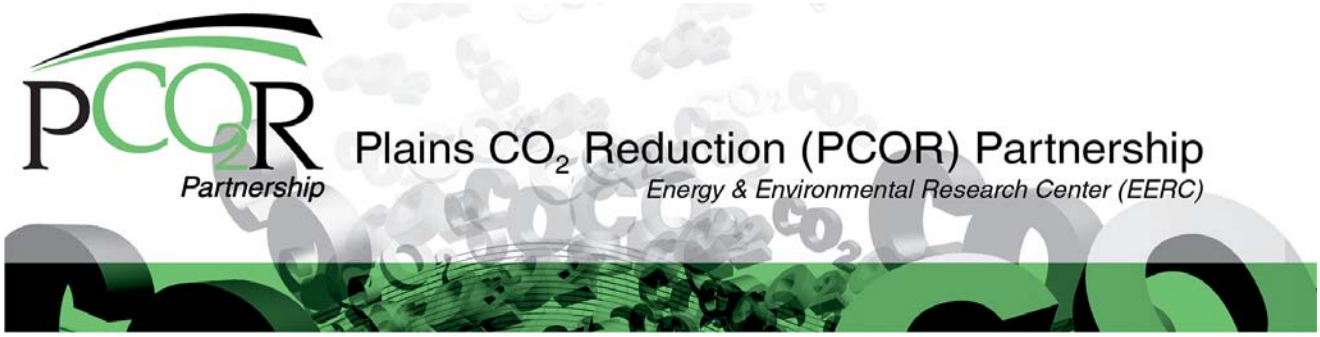

PLAINS CO_2 REDUCTION PARTNERSHIP PHASE III

Quarterly Technical Progress Report
Task 13 – Deliverable D58/D59

(for the period January 1 – March 31, 2017)

Prepared for:

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PLAINS CO_2 REDUCTION PARTNERSHIP PHASE III
Quarterly Technical Progress Report
January 1 – March 31, 2017

EXECUTIVE SUMMARY

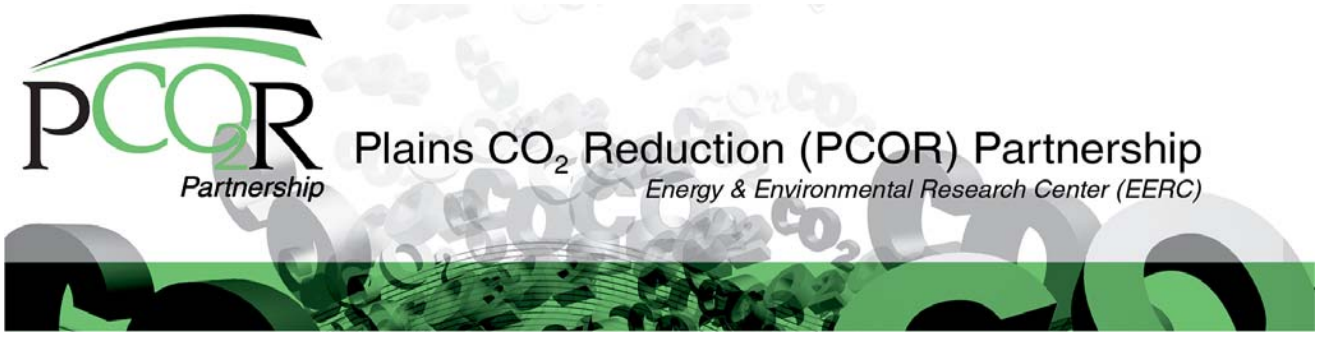
The Plains CO_2 Reduction (PCOR) Partnership is one of seven Regional Carbon Sequestration Partnerships competitively awarded by the U.S. Department of Energy (DOE) National Energy Technology Laboratory in 2003 as part of a national plan to mitigate greenhouse gas emissions. The PCOR Partnership is led 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 multiyear (2007–2017) development phase, is an extension of the characterization (Phase I) and validation (Phase II) phases and is intended to confirm that commercial-scale CO_2 capture, transportation, and storage can be achieved safely, permanently, and economically over extended periods in the PCOR Partnership region. Budget Period 5 began April 1, 2016.

This progress report presents an update of Phase III PCOR Partnership activities from January 1 through March 31, 2017. As of February 28, 2017, 3.712 million tonnes of total gas (composition of approximately 98% CO_2) had been purchased for injection into the Bell Creek Field since May 2013, equating to an estimated ***3.654 million tonnes of CO_2 stored***. At the end of Budget Period 4 (March 31, 2016), 2.979 million tonnes of CO_2 had been stored.

PCOR Partnership activities focused on Bell Creek activities and the completion of comprehensive deliverables. The pulsed-neutron log (PNL) acquisition on 11 Bell Creek Field wells was completed as part of the expanded PNL program. The PCOR Partnership's "Best Practices Manual (BPM) for Site Characterization" was submitted for review (essentially completing Task 4). The draft 1-hour documentary entitled "Coal Powered" was submitted to DOE for review. "Regulatory Perspective Regarding the Geologic Storage of CO_2 in the PCOR Partnership Region" was submitted to and approved by DOE.

Eleven tasks continued. In addition to the foregoing, CO_2 injection data and oil/gas/water production data for the Bell Creek oil field were submitted to DOE's Energy Data Exchange system, modeling and simulation activities continued in support of the Aquistore and Bell Creek projects, work on an update to Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCUS Activities continued, and development of an article or report on the major research focuses for water and carbon capture and storage continued.



PLAINS CO_2 REDUCTION PARTNERSHIP PHASE III
Quarterly Technical Progress Report
January 1 – March 31, 2017

INTRODUCTION

The Plains CO_2 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 Partnerships (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 sectors. The membership, as of March 31, 2017, 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 Storage Program (Figure 1) 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 PCOR Partnership Program 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

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 – March 31, 2016
- BP5: April 1, 2016 – September 30, 2017

BP1 and BP2 were effective in Phase II.

