Delta proceeding.

HMRSPPECH