



15 North 23rd Street — Stop 9018 / Grand Forks, ND 58202-9018 / Phone: (701) 777-5000 Fax: 777-5181 Web Site: www.undeerc.org

January 31, 2011

Ms. Karlene Fine **Executive Director** North Dakota Industrial Commission 600 East Boulevard Avenue State Capitol, 14th Floor Bismarck, ND 58505-0840

Dear Ms. Fine:

Subject: EERC Plains CO₂ Reduction Partnership (PCOR) Phase III Quarterly Technical Progress Report for the Period October 1 – December 31, 2010 Contract Nos. FY08-LX111-162 and G-015-030; EERC Funds 16196 and 15631

Enclosed is a hard copy of the Quarterly Technical Progress Report for the PCOR Partnership Program for Phase III. Also enclosed is a CD-ROM containing the Quarterly Technical Progress Report. A PDF version will also be sent via e-mail.

If you have any questions, please contact me by phone at (701) 777-5279 or by e-mail at esteadman@undeerc.org.

Sincerely,

Edward N. Steadman PCOR Partnership Program Manager EERC Senior Research Advisor

ENS/sah

Enclosures

c/enc: Michael Jones, Lignite Energy Council

Brent Brannan, NDIC Department of Mineral Resources, Oil and Gas Division Lynn Helms, NDIC Department of Mineral Resources, Oil and Gas Division Joe Murphy, North Dakota Department of Commerce

c: Corey Irion, EERC



PLAINS CO2 REDUCTION PARTNERSHIP PHASE III

Quarterly Technical Progress Report

(for the period December 1 –December 31, 2010)

Prepared for:

Karlene Fine

North Dakota Industrial Commission 600 East Boulevard Avenue State Capitol, 14th Floor Bismarck, ND 58505-0840

Contract Nos. FY08-LX111-162 and G-015-030 EERC Funds 16196 and 15631

Prepared by:

Edward N. Steadman John A. Harju Lucia Romuld James A. Sorensen Daniel J. Daly Melanie D. Jensen Lisa S. Botnen Wesley D. Peck Steven A. Smith Charles D. Gorecki Tami Jo Votava Katherine K. Anagnost

Energy & Environmental Research Center University of North Dakota 15 North 23rd Street, Stop 9018 Grand Forks, ND 58202-9018

January 2011

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PLAINS CO₂ REDUCTION PARTNERSHIP PHASE III Quarterly Technical Progress Report October 1 – December 31, 2010

EXECUTIVE SUMMARY

The Plains CO₂ Reduction (PCOR) Partnership is one of seven Regional Carbon Sequestration Partnerships competitively awarded by the U.S. Department of Energy National Energy Technology Laboratory in 2003 as part of a national plan to mitigate greenhouse gas emissions. The PCOR Partnership is led by the Energy & Environmental Research Center at the University of North Dakota and continues to include stakeholders from the public and private sector in Phase III. The PCOR Partnership region includes all or part of nine U.S. states and four Canadian provinces.

Phase III, the Development Phase, a 10-year effort (2007–2017), is an extension of the Characterization (Phase I) and Validation (Phase II) Phases. The Phase III efforts of the PCOR Partnership include two large-volume demonstration tests—one in Canada and one in the United States—that focus on injecting CO_2 into deep geologic formations for CO_2 storage. Budget Period 4 (Years 3–8 of Phase III) began October 1, 2009.

This progress report presents an update of Phase III PCOR Partnership activities from October 1, 2010, through December 31, 2010.

Activities leading to the initiation of CO_2 injection at both demonstration sites continued during this reporting period. The PCOR Partnership continued working with its partner and site owner, Spectra Energy, on the Fort Nelson demonstration project in British Columbia, Canada, including the initiation of simulation history matching activities and the next-round risk assessment. Negotiations continued with Denbury Resources, Inc., the PCOR Partnership's partner and site owner in the Bell Creek oil field in southeastern Montana, and included a meeting in October with Denbury Resources, Inc., in Plano, Texas, and the establishment of a file transfer portal for the exchange of data.

In October, the PCOR Partnership held its annual meeting and workshop, which attracted 74 attendees representing 45 organizations from 16 states, the District of Columbia, and four Canadian provinces. At this meeting, a draft "Current Status of CO₂ Capture Technology Development and Application" was provided for partners' review, along with a Regulatory Roundup, covering U.S. Environmental Protection Agency activities and general regulatory actions throughout the PCOR Partnership region. A new documentary entitled "Global Energy and Carbon: Tracking Our Footprint," produced in conjunction with Prairie Public Broadcasting, premiered on October 18, and was distributed to all partners. Progress continued on a detailed characterization effort of the Rival oil field located in north-central North Dakota. In addition, efforts to further characterize additional target formations in the Williston Basin continued, while the planning and scheduling of the wellbore integrity laboratory experiments were finalized for the ongoing work at the Zama, Alberta, Canada, field site.



PLAINS CO₂ REDUCTION PARTNERSHIP PHASE III Quarterly Technical Progress Report October 1 – December 31, 2010

INTRODUCTION

The Plains CO₂ Reduction (PCOR) Partnership is one of seven regional partnerships operating under the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) Regional Carbon Sequestration Partnership (RCSP) Program. The PCOR Partnership is led by the Energy & Environmental Research Center (EERC) at the University of North Dakota (UND) in Grand Forks, North Dakota, and includes stakeholders from the public and private sector. The membership as of December 31, 2010, is listed in Table 1. The PCOR Partnership region includes all or part of nine states (Iowa, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wisconsin, and Wyoming) and four Canadian provinces (Alberta, British Columbia, Manitoba, and Saskatchewan).

The RCSP Program is part of NETL's Carbon Sequestration Program and is a government–industry effort tasked with determining the most suitable technologies, regulations, and infrastructure needs for carbon capture and storage (CCS) on the North American continent.

The RCSP Program initiative is being implemented in three phases:

- Phase I Characterization Phase (2003–2005): characterized opportunities for carbon sequestration
- Phase II Validation Phase (2005–2009): conducted small-scale field validation tests
- Phase III Development Phase (2007–2017): involves large-volume carbon storage demonstration tests (Figure 1)

Phase III is divided into three budget periods (BPs), running from October 1, 2007, to September 30, 2017:

BP3: October 1, 2007 – September 30, 2009 BP4: October 1, 2009 – September 30, 2015 BP5: October 1, 2015 – September 30, 2017 Note: BP1 and BP2 were effective in Phase II.



Figure 1. RCSP development phase: scaling up toward commercialization (figure taken from DOE NETL).

Table 1. PCOR Partnership N	Iembership Phase III (October	1, 2007 – Present, inclusive)
DOE/NETL	Great Northern Project Development,	North Dakota Industrial Commission
UND EERC	LP	Oil and Gas Research Council
Abengoa Bioenergy New Technologies	Great River Energy Hess Corporation	North Dakota Natural Resources Trust
Air Products and Chemicals	Halliburton	North Dakota Petroleum Council
Alberta Department of Energy	Huntsman Corporation	North Dakota Pipeline Authority
Alberta Department of Environment	Interstate Oil and Gas Compact	Otter Tail Power Company
Alberta Innovates – Technology Futures	Commission	Oxand Risk & Project Management
ALLETE	Indian Land Tenure Foundation	Solutions
Ameren Corporation	Iowa Department of Natural Resources	Petroleum Technology Research Centre
American Coalition for Clean Coal	Lignite Energy Council	Petroleum Technology Transfer Council
Electricity	Manitoba Geological Survey	Pinnacle, a Halliburton Service
American Lignite Energy	Marathon Oil Company	Prairie Public Broadcasting
Apache Canada Ltd.	MEG Energy Corporation	Pratt & Whitney Rocketdyne, Inc.
Aquistore	Melzer Consulting	Ramgen Power Systems, Inc.
Baker Hughes Incorporated	Minnesota Power	RPS Energy Canada Ltd.
Basin Electric Power Cooperative	Minnkota Power Cooperative, Inc.	Saskatchewan Ministry of Industry and
Biorecro AB	Missouri Department of Natural	Resources
Blue Source, LLC	Resources	SaskPower
BNI Coal, Ltd.	Missouri River Energy Services	Schlumberger
British Columbia Ministry of Energy,	Montana–Dakota Utilities Co.	Shell Canada Energy
Mines, and Petroleum Resources	Montana Department of Environmental	Spectra Energy
British Columbia Oil and Gas	Quality	Suncor Energy Inc.
Commission	National Commission on Energy Policy	TAQA North, Ltd.
Computer Modelling Group, Inc.	Natural Resources Canada	TGS Geological Products and Services
Dakota Gasification Company	Nebraska Public Power District	University of Alberta
Denbury Resources Inc.	North American Coal Corporation	University of Regina
Eagle Operating, Inc.	North Dakota Department of Commerce	Weatherford Advanced Geotechnology
Eastern Iowa Community College	Division of Community Services	Western Governors' Association
District	North Dakota Department of Health	Westmoreland Coal Company
Enbridge Inc.	North Dakota Geological Survey	Williston Basin Interstate Pipeline
Encore Acquisition Company	North Dakota Industrial Commission	Company
Energy Resources Conservation Board/	Department of Mineral Resources, Oil	Wisconsin Department of Agriculture,
Alberta Geological Survey	and Gas Division	Trade and Consumer Protection
Environment Canada	North Dakota Industrial Commission	Wyoming Office of State Lands and
Excelsior Energy Inc.	Lignite Research, Development and	Investments
	Marketing Program	Xcel Energy

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The overall mission of the Phase III program is to 1) gather characterization data to verify the ability of the target formations to store CO_2 , 2) facilitate the development of the infrastructure required to transport CO_2 from sources to the injection sites, 3) facilitate development of the rapidly evolving North American regulatory and permitting framework, 4) develop opportunities for PCOR Partnership partners to capture and store CO_2 , 5) establish a technical framework by which carbon credits can be monetized for CO_2 stored in geologic formations, 6) continue collaboration with other RCSPs, and 7) provide outreach and education for CO_2 capture and storage stakeholders and the general public.

