

WATER
MATCH



CH2MHILL.

Water Reuse Case History

West Basin Water Recycling/Petroleum Refinery Reuse Program

El Segundo, California, USA

Municipality: West Basin Municipal Water District

Companies: Two Large Oil Refineries

Project Fast Facts

Industry Flowrate: 10,400 gpm
(2,362 m³/hr)

Industry: Oil and Gas; Municipal Water Supply

Use: Sea Water Barrier Injection Water, Cooling Water, and Boiler Feed Water

Conveyance: 25-mile (40-km) pipeline

In 1990, the West Basin Municipal Water District (WBMWD) initiated its Water Recycling Program to conserve available drinking water supplies for 18 cities and unincorporated areas in southwest Los Angeles County and to decrease its dependence on outside water sources. CH2M HILL has worked closely with WBMWD throughout the program to implement numerous projects that collectively divert up to 62.5 million gallons per day (mgd) of secondary effluent from the City of Los Angeles Hyperion Treatment Plant for further treatment and reuse, including reuse by local petroleum refineries.

The Phase I Edward C. Little Water Recycling Facility included two plants: a 15-mgd direct filtration plant, producing Title 22

water for irrigation, and a 5-mgd advanced treatment reverse osmosis (RO) plant, which produces drinking-water-quality injection water for the West Basin Barrier. The permit to inject recycled wastewater into the West Basin Barrier was issued by the Los Angeles Regional Water Quality Control Board (RWQCB) in January 1995. Only the second permit of its kind issued in California, it enabled the barrier to use an additional 8 mgd of purified recycled water to maintain an underground hydrogeologic barrier and to prevent seawater contamination of a drinking water aquifer. Since 1995, up to 5 mgd of purified recycled water was blended with imported potable water and injected into the ground. The percentage of purified recycled water increased in phases from 50 to 75 percent (12.5 mgd) and then to 100 percent (17.5 mgd). Simultaneously, the use of imported potable water was decreased and then eliminated, reducing the cost of maintaining the barrier by almost \$575,000 per year. The Phase II project included design of more than 25 miles of 6- to 42-inch-diameter pipelines in congested industrial, commercial, and residential areas.

In 1994 the West Basin Water Recycling Facility (WBWRF) in El Segundo, California, became operational. Using a unique combination of proven water treatment technologies, including microfiltration (MF) and RO treatment, it initially treated 20 mgd (3,167 m³/hr). Later expanded to treat 38 mgd (5,938 m³/hr), it is designed for ultimate expansion to 100 mgd (15,833 m³/hr)—making it the largest planned water recycling facility in the U.S.

CH2M HILL also delivered two offsite 5-mgd nitrification facilities to meet the stringent water quality needs of two large petroleum refineries. Piping at the WBWRF was later installed to provide boiler feed water to one of the refineries. The second nitrification plant uses advanced treatment with MF and RO to treat reclaimed water for boiler feed.



CH2M HILL fast-tracked the WBWRF facility design because of ongoing drought conditions and potentially critical water shortages. When built out, this will be the largest single planned water reclamation project in California and one of the world's largest water reuse programs.

**Our motive is simple: to promote beneficial wastewater reuse around the world today.
Join us and help make matches happen. Because no water should be wasted.**

