Natural OUTLOOK
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TEXANS TAKE ACTION ADDRESSING FUTURE WATER SUPPLIES

Innovative approaches span the state

Photo courtesy of CRMWD.

Barges are used to move intakes to deeper water when levels decline. This barge on Lake Thomas was moved twice—in Jan. 2009 and again in Mar. 2011. This picture was taken in Sep. 2012.

Texans take the bull by the horns—they deal with problems head on. Avoiding water shortages is no different. Water systems, irrigation districts, agriculture, and industry are taking steps to conserve and increase water supplies in the face of extended drought. Here are just a few ways these grassroots problem solvers are mitigating risk.

San Antonio Water System Reduces Use While the Population Grows

SAWS' Recycled Water Program was initiated to reduce the amount of water San Antonio pumps from the Edwards Aquifer. It conserves potable water and protects endangered-species habitats and critical ecosystems.

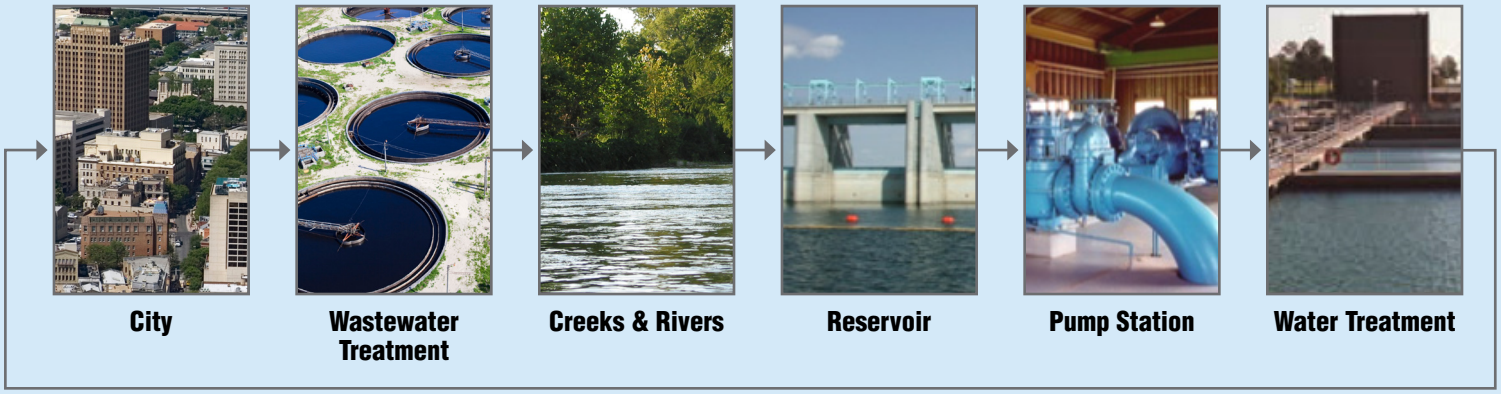
The system distributing recycled water spans 110 miles and delivers high-quality, treated, recycled water to commercial and industrial customers and to four stream-discharge locations for enhancement and restoration of aquatic ecosystems. Regular water-quality sampling at 13 locations has confirmed improvements as seen by lower turbidities, higher clarity, less algal growth, lower bacterial counts, and the return of several species sensitive to water quality and intolerant of pollution. Access to the recycled water has also attracted several businesses to the area.

SAWS also spearheaded several water-conservation programs, developing media campaigns and community-based outreach to raise public awareness and participation. The utility focuses on forming partnerships and involving stakeholders to ensure the success of its programs, which yielded more than 1 billion gallons of ongoing water savings since 2009. Activities included 1,842 residential water-conservation consultations, resulting in a cumulative drop of more than 80 million gallons in participating household-water consumption. Other activities saved more than 600 million gallons, such as SAWS' Conservation Make Over program, which assists low-income neighborhoods, retrofits older buildings, and conducts other indoor programs.