In Phase III, the PCOR Partnership is building on the information generated in its Characterization (Phase I) and Validation (Phase II) Phases. The PCOR Partnership plans to fully utilize the infrastructure of its region to maximize CO_2 injection volumes. A programmatic RCSP Phase III goal is the injection of approximately 1 million tons of CO_2 a year into at least one regionally significant geologic formation. Each of the RCSP's large-volume injection tests is designed to demonstrate that CO_2 storage sites have the potential to store regional CO_2 emissions safely, permanently, and economically for hundreds of years.

The PCOR Partnership is working toward the establishment of two demonstration sites. The sites are located 1) in the Bell Creek oil field in Powder River County in southeastern Montana and 2) near Spectra Energy's Fort Nelson gas-processing facility, situated near Fort Nelson, British Columbia, Canada (Figure 2).

The PCOR Partnership's objectives for the demonstration projects are as follows: 1) conduct a successful field demonstration to verify that the region's large number of oil fields have the potential to store significant quantities of CO_2 in a safe, economical, and environmentally responsible manner and 2) conduct a successful demonstration at the Fort Nelson site to verify the economic feasibility of using the region's carbonate saline formations for safe, long-term CO_2 storage. During Phase III, the PCOR Partnership will continue to refine storage resource estimates and evaluate other factors relevant to regional storage goals.

The PCOR Partnership plans to achieve its Phase III mission through a series of 14 tasks: 1) Regional Characterization, 2) Public Outreach and Education, 3) Permitting and National Environmental Policy Act (NEPA) Compliance, 4) Site Characterization and Modeling, 5) Well Drilling and Completion, 6) Infrastructure Development, 7) CO₂ Procurement, 8) Transportation and Injection Operations, 9) Operational Monitoring and Modeling, 10) Site Closure, 11) Postinjection Monitoring and Modeling, 12) Project Assessment, 13) Project Management, and 14) RCSP Water Working Group Coordination. See Table 2 for the responsibility matrix of these fourteen tasks.

It should be noted that Tasks 10 and 11 will not be initiated until BP5.



Figure 2. PCOR Partnership Phase III demonstration sites.

PROGRESS OF WORK

Task 1 – Regional Characterization

Significant accomplishments for Task 1 for the reporting period included the following:

- Attended the 2010 RCSP Annual Review Meeting in Pittsburgh, Pennsylvania, and participated in a geographic information system (GIS) working group side meeting and a Fort Nelson Carbon Capture and Storage (CCS) Feasibility Project dinner meeting.
- Participated in the 2010 PCOR Partnership Annual Meeting and Workshop held October 19–21, 2010, in Minneapolis, Minnesota, including presenting an update on the Decision Support System (DSS, ©2007–2010 EERC Foundation) and awarding the 2nd Annual DSS User of the Year award.
- Attended and presented at the North American Carbon Atlas Partnership (NACAP) meeting in Ottawa, Ontario, Canada, on November 2.
- In a follow-up to the NACAP meeting, drafted for review and comments a 3-page summary of methodologies used for CO₂ storage resource capacity calculations.

Table 2. Phase III Responsibility Matrix

Phase III Task Description	Task Leader
Task 1 – Regional Characterization	Wesley D. Peck
Task 2 – Public Outreach and Education	Daniel J. Daly
Task 3 – Permitting and NEPA Compliance	Lisa S. Botnen
Task 4 – Site Characterization and Modeling	James A. Sorensen
Task 5 – Well Drilling and Completion	Steven A. Smith
Task 6 – Infrastructure Development	Melanie D. Jensen
Task 7 – CO_2 Procurement	John A. Harju
Task 8 – Transportation and Injection Operations	Melanie D. Jensen
Task 9 – Operational Monitoring and Modeling	Charles D. Gorecki
Task 10 – Site Closure	TBA
Task 11 – Postinjection Monitoring and Modeling	TBA
Task 12 – Project Assessment	Katherine K. Anagnost
Task 13 – Project Management	Edward N. Steadman
Task 14 – RCSP Water Working Group Coordination	Charles D. Gorecki

- Submitted updated data and images to DOE NETL and NATCARB (the NATional CARBon Sequestration Database and Geographic Information System) for the upcoming third edition of the DOE NETL carbon sequestration atlas.
- Continued planning efforts and development of ideas and new maps for a revised PCOR Partnership Atlas, 4th Edition, due out September 2011.
- Ordered a second printing (3rd Edition, Revised) of the PCOR Partnership Atlas. In the past year, approximately 750 atlases were distributed to partners and nonpartners.
- Continued regional characterization of additional target horizons, e.g., Red River and Dakota Formations, in the Williston Basin.
- Continued efforts to update and improve the information on the DDS, including the following:
 - Added annual meeting information.
 - Updated the home page, "Keep Me Informed" page, and Regulations section.
 - Initiated development of a new value-added tool that would allow for investigation and cross-referencing of downhole techniques used for site characterization and monitoring, verification, and accounting (MVA) activities.
- Work is under way to create a value-added report on the known CO₂ storage opportunities for Iowa.
- Bad weather prevented attendance at the Basal Cambrian Aquifer Kickoff Meeting in Edmonton, Alberta, Canada, on October 28; however, work plans are under development for project initiation.
- Worked collaboratively with Alberta Innovates Technology Futures on an abstract to be submitted to the 10th Annual Conference on Carbon Capture & Sequestration, scheduled for May 2–5, 2011, Pittsburgh, Pennsylvania.
- Progress continues on the detailed assessment of the Rival oil field in north-central North Dakota, including the following:
 - Began creating surfaces in Petrel Model for use in normalization and initial model building.

- Extended the geologic model area to more accurately reflect the depositional environment.
- Selected eight additional horizons lying between the Midale and Frobisher Anhydrite stratigraphic units in 109 wells from the Rival and surrounding field.
- Added 54 Black Slough wells to fill in the model's "void" space.
- Added core analysis from new Black Slough wells.
- Added bulk density and grain density from the core analysis reports.
- Added six more Rival and Portal Field wells to the Petrel Model and picked tops (115 wells in the Petrel Project are being used).
- Worked on an abstract for the American Association of Petroleum Geologists (AAPG) Rocky Mountain Section Meeting on the geology of the Rival Field.
- Acquired data for use in the petrophysical model.
- Began writing a background and history of the field for the Rival Field case study.
- Began formulating a laboratory testing plan for Rival Field core work.
- Participated in a progress and planning meeting on December 1 with TAQA personnel in Calgary, Alberta, Canada.
- Efforts conducted as part of the continuing work at the Zama, Alberta, Canada, field site included the following:
 - Acquired new data sets from Apache Canada Ltd. that include core analyses, wireline logs, facies distributions of the pinnacles, etc., and began incorporating this new information into our currently existing static model. A quality assurance/quality control check will be performed upon completion of data entry.
 - Continued discussions with Halliburton in an effort to get the cement for our proposed wellbore integrity work.
 - Continued efforts on the interpretation of facies distribution, reservoir geometry, and geo-statistical distributions for the static modeling being conducted.
 - Finalized the planning and scheduling of the wellbore integrity laboratory experiments.
 - Requested samples of cap rock and wellbore cements to carry out laboratory activities.
 - Completed preliminary static geological modeling. This model will be updated as datasets are acquired from Apache Canada.
 - Developed methodologies, procedures, and time lines to conduct laboratory experiments to determine mineralogical and strength changes that may occur as wellbore cements and casing materials are exposed to acid gas.
 - Contacted Baker Hughes to determine the best practices for conducting a vertical seismic profiling (VSP) survey at Zama.

Actual or anticipated problems or delays during the reporting period included the following:

• Sent a letter proposal to DOE on November 23, 2010, requesting relocation of Subtask 1.4 – Further Characterization of the Zama Acid Gas EOR, CO₂ Storage, and Monitoring Project to a new task (Task 15) under the same title. No overall budget modifications would be required. The time line would remain the same; i.e., work was initiated in July 2010 and would continue through April 2012.

