

New York Bay. They contended that it would have little effect on the environment. However, a report by the National Marine Fisheries Service in June 1972 showed that the health of marine life was deteriorating. The study showed a higher rate of bacteria and heavy metals in the tissues of sea creatures and even reported that fish were found with cigarette filters in their stomachs. In spite of this, Jerome Kretchmer, the environmental protection administrator for New York City, told the *New York Times* that the dumping should go ahead as long as there was no negative environmental impact. In response, New Jersey governor William T. Cahill signed a law on June 1, 1971, to restrict dumping and publically urged that all waste dumping be prohibited in any water within 100 miles of U.S. shores.

### Environmental Protection Agency Control

The Marine Protection, Research, and Sanctuaries Act of 1972 transferred enforcement authority from the U.S. Army Corps of Engineers to the Environmental Protection Agency (EPA), giving the latter the power to determine in what circumstances dumping could take place. When the legislation was being debated in Congress, the Senate was adamant that the EPA should have the final say, whereas the House of Representatives wanted to leave enforcement with the Corps of Engineers. Finally, the law was approved by a voice vote in both houses and went into effect six months after its introduction on October 13, 1972. It gave the federal government the authority to prosecute anybody involved in illegal dumping and punish the guilty party with a fine of up to \$50,000 for each act of dumping and up to a year's imprisonment. The Act covered an area up to twelve nautical miles off the coast. This would include the area of sea south of the Ambrose Light, where the dumping by Mayor Lindsay was to have taken place. The Act also appropriated \$9.1 million through June 1974 for the administration of the legislation, and it gave the Department of Commerce the full authority to create marine sanctuaries where no dumping of any kind would be allowed. The Department of Commerce would also be able to monitor the effect of dumping in ocean areas in general.

One of the major tests of the Act was when the City of Camden in New Jersey applied to the EPA to allow it to dump sewage in fifty miles from the coastline. The EPA granted the city an interim permit. The EPA also granted an interim permit to the Chevron Oil Company in Perth Amboy, New Jersey, which wanted to dump caustic waste

106 miles from shore. Other applications were soon made by Westchester County; the City of Long Beach; the Sewage Authority of Middletown, New Jersey; and the Joint Meeting of Essex and Union Counties of New Jersey.

Although much of the initial focus was on the area around New York and New Jersey, DuPont wanted to dump waste in the Gulf of Mexico 230 miles off the coast of Florida. However, the EPA told DuPont on October 3, 1974, that it had to stop as the agency was not able to establish that there would not be "unreasonable environmental degradation" (Hill 1974). Another consideration in the EPA's decision was that dumping in the Gulf would affect other countries, and Russel E. Train, the administrator of the EPA, wanted the United States to set a good example. At that time, it was also made public that DuPont was dumping at sea waste generated by three plants in Texas, one in New Jersey, and one in Delaware.

—Justin Corfield

**See also:** *Army Corps of Engineers, United States; Environmental Quality Improvement Act (1970); National Environmental Policy Act of 1969; National Marine Fisheries Service; Wastewater Treatment*

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## Metropolitan Water District of Southern California

The Metropolitan Water District of Southern California (usually known as MWD or Met) is a wholesale water agency that imports water from northern California and the Colorado River via the State Water Project and Colorado River Aqueduct, respectively, for distribution to its twenty-six member agencies. Fourteen members are cities (Burbank, Los Angeles, Pasadena, etc.) that retail water to customers. Twelve members (the San Diego County Water Authority [SDCWA] plus eleven municipal water districts—confusingly called "MWDs"—such as MWD of

Orange County, West Basin MWD, etc.) sell water wholesale or retail. Met water flows to about 19 million customers of over 200 retail agencies, making Met the largest water utility in the United States by population served and volume of treated water delivery. Although few customers have heard of Met, almost everyone in the industry has, since Met is big: Met has a 5,200 square mile service area, a \$2 billion budget, 2,000 staff members, and 2 million acre-feet per year of water deliveries (Met 2010).

Met's institutional structure is also interesting. The California legislature established Met as a public corporation with the power of taxation. Met is governed as a self-regulating consumer cooperative, with a thirty-seven member board of directors appointed by its member agencies. Since agencies are heterogeneous on many dimensions (service area, population, governance, local supply, staff), Met's policies emerge from compromises among conflicting interests.

## Origin and Development

The Metropolitan Water District Act in 1928 directed Met to build an aqueduct from the Colorado River to California's south coast basin. In the same year, the U.S. Congress passed the Boulder Canyon Project Act, authorizing construction of Hoover Dam and other projects. These acts were related: the Colorado River Aqueduct (CRA) needed Hoover Dam power to pump water to southern California.

Met's thirteen founding members were cities, but Los Angeles dominated Met—financially, culturally and operationally—from the start. This domination was nominally constrained by limiting the city's votes on the board to 50 percent. Member votes are in proportion to their share of total assessed land value. Los Angeles's share—over 70 percent in Met's early years—did not drop below 50 percent until 1949. Los Angeles allowed this “taxation without representation” because it was going to use Hoover power

## Mono Lake Controversy

During the 1930s, the Los Angeles Department of Water and Power (LADWP) began acquiring water rights in the Mono Basin. Within a decade, the LADWP had secured the rights to water from a number of streams that fed Mono Lake, including Lee Vining, Parker, Rush, and Walker. The limitations of Los Angeles's aqueduct system prevented wholesale importation of the waters until the 1960s, when a second aqueduct was constructed to divert water from the Mono Basin. The loss of water from its tributaries resulted in a significant drop in Mono Lake's water level, resulting in severe damage to the local ecosystem. The lake's salinity quickly increased, negatively impacting the brine shrimp and fly populations that sustained migrating birds, such as California gulls.