Table 1. PCOR Partnership Membership Phase III (October 1, 2007 – present, inclusive)

DOE NETL	Halliburton	Omaha Public Power District
UND EERC	Hess Corporation	Otter Tail Power Company
Abengoa Bioenergy New Technologies	Huntsman Corporation	Outsource Petrophysics, Inc.
Air Products and Chemicals, Inc.	Husky Energy Inc.	Oxand Risk & Project Management Solutions
Alberta Department of Energy	Indian Land Tenure Foundation	Peabody Energy
Alberta Department of Environment	Interstate Oil and Gas Compact Commission	Petro Harvester Oil & Gas
Alberta Innovates – Technology Futures	Iowa Department of Natural Resources	Petroleum Technology Research Centre
ALLETE	Lignite Energy Council	Petroleum Technology Transfer Council
Ameren Corporation	Manitoba Geological Survey	Pinnacle, a Halliburton Service
American Coalition for Clean Coal Electricity	Marathon Oil Company	Prairie Public Broadcasting
American Lignite Energy	MBI Energy Services	Pratt & Whitney Rocketdyne, Inc.
Apache Canada Ltd.	MEG Energy Corporation	Praxair, Inc.
Aquistore	Melzer Consulting	Ramgen Power Systems, Inc.
Baker Hughes Incorporated	Minnesota Power	Red Trail Energy, LLC
Basin Electric Power Cooperative	Minnkota Power Cooperative, Inc.	RPS Energy Canada Ltd.
BillyJack Consulting Inc.	Missouri Department of Natural Resources	Saskatchewan Ministry of Industry and Resources
Biorecro AB	Missouri River Energy Services	SaskPower
Blue Source, LLC	Montana–Dakota Utilities Co.	Schlumberger
BNI Coal, Ltd.	Montana Department of Environmental Quality	Sejong University
British Columbia Ministry of Energy, Mines, and Petroleum Resources	National Commission on Energy Policy	Shell Canada Limited
British Columbia Oil and Gas Commission	Natural Resources Canada	Spectra Energy
C12 Energy, Inc.	Nebraska Public Power District	Suncor Energy Inc.
The CETER Group, Ltd.	North American Coal Corporation	TAQA North, Ltd.
Computer Modelling Group Ltd.	North Dakota Department of Commerce Division of Community Services	TGS Geological Products and Services
Continental Resources, Inc.	North Dakota Department of Health	Tri-State Generation and Transmission Association, Inc.
Dakota Gasification Company	North Dakota Geological Survey	Tundra Oil and Gas
Denbury Resources Inc.	North Dakota Industrial Commission Department of Mineral Resources, Oil and Gas Division	University of Alberta
Eagle Operating, Inc.	North Dakota Industrial Commission Lignite Research, Development and Marketing Program	University of Regina
Eastern Iowa Community College District	North Dakota Industrial Commission Oil and Gas Research Council	WBI Energy, Inc.
Enbridge Inc.	North Dakota Natural Resources Trust	Weatherford Advanced Geotechnology
Encore Acquisition Company	North Dakota Petroleum Council	Western Governors' Association
Energy Resources Conservation Board/Alberta Geological Survey	North Dakota Pipeline Authority	Westmoreland Coal Company
Environment Canada		Wisconsin Department of Agriculture, Trade and Consumer Protection
Excelsior Energy Inc.		Wyoming Office of State Lands and Investments
General Electric Global Research Oil & Gas Technology Center		Xcel Energy
Great Northern Project Development, LP		
Great River Energy		

The overall mission of the Phase III program is to 1) gather characterization data to verify the ability of the target formations to store carbon dioxide (CO_2), 2) facilitate the development of the infrastructure required to transport CO_2 from sources to the injection sites, 3) facilitate sensible 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) facilitate the establishment of 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 CCS 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

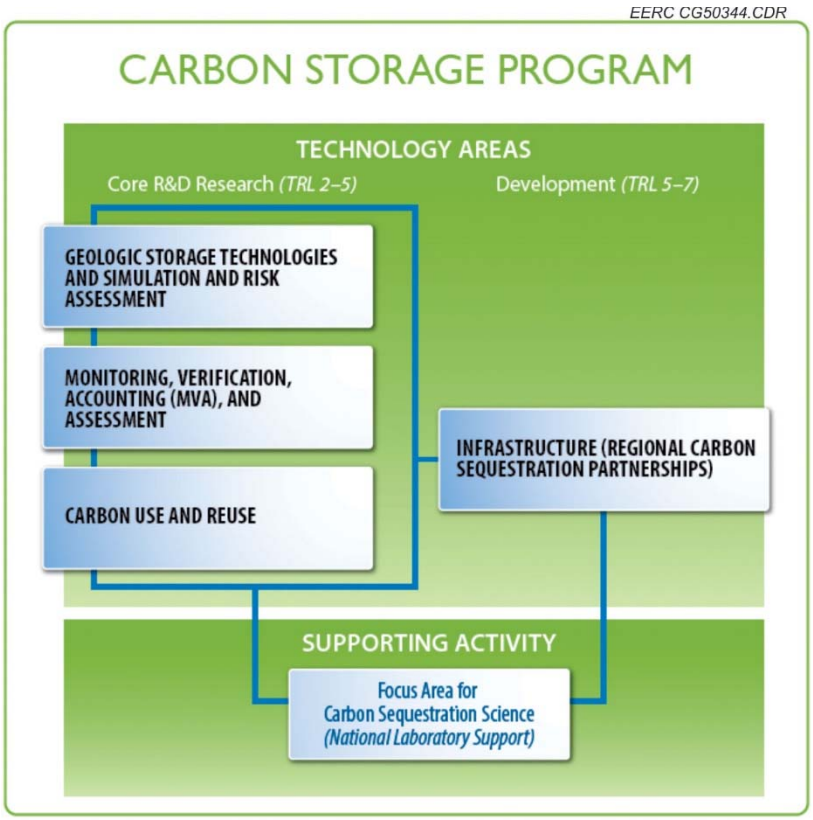


Figure 1. DOE Carbon Storage Program technology areas featuring regional partnerships (courtesy of Andrea Dunn, DOE NETL; "TRL" stands for technology readiness level).

