

# Submersible Pumps and Motors

## CASE

## STUDY

### Ocean Desalination Test Slant Well Dana Point



**INDAR** SP UGP

Source: Geoscience



### The Challenge

Despite the vast ocean bordering these cities, drinkable water remains scarce on land – 90 percent of south Orange County's drinking water is imported from other parts of the state. For more than a decade, local water districts in South County have partnered with cities to explore the possibility of developing a desalination plant in Dana Point to convert ocean water to drinkable water for the area.

The primary goal of the Doheny Desalination Project is to secure a reliable source of water for south Orange County; currently, the region has no relief options in the case of droughts or emergency situations that may cut off the water supply from Northern California.

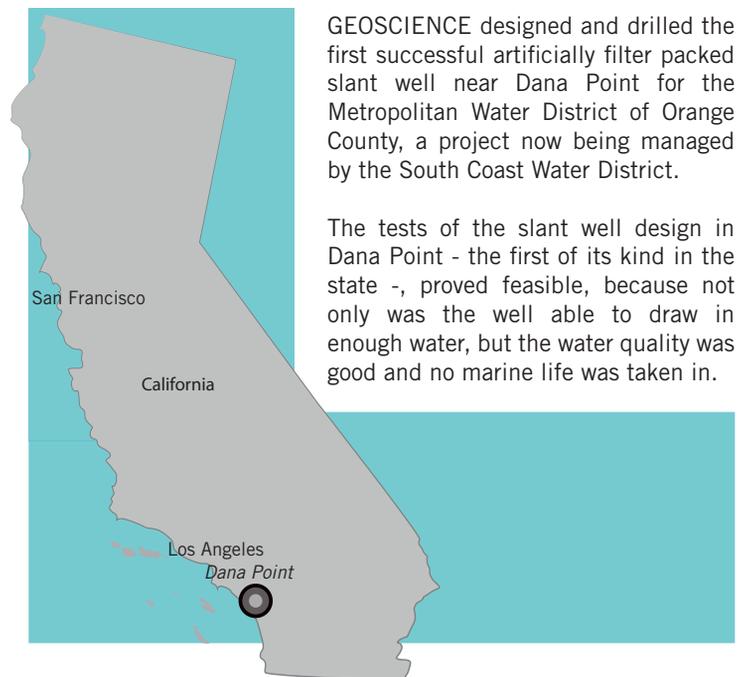
The Metropolitan Water District of Southern California – supplying water to Orange, Los Angeles, San Diego, Riverside, San Bernardino and Ventura counties – imports the majority of its water from the Colorado River. But there is a resource that is readily available to be tapped that could solve all of these problems. “There's an unlimited water supply in the ocean right outside the window”.

Desalination plants aren't a revolutionary concept: Plants with open intake valves indiscriminately take in water above the ocean floor and in the process also pull in marine life. The Coastal Commission prefers subsurface intake designs, which take in water from beneath the ocean floor, thus avoiding taking in plants and animals considering just open intake where subsurface is not feasible.

Seawater desalination is a viable alternative for Coastal communities across California. Use of low angled wells (slant wells) produce ground water from near shore and offshore aquifer systems and provides a number of potential advantages over open ocean intake systems. The aquifer system provides natural filtration from suspended organic matter and sediment eliminating the need for pretreatment.

### Pioneering Desalination Intake Systems

Slant wells are drilled at an angle, which allows for the slant well to pump water from below the ocean surface. The sea water obtained by this method contains fewer impurities and has silt density indices that are below current SWRO feedwater supply standards, which reduces the need for pretreatment. The subsurface intake approach also reduces issues related to impingement and entrainment, thus eliminating impacts on the ocean ecosystem that occur from open ocean intakes.



GEOSCIENCE designed and drilled the first successful artificially filter packed slant well near Dana Point for the Metropolitan Water District of Orange County, a project now being managed by the South Coast Water District.

The tests of the slant well design in Dana Point - the first of its kind in the state -, proved feasible, because not only was the well able to draw in enough water, but the water quality was good and no marine life was taken in.

