

## **Summit Gas Field, Fayette County, Pennsylvania: Evaluation of Deep Saline Carbon Sequestration Opportunities in the Appalachian Basin**

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The Summit gas field, located along the Chestnut Ridge anticline in southern Fayette County, Pennsylvania, offers an appropriate setting to discuss the carbon sequestration potential of the Oriskany Sandstone, one of the most promising, laterally extensive saline aquifers in the Appalachian basin. Discovered in April 1937 with the drilling of New Penn Development Corporation's No. 1 Leo F. Heyn well, the Summit field produced gas from roughly 300 feet of fractured Devonian Huntersville Chert and Oriskany Sandstone. The Heyn well produced an initial open flow of 1,800 MCF at a depth of 6,611 feet, and represents the first well ever drilled to produce from this combined, chert-sandstone reservoir. The original pool was eventually named North Summit as other Huntersville-Oriskany pools were discovered in separate fault blocks throughout the field. Reported intergranular porosities for these clastic rocks are generally low (1.5 to 3.5 percent), but secondary fracture porosity associated with multiple thrust faults greatly improved the reservoir's productivity. The North Summit pool eventually produced 22 BCF before it was converted to natural gas storage in 1991. Petrologic and petrophysical reservoir characterization data collected on behalf of the Midwest Regional Carbon Sequestration Partnership (MRCSP) serve to augment the North Summit storage pool's existing data set and advance our understanding of the fractured Huntersville-Oriskany reservoir relative to its carbon sequestration potential. Existing geophysical data are used to evaluate whether other Huntersville-Oriskany pools have comparable reservoir properties and storage capacities, thereby showing promise for carbon sequestration.