Exploration of West Texas Brackish Groundwater to Supply Fracking Fluids for the Bone Spring Play

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The oil boom has returned to West Texas with exploration of the Bone Spring and the Wolfcamp oil/gas plays. Development of these non-conventional plays requires large volumes of water (millions of gallons per well) to hydro-fracture (frack) the organic rich silt-stones and shales. Potable water (1,000 mg/l) has been used to frack these wells, tapping an already limited supply of useable groundwater. State funded water planning regions E, F and O are all concerned about the magnitude of water production and are presently evaluating the impact of this increased water use on re-gional water resources. The use of brackish water (1,000 to 10,000 mg/l) would be more publically acceptable and may be economically beneficial.

The Bone Spring Play exploration is presently focused in the vicinity of the Reeves, Ward and Loving counties border. A GIS geo-database of Texas Water Development Board (TWDB) and Texas Department of Regula-tions and Licensing (TDLR) was used for re-connaissance exploration to identify tracts of land with the potential to produce a sustainable supply of brackish water to meet local fracking needs (100 million gallons/month). Screening criteria used to identify potential land tracts included water quality (total dissolved solids, TDS mg/l), aquifer saturated thickness, well production rates, present land use and water truck transportation logistics. Four land tracts (>5,000 acres) in the study area were identi-fied. Aquifers considered included the Pecos Valley Alluvium, Edwards-Trinity Plateau, Dockum and Capitan Reef Complex.