

# SEAWATER DESALINATION

## The Claude “Bud” Lewis Desalination Plant and Related Facilities

The Claude “Bud” Lewis Carlsbad Desalination Plant produces up to 54 million gallons per day of locally controlled water for San Diego County, helping to minimize the region’s vulnerability to statewide drought conditions. It is part of a \$1 billion project that includes the nation’s largest and most technologically advanced and energy-efficient seawater desalination plant, a 10-mile large-diameter pipeline and improvements to Water Authority facilities for distributing desalinated seawater throughout San Diego County.

The plant meets approximately 10 percent of the region’s water demand – about one third of all the water generated in the county. This water supply and its cost are combined with the Water Authority’s other supplies serving 24 local water agencies, 3.3 million people and a \$253 billion economy.

The plant delivers several environmental benefits by using cutting-edge technology to recapture energy from the desalination process, offsetting carbon emissions and developing extensive wetlands to enhance fish populations along the San Diego County coastline. The entire project was developed through a rigorous environmental permitting process, and the project’s environmental compliance was upheld through 14 legal challenges.

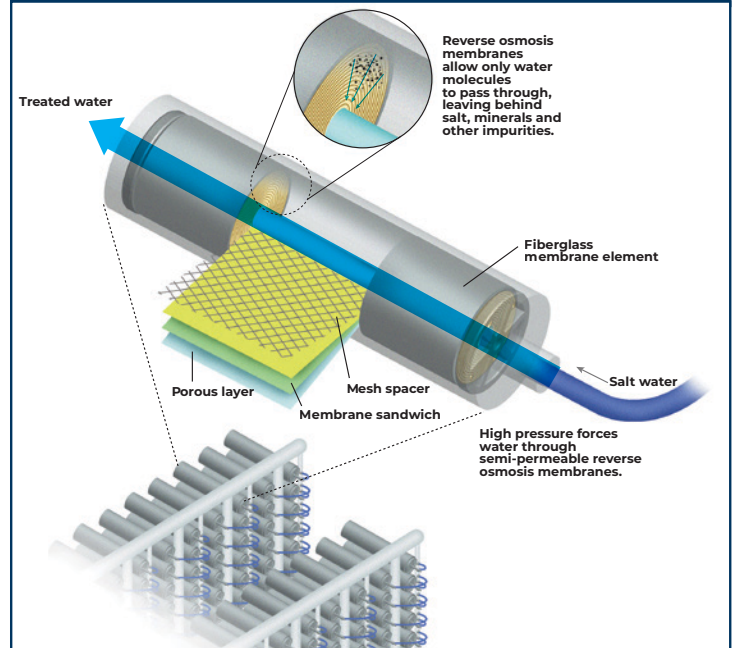
Poseidon Water, a private, investor-owned company, developed the Plant and continues to manage it today. A joint venture of Kiewit Infrastructure West and J.F. Shea Construction, Inc. designed and constructed the desalination plant and pipeline.

IDE Technologies, a world leader in desalination technology and operations, engineered the plant’s desalination process and related equipment. IDE also operates the plant under a 30-year contract with Poseidon.

### PROJECT BENEFITS

For more than two decades, the Water Authority has viewed seawater desalination as an important part of a diversified water supply portfolio that also includes potable reuse, recycled water, groundwater, independent transfers of conserved water from the Colorado River, and water imported by the Metropolitan Water District of Southern California.

### REVERSE OSMOSIS PROCESS



The Water Authority’s contract with Poseidon calls for the purchase of between 48,000 acre-feet and 56,000 acre-feet of desalinated seawater per year for 30 years. That’s enough water for approximately 400,000 people each year. In 2046, the Water Authority has the right, but not the obligation, to purchase the desalination plant for \$1.

Based on current electricity cost estimates, the Water Purchase Agreement sets the price of water at about \$2,975 per acre-foot for fiscal year 2023. The first 48,000 acre-feet of water purchased each year will pay for the fixed costs of the project and the variable costs of water production. The Water Authority has the option to purchase an additional 8,000 acre-feet per year at a lower rate that reflects only the variable costs of incremental water production.

Typical monthly cost for the water supply reliability provided by the desalination plant is about \$5 per household.

## THE PLANT AND PIPELINE

The heart of the desalination plant is a reverse-osmosis system designed by IDE Technologies. Ocean water is pumped to the plant, where it undergoes a sand/anthracite filtration process to remove suspended particles from the water. Then, the water is pumped through reverse-osmosis membranes that remove salts and other dissolved particles. Essential minerals are added back into the water before it is piped to the Water Authority's aqueduct as drinking water.

A 10-mile pipeline delivers water from the desalination plant to the Water Authority's Second Aqueduct. The Water Authority owns the pipeline, which cost approximately \$159 million.

The Second Aqueduct conveys desalinated water to the Water Authority's Twin Oaks Valley Water Treatment Plant north of San Marcos, where it is mixed with existing drinking water supplies for regional distribution.

## ENVIRONMENTAL UPGRADES

The Carlsbad Desalination Project meets rigorous environmental standards set by state and local agencies, including the State Water Resources Control Board and California Coastal Commission. By boosting the project's energy efficiency, offsetting greenhouse gas emissions and enhancing coastal habitat, the project is among the most environmentally friendly projects of its kind in the world.

Poseidon's Climate Action Plan calls for the plant to be net carbon neutral over 30 years by offsetting greenhouse gas emissions from project operations. It is the first major California infrastructure project to eliminate its carbon footprint. Poseidon also is restoring 66 acres of wetlands in San Diego Bay and preserving the 400-acre Agua Hedionda Lagoon by assuming responsibility for the continued stewardship of the lagoon.



**MORE INFO**



Drinking water pipes in the Claude "Bud" Lewis Carlsbad Desalination Plant.