utilize the infrastructure of its region to maximize CO_2 injection volumes. A programmatic development phase (Phase III) goal is implementation of large-scale field testing involving at least 1 million tonnes of CO_2 per project. Each of the RCSP large-volume injection tests is designed to demonstrate that the 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 with Denbury Onshore LLC (Denbury) in the Denbury-operated Bell Creek oil field in Powder River County in southeastern Montana. The PCOR Partnership has also conducted a feasibility study for Spectra Energy Transmission's (Spectra's) Fort Nelson gas-processing facility, situated near Fort Nelson, British Columbia, Canada. In addition, the PCOR Partnership is collaborating with the Petroleum Technology Research Centre (PTRC) on site characterization, risk assessment, and monitoring, verification, and accounting (MVA) activities associated with the Aquistore project near Estevan, Saskatchewan, Canada. The PCOR Partnership's work has concluded with Apache Canada Ltd. to further characterize the Zama Acid Gas Enhanced Oil Recovery (EOR), CO_2 Storage, and Monitoring Project in Alberta, Canada, as well as its work on a multiyear, binational characterization effort of the basal Cambrian system (Figure 2).

Figure 2. Location of large-scale sites with PCOR Partnership Phase III participation.

The PCOR Partnership's objectives for the demonstration projects are as follows: 1) conduct a successful Bell Creek 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) support Spectra's feasibility study of a Fort Nelson demonstration 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 16 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 (completed); 6) Infrastructure Development; 7) CO_2 Procurement (completed); 8) Transportation and Injection Operations (completed); 9) Operational Monitoring and Modeling; 10) Site Closure; 11) Postinjection Monitoring and Modeling; 12) Project Assessment; 13) Project Management; 14) RCSP Water Working Group (WWG) Coordination; 15) Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project (completed); and 16) Characterization of the Basal Cambrian System (completed). Table 2 lists the responsibility matrix for these 16 tasks.

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	Charles D. Gorecki
Task 4 – Site Characterization and Modeling	James A. Sorensen
Task 5 – Well Drilling and Completion (completed)	John A. Hamling
Task 6 – Infrastructure Development	Melanie D. Jensen
Task 7 – CO_2 Procurement (completed)	John A. Harju
Task 8 – Transportation and Injection Operations (completed)	Melanie D. Jensen
Task 9 – Operational Monitoring and Modeling	John A. Hamling and Lawrence J. Pekot
Task 10 – Site Closure	John A. Hamling
Task 11 – Postinjection Monitoring and Modeling	John A. Hamling and Lawrence J. Pekot
Task 12 – Project Assessment	Loreal V. Heebink
Task 13 – Project Management	Charles D. Gorecki
Task 14 – RCSP WWG Coordination	Ryan J. Klapperich
Task 15 – Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project (completed)	Charles D. Gorecki
Task 16 – Characterization of the Basal Cambrian System (completed)	Wesley D. Peck

PROGRESS OF WORK

Task 1 – Regional Characterization

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

- Received approval for Deliverable (D) 81 entitled "PCOR Partnership Atlas 5th Edition," with minor notes, on February 1, 2017. Submitted the final revised "PCOR Partnership Atlas 5th Edition," with minor changes, on March 14, 2017. Final printed and bound copies were received at the EERC. Copies were distributed internally and to representatives at DOE.
- Submitted Milestone (M) 60 entitled "Data Submitted to EDX" on March 14, 2017, and received approval on March 16, 2017. CO_2 injection data and oil/gas/water production data for the Bell Creek oil field were submitted to DOE's EDX (Energy Data eXchange) system on March 9, 2017.
- Updated information and continued work on the partners-only Decision Support System (DSS) Web site, including the following:
  - Completed an initial internal review for content updates to the Bell Creek portion of the PCOR Partnership members-only DSS on the PCOR Partnership regional background; characterization; MVA; and modeling/simulation activities. Content has been placed in the Web-based format and is undergoing additional review. Future

activities will be focused on refining layout and presentation of site content in the Web-based format.
  - Fixed broken PCOR Partnership partner links.
- Continued activities to update the content of the **PCOR Partnership general database**, including the following:
  - Updated North Dakota, South Dakota, Montana, Wyoming, Nebraska, Manitoba, and Saskatchewan well and production data.
  - Continued database preventive maintenance of Petra projects.
- Continued work on oilfield regional models, including the following:
  - Refined the distribution of properties in the Beaver Creek Field model.
  - Completed structural model of the Gooseneck Field.
  - Created and upscaled lithofacies logs from the Gooseneck Field well data.
  - Distributed petrophysical properties in the Gooseneck Field.
- Continued work on a value-added report on the geologic characterization and CO_2 storage potential of the state of Nebraska.
- With regard to the **Williston Basin** CO_2 storage sink relative permeability laboratory characterization effort:
  - Continued the internal review of the draft value-added report.
  - Made revisions to the draft value-added report based on comments from the internal review.
- With regard to the **Aquistore** project:
  - Worked with PTRC to gain access to the cloud storage database containing Aquistore injection data.
  - Responded to a request from PTRC for a previously published presentation and technical report.
  - Participated in monthly Science and Engineering Research Committee (SERC) conference calls.
  - Decided with PTRC that a contract agreement should be developed instead of a memorandum of understanding. PTRC and the EERC worked on the development of that contract agreement.
  - As of March 31, 2017, 102,000 tonnes of CO_2 has been injected at the Aquistore site.
  - With regard to static **modeling** and dynamic predictive **simulation** activities:
    - Continued to download and process daily injection rate, pressure, and temperature data as available.
    - Processed injection data from October 2016 to March 31, 2017.
    - Used Computer Modelling Group Ltd.'s (CMG's) CMOST (an assisted history-matching software) to determine how to use injection flow profile data obtained from spinner log surveys as a history-matching variable.
    - Continued work on processing dipole sonic logs. The data will be used to investigate the formation mechanical properties and anisotropy and estimate the stress regime and fracture direction. Worked on calculating the minimum horizontal stress using the dipole sonic log and analyzing the formation anisotropy. Analyzed the stress orientation using the fracture logs available in the wells.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 2 – Public Outreach and Education

