



Padre Dam Advanced Water Purification Demonstration Project

Padre Dam, California, USA

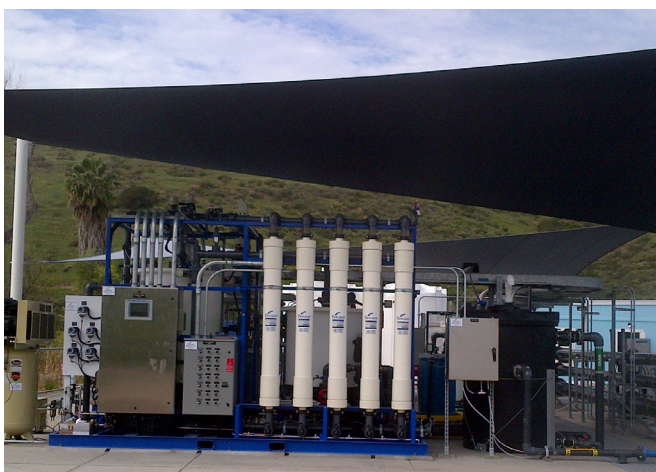


Ground breaking event visual highlighting the need for the project



Project overview

Owner:	Padre Dam Municipal Water District
Client:	Integrated Water Services Inc.
Scope:	Fabrication and commissioning of all process equipment for leading edge demonstration facility
Key technologies:	Ultrafiltration (UF) Reverse osmosis (RO) Advanced oxidation process (AOP) Ultraviolet (UV)
Membrane treatment capacity:	378 m ³ /day 0.378 million litres per day 100,000 US gallons per day
Population served:	N/A (the demonstration project is initially being used for monitoring and testing purposes only)
Development phase:	Complete (December 2014)



Complete demonstration facility pictured ahead of the opening ceremony

“ Leading edge solution to overcome water stress

INDIRECT POTABLE REUSE

Background

In recent years, California has suffered severe and devastating drought conditions and attention has turned to the need for increased conservation efforts, water supply facilities and innovative reuse solutions to ensure the State drought proofs itself ahead of future dry spells.

In an effort to diversify its water supply, whilst also reducing its dependency on imported water, Padre Dam Municipal Water District embarked on an advanced water treatment plant project to explore a new source of water in Santee, California.

The new facility was constructed to treat secondary effluent from a wastewater treatment plant in the District, and the treated water used for demonstration and testing purposes, to ensure it exceeds the stringent California Public Health

Department's draft regulations to be able to utilise the facility to provide for Padre Dam customers.

After the testing period, the District hopes to be able to expand the facility, to construct a full-scale plant to provide up to 10 million gallons per day (MGD (US)) of treated water with indirect potable reuse potential. With the necessary approvals to proceed, treated water would be injected into the local groundwater basin. It would undergo natural filtration, be withdrawn, treated again, and then distributed as potable water to customers.

The Advanced Water Purification Demonstration Project was funded through a three million dollar 'Proposition 50' grant from the Department of Water Resources.

Technical summary

Advanced water purification technologies were utilised in the construction and installation of this indirect potable reuse facility.

The advanced treatment processes included in the design are: chlorine disinfection, coagulation, ultrafiltration, reverse osmosis and advanced oxidation.

To deliver these advanced treatment processes on a fast-track basis, the following system elements were required on-site for fabrication, installation and commissioning:

- Field pumps
- Chlorine contactor
- Chemical dosing systems
- Ultrafiltration system
- Reverse osmosis system
- Advanced oxidation process system (using ultraviolet light (UV) and oxidation)
- Programmable logic controller (PLC) instrumentation, motor control centres and electrical panels

Biwater provided a complete turnkey design, and supplied and commissioned all process, mechanical, electrical and control components for the plant.

Biwater was chosen for its ability to supply a fully integrated system on a fast-track delivery, supporting Padre Dam's efforts to initiate proof of concept and testing activities as soon as possible.



Ultrafiltration (UF) system



Two stage reverse osmosis (RO) system

Studies

In parallel with demonstration period testing, studies are being run to assess the capacity of the Santee basin aquifer and the feasibility of extending the project beyond the demonstration and testing period, to serve a larger customer base in California.

The proposed expanded project might include the service areas of Padre Dam Municipal Water District, Helix Water District, a portion of the County of San Diego, and the City of El Cajon.



Advanced oxidation/UV system and final sample