By 1978, the National Audubon Society, Sierra Club, Friends of the Earth, California Trout, and the Mono Lake Committee had launched a number of lawsuits to protect and restore Mono Lake. In *National Audubon Society v. Superior Court*, decided on February 17, 1983, a key victory was obtained that established the concept of public trust in water legislation. The decision essentially determined that the needs of the local wildlife at Mono Lake superseded Los Angeles's water rights. The public trust concept, which required that environmental concerns be taken into account when determining water rights, was then expanded in subsequent lawsuits. The lawsuits eventually forced the LADWP to compromise with the environmental groups. It was agreed that the water level of Mono Lake would be maintained at a minimum of 6,392 feet above sea level. By the late 1990s, Mono Lake's ecosystem had begun to be visibly restored to its former glory.

—John R. Burch Jr.

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(under separate contracts) to drive Southern California Edison out of the city.

The CRA began deliveries in 1941, but Met's water was too expensive. Even with break-even pricing, Met's water cost a multiple of local water. Met used higher property taxes (projected 0.10 percent taxes reached 0.50 percent) to lower prices to “competitive” levels. Unfortunately, low prices did not boost demand to meet supply. So Met decided to grow.

Despite mutual misgivings, Met and SDCWA had complementary needs (too much supply and demand, respectively), and SDCWA joined in 1946. By 1949, SDCWA was

buying half of Met's water. The SDCWA annexation created two precedents: it was a wholesale member, and it was outside the south coast basin. The next break came in 1950, when Pomona MWD (now Three Valleys MWD) joined Met and stretched Met's charter—"to provide water for domestic use"—to include agricultural use.

These early developments are important because they created patterns that would come to haunt Met. First was the friction between members that experienced different costs and benefits. Flaxman (1976) calculated that SDCWA paid an average price of \$69 per acre-foot while Los Angeles paid an average cost of \$532 per acre-foot. Second was the culture of growth and sprawl; 97 percent of Met's post-1943 increase in service area came from new members. Perhaps the beginning of the end was the 1952 Laguna Declaration in which Met promised "to provide its service area with adequate supplies of water to meet expanding and increasing needs in the years ahead"—in exchange for a continued monopoly over water imports.

This pledge was soon put to the test. In the 1963 *Arizona vs. California* decision, the Supreme Court reduced California's supply from the Colorado River to 4.4 million acre-feet. This ruling cut Met's rights from 1,212 thousand acre-feet (taf) to 550 taf. Although Met had prepared for this outcome by signing contracts for over 2 million acre-feet from the State Water Project (SWP) in 1960, its median deliveries since the SWP began operations in 1972 have been 684 taf. The main reason for lower deliveries is that the SWP was never "completed," with unbuilt dams in northern California and the 1982 defeat of the Peripheral Canal. Another reason is that SWP water costs more than CRA water.

With supply in trouble and demand hardening, shortage was on the horizon. Met asked members to cut demand by 10 percent during the 1977 drought. During the 1987–1991 drought, Met hit members with 20 percent cuts.

Soon Met faced internal squabbles among members. The chief protagonist was SDCWA, which protested the disconnect between purchases and votes. Since SDCWA lacked outside options (Met provides over 70 percent of its supply), it felt vulnerable to decisions made by other members. SDCWA has tried to reduce dependency, but most of its choices are complicated and expensive.

Today, Met is struggling to maintain supply in the face of shocks from climate change and regulatory restrictions on SWP operations, but it has mostly succeeded in finding enough water to keep a full "water portfolio." In 2009, after

three years of drought, Met was again rationing members—this time by 10 percent.

## Importance of the Metropolitan Water District

Met is one of the earliest and biggest water wholesalers in the United States. It constructed the Colorado River Aqueduct and provided major support for the State Water Project. Its impact on southern California's urban development (simultaneously bringing sprawl and security) cannot be understated. As an organization, it has functioned reasonably well, but its survival has occasionally depended on its monopoly power. As a provider of water to 19 million people, Met's existence is not in doubt, but its form and operations are likely to evolve.

—David Zetland

**See also:** *Arizona vs. California (1963)*; *Boulder Canyon Project Act (1928)*; *Colorado River Aqueduct*; *Colorado River Compact of 1922*; *Hoover Dam*

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## Mississippi River Commission

Established by Congress on June 28, 1879, the Mississippi River Commission (MRC) was charged with establishing and coordinating plans to prevent flooding and securing navigation of the Mississippi River and its tributaries, thus impacting 41 percent of the United States and parts of Canada. The seven-member commission consists of three civilians and four federal personnel.

## Flooding Spurs Action

Following the Great Mississippi Flood of 1874, Congress not only provided aid to the victims but also created a joint commission to study the flooding problem. The commission's report recommended a levees-only policy, which