



Brackish Resources Aquifer Characterization System

The Brackish Resources Aquifer Characterization System (BRACS) program was established in 2009 to map and characterize the brackish portions of Texas aquifers to provide useful information and data to regional water planning groups and other entities interested in using brackish groundwater as a water supply.

Groundwater contains dissolved minerals, measured in units of milligrams per liter, and can be classified as fresh (0–1,000 milligrams per liter), brackish (1,000–10,000 milligrams per liter), or saline (greater than 10,000 milligrams per liter). Brackish groundwater is abundant in the state, currently estimated at more than 3.8 billion acre-feet. Presently, public entities are desalinating brackish groundwater to produce drinking water. As a result, it is important to better understand this resource.

BRACS Studies

The TWDB has completed or contracted 14 BRACS aquifer studies and five ongoing studies. There are six remaining aquifers that will need to be characterized by December 1, 2032. There are 12 additional aquifers that will not be characterized, either because they do not have significant amounts of brackish water or are ineligible for brackish groundwater production zones (BGPZs) that were initiated in 2015 by House Bill 30.

Completed Studies

- Hill Country Trinity Aquifer (Southern Portion of the Trinity Aquifer)
- Southern portion of the Queen City and Sparta aquifers (2022)
- Central portion of the Carrizo-Wilcox, Queen City, Sparta, and Yegua aquifers (2020)
- Northern Trinity Aquifer (2018)
- Lipan Aquifer (2018)
- Blossom Aquifer (2017)
- Nacatoch Aquifer (2017)
- Blaine Aquifer (2016)
- Southern portion of the Carrizo-Wilcox Aquifer (2016)
- Gulf Coast Aquifer (2016)
- Rustler Aquifer (2016)
- Queen City and Sparta aquifers in McMullen and Atascosa counties (2014)
- Gulf Coast Aquifer in the Lower Rio Grande Valley (2014)

- Gulf Coast Aquifer in the Corpus Christi Aquifer Storage and Recovery Conservation District and Surrounding Counties (2012)
- Pecos Valley Aquifer in West Texas (2012)

Ongoing Studies

- Edwards-Trinity (Plateau) Aquifer
- Eastern portion of the Sparta Aquifer
- Eastern portion of the Queen City and Carrizo-Wilcox aquifers
- Woodbine Aquifer

Legislative Background

In 2015, House Bill 30 tasked the BRACS program with designating brackish groundwater production zones that could potentially produce for 30- and 50-year periods and making recommendations on reasonable monitoring to observe the effects of production within the zone. House Bill 30 also directed the TWDB to conduct studies to identify and designate brackish groundwater production zones in four specific aquifers by December 1, 2016, and all eligible aquifers by December 1, 2022.

To date, there are a total of 31 brackish groundwater production zones that have been designated. In 2016, the Board designated eight brackish groundwater production zones in the Carrizo-Wilcox, Gulf Coast, and Rustler aquifers. No zones were designated in the Blaine Aquifer. In March 2019, the Board designated an additional 23 production zones in the Blossom, Nacatoch, and Northern Trinity aquifers. No zones were designated in the Lipan Aquifer.

In 2019, The 86th Texas Legislature passed Senate Bill 1041 that extended the deadline to complete zone designations from December 1, 2022, to December 1, 2032, and House Bill 722 that established a permitting framework for developing water supplies from TWDB-designated brackish groundwater production zones.

Recent BRACS Projects

Since 2020, The TWDB has contracted studies to share knowledge about brackish groundwater exploration that include the preparation of a resource document that details how to drill and log the ideal exploratory brackish groundwater well, and the creation of a resource document that details how to use seismic data to map brackish aquifers. Studies undertaken for the purpose of expanding the knowledge base of the public and stakeholders include a study that focuses

on the comingling of groundwaters, with different salinities with the Texas Department of Licensing and Regulation as a stakeholder, and a technically defensible modeling tool to map injectate from injection wells.

Other contracted studies that have been recently completed were geared to support BRACS studies of the remaining aquifers, which include core testing and analysis to determine key aquifer properties for both the Hill Country Trinity aquifer and the Edwards-Trinity (Plateau) Aquifer, well log simulation to determine key aquifer properties in the Edwards-Trinity (Plateau) Aquifer, and processing over 19,000 geophysical logs for inclusion in the BRACS database in East Texas for the eastern portion of the Yegua-Jackson, Sparta, Queen City, and Carrizo-Wilcox aquifers.

How can we use the information?

Completed studies indicate an estimated 3.8 billion acre-feet of total brackish groundwater volumes in storage with total dissolved solids concentrations between 1,000 and 10,000 mg/L. This refined estimate is much more than the initial estimate from a 2003 contract study of 2.7 billion acre-feet.

The scientific work conducted in BRACS studies and House Bill 30 zone designations is valuable because the entire aquifer is mapped and characterized using all publicly available water well reports, geophysical well logs, and aquifer data. Stakeholders can use the BRACS studies to better understand the potential for brackish groundwater resources in their areas of interest and stakeholders within a designated brackish groundwater production zone can apply for a brackish production permit with the local groundwater conservation district.

More Information

To learn more about the TWDB's BRACS activities, please visit www.twdb.texas.gov/groundwater/BRACS.

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