

## Triassic Confining Units for Carbon Dioxide Sequestration in Wyoming

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Carbon capture and geologic storage is being investigated throughout Wyoming in preparation for possible carbon emission regulations. At potential storage sites, researchers must identify confining units capable of ensuring that stored carbon dioxide remains in place at depth. A confining system consists of one or more stratigraphic units that prevent the passage of fluid through rock. Using hydrocarbon systems as an analogue, good confining layers are composed of thick, laterally continuous, ductile rocks. The majority of good sealing layers are fine-grained clastic rocks, evaporites, or organic rich units. The Triassic Dinwoody and Permo-Triassic Goose Egg formations are two potential confining layers in Wyoming. The Dinwoody, located in western Wyoming, is a gray or greenish-gray very fine grained sandy and micaceous siltstone. The Dinwoody varies greatly in thickness, ranging from approximately 15 meters thick near Lander, Wyoming to approximately 330 meters thick just south of the Wyoming/Colorado border in Irish Canyon, Colorado. Thin layers of gypsum are present near the top of the section in outcrops, although cross-cutting relationships suggest these layers may have both primary and secondary depositional origins. The Goose Egg, located in central and eastern Wyoming, is red or purplish-red siltstone with minor limestone. It is approximately 100 meters thick near Seminoe and Alcova, Wyoming. It contains up to 30 meters of gypsum near the top of the section, although the true thickness may have changed due to structural deformation. The lithologies, lateral extent, and thicknesses of these formations indicate good potential to geologically sequester carbon dioxide.