Task 2 – Public Outreach and Education

Significant accomplishments for Task 2 for the reporting period included the following:

- Twenty-seven EERC employees attended seven meetings/conferences and two workshops, resulting in approximately 6739 external participants that were exposed to the PCOR Partnership name, messaging, and informational materials. Specifically, the PCOR Partnership outreach activities included two poster presentations, and 11 oral presentations. The following quantities of outreach materials were distributed:
 - PCOR Partnership documentary entitled "Nature in the Balance: CO₂ Sequestration" 40
 - PCOR Partnership documentary entitled "Reducing Our Carbon Footprint: The Role of Markets" – 40
 - PCOR Partnership documentary entitled "Out of the Air: Into the Soil" 36
 - PCOR Partnership documentary entitled "Managing Carbon Dioxide: The Geologic Solution" – 33
 - PCOR Partnership documentary entitled "Global Energy and Carbon: Tracking Our Footprint" – 374
 - PCOR Partnership Atlas 3rd Edition, Revised 60
 - PCOR Partnership product list 68
- A poster entitled "Outreach Best Practices: A Practical Foundation for the Future" was prepared and presented on behalf of the RCSP Outreach Working Group at the RCSP Annual Review Meeting in Pittsburgh.
- Provided verbal and written comments on the World Resources Institute's draft final 105-page document entitled "Guidelines for CCS Outreach."
- Coordinated and participated in the Carbon Capture and Storage Project Development Workshop (featuring the I-Wheel®) held on the afternoon of October 19 in Minneapolis, Minnesota.
- On October 22, the EERC Marketing Research Manager attended the annual Education Minnesota Professional Conference in downtown St. Paul, Minnesota, as part of an ongoing effort to develop strategies for education outreach across the region.
- Discussed development of a GIS-based system to aid in planning for outreach and technical activities with a representative of the Indian Land Tenure Foundation.
- Discussed the possibility of using PCOR Partnership documentary materials in national-level outreach activities with the American Coalition for Clean Coal Electricity.
- Provided documentary video materials for use by Swedish Television in its segment on CCS featuring Biorecro.
- Participated in discussions with Spectra Energy regarding collaborative outreach activities at the Fort Nelson site.
- The new documentary entitled "Global Energy and Carbon: Tracking Our Footprint" premiered on Prairie Public Broadcasting (PPB) on October 18, 2010. Both an EERC press release and an e-mail announcement to the PCOR Partnership partners were prepared and distributed.
- Promotional efforts continued regarding the documentary entitled "Global Energy and Carbon: Tracking Our Footprint" including:

- On November 24, a DVD was mailed to each partner not in attendance at the annual meeting.
- Efforts continued to prepare streaming video of the documentary for upload to the PCOR Partnership Web site.
- Continued efforts on tracking outreach materials and activities, including:
 - Reviewed database options (create or buy off-the-shelf) to improve efficiency and tracking.
 - Discussed options with PPB for tracking and encouraging broadcast of the documentaries.
 - Prepared an in-house tracking report to make information more readily available.
- Continued investigation and assessment of social media usage (Facebook, Twitter, Flickr, etc.) and its potential use in PCOR Partnership outreach activities.
- Participated in several in-house meetings regarding plans for the next version of the atlas.
- Participated in several meetings (December 3, 16, and 21) with PPB to plan scope of work activities for BP4.
- Fulfilled a request from television station KCLS in Los Angeles for access to the "Reducing Our Carbon Footprint: The Role of Markets" documentary for broadcast in its region.
- Received notification that the National Educational Telecommunications Association, a program service that seeks to enrich public television by delivering one-of-kind documentaries and diverse informational series to every public television station in the country, has scheduled "Global Energy and Carbon: Tracking Our Footprint" for download to public television stations across the continent on January 21, 2011.
- Preparations are under way for a letter and set of instructions to encourage PCOR Partnership partners (outside of the PPB broadcast area) to work with their local public television stations to broadcast the PCOR Partnership documentaries.
- Continued preparation of the Bell Creek test site fact sheet (Deliverable [D]15).

Actual or anticipated problems or delays during the reporting period included the following:

• On October 28, requested an extension to the due date for Deliverable D15 entitled "Bell Creek Test Site – Fact Sheet" from October 31, 2010, to February 28, 2011.

Task 3 – Permitting and NEPA Compliance

Significant accomplishments for Task 3 for the reporting period included the following:

- Attended and presented on North Dakota's framework for CCS at the 6th Annual Clean Carbon Policy Summit & Project in Austin, Texas.
- Attended and participated in the 2010 PCOR Partnership Annual Meeting and Workshop in Minneapolis, Minnesota.
- At the annual meeting, prepared and distributed a handout entitled "Regulatory Roundup," covering U.S. Environmental Protection Agency (EPA) activities, the U.S. Presidential Interagency Task Force on CCS, and general regulatory activity throughout the PCOR Partnership region.

- Continued participation in activities associated with the Interstate Oil and Gas Compact Commission (IOGCC), including:
 - Coordinated a conference call with IOGCC staff to discuss regulatory communication issues.
 - Participated in a conference call of the IOGCC Pipeline Transportation Task Force (PTTF) Executive Committee on November 12.
 - Reviewed and commented on the PTTF report.
 - Attended the IOGCC 2010 Annual Meeting in Tucson, Arizona (http://www.iogcc.state.ok.us/), and participated in an informal breakfast meeting with regulators in attendance from the PCOR Partnership region.
- Participated in a conference call of North Dakota's CO₂ Storage Work Group/Task Force to discuss the upcoming legislative session in North Dakota.
- Participated in a conference call with North Dakota's CCS Task Force on November 8.
- Participated in a Webinar sponsored by the North Dakota Pipeline Authority covering North Dakota's regulatory requirements for pipelines.
- Completed review of Craig Hart's paper on Phase III of the RCSP Program, including financial, legal, and regulatory barriers.
- Participated in an internal meeting to discuss pipeline regulatory issues and began development of a regulatory outline to be included in D85 entitled "Opportunities and Challenges Associated with CO₂ Compression and Transportation During CCS Activities."
- Participated on November 22 in an EPA stakeholder call to discuss finalization of two rules related to the capture and sequestration of carbon dioxide.
- Accepted an invitation to review a manuscript entitled "North Dakota Lignite and Pittsburgh Bituminous Coal: A Comparative Analysis in Application to CO₂ Sequestration" for possible publication in the International Journal of Oil, Gas and Coal Technology.
- Reviewed the performance period and scope of work for the environmental questionnaire completed for the Fort Nelson test site.
- Evaluated whether a National Environmental Policy Act (NEPA) would be necessary for additional characterization and laboratory work under the PCOR Partnership Program.
- Completed review of the new EPA rules that aim to protect drinking water (entitled "Final Rule for Federal Requirements under the Underground Injection Control [UIC] Program for Carbon Dioxide [CO₂] Geologic Sequestration [GS] Wells") and to track the amount of CO₂ sequestered from facilities that carry out GS (entitled "Mandatory Reporting of Greenhouse Gases from Petroleum and Natural Gas Systems [Subpart W] and from Carbon Dioxide Injection and Geologic Sequestration [Subpart RR]").
- Continued to review EPA's GHG Reporting Program Subparts RR (Geologic Sequestration) and UU (Underground Injection of CO₂).
- Initiated plans to attend the Ground Water Protection Council's "Underground Injection Control: THE National Ground Water Protection Program" 2011 Conference scheduled for January 24–26 in Austin, Texas.
- Participated in an Argus Media Webinar entitled "U.S. Environmental Policy: Through the Eyes of the 112th Congress."

- Participated in an EPA Webinar entitled "GHG Reporting Program Webinar: Subpart W (Petroleum and Natural Gas Systems)."
- Participated in the EPA's GHG Reporting Program Webinar: Subparts RR (Geologic Sequestration) and UU (Underground Injection of CO₂).
- Participated in in-house meetings to discuss a communication plan for the Bell Creek project.

Actual or anticipated problems or delays during the reporting period included the following:

• Following a midmonth meeting with Denbury Resources, on October 28 requested an extension of the due date for D28 entitled "Bell Creek Test Site – Environmental Questionnaire" from October 31, 2010, to March 31, 2011. Also requested an extension of the due date for D29 entitled "Permitting Action Plan" from January 31, 2011, to August 31, 2011.

Task 4 – Site Characterization and Modeling

Significant accomplishments for Task 4 for the reporting period included the following:

- Presented on November 8 at the Petroleum Technology Alliance Canada (PTAC) Conference entitled "Towards Clean Energy Production – CO₂ Management for EOR and CCS" in Calgary, Alberta, Canada.
- Bell Creek test site activities included the following:
 - Attended and presented at a meeting with Denbury Resources on October 13 in Plano, Texas.
 - Completed the geomechanical work plan (D87) for the Bell Creek CCS project.
 - Initiation of the transfer of reservoir characterization data from Denbury Resources to an EERC's file transfer portal (FTP) site. Upon transfer, this data will be incorporated into the development of a geologic model for the site.
 - Continued evaluation of outcrop samples that are representative of Bell Creek reservoir rocks. Plans are under way for a series of in-house laboratory tests on three separate facies including:
 - Making thin sections for optical microscopy.
 - Performing x-ray diffraction (XRD) on ground samples.
 - Profilometer for analyzing/validating porosity, pore geometry, and size.
 - Obtain porosity and permeability measurements
 - Conduct CO₂ water relative permeability tests
 - Conduct uniaxial and triaxial compression tests.
 - Perform QEMSCAN analysis for mineralogy of samples.
- Fort Nelson test site activities included the following:
 - Attended and participated in the PCOR Partnership Annual Meeting and Workshop in Minneapolis, Minnesota, including copresenting with Spectra Energy an update on the Fort Nelson CCS Feasibility Project.
 - Completed planning and scheduling of new laboratory experiments to determine the effects of injection on reservoir rock samples from the Fort Nelson exploratory well.

Samples obtained are in the form of cuttings retrieved from the Fort Nelson exploratory well (C-61-E) and will be exposed at low-temperature/high-pressure and high-temperature/low-pressure conditions.

- Participated in a conference call on October 28 with Spectra Energy personnel regarding ongoing activities at the Fort Nelson site in northeastern British Columbia, Canada.
- Traveled to Calgary, Alberta, Canada, and participated in a quarterly Fort Nelson project meeting with Spectra Energy personnel held December 2.
- Initiated development of a sampling and analysis plan for shallow groundwater monitoring of the second exploratory well. (Shallow groundwater sampling and analysis has been under way for the location of the first exploratory well.)
- Continued laboratory work on two sample sets comprised of cuttings from the C-61-E test well drilled in the winter 2008/2009 season.
 - The first 28-day exposure period has been conducted at conditions representative of the near wellbore environment during injection (i.e., low temperature/high pressure).
 - The samples are currently being analyzed using XRD, QEMSCAN, and scanning electron microscopy.
 - Thin sections will be prepared for optical investigation.
 - Fluids used in the experiment are analogous to what is believed to be in the injection formation. These fluids have been analyzed to identify pre-post exposure changes.
- Adjusted the surface of the Slave Point Formation in the June 2010 geologic model for better history matching, with special attention to the Clark Lake A pool to better understand the regional pressure profile.
- Obtained a trial version of Paradigm's GoCad and Skua geologic model building software packages and may acquire license to aid in geologic model development.

