

# **Hydrogeochemical Evaluation of the Texas Gulf Coast Aquifer System and Implication for Developing Groundwater Availability Models**

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## **ABSTRACT**

Detailed mapping of geochemical data was performed to help assess the conceptual flow model for the Gulf Coast Aquifer System by evaluating lines of evidence for groundwater mixing, flow paths, and ages. The geochemical data and maps were used to evaluate the conceptualization and development of the following four groundwater models: the Northern Gulf Coast Aquifer System Groundwater Availability Model (GAM), the Central Gulf Coast Aquifer System GAM, the Groundwater Management Area (GMA) 16 Alternative Groundwater Model, and the Lower Colorado River Basin (LCRB) model. These four models have been used in Texas to support regional water resource planning. The analysis of these models include comparisons of their water budgets, particle tracks, recharge rates, and aquifer properties for transects where maps have been developed for ions, ion ratios, hydrogeochemical facies, stable isotopes, and groundwater ages based on  $^{14}\text{C}$ . Our presentation provides recommendations for updating and developing regional groundwater flow models for representing updip and down-dip flow boundaries, of the spatial distribution and magnitude of recharge, of rivers and streams, groundwater age, and geological formations.