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### **Geology of Three Natural Carbon Dioxide Reservoirs**

Three large gas fields in North America hold almost pure Carbon Dioxide. The geology and settings of these fields are very different, yet they all have held large amounts of CO<sub>2</sub> gas for long geological periods of time. Each of the fields has an association with an igneous event that controls either its structure or timing of the CO<sub>2</sub> generation. These fields can be used as analogs for sequestration of waste gases.

At McElmo Dome (Colorado), the Leadville Limestone was deposited in shallow marine environment with multiple cycles and multiple depositional limestone facies. The top of the Leadville is erosional. Faults within the field seem to die out in the salt cap rock. The nearby Ute Mountain Laccolith is important to the generation and timing of the CO<sub>2</sub>.

The St. Johns anticlinal field (Arizona-New Mexico) is within the Holbrook Basin. The basin formed during the Pennsylvanian period and filled with Permian sabkha sediments. The deposits consist of fine-grained red beds locally interbedded with limestone and anhydrite. A major northwest reverse fault parallels the anticline. There are two nearby igneous regimes – the White Mountains and the Springerville volcanic fields.

The Jackson Dome within the Mississippi Interior Salt Basin is the dominant structural feature of central Mississippi and was formed as an igneous intrusion in the Late Cretaceous. The CO<sub>2</sub> is found in the Upper Jurassic Smackover shallow water carbonate reservoirs along the NE flank of Jackson Dome. Seals are mudstones within the overlying Jurassic.