Actual or anticipated problems or delays during the reporting period included the following:

• On November 1, the DOE NETL project manager approved extensions to the due dates for D31 entitled "Bell Creek Test Site – Geological Characterization Experimental Design Package" and M28 entitled "Bell Creek Geological Experimental Design Package Completed" from November 30, 2010, to January 31, 2011.

Task 5 – Well Drilling and Completion

Significant accomplishments for Task 5 for the reporting period included the following:

• As part of the MVA planning, samples analogous to the Muddy Sandstone (the reservoir at Bell Creek) have been obtained and examined for petrophysical and geochemical attributes. These activities will aid in the design and selection of appropriate MVA technologies utilized at the site.

- On November 22, provided comments on the working draft of the NETL "Best Practices Manual for Drilling, Well Installation, Permitting, Operations, Mitigation and Closure in Deep Geologic Formations."
- Composed a set of condensed notes and a requirements checklist for CO₂ injection projects pertaining to the characterization and MVA activities required by EPA's UIC Class VI injection well requirements released on November 20, 2010, and which go into effect January 1, 2011, to ensure all future U.S.-based PCOR Partnership work remains in compliance with EPA regulations, and so that MVA, characterization, and CO₂ injection plans can quickly be designed and evaluated in terms of said regulations.

Task 6 – Infrastructure Development

Significant accomplishments for Task 6 for the reporting period included the following:

- Attended and participated in the 2010 PCOR Partnership Annual Meeting and Workshop held in Minneapolis, Minnesota.
- Drafted a summary of the annual meeting roundtable discussion by combining all of the notes taken during the discussion.
- Provided a desk copy of the draft "Current Status of CO₂ Capture Technology Development and Application" for partners' review at the annual meeting.
- Evaluated comments obtained from three external reviewers of the capture technologies overview report and determined a course of action with respect to the suggestions.
- Responded to a partner's request for a summary of capture technologies used in each of the RCSP Phase III demonstration projects.
- Responded to a partner's request for information about CO₂ capture and storage costs.
- Completed performance of statistics (such as the percentages for each CO₂ source type) on the recently updated master sources spreadsheet.
- Prepared a table showing all of the source documents of the PCOR Partnership master CO₂ sources spreadsheet.
- Began preparation of D85, "Opportunities and Challenges Associated with CO₂ Compression and Transportation During CCS Activities" (due March 31, 2011).
- Searched for information on the breakdown of generation sources of electrical power (e.g., coal-fired, wind, hydro, natural gas-fired, etc.) used (as opposed to generated) in each state.

Task 7 – CO₂ Procurement

Significant accomplishments for Task 7 for the reporting period included the following:

- While the Bell Creek site was selected and approved by NETL at the end of September 2009, Encore Acquisition Company's merger with Denbury Resources delayed efforts to gain a firm commitment and cost-share agreement. However, the following activity occurred in the quarter:
 - A confidentiality agreement was finalized and is in place.

- A meeting at Denbury Resources' headquarters in Plano, Texas, was held on October 13.
- The transfer of data has begun.
- Dates for a follow-on meeting, likely in February, are being discussed.

Task 8 – Transportation and Injection Operations

Significant accomplishments for Task 8 for the reporting period included the following:

- Attended and participated in the PCOR Partnership Annual Meeting and Workshop in Minneapolis, Minnesota, and engaged in discussions with industry partners and subcontractors.
- On November 18, the PCOR Partnership program manager reassigned leadership of this task.
- The new task leader reviewed objectives and activities for this task and endeavored to eliminate potential duplication of effort with existing Task 6 activities.
- A meeting was held with appropriate PCOR Partnership personnel to determine a strategy for the task that will provide significant value to Denbury Resources at the Bell Creek site. Areas of potential overlap between this task and Task 6, Infrastructure Development, are being explored to eliminate duplication of effort.

Actual or anticipated problems or delays during the reporting period included the following:

• On November 1, the DOE NETL project manager approved an extension to the initiation of activities from July 1, 2010, to October 1, 2010.

Task 9 – Operational Monitoring and Modeling

Significant accomplishments for Task 9 for the reporting period included the following:

- Attended the 2010 RCSP Annual Review Meeting in Pittsburgh, Pennsylvania, including participation in the RCSP Sim/Risk Working Group side meeting and a dinner meeting with Spectra Energy to discuss the Fort Nelson CCS Feasibility Project.
- Bell Creek site activities continued, including the following:
 - Attended and presented at the meeting with Denbury Resources held October 13 in Plano, Texas.
 - Participated in several planning meetings on the Bell Creek project and continued preparation for the data transfer.
 - Presented on the Bell Creek CO₂ EOR project at the PCOR Partnership Annual Meeting in Minneapolis on October 21, 2010.
 - Initiated searches for well data in the area surrounding the Bell Creek Field.
 - Contacted TGS Geological Products and Services and the Montana Board of Oil and Gas to determine what data are publicly available. Unfortunately, the Montana Board cannot provide electronic data; i.e., data retrieval would require travel and photocopying.

- Continued setup of the relative permeability apparatus which soon will be used to test Bell Creek plugs.
- Created a secure FTP site for data transfer between Denbury Resources and the EERC.
- Denbury Resources continued compilation of data for transmittal as well as review of cost-share documentation forms.
- Coordinated a meeting on December 16 with personnel experienced in Bell Creek Field capillary pressures.
- Added all the unitized field outlines and digitized them in the permeability barriers in Petrel software.
- Continued a literature review and analysis of historic injection and production data from the Bell Creek Field.
- Continued evaluation of the minimum miscible pressure measurements on the Bell Creek crude and CO₂ to help determine the optimum operating pressure for the field.
- Fort Nelson site activities continued, including the following:
 - Continued development of the history-matching activities for the Fort Nelson June 2010 model.
 - Completed the base case simulation on the June 2010 Fort Nelson geologic model, and initiated running variations on the model.
 - Participated in the October 27 monthly conference call with Spectra Energy including discussions on the upcoming and ongoing laboratory, simulation, and field activities.
 - Began working on rough history match of the Fort Nelson A and B gas pools to gain a better understanding of the system and improve the property distribution.
 - Continued setup of the relative permeability apparatus which will be used to test Fort Nelson plugs.
 - Reviewed progress on the subcontracted work with RPS Energy Canada.
 - Continued working on the rough history match of the Clark Lake "A" Pool to get more accurate pressure profiling across the reef front.
 - Participated in the quarterly progress meeting with Spectra Energy on December 2, in Calgary, Alberta, Canada.
 - Reviewed potential training courses for modeling team members to learn Petrel's Fracture Modeling to improve accuracy in modeling fractured reservoirs such as those located at Fort Nelson.
 - Under consideration is an invitation to present on the Fort Nelson modeling work at the IEA Greenhouse Gas R&D Programme's modeling network meeting scheduled for April 2011 in Perth, Australia.
 - Reinitialized the case-based model with adjusted surfaces to get a better original gas pool definition.
 - Numerically tuned the base case simulation for better run time on the history matching.
 - Reviewed the groundwater monitoring report received from Spectra.
 - Finished assembly of the high-performance computer cluster, including installation of the necessary firewalls and job schedulers, and continued running history matching simulations.
 - Developed a listing of data needs for the second-round Fort Nelson risk assessment.

- Prepared a draft Fort Nelson risk assessment "path forward" document.
- Participated in a conference call on December 2 with Spectra Energy to discuss the next-round risk assessment.
- Held a conference call, along with an on-site meeting on December 7, with an independent consultant to continue to discuss next steps for the Fort Nelson project.

Task 10 – Site Closure

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

Task 11 – Postinjection Monitoring and Modeling

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

Task 12 – Project Assessment

• The project assessment report (D57) for the period October 1, 2009 – September 30, 2010, was submitted on December 23, 2010.

Task 13 – Project Management

Significant accomplishments for Task 13 for the reporting period included the following:

- Welcomed the following new members: British Columbia Oil and Gas Commission, Aquistore, Halliburton, and Pinnacle, a Halliburton Service.
- Participated in the RCSP Sim/Risk Working Group conference call on November 2.
- Completed review of the RCSP Sim/Risk best practices manual.
- Reviewed the project management plan of the DOE NETL National Risk Assessment Partnership.
- Presented an update on the PCOR Partnership at the RCSP Annual Review Meeting in Pittsburgh and participated in several side meetings including discussions on the Bell Creek project and Fort Nelson project.
- Presented an overview of PCOR Partnership efforts and abilities to Denbury Resources on October 13 in Plano, Texas.
- Completed a survey on Phase III projects for the National Coal Council.
- Participated on October 27 in the monthly conference call with Spectra Energy and transmitted minutes and an updated action item listing to the team.
- Updated the current status of PCOR Partnership activities on the 2008 Peer Review document and transmitted the same to DOE NETL on October 27.
- Hosted the annual meeting and workshop, which attracted 74 attendees representing 45 organizations from 16 states, the District of Columbia, and four Canadian provinces.
- Held a task leader meeting on November 19 during which the following topics were discussed:
 - Recap of the IOGCC annual meeting
 - Review of the draft agenda and schedule for upcoming RCSP peer review meeting
 - Updates on the Fort Nelson and Bell Creek projects

