Southwest Regional Partnership on Carbon Sequestration

Quarterly Progress Report

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Executive Summary

Tasks addressed in this quarter were Tasks 1, 2, 4, 5, 6, and 8.

Task 1–Regional Characterization: By the end of the quarter, work on the updated information for NATCARB was completed determining a range for oil and gas reservoir storage in the SWP states.

Task 2–Public Outreach and Education: MediaWiki and the Semantic MediaWiki extension were updated for SWP-Velo and maintenance work on SWP-Velo was performed.

Task 4–Site Characterization and Planning: An updated Core Analysis Plan was produced and a map depicting the structure of the top of the Arbuckle Group was updated. Work continued on the development of STOMP-EOR, focusing on realizing an executing version of the simulator. Modeling work focused on construction of the base pre-CO_2 injection multi-phase flow model in the Morrow B sandstone formation and development of methodology for permeability parameterization at FWU. The SWP simulation workgroup began evaluating whether to adopt the widely-used Ensemble Kalman filter (EnKF) approach. Work on relative permeability, and in particular, field-scale relative permeability, continued this quarter and researchers began designing an efficacy-testing approach. Researchers continued to work with CO_2 -PENS + PSUADE to quantify uncertainty for capacity, injectivity, pressure, migration, and integrating CO_2 -PENS + PSUADE with STOMP/Velo/GS3 products. Work also continued on developing response surfaces for selected risk FEPs. Work plan revisions were completed and resubmitted.

Task 5–Well Drilling and Completion: Well 1310A was drilled, cored, logged, cased, and cemented, after some delays caused by problems in drilling. Researchers preserved samples of core in the field immediately after it arrived at Earth's surface, with helium-containing cannisters.

Task 6–Operational Monitoring and Modeling: Work progressed on a number of fronts in this quarter. SWP researchers began laying out a directory structure for data related to the MVA workgroup/program. CO_2 surface flux monitoring continued, with samples being gathered and analyzed twice in the quarter and Eddy covariance tower development and calibration continued. SWP accounting and verification of injected CO_2 storage into the Morrow Formation at the Farnsworth Unit began on October 1. Geochemical modeling of groundwater in the Morrow Sandstone refined and extended work that had begun in the last quarter; the next phase will consist of building a reactive transport model for the Morrow Sandstone using a simplified geologic model. Water samples were taken at the project site and analyzed. Researchers interpreted a 3D seismic cube using velocity and stratigraphic models in anticipation of generating facies models and a velocity model was generated and tested.

Task 8–Project Management: Chaparral, Schlumberger, and SWP worked on coordination of site activities and timing to optimize data for site characterization and MVA with cost. A venue and program for the annual review meeting November 19–20 were determined, and the meeting was held in Liberal, KS, with visits to the project site and the Ethanol plant in Liberal, the primary FWU CO_2 source. On November 13, Principal Investigators for the SWP attended the IEA Expert Review for the SWP Phase III project on November 13 in Washington DC.