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

- Submitted a draft 1-hour documentary entitled "Coal Powered" for DOE review on January 31, 2017 (D22).
- Submitted the value-added "Household Energy and Carbon Web Pages Report" for the October 1 – December 31, 2016, quarter on March 23, 2017.
- Received verbal approval from DOE on January 9, 2017, for "The Bell Creek Story – CO_2 in Action" (D21).
- Participated in a Webinar entitled "Part 5: Social Site Characterization" hosted by the Global CCS Institute on March 23, 2017. The focus of the Webinar was social characterization as a basis for effective public engagement, education, and outreach for CCS.
- During the quarter, the PCOR Partnership was represented by EERC personnel at six meetings/conferences and two workshops. Specifically, the PCOR Partnership outreach activities included three oral presentations. The following quantities of PCOR Partnership outreach materials were distributed:
  - PCOR Partnership documentary entitled "Nature in the Balance: CO_2 Sequestration" – 1
  - PCOR Partnership documentary entitled "Reducing Our Carbon Footprint: The Role of Carbon Markets" – 1
  - PCOR Partnership documentary entitled "Out of the Air – Into the Soil" – 1
  - PCOR Partnership documentary entitled "Managing Carbon Dioxide: The Geologic Solution" – 1
  - PCOR Partnership documentary entitled "Global Energy and Carbon: Tracking Our Footprint" – 1
  - PCOR Partnership video training guide entitled "Installing a Casing-Conveyed Permanent Downhole Monitoring System" – 1
  - "Plains CO_2 Reduction Partnership Atlas, 4th Edition, Revised" – 27
  - "Plains CO_2 Reduction Partnership Atlas, 5th Edition" – 115
- Addressed review comments from DOE NETL and Denbury for Documentary D21 (The Bell Creek Story – CO_2 in Action). Developed draft DVD components, including scene definitions, chapter headings, jacket, and insert.
- Development and internal review of two value-added fact sheets (EOR 101 and Green Oil) were placed on hold.
- Continued review and comment on the draft value-added update of the Phase II Terrestrial Sequestration fact sheet. Completed initial internal review. Worked on modifications based on internal review and to insert a new image on the front page.

- Continued work on the text of the draft updated Phase II Zama fact sheet, including the characterization section.
- **Conference call** activity this quarter included the following:
  - No monthly Aquistore Outreach Advisory Group phone calls were held this quarter.
  - With regard to the monthly RCSP Program Outreach Working Group (OWG) conference calls:
    - Participated in the OWG call for January 19, 2017. The call focused on an OWG paper for the Carbon Capture, Utilization & Storage (CCUS) Conference to be held April 10–13, 2017, in Chicago, Illinois, and the idea of engaging CarbonSAFE projects was introduced.
    - Participated in the OWG call on February 16, 2017. The call focused on an OWG paper for the CCUS Conference and on engaging CarbonSAFE (Carbon Storage Assurance and Facility Enterprise) projects.
    - Participated in OWG call on March 23, 2017. The call focused on an OWG paper for the CCUS Conference and on engaging CarbonSAFE projects. Provided written comments to draft communications regarding CarbonSAFE project engagement.
- Continued efforts to update the **public Web site** (www.undeerc.org/pcor), including the following:
  - Wrote content for two of five CarbonSAFE project pages to be added to the CO_2 Sequestration Projects section of the public Web site in a future update. Worked on changes to the CO_2 Projects Map image to include these projects. Pages have been programmed on stages for internal review and/or as placeholders upon text approval from partners.
  - Continued ongoing identification and repair of broken links. Fixed broken partner Web site links.
- Continued collaborative efforts with **Prairie Public Broadcasting (PPB)**, including the following:
  - With regard to D21, the 30-minute Bell Creek documentary scheduled for June 2017 broadcast on PPB area, formulated a plan to address the comments received from DOE on January 9, 2017, and began to address comments to meet the schedule for a revised product to PPB by mid-April 2017.
  - With regard to D22, the "Coal Powered" 60-minute documentary:
    - PPB personnel traveled to Grand Forks, North Dakota, on January 4, 2017, to perform interviews with Ed Steadman and Roy Beard, EERC, for the D22 documentary.
    - Traveled to Fargo, North Dakota, on January 23, 2016, to meet with PPB personnel with respect to D22.
    - Matched all images, video location footage, and archival footage with a revised script and graphic animation to produce the draft documentary sent to DOE for review on January 31, 2017.
- Information regarding the **site sessions/visits** to the PCOR Partnership public Web site included the following:
  - There were 9831 sessions/visits to the public Web site (www.undeerc.org/pcor). Traffic decreased 7% from last quarter (10,558 sessions/visits).

- There were 8717 unique visitors to the public Web site, representing a 5% decrease from last quarter (9188 visitors). In particular, 88% of these visitors were new to the Web site (visitors whose visit was marked as a first-time visit in this quarter).
- Of the 9831 sessions/visits, 47% of the Web traffic was domestic and 53% was international. Table 3 lists the top ten countries for visits to the PCOR Partnership Web site: United States, India, United Kingdom, Canada, Australia, Nigeria, Philippines, Pakistan, New Zealand and Mexico. There was traffic from 148 countries overall (Figure 3).

Table 3. Sessions/Visit Activity from the Top Ten Countries and the PCOR Partnership Region

	Country	Sessions/ Visits*	PCOR Partnership State/Province	Visits*
1	United States	4667		
			North Dakota	151
			Minnesota	100
			Wisconsin	93
			Missouri	65
			Wyoming	40
			Iowa	34
			Nebraska	33
			Montana	32
			South Dakota	14
2	India	884		
3	United Kingdom	688		
4	Canada	652		
			Alberta	115
			British Columbia	89
			Saskatchewan	23
			Manitoba	18
5	Australia	274		
6	Nigeria	197		
7	Philippines	195		
8	Pakistan	131		
9	New Zealand	94		
10	Mexico	93		
	Other 138 countries	1956		
Total Sessions/Visits		**9831**	**Total PCOR Partnership Visits**	**807**

*Arranged by the number of visits to the site.