- Status of deliverables
- Continued to review various methodologies for the development of a PCOR Partnership programmatic risk assessment.
- Continued efforts on the update to the project management plan.
- Notified the partnership about a DOE Fossil Energy Techline posted online regarding the Lignite field validation project and also provided a link to the Lignite Regional Technology Implementation Plan located on the DSS.
- Mailed a flash drive bearing all of the annual meeting presentations, workshop results, and panel summary to every partner contact as well as to the annual meeting speakers, panelists, and guests.
- Provided information upon request from DOE NETL on pinnacle reefs and plume stabilization.
- Discussed potential field safety training opportunities with EERC's safety specialist in preparation for future work at the Bell Creek site.
- Provided cost-share preparation information to Denbury Resources.
- Provided information regarding the PCOR Partnership's Canadian partners and collaborations upon request from DOE.
- Submitted a presentation for the EUEC 2011: Energy, Utility, & Environmental Conference scheduled for January 31 February 2 in Phoenix, Arizona (http://www.euec.com/index.aspx).
- Submitted an abstract to the 2011 Rocky Mountain Section AAPG 60th Annual Meeting scheduled for next June in Cheyenne, Wyoming (www.rms-aapg.org/2011_meeting/).
- Participated in the U.S.–Canada Clean Energy Dialogue: North American Knowledge Sharing Arrangement (NAKSA) meeting hosted by DOE and held in Columbus, Ohio.
- Traveled to Calgary, Alberta, Canada, to meet with Spectra Energy personnel on December 2 to discuss the Fort Nelson project.
- Attended 2010 CO₂ Conference Week in Houston and Midland, Texas, December 6–10.
- Held a task leader meeting on December 13 during which the following topics were discussed:
 - Upcoming peer review scheduled for March 14–18, 2011
 - EERC Proposal No. 2011-0098 (PCOR Partnership Phase III Add-On Proposal)
 - Upcoming deliverables and conferences
 - Updates from all the task leaders
- Held a group meeting on December 14 for all EERC team members working on the PCOR Partnership Program (~35 people) during which the following topics were discussed:
 - Update on program activities including the two demonstration sites.
 - Introduction of new team members.
 - Wes Peck provided an overview of the regional characterization task and associated activities.
- Participated in a North Dakota Petroleum Council legislative briefing luncheon.
- Deliverables and milestones completed in October:
 - September monthly update
 - Task 4: D87: Bell Creek test site geomechanical experimental design package

- Task 13: D58/59: quarterly progress report/milestone quarterly report
- Deliverables and milestones completed in November:
 - October monthly update
- Deliverables and milestones completed in December:
 - November monthly update
 - Task 12: D57 project assessment annual report
 - Task 14: M23 monthly water working group (WWG) conference call
- Deliverables and milestones due in January:
 - December monthly update
 - Task 4: M8 Bell Creek test site wellbore leakage data collection initiated
 - Task 4: D31 Bell Creek test site geological characterization experimental design package
 - Task 4: M28 Bell Creek geological experimental design package completed
 - Task 13: D58/59 quarterly progress report/milestone quarterly report

Actual or anticipated problems or delays during the reporting period included the following:

- Because of the merger acquisition of our commercial partner at the Bell Creek site, a cost-share agreement has not been completed. However, communications have improved, and cost-share reporting forms were sent to Denbury on November 12.
- On November 1, the DOE NETL project manager approved extensions on a number of task initiations and due dates for deliverables/milestones related to Bell Creek activities.
- On November 1, a new deliverable (D88) for the programmatic risk management plan was approved by DOE NETL, with the first plan due in April 2011.

Task 14 – RCSP Water Working Group (WWG) Coordination

Significant accomplishments for Task 14 for the reporting period included the following:

- Held the monthly conference call for the Water Working Group (WWG) on October 26, during which the due dates were set for the road-mapping document and discussion was held about submitting a peer-reviewed paper based on the white paper, fact sheet, and road-mapping document.
- The conference call for November was waived.
- Distributed the October conference call minutes on November 18, 2010.
- Submitted an abstract for and received approval to present the WWG canned PowerPoint presentation at the 2011 American Water Resources Association (AWRA) Spring Specialty Conference on Managing Climate Change Impacts on Water Resources: Adaptation Issues, Options & Strategies scheduled for April 18–20, 2011, in Baltimore, Maryland (www.awra.org/meetings/Baltimore2011Call/).
- Continued development of a paper based on the white paper on the nexus of CCS and water, WWG fact sheet, and road-mapping document that will eventually be submitted to a peer-reviewed journal.
- Work continued on the road-mapping document, including the following:
 - Requested comments from the WWG on November 19, 2010.
 - The due date for WWG comments was extended to December 17, 2010.

- Corrections and modification based on the WWG first-round comments will be completed and returned to the WWG for a second-round review by January 14, 2011.
 The WWC will then have until January 28, 2011, to review and comments.
- The WWG will then have until January 28, 2011, to review and comment.
- The PCOR Partnership will review the comments and submit a final copy to NETL on February 11, 2011.

Actual or anticipated problems or delays during the reporting period included the following:

• On December 15, 2009, DOE waived the water resource estimation methodology documents due February 2010 and May 2011. The fact sheet submitted April 30, 2010, replaced the former. An alternative report to replace the latter is still under consideration.

PHASE III COST STATUS

The approved BP4 (Modification No. 17) budget along with actual costs incurred and inkind cost share reported is shown in Table 3. A spending plan for BP4 and actual incurred cost by quarter of cash funds for BP4 are provided in Figure 3 and Table 4.

Organization	Approved Budget, \$	Actual Costs Incurred, \$
DOE Share – Cash	53,990,663	6,240,399
Nonfederal Share – Cash	2,411,971	496,546
Nonfederal Share – In-Kind	17,400,865	16,539,019
Total	73,803,499	23,275,964

Table 3. Phase III Budget – BP4

PHASE III SCHEDULE STATUS

Table 5 lists all deliverables and milestones by quarter, with completion dates, through the end of the reporting period (see Table 6 for the Gantt chart for BP4, Year 3).



Figure 3. PCOR Partnership Phase III, BP4 – Years 3 and 4 funding (cash only).

Table 4. BP4 – Years 3 and 4 Spending Plan

		Year 3										Ye	ar 4			
Baseline Reporting																
Quarter	C	21	0	22	(Q3	(24	(Q1	(22	(23	(Q4
		Cum. BP														
	Q1	Total	Q2	Total	Q3	Total	Q4	Total	Q1	Total	Q2	Total	Q3	Total	Q4	Total
Baseline Cost Plan																
Federal Share	\$1,692,969	\$ 1,692,969	\$1,692,969	\$ 3,385,938	\$1,692,969	\$ 5,078,906	\$1,692,969	\$ 6,771,875	\$2,707,624	\$ 9,479,499	\$2,707,624	\$12,187,123	\$2,707,624	\$14,894,747	\$2,707,624	\$17,602,371
Nonfederal Share	\$ 127,735	\$ 127,735	\$ 127,735	\$ 255,470	\$ 127,735	\$ 383,204	\$ 127,735	\$ 510,939	\$ 177,644	\$ 688,583	\$ 177,644	\$ 866,227	\$ 177,644	\$ 1,043,871	\$ 177,644	\$ 1,221,515
Total Planned	\$1,820,704	\$ 1,820,704	\$1,820,704	\$ 3,641,407	\$1,820,704	\$ 5,462,111	\$1,820,704	\$ 7,282,814	\$2,885,268	\$10,168,082	\$2,885,268	\$13,053,350	\$2,885,268	\$15,938,618	\$2,885,268	\$18,823,886
Actual Incurred Cost	:															
Federal Share	\$1,025,953	\$ 1,025,953	\$ 983,104	\$ 2,009,057	\$1,352,281	\$ 3,361,338	\$1,347,660	\$ 4,708,998	\$1,531,401	\$ 6,240,399				í T		
Nonfederal Share	\$ 171,873	\$ 171,873	\$ 164,935	\$ 336,808	\$ 74,929	\$ 411,737	\$ 4,563	\$ 416,300	\$ 80,246	\$ 496,546				í T		
Total Incurred Cost	\$1,197,826	\$ 1,197,826	\$1,148,039	\$ 2,345,865	\$1,427,210	\$ 3,773,075	\$1,352,223	\$ 5,125,298	\$1,611,647	\$ 6,736,945				í T		
Variance																
Federal Share	\$ 667,016	\$ 667,016	\$ 709,865	\$ 1,376,881	\$ 340,688	\$ 1,717,568	\$ 345,309	\$ 2,062,877	\$1,176,223	\$ 3,239,100				í T		
Nonfederal Share	\$ (44,138)	\$ (44,138)	\$ (37,200)	\$ (81,339)	\$ 52,806	\$ (28,533)	\$ 123,172	\$ 94,639	\$ 97,398	\$ 192,037				l l		
Total Variance	\$ 622,878	\$ 622,878	\$ 672,665	\$ 1,295,542	\$ 393,494	\$ 1,689,036	\$ 468,481	\$ 2,157,516	\$1,273,621	\$ 3,431,137				i		

