



**Plains CO₂ Reduction (PCOR) Partnership Monthly Update
November 1–30, 2011**

PHASE III ACTIVITIES

Task 1 – Regional Characterization (Wesley D. Peck)

Highlights

- Continued efforts on the revised Atlas (4th edition), and the first in-house management review is complete.
- Organized and uploaded the geospatial data used in various PCOR Partnership activities to a central geodatabase location to allow for more efficient sharing of the data among the Energy & Environmental Research Center (EERC) staff.
- Began preparation of an overview of the PCOR Partnership Program for an upcoming presentation on December 7, 2011, to the “Introduction to Geographic Information Systems (GIS)” class at North Dakota State University in Fargo, North Dakota.
- Attended and presented at the Nebraska Public Power District’s (NPPD’s) Power Summit (www.nppd.com/our_community/environment/additional_files/power_summit.asp) on November 16 in Lincoln, Nebraska.
- Continued efforts on the Rival Field characterization, including the following:
 - Continued drafting Deliverable D5, second target area completed, due March 2012.
 - Held a conference call with TAQA to discuss ongoing work.
 - Began planning and creating Rival posters for the American Association of Petroleum Geologists (AAPG) 2012 conference.

Task 2 – Public Outreach and Education (Daniel J. Daly)

Highlights

- Notified Prairie Public Broadcasting (PPB) of the evolving schedule for initiating drilling at the Bell Creek site, and revised filming schedules accordingly.
- Attended and presented at the PPB Prairie Energy & Carbon Teacher Training Institute on November 18 and 19 in Grand Forks, North Dakota.
- Continued efforts to finalize the Fort Nelson poster (D26).
- Continued efforts to update the public Web site (D13, due July 2012). Continued efforts to implement use of the outreach tracking database.

- Continued to develop outreach materials to address natural storage of CO₂, gas field chemical composition, unconventional oil and gas resources, and related topics.
- Reviewed a survey under development by the Water Working Group (WWG), and provided comments.
- On November 1, sent a set of comments to the Outreach Working Group (OWG) regarding materials developed for the Message Mapping Workshop held November 17, 2011, at the Carbon Storage Infrastructure Annual Review Meeting held in Pittsburgh, Pennsylvania.
- Provided feedback on draft “needs” and “path forward” documents for outreach developed at the Society of Petroleum Engineers (SPE, Europe/North Africa/Middle East) carbon capture and storage (CCS) forum held October 9–14, 2011, in Vilamoura, Portugal.

Task 3 – Permitting and NEPA (National Environmental Policy Act) Compliance (Lisa S. Botnen)

Highlights

- Completed review of the proposed rule changes to North Dakota Administrative Code §43-05-01, Geologic Storage of Carbon Dioxide, and provided comments to the North Dakota Industrial Commission (NDIC).
- Continued review of the Canadian Standards Association draft proposal for geologic storage.
- Continued efforts on the Lignite Phase II site closure and reclamation, including the following:
 - All subcontracted site work is complete, including plugging and reclamation.
 - Harris Construction will soon submit an invoice.
 - Submitted the North Dakota Department of Mineral Resources Form 7 for plugging and abandoning. A report on activity is in progress.
 - Spraying to control Canadian thistle will be considered next spring.
 - Traveled to the Lignite field validation site near Kenmare, North Dakota.

Task 4 – Site Characterization and Modeling (James A. Sorensen)

Highlights

- Modeling staff attended Computer Modelling Group’s “Unconventional Gas Modelling with IMEX and GEM” in Houston, Texas.
- Bell Creek test site activities included the following:
 - Participated in a conference call on November 2 with Denbury to discuss core analysis.
 - Continued development of the core analysis plan.
 - Continued work on processing the information gathered from the visit to the Montana Board of Oil and Gas Conservation offices in Billings, Montana. The wireline logs that were scanned are now being digitized into LAS format.
- Fort Nelson test site activities included the following:
 - Continued preparation of a technology assessment on the geomechanical modeling options available.
 - Continued work on the geomechanical model.
 - Continued planning for the quarterly Fort Nelson project meeting scheduled for December 13 and 14 in Calgary, Alberta, Canada, and prepared a draft agenda.

