

## **USGS Groundwater Study in the Poso Creek Oil Field Area Shows Variability in the Sealing Properties of Faults and Clay Layers**

A U.S. Geological Survey (USGS) study in the Poso Creek Oil Field area has found variability in how faults and clay layers restrict and enable fluid flows. The study "[Stratigraphic and structural controls on groundwater salinity variations in the Poso Creek Oil Field, Kern County, California, USA](#)" was published in *Hydrogeology Journal*. The USGS is conducting this research under an agreement with the State Water Resources Control Board (State Water Board), in accordance with Senate Bill 4 (Pavley, statutes of 2013), which required the State Water Board to develop and implement a regional groundwater monitoring program. The scientific effort is aimed at characterizing groundwater quality in areas of oil and gas operations.

It is well-known that faults and clay layers can form boundaries keeping liquid from moving between subsurface zones. Faults can act as either a conduit or a seal for fluid flow or both, depending upon the fluid interaction with the subsurface conditions. The potential movement of liquids across faults and clay barriers depend on site-specific characteristics and may not be consistent along the entire length of a fault or clay layer. This study documents both site-specific barriers and conduits to groundwater flow across faults and the Macoma claystone in the Poso Creek Oil Field by comparing groundwater salinity patterns to subsurface stratigraphy and structure. These methods may be used in other oil field settings to more precisely characterize how barriers vary in their sealing properties over large areas.

[Data associated with this report](#) are also available online.

Visit the State Water Board [Oil and Gas Regional Groundwater Monitoring Program](#) and [USGS California Oil, Gas, and Groundwater](#) websites for more information.