

**Southwest Regional Partnership on Carbon Sequestration**

Quarterly Progress Report

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## **Executive Summary**

Tasks addressed in this quarter were Tasks 1, 2, 3, 4, 6, and 8.

In Task 1–Regional Characterization, SWP researchers reformatted the existing ArcGIS 9.3 VBA script to calculate the CO<sub>2</sub> density with depth into a spreadsheet format.

In Task 2–Public Outreach and Education, files were maintained on the project website, including the data-sharing portal. The public website went online early in January 2013.

In Task 3–Permitting and NEPA Compliance, permits required for the 3D Seismic Survey were obtained by the first week of January. All surface and mineral owners in the survey area were contacted and access payments negotiated and paid. By the end of January, five of the six remaining access agreements were signed. The one non-permit area was removed from the survey without significant impact. Permitting agents meet with landowners for damage settlements; exclusively, ruts on the surface from the vibrator trucks moving over the land. There were no issues of significance and damages paid.

In Task 4–Site Characterization and Modeling, work progressed on a number of areas. The SWP Site Characterization Work Group investigated the availability of physical cores from the Farnsworth Unit (FWU) and a literature review was performed on the impact of CO<sub>2</sub> impurities in the injection stream. Researchers continued to investigate the petrophysical properties, especially spatial variation, within the FWU, mainly with variogram analysis. The first risk assessment analysis completed this past quarter was a simple one focused on “first order” evaluation of the model’s ability to identify a leakage point via the measured pressure distribution. SWP researchers worked on refining the MVA plan in preparation for the SWP Kick-Off meeting. A preliminary Gantt chart of MVA activities was created to show timing and frequencies of the various technologies used at FWU.

In Task 6–Operational Monitoring and Modeling, Water and oil samples were taken from FWU wells and analyzed. A study was performed to investigate the relative permeabilities of CO<sub>2</sub> and brine in a sandstone rock sample. For the 3D seismic survey (SCS) of the Farnsworth Unit, survey operations and data acquisition began on January 16 and by the end of January a total of 3185 of the total 4987 (64%) planned survey recording were made. The initial field processing indicated the data acquired was excellent. Work progressed on the subroutines for the STOMP-HYDT-KE simulator and a model of the Buckhalt Sands (Morrow) was constructed.

In Task 8–Project Management, work continued on the Project Management Plan and four Work Plans: MVA, Characterization, Simulation, and Risk. An open-source online project management software was investigated. The NMT/Chaparral site contract underwent extensive work during this quarter. On January 10, a meeting was held at the PRRC/NMT in Socorro between PRRC and Chaparral NMT/CELLC to resolve contract issues, and significant progress was made. The management team continued with limited General Administrative/Management Activities in anticipation of the full projecting starting in the near future. This work was required to allow the project to begin rapidly when approved. The SWP FWU Site Kick-off Meeting was set for April 9-10 at the Quail Springs Holiday Inn in OK City; presentations and work groups were finalized in this quarter..

## **Task 1 Refine Regional Characterization**

### ***Subtask 1.4 Continued Assessment of Regional Geologic Potential***

SWP researchers reformatted the existing ArcGIS 9.3 VBA script to calculate the CO<sub>2</sub> density with depth into a spreadsheet format. The VBA script does not work properly under ArcGIS 10. Using a spreadsheet instead of the script has a few advantages. It allows for different geothermal gradients to be used for each of the basins – the script had the geothermal gradient hardcoded into it. Where sufficient data are available, the gradient can be spatially varied within a basin as well. It also makes the methodology more transparent to the data analyst. However, performing the calculations in a spreadsheet has drawbacks too. The measurement units for several of the input variables differ between the CO<sub>2</sub> density script and the NATCARB atlas. The spreadsheet is more error prone converting between the units than an automated script is. Also the number of records to work with in the spreadsheet is very large. A script will be much more efficient for large numbers of records.

## **TASK 2 Public Outreach and Education**

### ***Subtask 2.2 Project Website***

The SWP website team continued to maintain the DNS and registration of the SWP websites (southwestcarbonpartnership.org, swpartnership.org, southwestpartnership.org), subdomains (www, files, meetings, forum, etc) and satellite domains (ccstrainingcenter.org, ccstrend.org). The satellite domains, including the data-sharing portal (<http://files.southwestcarbonpartnership.org>) will continue to be hosted on University of Utah servers, at least for the foreseeable future.

The public website went online in early January 2013 at <http://www.southwestcarbonpartnership.org>.