

# Seawater Desalination Feasibility and Pilot Study

## Laguna Madre Water District



### Location

South Padre Island, Texas

### Study Focus

Seawater Desalination

### Study Period

2008-2009

### Technology

Conventional Pretreatment,  
Microfiltration, Reverse Osmosis

NorrisLeal Role Study Manger,  
pilot operations, permit  
management, documentation

### Historical Perspective

The Laguna Madre Water District serves three municipalities the Town of South Padre Island, the City of Port Isabel, and the Town of Laguna Vista. Known as one of Texas premier tourist attractions, the District serves a large influx of tourists during spring and summer, along with a rapidly-growing population. Throughout the year, the Laguna Madre Water District serves nearly 20,000 customers.

For the past several decades, LMWD has been investigating affordable alternative water supplies to meet the future demand of its growing and dynamic customer base. Previously cost-prohibitive technologies, notably desalination, were evaluated through feasibility studies as the technology improved and costs decreased. In 200 , LMWD, with financial assistance from the Texas Water Development Board, Norris and Leal completed a pilot study on South Padre Island to evaluate available treatment technologies at site-specific conditions.

By developing a series of performance specifications, the pilot study was conducted with the ultimate goal of establishing specific design parameters to be implemented at a full scale facility. This project considered the challenges of adding desalinated water at this point in the distribution system, taking into consideration its impact on finished water quality and the reliability of the existing distribution infrastructure. The pilot contended with unique operating conditions over the course of the Study, including a red tide event and inclement tropical weather.