

Reservoir Characterization of Oligocene Vedder and Miocene Stevens Sandstones of the Southern San Joaquin Basin, California, for Robust Estimation of Their Simultaneous CO₂-EOR and Storage Potentials.

Charles J. Gomes¹ and Dayanand Saini¹

¹California State University, Bakersfield

ABSTRACT

With advances in CO₂ capture, transport, and injection technologies the process of simultaneous CO₂-EOR and storage becomes more efficient and economically viable for smaller projects. The Vedder and Stevens Sandstones in the Southern San Joaquin Valley have been extensively produced with many fields reaching the residual oil saturation via conventional production practices. These sands have already been identified as top candidates for future CO₂-EOR and storage projects. However, more robust reservoir characterization is needed for more reliable estimations of their simultaneous CO₂-EOR and storage potentials and optimal injection strategies. The arkosic to subarkosic marine shelf deposits of the Vedder Sandstone occur in widespread and thick intervals which varies with the Stevens Sands which have been interpreted as marine turbidite deposits and occur in stacked channelized deposits. The two selected fields have >90% of cumulative production from either the Vedder or Stevens sands with stacked pay intervals providing additional CO₂ storage options. By using petrophysical logs and side wall core data to constrain the heterogeneous reservoir characteristics of the modeled areas' a more accurate geological model can be produced to further refine future dynamic simulation based estimations of their simultaneous CO₂ -EOR and storage potentials under various injection scenarios.