Table 3. I hase III Milestones and Denverable	Ta	abl	e 5.	Phase	III	Milestones	and	Deliv	verabl
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		Actual
Title/Description	Due Date	Completion Date
Year 1 – Quarter 1 (October–December 2007)		
D37: Task 4 – Fort Nelson Test Site – Geological Characterization Experimental Design	12/31/07	12/28/07
Package		
D63: Task 13 – Project Management Plan	12/31/07	12/28/07
M17: Task 4 – Fort Nelson Test Site Selected	12/31/07	12/28/07
Year 1 – Quarter 2 (January–March 2008)		
D38: Task 4 – Fort Nelson Test Site – Geomechanical Experimental Design Package	1/31/08	1/31/08
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/08	1/31/08
D11: Task 2 – Outreach Plan	3/31/08	3/31/08
D27: Task 3 – Environmental Questionnaire – Fort Nelson Test Site	3/31/08	4/02/08
D30: Task 4 – Williston Basin Test Site – Geomechanical Experimental Design Package	3/31/08	3/31/08
M1: Task 1 – Three Target Areas Selected for Detailed Characterization	3/31/08	3/20/08
M18: Task 4 – Fort Nelson Test Site Geochemical Work Initiated	3/31/08	3/19/08
Year 1 – Quarter 3 (April–June 2008)		
D14: Task 2 – General Phase III Fact Sheet	4/30/08	4/30/08
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/08	4/30/08
D17: Task 2 – General Phase III Information PowerPoint Presentation	5/30/08	5/30/08
M3: Task 3 – Start Environmental Questionnaire for Williston Basin Test Site	6/30/08	6/27/08
M6: Task 4 – Williston Basin Test Site Geochemical Work Initiated	6/30/08	6/30/08
M7: Task 4 – Williston Basin Test Site Geological Characterization Data Collection Initiated	6/30/08	6/30/08
Year 1 – Quarter 4 (July–September 2008)		
D12: Task 2 – Demonstration Web Pages on the Public Site	7/31/08	7/31/08
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/08	7/31/08
D1: Task 1 – Review of Source Attributes	9/30/08	9/26/08
M2: Task 1 – Demonstration Project Reporting System (DPRS) Prototype Completed	9/30/08	9/26/08
Year 2 – Quarter 1 (October–December 2008)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/08	10/31/08
D20: Task 2 – Documentary Support to PowerPoint and Web Site	12/31/08	12/31/08
D57: Task 12 – Project Assessment Annual Report	12/31/08	12/31/08

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Continued . . .

		Actual
Title/Description	Due Date	Completion Date
Year 2 – Quarter 2 (January–March 2009)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/09	1/30/09
M21: Task 14 – Outline of White Paper on Nexus of CO ₂ Capture and Sequestration (CCS)	2/28/09	2/27/09
and Water, Part Subtask 14.2 – White Paper on Nexus of CCS and Water		
D24: Task 2 – PCOR Partnership Region Sequestration General Poster	3/31/09	3/31/09
Year 2 – Quarter 3 (April–June 2009)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/09	4/30/09
M23: Task 14 – Monthly WWG Conference Call Held	4/30/09	4/15/09
D2: Task 1 – First Target Area Completed	5/29/09	5/29/09
M23: Task 14 – Monthly WWG Conference Call Held	5/29/09	5/29/09
D16: Task 2 – Fort Nelson Test Site Fact Sheet	5/29/09	5/29/09
M24: Task 14 – WWG Annual Meeting Held	5/31/09	5/07/09
M23: Task 14 – Monthly WWG Conference Call Held	6/30/09	6/25/09
Year 2 – Quarter 4 (July–September 2009)		
M23: Task 14 – Monthly WWG Conference Call Held	N/A	Not required
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation	7/31/09	7/31/09
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/09	7/31/09
M22: Task 14 – Draft White Paper – Nexus of CCS and Water Available for Comments	8/17/09	8/18/09 (DOE)
		8/21/09 (WWG)
M23: Task 14 – Monthly WWG Conference Call Held	8/31/09	8/25/09
D1: Task 1 – Review of Source Attributes	9/30/09	9/25/09
D3: Task 1 – Permitting Review – One State and One Province	9/30/09	9/30/09
D9: Task 1 – Updated DSS	9/30/09	9/29/09
D47: Task 6 – Report on the Preliminary Design of Advanced Compression Technology	9/30/09	9/30/09
D77: Task 13 – Risk Management Plan Outline	9/30/09	9/18/09
M4: Task 4 – Bell Creek Test Site Selected	9/30/09	9/30/09
M5: Task 4 – Bell Creek Test Site – Data Collection Initiated	9/30/09	9/30/09
M23: Task 14 – Monthly WWG Conference Call Held	9/30/09	9/22/09

Continued . . .

		Actual
Title/Description	Due Date	Completion Date
Year 3 – Quarter 1 (October–December 2009)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/30/09	11/02/09
D78: Task 14 – Final White Paper on the Nexus of CCS and Water	10/30/09	10/28/09
M23: Task 14 – Monthly WWG Conference Call Held	10/31/09	10/26/09
M23: Task 14 – Monthly WWG Conference Call Held	11/30/09	11/16/09
D57: Task 12 – Project Assessment Annual Report	12/31/09	12/31/09
M23: Task 14 – Monthly WWG Conference Call Held	12/31/09	Waived by DOE
Year 3 – Quarter 2 (January–March 2010)		
D13: Task 2 – Public Site Updates	1/15/10	1/15/10
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/10	1/29/10
M23: Task 14 – Monthly WWG Conference Call Held	1/31/10	1/6/10
D79: Task 14 – Water Resource Estimation Methodology Document	2/28/10	Waived by DOE
M23: Task 14 – Monthly WWG Conference Call Held	2/28/10	2/25/10
D11: Task 2 – Outreach Plan	3/31/10	3/31/10
M23: Task 14 – Monthly WWG Conference Call Held	3/31/10	3/23/10
Year 3 – Quarter 3 (April–June 2010)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/10	4/30/10
M23: Task 14 – Monthly WWG Conference Call Held	4/30/10	4/28/10
M23: Task 14 – Monthly WWG Conference Call Held	5/31/10	5/13/10
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	6/30/10	6/30/10
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (update)	6/30/10	6/29/10
M23: Task 14 – Monthly WWG Conference Call Held	6/30/10	6/23/10
M24: Task 14 – WWG Annual Meeting Held	6/30/10	5/13/10
Year 3 – Quarter 4 (July–September 2010)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/10	7/29/10
M23: Task 14 – Monthly WWG Conference Call Held	7/31/10	7/28/10
M23: Task 14 – Monthly WWG Conference Call Held	8/31/10	8/31/10
D1: Task 1 – Review of Source Attributes	9/30/10	9/20/10
D52: Task 9 – Fort Nelson Test Site – Site Characterization, Modeling, and Monitoring Plan	9/30/10	9/30/10
M9: Task 4 – Bell Creek Test Site Geological Model Development Initiated	9/30/10	9/30/10
M23: Task 14 – Monthly WWG Conference Call Held	9/30/10	Waived by DOE

		Actual				
Title/Description	Due Date	Completion Date				
Year 4 – Quarter 1 (October–December 2010)						
D87: Task 4 – Bell Creek Test Site – Geomechanical Experimental Design Package	10/30/10	10/29/10				
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/10	10/29/10				
M23: Task 14 – Monthly WWG Conference Call Held	10/31/10	10/26/10				
M23: Task 14 – Monthly WWG Conference Call Held	11/30/10	Waived by DOE				
D57: Task 12 – Project Assessment Annual Report	12/31/10	12/23/10				
M23: Task 14 – Monthly WWG Conference Call Held	12/31/10	12/13/10				
Year 4 – Quarter 2 (January–March 2011)						
M8: Task 4 – Bell Creek Test Site Wellbore Leakage Data Collection Initiated	1/15/11					
D31: Task 4 – Bell Creek Test Site – Geological Characterization Experimental Design	1/31/11					
Package						
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/11					
M23: Task 14 – Monthly WWG Conference Call Held	1/31/11					
M28: Task 4 – Bell Creek Geological Experimental Design Package Completed	1/31/11					
D15: Task 2 – Bell Creek Test Site Fact Sheet	2/28/11					
D65: Task 4 – Fort Nelson Test Site – Site Characterization Report	2/28/11					
M23: Task 14 – Monthly WWG Conference Call Held	2/28/11					
M29: Task 4 – Fort Nelson Site Characterization Report completed	2/28/11					
D10: Task 1 – Demonstration Project Reporting System Update	3/31/11					
D18: Task 2 – Bell Creek Test Site PowerPoint Presentation (Update)	3/31/11					
D26: Task 2 – Fort Nelson Test Site Poster	3/31/11					
D28: Task 3 – Environmental Questionnaire – Bell Creek Test Site	3/31/11					
D85: Task 6 – Report – Opportunities and Challenges Associated with CO ₂ Compression and	3/31/11					
Transportation During CCS Activities						
M23: Task 14 – Monthly WWG Conference Call Held	3/31/11					

Continued . . .

		Actual
Title/Description	Due Date	Completion Date
Year 4 – Quarter 3 (April–June 2011)		
M30: Task 5 – Bell Creek Test Site Baseline MVA Initiated	4/01/11	
M23: Task 14 – Monthly WWG Conference Call Held	4/30/11	
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/11	
D17: Task 2 – General Phase III Information PowerPoint Presentation (Update)	5/31/11	
D34: Task 4 – Bell Creek Test Site – Baseline Hydrogeological Final Report	5/31/11	
M23: Task 14 – Monthly WWG Conference Call Held	5/31/11	
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (Update)	6/30/11	
D60: Task 13 – Site Development, Operations, and Closure Plan	6/30/11	
M23: Task 14 – Monthly WWG Conference Call Held	6/30/11	
M24: Task 14 – WWG Annual Meeting Held	6/30/11	
Year 4 – Quarter 4 (July–September 2011)	-	
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/11	
M23: Task 14 – Monthly WWG Conference Call Held	7/31/11	
D29: Task 3 – Permitting Action Plan	8/31/11	
D81: Task 1 – Regional Carbon Sequestration Atlas (Update)	8/31/11	
M23: Task 14 – Monthly WWG Conference Call Held	8/31/11	
D1: Task 1 – Review of Source Attributes	9/30/11	
D4: Task 1 – Permitting Review – Two Additional States	9/30/11	
D9: Task 1 – Updated DSS	9/30/11	
D25: Task 2 – Bell Creek Test Site Poster	9/30/11	
D50: Task 9 – Bell Creek Test Site – Site Characterization, Modeling, and Monitoring Plan	9/30/11	
M23: Task 14 – Monthly WWG Conference Call Held	9/30/11	
M31: Task 9 – Bell Creek Test Site – Site Characterization, Modeling, and Monitoring Plan	9/30/11	
Completed		