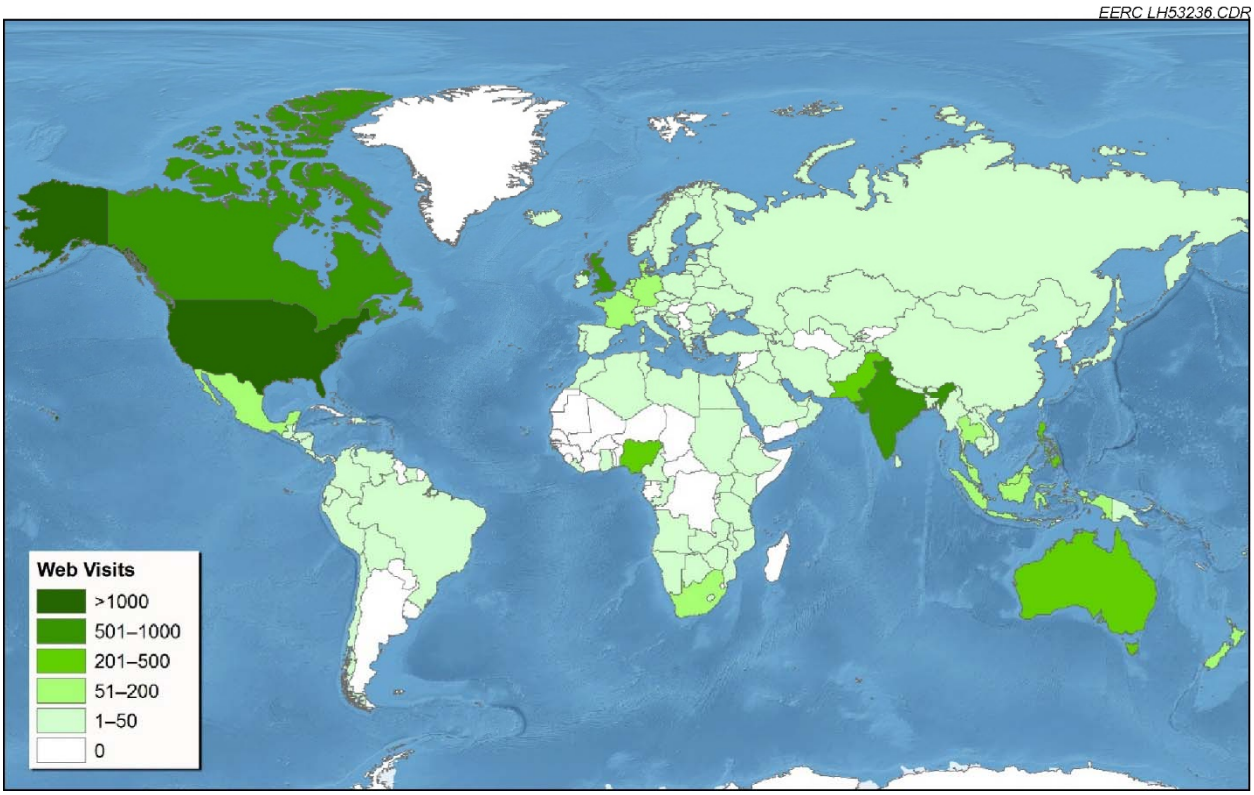


Figure 3. Map of PCOR Partnership Web site global traffic for this reporting period.

  - There were 807 sessions/visits originating from within the PCOR Partnership region (approximately an 8% decrease from last quarter) (Figure 4). Approximately 70% of the regional visits originated from the United States, and 30% came from Canada. Visits from within the PCOR Partnership region represent approximately 8% of the overall traffic to the public Web site (it should be noted that the totals are exaggerated to some degree because the visit location data were aggregated at the state and province levels, even though the PCOR Partnership region formally includes only portions of British Columbia, Montana, and Wyoming).
- During this reporting period, a breakdown of how visitors came to the PCOR Partnership Web site, also referred to as **traffic sources** (Figure 5), was determined and is provided below:
  - Search traffic refers to the use of search engines such as Google, Bing, and Yahoo. Search traffic accounted for over 87% of the overall traffic that came to the public Web site. Google Analytics provides keywords that visitors used to find the public Web site. The top three search phrases were "CO_2," "sequestration," and "what is CO_2."