- Continued development of the scopes of work for each of the key activities to be undertaken by the EERC over the next 12 months.
- Held in-house Fort Nelson project update meetings on November 4 and 21.
- Held in-house meetings to discuss the upcoming quarterly meeting on November 22 and 29.
- Continued work on the development of the next iteration of the petrophysical model for the Fort Nelson area.
- Discussed the Fort Nelson geologic model in-house on November 2.
- Continued development of the monitoring, verification, and accounting (MVA) plan.
- Continued finalization of a draft report presenting the results of geochemical experiments conducted over the course of 2009–2011.
- Continued preparation of the site characterization report (D65, due December 2011).

Task 5 – Well Drilling and Completion (John A. Hamling)

Highlights

- Participated in Bell Creek update meetings on November 2 and 28 to discuss the monitoring well; surface and deep MVA plans; status of modeling; lidar data; and upcoming deliverables.
- Completed the first surface water, groundwater, and soil gas-monitoring baseline sampling trip held November 1–10, 2011; 21 water samples and 110 soil gas samples were collected, which included soil gas samples at all injection and production well sites in the Phase 1 area, 10 interspaced samples, and six samples per development phase in Phases 2–7.
- Completed the second soil gas-sampling trip targeting plugged and abandoned (P&A) wells within and surrounding the Bell Creek oil field on November 28 – December 1; approximately 170 gas samples from ~55 P&A wells were collected utilizing a three-spot pattern in addition to field blanks and repeat samples.
- Attended the National Ground Water Association Ground Water Expo on November 28 – December 1 in Las Vegas, Nevada.
- Continued to analyze and archive MVA baseline results in anticipation of a preinjection baseline report.
- Continued planning core analysis activities; selected core analysis provider.
- Continued work in material procurement and design of permanent downhole monitoring equipment for the monitoring well.
- Selected a casing-conveyed perforating service company and continued coordinating activities.
- Held weekly conference calls with Denbury to discuss well drilling and completion operations.
- Continued preparation work in anticipation of the drilling and completion of a monitoring well which is anticipated to spud in early December.
- Held a predrilling and weekly operations conference call with Denbury and third-party service providers to discuss logistical issues and concerns.
- Continued to plan travel to the Bell Creek Field on December 5 to observe seismic source testing and meet with Denbury geophysical staff.

Task 6 – Infrastructure Development (Melanie D. Jensen)

Highlights

- Continued testing the interactive technology tree on the PCOR Partnership Decision Support System (DSS, © 2007–2011 EERC Foundation).
- Began work on an interactive compression technology tree for the DSS.
- Reviewed the “CO₂ Capture” section of the upcoming edition of the PCOR Partnership Atlas.
- Attended and presented at the NPPD Power Summit on November 16, in Lincoln, Nebraska.
- Continued to perform various runs of the Integrated Environmental Control Model as part of information gathering to answer a PCOR Partnership partner’s question.

Task 7 – CO₂ Procurement (John A. Harju)

Highlights

- Participated in ongoing project discussions with Denbury Onshore LLC.

Task 8 – Transportation and Injection Operations (Melanie D. Jensen)

Highlights

- Efforts were made to set up a conference call with Denbury site engineers to discuss the task activities in more detail.

Task 9 – Operational Monitoring and Modeling (Charles D. Gorecki)

Highlights

- Held a monthly in-house modeling and simulation meeting.
- Continued to review course materials from “Practical Reservoir Simulation” to help connect the geologic side of modeling with simulation and history matching.
- Continued Bell Creek site activities, including the following:
 - Worked on revisions to the report on subnormal pressure mechanisms in the Bell Creek Field.
 - Continued work on history matching.
 - Continued efforts on the Bell Creek simulation report.
 - Participated in in-house update meetings on November 2 and 28.
 - Created cross sections through the well site with raster logs, and prepared for coring and pressure sensor placement.
 - Updated PETRA database with lidar data, and began drafting an outline of the fieldwide modeling plan.

Task 10 – Site Closure (to be announced [TBA])

- This task is anticipated to be initiated in Quarter 1 – Budget Period (BP) 5, Year 9 (October 2015).

