MULTIDISCIPLINARY GEOTECHNICAL DATA COLLECTION, CURATION, AND ANALYSIS FOR CONFORMITY WITH THE REGULATORY FRAMEWORK FOR GEOLOGIC CARBON STORAGE IN WYOMING, USA

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Construction and operation of wells for geologic sequestration of carbon dioxide necessitate that they are permitted under the Environmental Protection Agency's (EPA) Underground Injection Control Class VI program requirements. Class VI wells conform to stringent requirements to ensure long-term safety and integrity of the storage site and the protection of Underground Sources of Drinking Water. Entities pursuing Class VI permitting must provide comprehensive geologic site characterization, including regional geologic structure and stratigraphy, aquifer information, reservoir and confining unit geomechanical properties, geochemical analyses, assessment of trapping capacity and mechanisms, and a variety of other of multidisciplinary geotechnical data.

The Wyoming Class VI Site Characterization Database Project is a collaboration between the University of Wyoming, the Wyoming State Geological Survey, and the Wyoming Department of Environmental Quality, which serves as the primary enforcement authority for EPA's Class VI program in the State. The project is focused on developing a geologic site characterization database of geotechnical information that has been compiled and verified from established, public databases/entities and scientific literature to expedite Class VI permitting in Sweetwater County within the Greater Green River Basin of southern Wyoming.

The preliminary suite of compiled data from 14,000 wells includes 8,000 wells with logs and 7,250 wells with formation tops, approximately 70 wells with core data (e.g., X-Ray diffraction, petrographic, and petrophysical data), 2,500 water analyses, 740 seismic events data, and 520 bottom-hole temperature measurements. Future work on—and stemming from—this project will include new core analyses, calculation and interpolation of subsurface temperature gradients, mechanical earth models, geochemical simulations, storage capacity estimation, stratigraphic column generation and correlation, and construction of subsurface maps. Finally, this work will help to inspire and facilitate subsurface data compilation and curation beyond Sweetwater County, Wyoming.