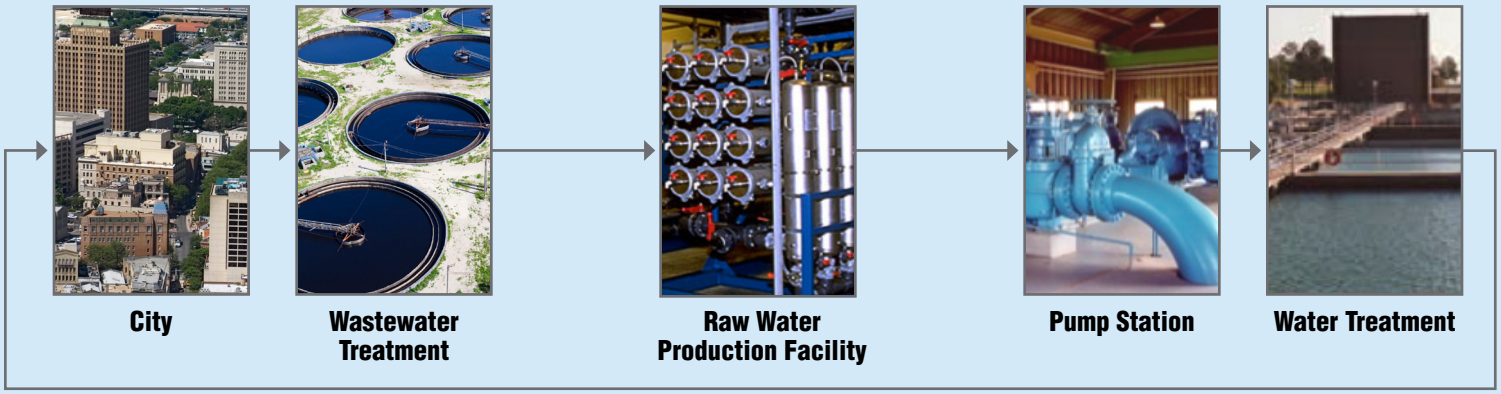
Conservation has helped drop the system-wide gallons per capita per day (GPCD) from 136 in 2008 to 125 in 2009. SAWS had an average annual GPCD drop of 1.5 between 2000 and 2009. Thanks to conservation programs in place since 1994, the utility is now able to serve twice as many customers using the same amount of water. Even during very dry conditions in 2011, the system had a surplus of 8,416 acre-feet and additional storage of approximately 90,000 acre-feet.

This year SAWS plans to select a contractor for the first phase of a brackish water desalination project. The proposed system is expected to supply 30,525 acre-feet of water by 2026.

The Conventional Water Cycle



The Reuse Water Cycle



Colorado River Municipal Water District Uses Multiple Approaches to Secure Supplies

Water is always a chief concern to people in West Texas, no more so than during extended drought. The Colorado River Municipal Water District supplies water to member cities Big Spring, Odessa, and Snyder, and sells water to Midland, San Angelo, Abilene, Stanton, Robert Lee, Grandfalls, Ballinger, and Pyote.

Surface water supplies are at historic lows in Lake J.B. Thomas, E.V. Spence Reservoir, and O.H. Ivie Reservoir, the district's three repositories of surface water. Evaporation and extended drought have rendered spillways useless artifacts sitting on dry land. In 2009, a barge was built to capture water from a deeper portion of Lake Thomas. A second barge was built and moved to deeper water in March 2011 to tap a shrinking supply.

New wells have been drilled in Ward County, some 60 miles from the nearest reservoir. A pump station and a 45-mile pipeline have been constructed connecting to existing storage in Odessa to deliver this groundwater to the system. These new wells will supply 30 million gallons per day.

In Big Spring, a reuse facility will treat wastewater and blend it with raw water from the lakes to supply customers in Big Spring, Stanton, Midland and Odessa. When fully operational, the facility should supply 2 mgd.

Other projects of the district include:

- refurbishing existing wells, pipelines and pump stations
- reversing the direction of a pipeline
- two additional reuse facilities brackish-water desalination
- channel dredging in O.H. Ivie Reservoir

E.V. Spence Safe Yields

Original	45,800 acre-feet
1999	34,450 acre-feet
2006	32,300 acre-feet
2011	19,000 acre-feet +/-

O.H. Ivie Safe Yields

Original	90,700 acre-feet
1999	85,890 acre-feet
2006	65,900 acre-feet
2011	54,000 acre-feet +/-

Anheuser-Busch Houston Takes a Comprehensive Approach to Conservation

For the past 16 years, the Anheuser-Busch brewery in Houston has decreased its water use by more than 30 percent—a drop not due to the economy or decreased production, but to a company-wide dedication to water conservation. Water consumption is a fact of life for any brewery, but Anheuser-Busch's team of engineers, environmental managers, and employees have integrated technologies and innovative practices to streamline water use, saving 577 million gallons of water in 2011 alone.

Anheuser-Busch uses technology in almost every detail of brewing. First, the brewery filters the incoming water and monitors the resulting quality. Then, during the regeneration of the carbon filters, the backwash is collected and rerouted for use in cooling. Reclamation of water during this process and from carbon dioxide scrubbers saves nearly 19 million gallons every year. While brewing and fermenting, dual-range probes monitor conductivity during rinses in boiler and fermentation tanks—a process carefully monitored so that the tanks are never over-rinsed. Additionally, the recovery during bottling and packaging—made possible by upgrading pasteurizers and bottling machinery—has saved more than 70 million gallons of water by redirecting the reclaimed water for cooling in other areas.

El Paso Water Utilities' Kay Bailey Hutchison Desalination Plant

The Kay Bailey Hutchison Desalination Plant has a design capacity of 27.5 mgd. This facility is the largest inland municipal desalination plant in the world. This joint facility of the El Paso Water Utilities and the United States Army at Fort Bliss desalinates brackish groundwater to extend limited freshwater supplies in this desert community for the benefit of all.