**Indar**  
Ingeteam Group

## INDAR supplies a submersible pump for Dana Point

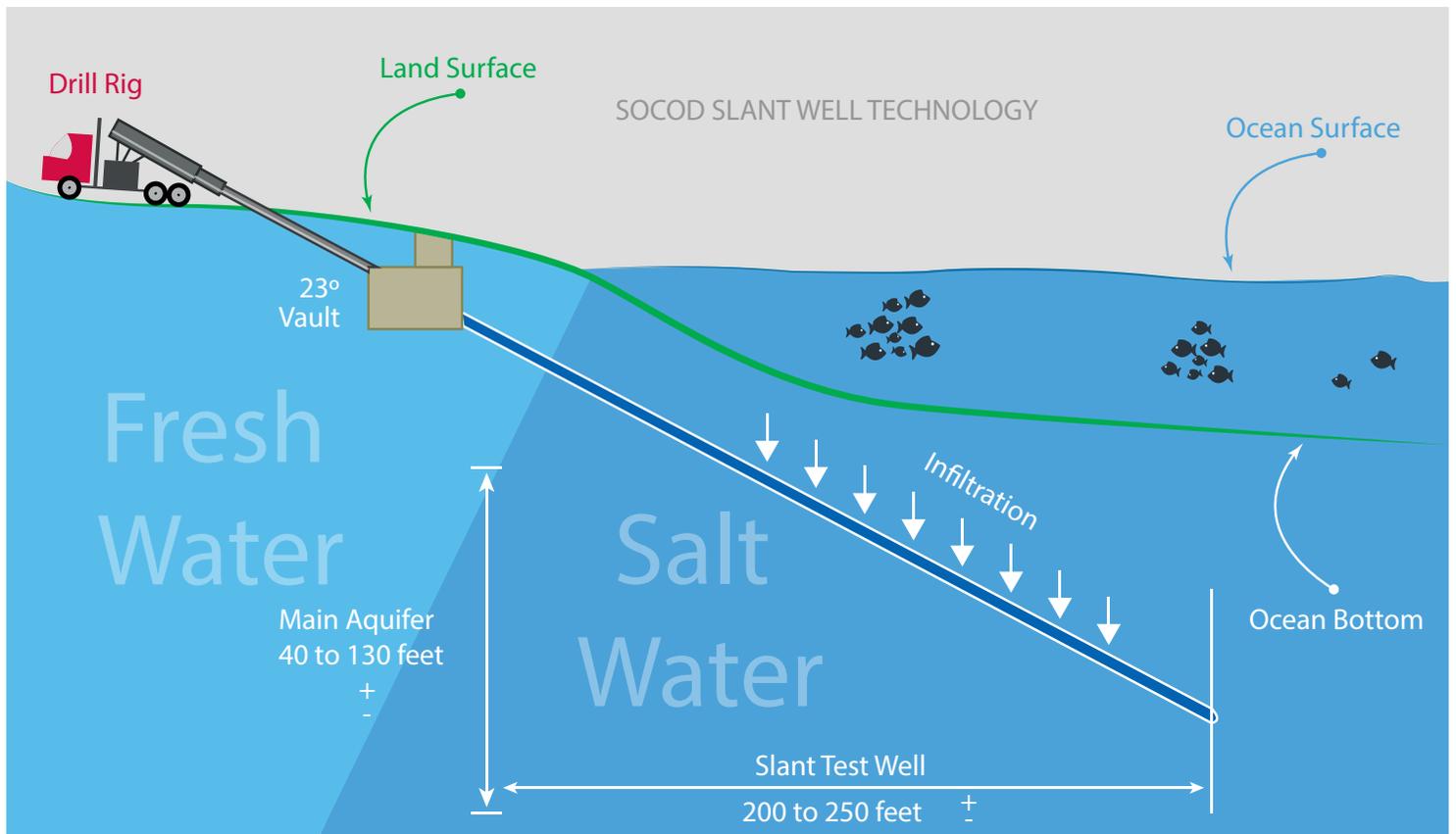
The INDAR Series SP UGP is the right answer to this challenging technology for Pioneering desalination Intake Systems.

The INDAR SP UGP Series Submersible electropump set consist of a vertical multistage centrifugal pump, and an ISM ML electric motor directly coupled to the pump.

The INDAR ISM ML electric motors are submersible, asynchronous, three-phase, squirrel cage rotor types. These motors must operate filled with water (or a mixture of water and antifreeze) and be fully submerged.

The INDAR pump set UGP-1040-01 + ML-25S-3/070-N was installed in Dana Point slant well in 2009.

The test showed consistent high efficiency pumping for nearly two years with very low silt density index.



Model	Motor Output (HP)	Voltage (V)	Weight (Lb.)	Diameter (in)	Height (in)
UGP-1040-01 + ML-25S-3/070-N	100	480	963	10.43	93.55