											Budg	et Period	4 (Years	3 & 4)										
		Q1		1	Q2	Yea	ır 3	Q3		1	Q4			01		1	Q2	Ye	ar 4	Q3		1	Q4	
	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11 Se	p-11
Task 1: Regional Characterization																							D81	
1.1 Regional Characterization												D1											V D1,	D4
1.2 Decision Support System																								D9
																		D10	\downarrow					
1.3 Development of a Demonstration Project Reporting System																								
1.4 Further Characterization of Zama Project																								
Task 2: Public Outreach and						D11																		
2.1 Outreach Planning						BIT	/									 								
2.2 Data Acquisition and Management																								
				D13												1								
2.3 Public Web Site																		Ł,						
2.4 Fact Sheets														/				D15						
2.5 PowerPoint Presentations									l N	D17, D19								D18	¥	D17	7 7	19		
2.6 Documentary and Video Products																								
																		D26	₽					D25
2.7 Posters																 			Ĭ					
2.8 Additional Outreach Activities																								
Task 3: Permitting and NEPA Compliance																			l Ł					
3.1 Completion of DOE's Environmental Questionnaire														/				D28	ľ					
3.2 Assist in Development of EA/EIS																								
3.3 General Permitting Assistance																								
2.4 Development of a Dermittic - A -ti																7	7						 D2	:9
3.4 Development of a Permitting Action Plan																								
Summany Task		-		Activity F	3ar			Progre	ss Activit	v Bar		1		Time No.	N .		Rovisod			<u>л г</u>)eliverabl	e 🗸	Milestone	~
Summary rask				, touvity L	~~. 			i iogie		y Dai y							Schedule	• 🗸	7	Ž ľ	Civerabl	~ \	.71103(0116	\sim

Table 6. PCOR Partnership Phase III BP4, Years 3–4 Gantt Chart

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											Budge	et Period	4 (Years	3 & 4)										
						Yea	ar 3											Ye	ar 4					
		Q1			Q2			Q3			Q4			Q1		ļ	Q2			Q3			Q4	
	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Task 4: Site Characterization and																i								
Modeling																l .								
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4.2 Fort Nelson Test Site																-		/						
4.2 For Neison Test Ore																	1400							
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4.3 Bell Creek Test Site				-																				
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Task 5: Well Drilling and Completion																i								
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5.1 Bell Creek Test Site - Injection																								
Scheme Design																								
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5.2 Bell Creek Test Site – Monitoring Scheme Design																								
Scheme Design																		M30	*					
5.2 Boll Crock Text Site - Baseline MV/A																ł		<	¥					
Activities																į –								
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Task 6: Infrastructure Development																ł								
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6.1 Regional infrastructure Planning																								
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6.2 Project Infrastructure Development																İ								
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6.3 Ramgen Compression Technology Slipstream Test																ł								
Task 7: CO ₂ Procurement									_							l								
7.1 Monitoring and Assessment of CO ₂																								
Procurement Issues																į								
7.2 Procurement Plan and Agreement Eacilitation				Anna a																				
2 domation																								
Task 8: Transportation and Injection																1								
Operations																1								
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8.1 Ongoing Monitoring Assessment of																								
Commercial Operations				1												!								
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Summary Task				Activity E	Bar			Progres	ss Activity	/ Bar			٦	Time Nov	N		Revised	Ļ		<u>}</u> □	eliverable	e ∕∕	Milesto	one 🔿
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Table 6. PCOR Partnership Phase III BP4, Years 3–4 Gantt Chart (continued)

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Table 6. PCOR Partnership Phase III BP4, Years 3–4 Gantt Chart (continued)

Summary Task Activity Bar Progress Activity Bar Time Now Revised V Deliverable V Milestone

Continued...

Table 6. PCOR Partnership Phase III BP4, Years 3–4 Gantt Chart (continued)

	Key	for De	Key for Milestones (M) 🔶						
D1	Review of Source Attributes	D29	Permitting Action Plan	M8	BC Test Site – Wellbore Leakage Data Collection Initiated				
D4	Permitting Review – Two Additional States	D31	BC Test Site – Geological Characterization Experimental Design Package	M9	BC Test Site – Geological Model Development Initiated				
D9	Updated DSS	D34	BC Test Site - Baseline Hydrogeological Experimental Design Package	M23	Monthly WWG Conference Call Held				
D10	DPRS Update	D50	BC Test Site - Site Characterization, Modeling, and Monitoring Plan	M24	WWG Annual Meeting Held				
D11	Outreach Plan	D52	FN Test Site - Site Characterization, Modeling, and Monitoring Plan	M28	BC Test Site - Geological Characterization Experimental Design Package Completed				
D13	Public Site Updates	D57	Project Assessment Annual Report	M29	FN Test Site – Site Characterization Report Completed				
D15	Bell Creek (BC) Test Site Fact Sheet	D58	Quarterly Progress Report	M30	BC Test Site – Baseline MVA Activities Initiated				
D16	Fort Nelson (FN) Test Site Fact Sheet	D59	Milestone Quarterly Report	M31	BC Test Site - Site Characterization, Modeling, and Monitoring Plan Completed				
D17	General Phase III Information PowerPoint Presentation	D65	FN Test Site – Site Characterization Report						
D18	BC Test Site PowerPoint Presentation	D78	White Paper – Nexus of CCS and Water						
D19	FN Test Site PowerPoint Presentation	D81	Regional Carbon Sequestration Atlas (update)						
D20	Video Support to PowerPoint and Web Site	D85	Report – Opportunities and Challenges Associated with CO ₂ Compression						
D24	PCOR Partnership Region CO ₂ Storage General Poster		and Transportation During CCS Activities						
D25	BC Test Site Poster	D87	BC Test Site – Geomechanical Experimental Design Package						
D26	FN Test Site Poster	D88	Programmatic Risk Management Plan						
D28	BC Test Site – Environmental Questionnaire								

PHASE III PRODUCTS OR TECHNOLOGY TRANSFER ACTIVITIES

During the reporting period, there were three abstracts accepted for presentation and 14 presentations given at seven different meetings/conferences. In addition, two deliverables, two milestones, and a quarterly progress report were completed.

Abstracts – Submitted and Accepted for Presentation

Gorecki, C.D., Klapperich, R.J., Bremer, J.M., Holubnyak, Y.I., and McNemar, A., 2010, Regional Carbon Sequestration Partnership—Water Working Group [abs.]: American Water Resources Association (AWRA) Spring Specialty Conference, Baltimore, Maryland, April 18–20, 2011.

Abstracts – Accepted for Presentation

- Bachu, S., Steadman, E.N., and Smith, S.A., 2010, The potential for, and possible effects of CO₂ storage in the Basal Aquifer of the Northern Plains Prairie Region of North America—a joint U.S.–Canada project [abs.]: 10th Annual Carbon Capture & Sequestration Conference, Pittsburgh, Pennsylvania, May 2–5, 2011.
- Steadman, E.N., Harju, J.A., Botnen, L.S., Daly, D.J., Gorecki, C.D., Jensen, M.D., Peck, W.D., Smith, S.A., Sorensen, J.A., and Anagnost, K.K., 2010, The Plains CO₂ Reduction (PCOR) Partnership—demonstrating carbon management options for the central interior of North America [abs.]: 2011 American Association of Petroleum Geologists – Rocky Mountain Section (AAPG – RMS) Meeting, Cheyenne, Wyoming, June 25–29, 2011.

Abstracts – Rejected

- Braunberger, J.R., Bremer, J.M., Liu, G., Gorecki, C.D., Sorensen, J.A., Steadman, E.N., and Harju, J.A., 2010, Characterization and modeling using macrofacies and microfacies intervals of the rival "Nesson" beds in the Mississippian Lower Charles Formation, Burke County, North Dakota [abs.]: American Association of Petroleum Geologists (AAPG) 2011 Annual Convention & Exhibition, Houston, Texas, April 10–13, 2011.
- Gorecki, C.D., Klapperich, R.J., Bremer, J.M., Holubnyak, Y.I., and McNemar, A., 2010, Regional Carbon Sequestration Partnership—Water Working Group [abs.]: American Association of Petroleum Geologists (AAPG) 2011 Annual Convention & Exhibition, Houston, Texas, April 10–13, 2011.
- Gorecki, C.D., Liu, G., Bremer, J.M., Sorensen, J.A., Steadman, E.N., and Harju, J.A., 2010, Modeling and monitoring the Northwest McGregor huff 'n' puff EOR project [abs.]: 73rd European Association of Geoscientists & Engineers (EAGE) Conference & Exhibition incorporating SPE EUROPEC 2011, Vienna, Austria, May 23–26, 2011.