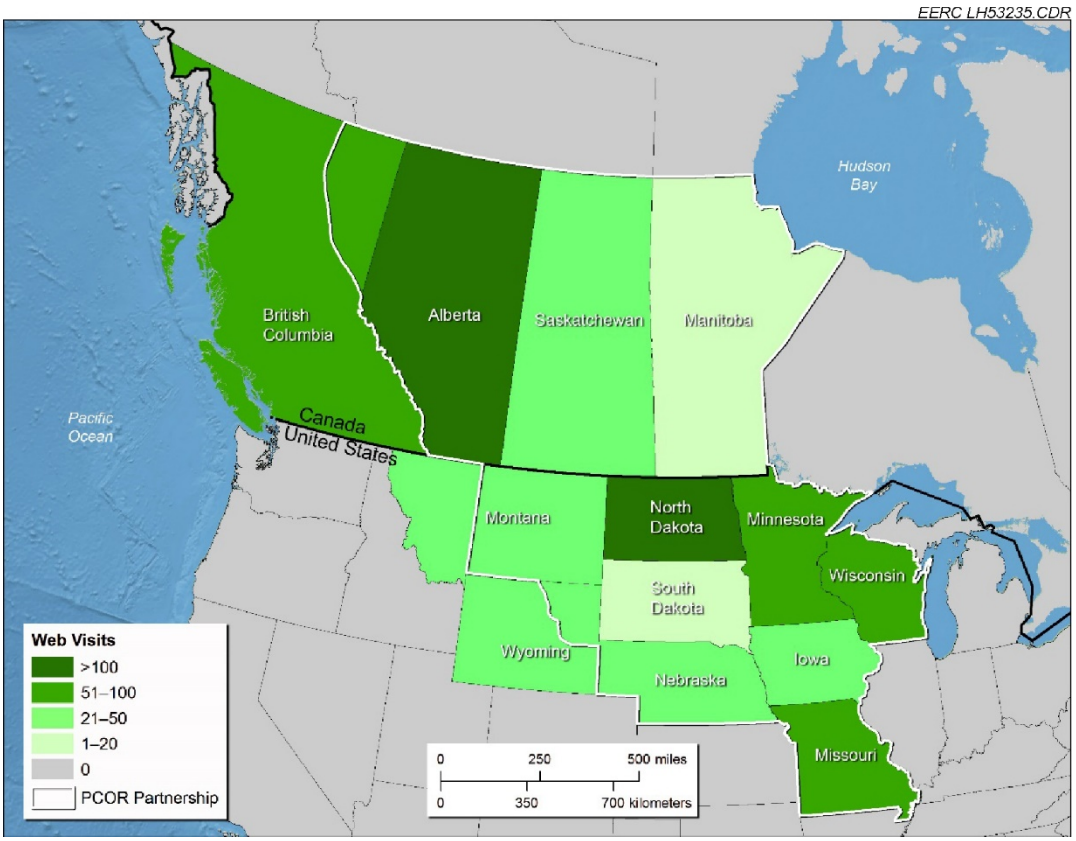


Figure 4. Map of PCOR Partnership Web site regional visits for this reporting period.

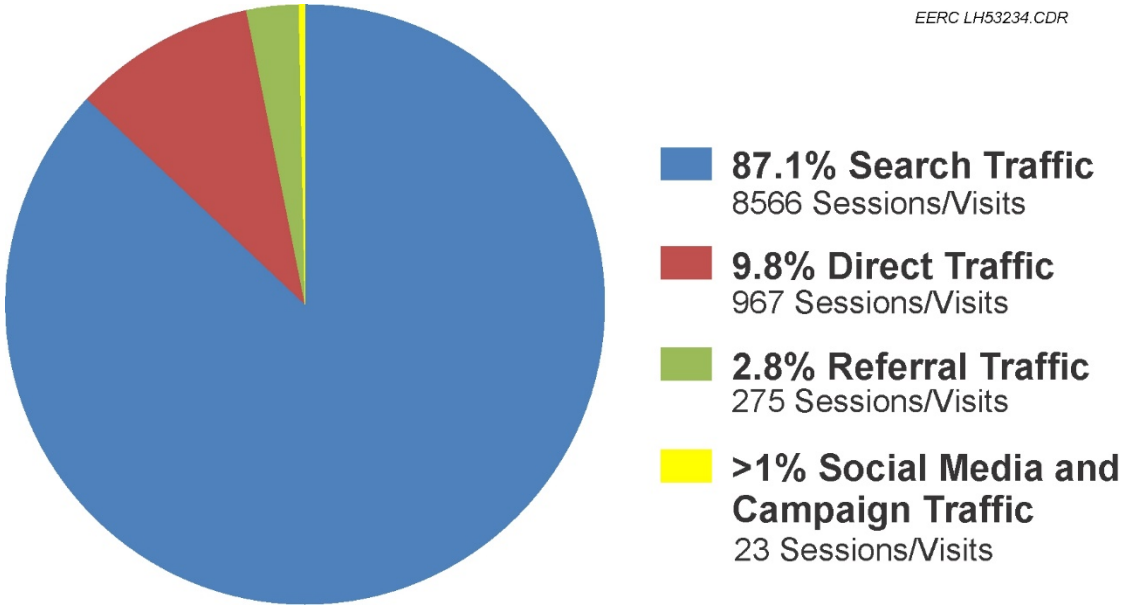


Figure 5. PCOR Partnership public Web site traffic sources for this reporting period.

  - Direct traffic consists of those visitors who bookmark or type a specific URL (e.g., www.undeerc.org/pcor) into the Web address bar. It is likely that most of the direct traffic (almost 10%) is from persons familiar with the PCOR Partnership.
  - Referral site traffic (approximately 3%) corresponds to the traffic directed to the PCOR Partnership Web page from other sites via links. The top referring Web sites were from energy.gov (directing visitors to the "Home" page) and arthapedia.in (an Indian economy and government Web site leading to the "What is CO_2 Sequestration" page).
  - Less than 1% of site traffic (23 visitors) resulted from teacher campaigns and social interactions, such as e-mail or social media sources (e.g., Facebook and YouTube).
- During this reporting period, the **nature of the sessions** to the PCOR Partnership public Web site included 16,153 page views (a 3% decrease from last quarter); the top five pages viewed are listed in Table 4. These five pages make up over 71% of total page views.
- All five full-length documentaries and 50 video clips taken from the documentaries have been uploaded to the EERC's YouTube channel. The top five accessed YouTube videos are listed in Table 5. Because of the volume of material, the videos were organized into seven playlists. Each video description includes one or more links to the PCOR Partnership public Web site. Three PCOR Partnership full-length documentaries are also on the PPB YouTube Channel. These are listed in Table 6. These videos can also be streamed on the PCOR Partnership public Web site.

Table 4. Top "Page Views" on the PCOR Partnership Public Web Site

Page Title	Page Views	% Page Views	Page
What Is CO_2?	5198	32.2	www.undeerc.org/pcor/sequestration/whatisco2.aspx
What Is CO_2 Sequestration?	4478	27.7	www.undeerc.org/pcor/sequestration/whatissequestration.aspx
Carbon Capture and Storage (CCS)	813	5.0	www.undeerc.org/pcor/sequestration/ccs.aspx
Terrestrial	632	3.9	www.undeerc.org/pcor/region/terrestrial/default.aspx
CO_2 on Earth	463	2.8	www.undeerc.org/pcor/sequestration/co2onearth.aspx

Table 5. Top EERC PCOR Partnership-Related YouTube Channel Videos Accessed

Video	Video Length	Views	Est. Minutes Watched	Avg. View Duration
Reforestation in Brazil	4:41	1016	2156	2:10
Reducing Our Carbon Footprint: The Role of Markets Documentary	26:49	703	3171	4:30
The Phases of Oil Recovery – So Far	2:40	616	1058	1:45
Installing a Casing-Conveyed Permanent Downhole Monitoring System	19:19	122	494	4:00
Household Energy Around the World	5:34	113	313	2:50

