

Stratigraphy of the Evangeline and Jasper Aquifers in Parts of Montgomery and Harris Counties, Texas

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Abstract

The Texas Water Development Board is conducting studies to support the development of aquifer storage and recovery (ASR) projects in Texas. This study investigates the stratigraphy of two hydrogeologic units of the Gulf Coast Aquifer, the Evangeline and Jasper aquifers, in portions of Montgomery and Harris counties. This stratigraphic analysis is the first part of an aquifer characterization to support a planned ASR water management strategy for the San Jacinto River Authority (SJRA). The Jasper aquifer is upper Oligocene to middle Miocene and includes the Oakville Sandstone and the Lower Lagarto Formation. The Evangeline Aquifer overlies the Jasper Aquifer and is separated from it by the Burkeville Confining Unit. The Evangeline aquifer is middle to upper Miocene and is comprised of the Upper Lagarto and Lower and Upper Goliad formations. These units are primarily thick sequences of deltaic and estuarine sandstones and mudstones. These units were correlated using geophysical well logs collected from several publicly available sources. Stratigraphic tops were used to create surfaces that will form the framework of the aquifer characterization. The characterization will also include lithologic interpretation using geophysical well logs and driller's descriptions from well reports. Water quality will also be part of the aquifer characterization and will include parameters important to consider for ASR operations and well design. The results of this study will assist the SJRA in future water management strategy planning and will provide a higher resolution model of the Gulf Coast Aquifer in the study area.