

# Southmost Regional BWRO Facility

## Southmost Regional Water Authority

**NORRISLEAL**  
ENGINEERING WATER



### Location

Brownsville, Texas

### Capacity

7.5 MGD RO (\$23 Million)  
11.0 MGD Microfiltration,  
plus 4.0 MGD RO (\$11 Million)

### Value

\$26 Million, Phase 1  
\$11 Million, Phase 2

### Constructed

2004 7.5 MGD  
2014 Expansion to 11 MGD

### Treatment System

Two-stage reverse osmosis

### Associated Facilities

- 20 wells
- 15 miles of raw water collection lines
- 5 miles treated water transmission lines
- RO treatment system
- Microfiltration system
- 7.5 MGD storage tank

### Feed Water Quality

3,000 mg/L TDS

### Historical Perspective

From 2001 to present, NorrisLeal has been the engineer of record of the largest producing brackish groundwater treatment plant in Texas. As the 20th century drew to a close, water supplies in the Lower Rio Grande Valley were in jeopardy. Inflows from Mexican tributaries into the Rio Grande the sole source of almost all water supplies in the region were minimal, and storage in the Amistad Falcon reservoir system was near record lows. Municipalities dependent on receiving their water supplies through irrigation district conveyance systems faced real problems with delivery. Massive growths of hydrilla and water hyacinth in the river further aggravated these problems. Particularly at risk were municipal and industrial users at the end of the Rio Grande's long course. The problems with surface water were reflected in the high cost of buying additional water rights.

Such regional problems demanded regional solutions. At hand was a vehicle for creating regional partnerships the Southmost Regional Water Authority (SRWA). Although formed in 1981 for the purpose of developing alternative water supply strategies, SRWA had been dormant for many years. But in September 2000, it was revived, focusing on finding viable, alternative water supplies to decrease dependency on the Rio Grande. The partners include Brownsville Public Utilities Board, Valley Municipal Utility District 2 (Rancho Viejo), City of Los Fresnos, Town of Indian Lake, and the Brownsville Navigation District. Together, these water supply entities serve more than 150,000 people.

### Project Solution

In 2001, SRWA retained Norris and Leal to study the initial feasibility of using reverse osmosis to treat local supplies of brackish groundwater. Subsequently, SRWA authorized extensive aquifer testing, including ten test wells and one pilot well, to determine the actual long-term quality and quantity of brackish groundwater available. The tests demonstrated reliable long-term supplies of groundwater with a relatively low salinity of 3,000 mg/l total dissolved solids. That made treatment costs competitive with the price of purchasing additional surface water rights.



Groundbreaking of the full-scale facility occurred in late 2002, followed by well-drilling and facility construction in 2003, and formal ribbon-cutting in early 2004. The project encompassed 20 wells, 15 miles of raw water collection lines, 9 miles of treated transmission lines, a reverse osmosis membrane treatment system, and a 7.5 million gallon ground storage tank. Project components have been oversized so the facility can be cost-effectively expanded to two or three times its initial capacity.

In 2006, in response to the EPA reducing the maximum containment level of arsenic in public drinking water supplies, the SRWA began piloting arsenic removal treatment alternatives to evaluate the most cost effective pretreatment configuration to comply with regulations. Microfiltration membranes were selected to remove arsenic compounds from the raw water stream.

The plant is providing 7.5 million gallons per day (MGD) of high quality water, more than 40 percent of the annual needs of participating entities, thus reducing dependency on the over-allocated Rio Grande, at an economical cost.

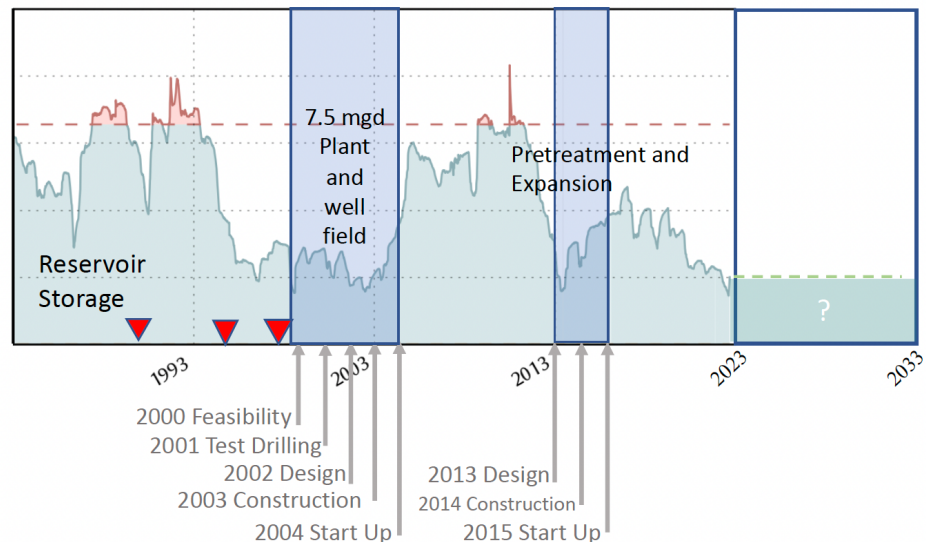
### Regional Benefits

The regional approach has been key to making the project affordable. By joining together instead of building separate facilities, project partners realize lower building and personnel costs. Significant savings accrue from a single plant with a single set of operators.

### Expansion

In 2014, the SRWA Brackish Groundwater Desalination Plant expansion involved the acquisition of easements and right of ways for transmission and distribution lines and land negotiating and detailed property surveys for constructing twenty groundwater production wells. This \$24 million project was designed in four months and started up in fourteen months. This project was \$3 million (12 percent) under budget and completed in time to meet summer water demands. The expansion was \$11 million (Construction Management), \$4 million under general contractor bid.

## SRWA Desal Historical Timeline



1985 BPUB Trip to Florida

1995 BPUB Pilot Study

1999 VMUD RO

This project was awarded the 2003 Water Conservation & Reuse Award by AWWA, Texas Section

### SRWA Members

- Brownsville PUB
- Valley Municipal Utility District No. 2
- City of Los Fresnos
- Town of Indian Lake
- Brownsville Navigation District