

## Brackish water could ease San Antonio's drought pains

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### **Jerry Needham Express-News**

In a world of shrinking water resources, San Antonio Water System officials are hoping they've found a source that's drought-proof, uncontroversial and nearby.

They're looking to build a plant south of town that daily takes a heavy load of minerals out of 25 million gallons of brackish groundwater. That could put a hefty dent in the utility's typical summertime demand of 200 million gallons a day.

And, if the price comes out right from the pilot plant the city-owned utility is undertaking, there's lots more salty groundwater in the region.

"We're the only ones that are interested in it right now," said Calvin Finch, SAWS water resources director. "And there's a huge reserve under the region — largest in the state of Texas."

SAWS is still conducting tests to determine the best approach for the planned \$150 million plant that would use reverse osmosis membranes to filter out the excess minerals.

"It's a sound step for San Antonio to be looking into this," said Jorge Arroyo, director of special projects with the innovative water technologies group of the Texas Water Development Board. "This is not a risky technology anymore. The economics are there that makes this cost-competitive with other options."

Kevin Morrison, SAWS project coordinator, said pump tests on wells drilled into the Wilcox Aquifer at three locations have turned up a promising site in Atascosa County about 8 miles south of the Bexar County line.

The utility has hired contractors to conduct pilot tests on filters and to use a state grant to test an experimental method of reducing the briny waste. They're aiming to go out next year with contracts to build and are expecting an operating facility in early 2011.

According to studies conducted for the water development board, the 21-county water-planning region that includes San Antonio has 1.2 million acre-feet of brackish groundwater available. An acre-foot is 325,851 gallons.

The water is not only a lot closer to San Antonio than seawater, reducing the transmission costs, but it's also got a lot less salt.

While brackish water is defined as having more than 1,000 parts of minerals per million parts of water, seawater has 35,000 to 40,000 parts per million. That makes the area's water a lot easier and cheaper to clean.

At least initially, SAWS probably would use the plant mostly to supplement other supplies in times of drought, Finch said.

"You might have some water coming out at all times, but you take it up to full capacity when some of the other water sources are not available," Finch said.

"The potential is that we could do more of these," he said.

The water's estimated cost — treated and delivered — is less than \$800 an acre-foot, and that's less than a couple of freshwater projects the utility is considering. Water from the planned regional Carrizo Aquifer project is estimated at \$862 an acre-foot, and from the proposed Lower Colorado River Authority project at \$1,326 an acre-foot.

"It gets more exciting every year because the cost of some of the other sources go up but the technology is allowing the cost of this to go down," Finch said.

The state has six public water supply facilities capable of desalting at least 6 million gallons a day, including the nation's largest inland desalination plant, scheduled to open this summer in El Paso. There also are plants in Abilene, Brownsville and Granbury that opened in the past four years, and plants in Sherman and Fort Stockton that have been operating for more than 10 years.

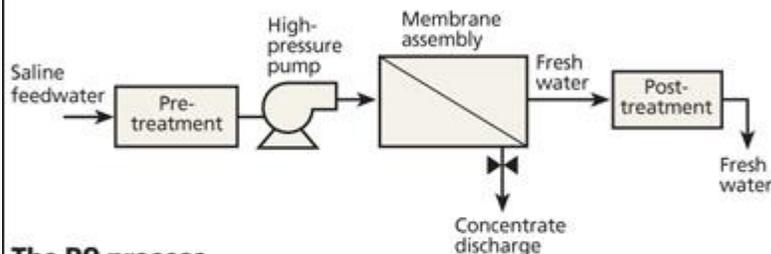
SAWS is still looking at several options for getting rid of the concentrated brine, which can amount to 20 percent of a plant's output, but deep-well injection is most likely at this point, Finch said.

The utility could mix some brackish water back into the plant's projected daily output of 20 million gallons of desalted water to stretch the supply, Finch said.

## Desalination and reverse osmosis

Desalination removes salts from water. Reverse osmosis (RO) is a desalination process in which water from a pressurized saline solution is separated from the dissolved salts by flowing through a water-permeable membrane.

### Basic components of a reverse osmosis plant



### The RO process

- The liquid is forced through the membrane by the pressure differential created between the pressurized feedwater and the product water.

- The remaining feedwater continues through the pressurized side of the reactor as brine. No

heating takes place. The major energy requirement is for the initial pressurization of the feedwater.

- Pretreatment of the feedwater is important because the membrane surfaces must remain clean.

Sources: International Desalination Association, Texas Water Development Board

JAMES HENDRICKS/STAFF

There's potential for pulling brackish water from the Edwards Aquifer, but officials would have to make sure that doing so didn't harm its freshwater stores. SAWS is still conducting tests on a brackish Edwards site in northern Atascosa County.