Presentations, Conference Papers, Posters, and Other Media

- Botnen, L.S., 2010, North Dakota's framework for carbon capture & storage (CCS): Presented at the 6th Annual Clean Carbon Policy Summit & Project Expo, Austin, Texas, October 5, 2010.
- Daly, D.J., Bradbury, J., Garrett, G., Greenberg, S., Myhre, R., Peterson, T., Tollefson, L., Wade, S., and Sacuta, N., 2010, Outreach best practices—a practical foundation for the future: Poster presented at the Regional Carbon Sequestration Partnerships (RCSP) Annual Review Meeting, Pittsburgh, Pennsylvania, October 5, 2010.
- Harju, J.A., 2010, The PCOR Partnership's efforts to facilitate regional CCS deployment: Presented at the 8th Annual EOR Carbon Management Workshop, Houston, Texas, December 6–7, 2010.
- Harju, J.A., Anderson, S., Crookshank, S., Leonard, N., Melzer, S., and Moore, M., 2010, Legislation, liability, risk, and opportunity—where is CCS headed?: Roundtable discussion presented at the 2010 PCOR Partnership Annual Meeting & Workshop, Minneapolis, Minnesota, October 19–21, 2010.
- Harju, J.A., and Steadman, E.N., 2010, PCOR Partnership program overview—adding value to Denbury Resources' Rocky Mountain operations: Presented at the Bell Creek Project Discussion Meeting, Plano, Texas, October 13–14, 2010.
- Holubnyak, Y.I., Hawthorne, S.B., Mibeck, B.A., Miller, D.J., Bremer, J.M., Smith, S.A., Sorensen, J.A., Steadman, E.N., and Harju, J.A., 2010, Geochemical interactions of CO₂ with reservoir fluid and rocks of Powder River Basin: Presented at the 2010 Geological Society of America (GSA) Annual Meeting, Denver, Colorado, October 31 – November 3, 2010.
- Holubnyak, Y.I., Mibeck, B.A., Bremer, J.M., Smith, S.A., Gorecki, C.D., Sorensen, J.A., Steadman, E.N., and Harju, J.A., 2010, Geochemical modeling of huff 'n' puff oil recovery with CO₂ at the Northwest McGregor oil field: Poster presented at the 2010 Geological Society of America (GSA) Annual Meeting, Denver, Colorado, October 31 – November 3, 2010.
- Holubnyak, Y.I., Rygalov, V., Smith, S.A., Sorensen, J.A., Steadman, E.N., and Harju, J.A., 2010, Introducing new statistical methods in geochemical kinetics modeling for better estimations of CO₂–water–rock interactions: Poster presented at the 2010 Geological Society of America (GSA) Annual Meeting, Denver, Colorado, October 31 November 3, 2010.
- Peck, W.D., 2010, North American Carbon Atlas workshop: Presented at the North American Carbon Atlas Workshop, Ottawa, Ontario, Canada, November 1–3, 2010.
- Peck, W.D., 2010, PCOR Partnership regional characterization activity: Presented at the Plains CO₂ Reduction (PCOR) Partnership Quarterly Group Meeting, Grand Forks, North Dakota, December 14, 2010.

- Peck, W.D., 2010, Plains CO₂ Reduction (PCOR) Partnership Decision Support System update: Presented at the 2010 PCOR Partnership Annual Meeting & Workshop, Minneapolis, Minnesota, October 19–21, 2010.
- Sorensen, J.A., 2010, Simultaneous EOR and CCS experiences in the Zama oil field: Presented at the Petroleum Technology Alliance Canada (PTAC) Conference, Calgary, Alberta, November 8, 2010.
- Sorensen, J.A., and Gorecki, C.D., 2010, Energy & Environmental Research Center—Oil and Gas Group overview: Presented at the Bell Creek Project Discussion Meeting, Plano, Texas, October 13–14, 2010.
- Sorensen, J.A., and Schmidt, D.D., 2010, EERC activities in the Williston Basin—examining the Bakken and Dickinson Lodgepole mound plays: Presented at the Bell Creek Project Discussion Meeting, Plano, Texas, October 13–14, 2010.
- Steadman, E.N., 2010, Plains CO₂ Reduction (PCOR) Partnership update: Presented at the 2010 PCOR Partnership Annual Meeting & Workshop, Minneapolis, Minnesota, October 19–21, 2010.
- Steadman, E.N., and Harju, J.A., 2010, Plains CO₂ Reduction (PCOR) Partnership update: Presented at the Regional Carbon Sequestration Partnerships (RCSP) Annual Review Meeting, Pittsburgh, Pennsylvania, October 5, 2010.

Reports and Meeting Minutes

- Gorecki, C.D., 2010, Minutes—Regional Carbon Sequestration Partnership Water Working Group conference call: December 13.
- Gorecki, C.D., 2010, Minutes—Regional Carbon Sequestration Partnership Water Working Group conference call: October 28.
- Peck, W.D., Daly, D.J., Botnen, L.S., Sorensen, J.A., Smith, S.A., Jensen, M.D., Harju, J.A., Gorecki, C.D., Anagnost, K.K., and Steadman, E.N., 2010, Plains CO₂ Reduction (PCOR) Partnership: Phase III monthly report (September 1–30, 2010) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, September.
- Peck, W.D., Daly, D.J., Botnen, L.S., Sorensen, J.A., Smith, S.A., Jensen, M.D., Harju, J.A., Gorecki, C.D., Anagnost, K.K., and Steadman, E.N., 2010, Plains CO₂ Reduction (PCOR) Partnership: Phase III monthly report (October 1–31, 2010) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, October.
- Peck, W.D., Daly, D.J., Botnen, L.S., Sorensen, J.A., Smith, S.A., Jensen, M.D., Harju, J.A., Gorecki, C.D., Anagnost, K.K., and Steadman, E.N., 2010, Plains CO₂ Reduction (PCOR) Partnership: Phase III monthly report (November 1–30, 2010) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, November.

- Peck, W.D., Anagnost, K.K., Botnen, B.W., Botnen, L.S., Daly, D.J., Gorecki, C.D., Grove, M.M., Harju, J.A., Jensen, M.D., Jones, M.L., Smith, S.A., Sorensen, J.A., Steadman, E.N., Wolfe, S.L., McNemar, A.T., Litynski, J.T., and Plasynski, S.I., 2010, Plains CO₂ Reduction (PCOR) Partnership atlas (3d ed. rev.): Prepared for the U.S. Department of Energy National Energy Technology Laboratory and the PCOR Partnership, Grand Forks, North Dakota, Energy & Environmental Research Center, 65 p.
- Sorensen, J.A., Steadman, E.N., Harju, J.A., and Moffatt, D.J., 2010, Bell Creek test site geological model development initiated: Plains CO₂ Reduction (PCOR) Partnership Task 4 Milestone 9 report for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2010-EERC-10-04, Grand Forks, North Dakota, Energy & Environmental Research Center, September.
- Sorensen, J.A., Smith, S.A., Lindeman, C.D., Steadman, E.N., and Harju, J.A., 2010, Bell Creek test site – geomechanical experimental design package: Plains CO₂ Reduction (PCOR) Partnership Phase III draft Task 4 Deliverable D87 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, October.
- Steadman, E.N., Harju, J.A., Romuld, L., Sorensen, J.A., Daly, D.J., Gorecki, C.D., Smith, S.A., Jensen, M.D., Botnen, L.S., Peck, W.D., Anagnost, K.K., and Votava, T.J., 2010, Plains CO₂ Reduction (PCOR) Partnership Phase III annual assessment report: Draft Task 12 Deliverable D57 (October 1, 2009 September 30, 2010) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, December.
- Steadman, E.N., Harju, J.A., Romuld, L., Sorensen, J.A., Daly, D.J., Jensen, M.D., Botnen, L.S., Peck, W.D., Smith, S.A., Gorecki, C.D., Anagnost, K.K., and Votava, T.J., 2010, Plains CO₂ Reduction Partnership Phase III: Quarterly technical progress report (July 1 September 30, 2010) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592 and North Dakota Industrial Commission Contract Nos. FY08-LX111-162 and G-015-030, Grand Forks, North Dakota, Energy & Environmental Research Center, October.

MEETINGS/TRAVEL

Representatives from the PCOR Partnership participated in and/or presented at the following 14 meetings/conferences and three training opportunities in this reporting period:

- October 1–6, 2010: Attended Schlumberger software training entitled "Petrel Structural Modeling" in Houston, Texas.
- October 4–6, 2010: Presented at the 6th Annual Clean Carbon Policy Summit & Expo in Austin, Texas.
- October 4–7, 2010: Attended and participated in the 2010 RCSP Annual Review Meeting in Pittsburgh, Pennsylvania.
- October 6–7, 2010: Attended the Lignite Energy Council Annual Meeting in Bismarck, North Dakota.

- October 12–14, 2010: Presented a project update at Denbury Resources' headquarters in Plano, Texas.
- October 18–21, 2010: Hosted the PCOR Partnership Annual Meeting and Workshop in Minneapolis, Minnesota.
- October 19–23, 2010: Attended Computer Modeling Group's software training entitled "CO₂-Based Enhanced Oil Recovery (Miscible Flood) Course in Houston, Texas.
- October 29 November 3, 2010: Presented at the 2010 Geological Society of America Annual Meeting held in Denver, Colorado.
- November 1–3, 2010: Participated in the NACAP meeting held in Ottawa, Ontario, Canada.
- November 7–9, 2010: Presented at the PTAC conference held in Calgary, Alberta, Canada.
- November 14–18, 2010: Participated in the IOGCC 2010 Annual Meeting held in Tucson, Arizona.
- November 29 December 1, 2010: Participated in the U.S.–Canada Clean Energy Dialogue: NAKSA meeting held in Columbus, Ohio.
- November 29 December 3, 2010: Participated in the Fort Nelson site quarterly progress meeting in Calgary, Alberta, Canada.
- December 1, 2010: Attended the North Dakota Industrial Commission meeting in Bismarck, North Dakota.
- December 4–10, 2010: Participated in the 8th Annual EOR Carbon Management Workshop in Houston, Texas, and attended the 16th Annual CO₂ Flooding Conference in Midland, Texas.
- December 12–15, 2010: Attended Schlumberger Petrel Fracture Modeling training in Houston, Texas.
- December 16, 2010: Attended an outreach meeting with PPB in Fargo, North Dakota.

Materials presented at these meetings are available to partners on the PCOR Partnership DSS Web site (www2.undeerc.org/website/pcorp/).

REFERENCES

None.