Table 6. PCOR Partnership Documentaries on PPB YouTube Channel Accessed

Video	Video Length	Views	Est. Minutes Watched	Avg. View Duration
Global Energy and Carbon: Tracking Our Footprint	32:36	1254	9484	7:30
Managing Carbon Dioxide: The Geologic Solution	31:40	38	236	6:00
Out of the Air and Into the Soil	26:45	50	223	4:30

- During this reporting period, the PCOR Partnership received **public television exposure** from documentaries broadcast in the PPB region in four states and one Canadian province. A total of three broadcasts aired, with "Reducing Our Carbon Footprint: The Role of Markets," "Managing Carbon Dioxide: The Geological Solution," and "Global Energy and Carbon: Tracking our Footprint" each airing once.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 3 – Permitting and NEPA Compliance

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

- Submitted D76 entitled "Regulatory Perspective Regarding the Geologic Storage of CO_2 in the PCOR Partnership Region" on January 31, 2017. Received approval on March 23, 2017.
- Participated in the Webinar entitled "Environmental Regulations under the Trump Administration: What They Mean for Your Business" on January 10, 2017, which was rescheduled by the presenter from December 15, 2016.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 4 – Site Characterization and Modeling

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

- Submitted D35 entitled "Best Practices Manual (BPM) for Site Characterization" on March 31, 2017.

- Conducted a 2-day petrophysics training event February 7–8, 2017, at the EERC and the North Dakota Core Library. The event was led by PCOR Partnership member Eric Pasternack, Outsource Petrophysics. The training used PCOR Partnership data sets and focused on ongoing PCOR Partnership activities.
- **Bell Creek** test site activities included the following:
  - With regard to **modeling** efforts, the following activities occurred:
    - Imported pulsed-neutron logs (PNLs) from the January campaign into the PNL Petrel model.
    - Completed the Version 3 (V3) Bell Creek reservoir model (static). Portions of this model are serving as the basis for current numerical simulation efforts.

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

- This task ended on March 31, 2017.

Task 5 – Well Drilling and Completion

This task ended in Quarter 3 – BP4, Year 7 (June 2014).

Task 6 – Infrastructure Development

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

- Worked on the 2017 update to D85 (Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCUS Activities), including the following:
  - Discussed the topic of interest. The focus at this time is CO_2 impurities. The resulting document should illustrate the costs and benefits of various changes that can be made to compression and pipeline infrastructure to enable different types of CO_2 sources to consider CCS.
  - Developed an outline.
  - Worked on sections discussing end uses of CO_2 and their specific CO_2 stream purity requirements, removal of impurities and relative costs, and potential pipeline changes.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 7 – CO_2 Procurement

This task ended Quarter 4, BP4, Year 6 (September 2013).

Task 8 – Transportation and Injection Operations

This task ended Quarter 4, BP4, Year 8 (September 2015).

Task 9 – Operational Monitoring and Modeling

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

- Attended a Linux Sysadmin Workshop held in El Segundo, California, February 9–10, 2017. This was a hands-on training workshop on Linux system administration, which will allow more efficient use of the dedicated geophysics workstation. This workstation is used for processing and analysis of seismic data.
- Two researchers attended Schlumberger Carbon Services' (Schlumberger) NExT Training "Practical Seismic Interpretation with Petrel" held February 27 – March 3, 2017, in Houston, Texas.
- Attended a Schlumberger short course entitled "Geomechanics Applications in Shale Gas" in Grand Forks, North Dakota, on March 28–29, 2017. The course covered several relevant topics, including introduction to petroleum geomechanics, construction of a Mechanical Earth Model (MEM), wellbore stability control, and shale anisotropy and heterogeneity. The knowledge will aid in the modeling process.
- Submitted three memos regarding official updated volumes of tonnes of CO_2 purchased for injection and tonnes of CO_2 stored at Bell Creek. At the end of BP4 (March 31, 2016), 2.979 million tonnes of CO_2 had been stored.
  - Submitted a memo on January 26, 2017. As of December 31, 2016, 3.583 million tonnes of total gas (composition of approximately 98% CO_2) had been purchased for injection into the Bell Creek Field, equating to an estimated ***3.526 million tonnes of CO_2 stored***.
  - Submitted a memo on March 2, 2017. As of January 31, 2017, 3.646 million tonnes of total gas (composition of approximately 98% CO_2) had been purchased for injection into the Bell Creek Field, equating to an estimated ***3.589 million tonnes of CO_2 stored***.
  - Submitted a memo on March 31, 2017. As of February 28, 2017, the most recent month of record, 3.712 million tonnes of total gas (composition of approximately 98% CO_2) has been purchased for injection into the Bell Creek Field, equating to an estimated ***3.654 million tonnes of CO_2 stored***.
- Submitted and received approval for M63 entitled "Bell Creek Test Site – Initial Analysis of Processed InSAR (interferometric synthetic aperture radar) Data Completed" on March 30, 2017.
- Submitted and received acceptance for an abstract entitled "The Value of 4-D Seismic Monitoring at Bell Creek – A Mature Oil Field Undergoing CO_2 Enhanced Oil Recovery" to be presented at the 79th European Association of Geoscientists and Engineers (EAGE) Conference & Exhibition 2017 to be held June 12–15, 2017, in Paris, France.
- Held a meeting to discuss the latest Bell Creek risk assessment. Worked on updating the Bell Creek risk assessment based on January 2017 meeting feedback.

