Southwest Regional Partnership on Carbon Sequestration

Quarterly Progress Report

Reporting Period: January 1, 2018–March 31, 2018

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Executive Summary

Task 2–Public Outreach and Education*:* SWP continued to support the Domain Name System (DNS) and registration of the SWP Internet presence. The project team also continued improvements to the MVA data website to allow for more secure and user-friendly SWP-wide access. Researchers continued to maintain SWP-Velo and to implement small changes to the system at the request of the SWP community of users.

Task 6–Operational Monitoring and Modeling: the MVA Database was maintained and updated. In *6.1 Surface and Near-Surface:* Researchers maintained the continuous SP monitoring system at WH1310 and retrieved the data recorded on site in January, removing damaged SP equipment. CO_2 soil flux data was not taken during Q42. Water samples were not collected so there was no general water chemistry analysis. In March, SWP personnel visited FWU to drop off GOST tubes and perform inventory. Sampling contractors were apprised of the need to sample regularly. In *6.2 Subsurface:* SWP did not receive sufficient CO_2 storage summary data to make a full analysis, but injection volumes were on trend with the previous quarter. SWP continued analysis of samples for aqueous and vapor-phase tracers, and composed scripts to assist with data analysis and interpretation for each production well. A micro CT image of a plug of the Morrow-B was acquired to complement existing work. Researchers worked on analysis of the CMR logs completed in well #13-10A prior to CO_2 injection. In *6.3 Seismic:* Reprocessed seismic data was tied to 13-10A, 13-14, and 32-8 with a high degree of confidence; horizons from previous research were re-interpreted on the new reprocessed 3D surface seismic data; edge detection seismic attributes were generated on the Morrow B and deeper horizons and the new borehole geophone array was tested. Work continued on analysis of FWU time-lapse seismic data. In *6.4 Reservoir Modeling:* work continued on three-phase reactive transport simulations for a five-spot pattern based on FWU geology and fluid chemistry. Progress continued with history matching conducted on the current SWP 2017 static model, assessing CO_2 storage and oil recovery within the FWU, with various prediction cases. Relative permeability studies progressed on fluid rock interaction experiments and oil–brine steady state experiments, as well as simulations comparing field-scale to lab-measured relative permeability. Analysis of noble gas data continued and researchers worked on data to be used in the geomodels. In *6.5 Risk Assessment*: researchers continued to assess NRAP tools to quantify the AoR and risk of leakage at FWU. Researchers completed a series of quantitative assessments of potential risks to the Ogallala aquifer due to FWU CO_2 and brine leakage. Progress continued on the Caprock Integrity Report, and on the caprock integrity analysis model.

Task 8–Project Management and Oversight: By the beginning of Q42 the 3D VSP repeat seismic at FWU on the 13-10a well had been completed and data sent to the processors; **this meets a Q1 milestone**. The new passive seismic array for 13-10 and the eddy covariance tower were ready to deploy but SWP continued to wait on final agreements with Schlumberger and Tabula Rasa, the site operator. At the end of the quarter there was still no new field agreement. Work progressed on a new contract with Schlumberger, to address termination of the SCS contract. Work on book chapters continued, while SWP renegotiated the book contract for open access. In February, SWP announced a new hire for the project, for microseismic studies, model building, geological, and geophysical interpretation. Preparations for Budget Period 4 statement of work and budget began, with all groups working on BP4 applications.