Task 11 – Postinjection Monitoring and Modeling (TBA)

- This task is anticipated to be initiated in Quarter 1 – BP5, Year 9 (October 2015).

Task 12 – Project Assessment (Katherine K. Anagnost)

- Began work on the project assessment report (D57) for the period October 1, 2010 – September 30, 2011, due December 31, 2011.

Task 13 – Project Management (Charles D. Gorecki)

Highlights

- Held a conference call to discuss the PCOR Partnership Technical Advisory Board (TAB).
- Began preparations for the inaugural TAB meeting tentatively scheduled for June 2012.
- Submitted three papers on November 21, and began work on two presentations and a poster for the 2012 Carbon Management Technology Conference.
- Provided updates to the National Energy Technology Laboratory PCOR Partnership Phase III factsheet.
- Attended and presented at the “Carbon Storage Program Infrastructure Annual Review Meeting” on November 14–17, in Pittsburgh, Pennsylvania.
- Held an in-house discussion on the PCOR Partnership Advisory Board, including potential board member invites and meeting venues.
- Held a task leader meeting on November 21. Topics discussed included upcoming conferences and abstract deadlines (11th Annual Conference on Carbon Capture, Utilization, and Storage; and GHGT11) and updates from each task leader.
- Continued efforts toward populating and updating the partners’ database, which was programmed in-house.
- Continued the site and date selection process for the 2012 annual meeting. Preliminary plans are to hold it in September.
- Deliverables and milestones completed in November:
 - October monthly update
 - Task 14: M23 – Monthly WWG Conference Call Held

Task 14 – RCSP WWG Coordination (Ryan J. Klapperich)

Highlights

- Distributed minutes from the October conference call.
- Held the November conference call on November 30.
- Began preparing for the December conference call.
- Continued internal review of Stakeholder Group Outreach Survey. Plan to distribute survey to the working group to solicit comments.

Task 15 – Further Characterization of the Zama Acid Gas EOR, CO₂ Storage, and Monitoring Project (James A. Sorensen)

Highlights

- Continued work on the modification of the dynamic model and ran several simulations for obtaining an initial history match.
- Consultant (and former Apache employee) met with Apache personnel on November 24 in Calgary to discuss Zama project next steps. An update from that meeting is anticipated soon.
- Held an in-house discussion on the Zama simulation on November 2.

Task 16 – Characterization of the Basal Cambrian System (Wesley D. Peck)

Highlights

- Examination of previously unexamined boxes of core has revealed new rock that is suitable for taking samples for relative permeability tests. This effort will add nicely to the limited set of information available for the rocks of the basal Cambrian system in North Dakota. Project is progressing according to schedule and budget.
- Initial 2-D models have been developed. Project is progressing according to schedule and budget. Next step is to create 3-D models.
- Presented a poster entitled “CO₂ Storage Characterization of the Basal Aquifer System in the Northern Plains – Prairie Region of North American” at the Carbon Storage Program Infrastructure Annual Review Meeting on November 16 in Pittsburgh, Pennsylvania.
- Continued work on scanning electron microscope and baseline permeability measurements for the characterization activities occurring on the formation.
- Held an in-house “next step” meeting on November 10.
- Held an in-house project update meeting on November 28.

Travel/Meetings

- October 28 – November 13 and November 27 – December 3, 2011: Traveled for soil gas and groundwater sampling to the Bell Creek oil field located in Montana.
- November 7–10, 2011: Attended the Midwest Geological Sequestration Consortium Science Conference in Champaign, Illinois.
- November 14, 2011: Traveled to the Lignite field validation site near Kenmare, North Dakota.
- November 14–17, 2011: Attended Computer Modelling Group’s “Unconventional Gas Modelling with IMEX and GEM” in Houston, Texas.
- November 14–17, 2011: Participated in the Carbon Storage Program Infrastructure Annual Review Meeting held in Pittsburgh, Pennsylvania.
- November 14–20, 2011: Visited the Montana Board of Oil & Gas Conservation to scan well logs in Billings, Montana.
- November 15–17, 2011: Presented at NPPD Power Summit in Lincoln, Nebraska.
- November 28 – December 1, 2011: Attended the National Ground Water Association Ground Water Expo in Las Vegas, Nevada.

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