The plant uses reverse osmosis to remove salts and contaminants from brackish water drawn from the Hueco Bolson (an aquifer). The desalted water is disinfected and blended with fresh well water before it enters the distribution system. This new source extends El Paso's water supplies by 25 percent. During the summer of 2012—when the Rio Grande ran dry—the desalination plant ran at full capacity for the first time ever.

In addition to the obvious benefits of extending water supplies for the future, the facility serves as a model for other inland cities with limited supplies and prevents saltwater intrusion into existing freshwater sources.

The plant is only one part of El Paso Water Utility's diversified water portfolio. The utility also relies on fresh groundwater from the Hueco Bolson and Mesilla Bolson, surface water from the Rio Grande when it is available, and reclaimed wastewater for industry and irrigation. In addition, importation of water is planned to ensure an ample supply for the future.

Harlingen Irrigation District Wins Accolades for Water Conservation in Agriculture

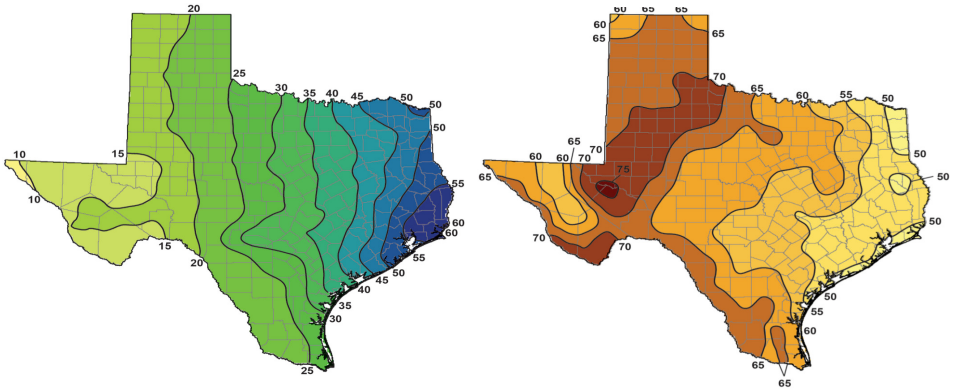
The Rio Grande Valley and agriculture have been linked for more than a century. While agriculture retains the top spot as the Valley's staple industry, farmland is quickly being replaced via suburban and commercial development. The loss of land in this southernmost tip of Texas, combined with competing demands for water from industries and municipalities and extended drought, means irrigation districts and agricultural producers must convey and use water more efficiently. In 2011, the Harlingen Irrigation District won one of the state's prestigious Texas Environmental Excellence Awards, recognizing its water-conservation efforts.

Looking for more efficient ways to irrigate crops, the district secured a 10-year grant in 2004 to manage the Agricultural Water Conservation Demonstration Initiative Program (ADI) in the Valley. The ADI Program aims to promote water conservation throughout Texas to help meet future water demands while maintaining or increasing farm profitability.

The Irrigation District's program recruited dozens of local farmers willing to test new technologies and irrigation methods on a wide variety of crops, including cotton, corn, grain sorghum, sugarcane, citrus, and vegetables. Over time they learned that water management is the key to conservation, and the district is supplying tools to help growers use the water more effectively no matter what method is being used.

In addition to ADI Program successes, the Harlingen Irrigation District installed different types of automatic meters throughout its 250-mile irrigation system and tied them into a telemetry system that reports water pumping and water flows on its website in real

Texas Rainfall and Evaporation



Average annual rainfall for most of the state decreased while evaporation increased. In the Colorado River Municipal Water District's service area average annual rainfall was 21 inches while evaporation losses averaged 61 inches.

Maps courtesy of the Water Development Board's State Water Plan

time. It is a valuable tool for allowing the district to assess water usage and operate more efficiently, as well as an opportunity for farmers to obtain data that assist them with determining current watering needs.

The Harlingen Irrigation District built the state's first Flow Meter Calibration Center, where other irrigation districts can test and calibrate equipment to more accurately measure water usage by farmers. The facility offers training and demonstrations so that other districts can learn proper procedures for determining the validity of meter readings and encourage changes at the district level that will save water.

Every water district differs as to what reductions are attainable and economically feasible, but more information gives districts and farmers a better chance to come up with innovations that will work.

Conservation is Everyone's Business

Drought continues in Texas this year. If we are going to sustain the economic and population growth the state has enjoyed, we will need to make water conservation a priority. Water is a precious resource that is vital to life. We must all do our part to conserve—from the bathroom to the boardroom.

Related Information

Texas Drought:
www.tceq.texas.gov/response/drought

Take Care of Texas

Consumer Conservation Tips:
www.takecareoftexas.org/water-conservation-tips

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