- Discussed PCOR Partnership MVA technology experience with a representative from Schlumberger for an internal DOE document.
- Continued working on content for the modeling and simulation BPM (D69), due May 31, 2017, including the outline, lessons learned, and recommended best practices.
- Continued work on BPM – Monitoring for CO_2 Storage and CO_2 EOR (D51), including the outline and reference resources.
- Continued **Bell Creek** site activities, including the following:
  - Used the most recent publicly available data to determine that cumulative total CO_2 gas injection is 6,715,451 tonnes through January 31, 2017. This value represents the total gas volume injected, which includes purchase and recycle streams and is NOT corrected for a gas composition of approximately 98% CO_2 (Table 7).
  - As of February 28, 2017, the most recent month of record during this reporting period, 3.712 million tonnes of total gas (composition of approximately 98% CO_2) has been purchased for injection into the Bell Creek Field, equating to an estimated 3.654 million tonnes of CO_2 stored (Table 8), with the difference comprising other trace gases in the purchase gas stream. A separate methodology from that used to calculate total gas injected was used to calculate a cumulative associated CO_2 storage volume estimate by correcting the gas purchase volume (approximately 98% CO_2) obtained from Denbury's custody transfer meter with gas compositional data.
  - With regard to **injection-phase monitoring** efforts:
    - Continued reservoir pressure and distributed temperature monitoring of 05-06 OW (observation well) from the permanent downhole monitoring (PDM) system using the casing-conveyed pressure–temperature gauges and fiber-optic distributed temperature system (DTS):
      - Near-continuous operation since April 2012.
      - Traveled to the Bell Creek Field February 22–24, 2017, to download DTS unit and MOREVision data, which included:
        - DTS data: July 11, 2016, to February 23, 2017
        - MOREVision data: July 29, 2016, to February 23, 2017

Table 7. Bell Creek CO_2 Gas Injection Totals for January 2017 (cumulative totals May 2013 to January 2017)[1]

	January 2017 Injection
Total, Mscf	3,466,679
Total, tons[2]	198,289
Total, tonnes[3]	180,059
Cumulative Total, Mscf	129,292,583
Cumulative Total, tons[2,4]	7,395,332
Cumulative Total, tonnes[3,4]	6,715,451

Source: Montana Board of Oil and Gas (MBOG) database.

[1] Total gas injection quantities are ***NOT CORRECTED*** for gas composition and include the combined purchased and recycled gas streams.

[2] Calculated utilizing a conversion of 17.483 Mscf/ton.

[3] Calculated utilizing a conversion of 19.253 Mscf/tonnes.

[4] Cumulative totals are for the period from May 2013 to the month listed.

Table 8. Cumulative Total Gas Purchased and Estimated Associated CO_2 Storage for the Bell Creek Field[1]

	February 2017 Gas Totals
Monthly Total Gas Purchased, MMscf[2]	1261
Monthly Total Gas Purchased, million tons[2]	0.072
Monthly Total Gas Purchased, million tonnes[2]	0.066
Cumulative Total Gas Purchased, MMscf[2,3]	71,464
Cumulative Total Gas Purchased, million tons[2,3]	4.088
Cumulative Total Gas Purchased, million tonnes[2,3]	3.712
Cumulative Total CO_2 Stored, MMscf[3,4]	70,351
Cumulative Total CO_2 Stored, million tons[3,4]	4.024
Cumulative Total CO_2 Stored, million tonnes[3,4]	3.654

[1] Conversion factors of 17.483 Mscf/ton and 19.253 Mscf/tonne were used to calculate equivalent purchase and storage quantities.
[2] Total gas purchased *NOT CORRECTED* for gas composition.
[3] Cumulative totals are for the period from May 2013 to the month listed.
[4] Total CO_2 stored *CORRECTED* for gas composition.

    - Encountered 18 days of lost data (July 11–29, 2016) for each of the three gauges (lower, middle, and upper) on the MOREVision unit. The data gap is attributed to sample rates being reverted back to 10-second intervals instead of 5-minute intervals according to PROMORE's updates to the program, thus causing the system to overwrite.
  - Completed data processing and quality assurance/quality control for the 05-06 OW PDM data sets through February 23, 2017.
- Continued working with the 4-D surface seismic data set from Bell Creek. Analysis included the following:
  - Worked on amplitude mapping of the new (September 2015) 4-D data set, i.e., 3-D seismic data sets for 2012 overlapping 2015, and 3-D seismic data sets for 2015 overlapping 2012.
  - Worked on integrating 4-D seismic data with PNLs.
  - Worked on mapping changes in reservoir properties (Sg and pressure) to compare with the map of 4-D seismic amplitude difference for Phase Areas 1 and 2 to identify where simulation model can updated by the engineers.
  - Worked on integrating 4-D seismic data with vertical seismic profile (VSP) data.
  - Performed seismic calibration for the Bell Creek Petrel model.
  - Completed seismic well tie for four wells, and generated a synthetic seismogram in the Bell Creek Petrel model. Completed six seismic horizons for the 2012 3-D seismic data using the four seismic well tie.
  - Started work on prestack seismic inversion of the repeat data set (2012 and 2014) to obtain the P-wave and S-wave velocities and impedances. This is expected to help with distinguishing saturation changes from pressure changes.
  - Completed prestack AVO (amplitude versus offset) stack inversions for the baseline and monitor.
- Continued Bell Creek Field microseismic data processing focused on data collected May–June 2013 and June–July 2014, including the following:

        - Continued work on the model for microseismic event localization.
        - Worked on testing new microseismic model on passive data.
        - Refined the microseismic velocity model after integrating Bell Creek Field horizons and well logs. This is one of the fundamental steps in processing and interpretation.
        - Worked on passive seismic processing testing event location methods.
        - Worked on improving the performance of the automatic event detection algorithm available in MiVu (microseismic software).
        - Continued testing automatic event detection in MiVu.
    - Worked on D104 (Analysis of Expanded Seismic Campaign), including the following:
        - Drafted a preliminary table of contents.
        - Wrote text for sections on microseismic data analysis, surface seismic acquisition, and processing.
        - Worked on crossplot analyses for inclusion.
- With regard to **injection-phase PNL** activities:
    - Completed the PNL acquisition on 11 Bell Creek wells as part of the expanded PNL program. Logging occurred January 8–22, 2017. Logs acquired were focused on Phase Areas 1 and 3.
- With regard to **injection-phase sampling** activities:
    - Travel for Bell Creek activities:
        - Worked with Denbury personnel on the fifth round of oil sample collection from a select group of wells in the Bell Creek Field. Nine of ten target samples were collected.
    - Continued oil composition analyses of oil samples collected from the Bell Creek oil field.
    - Started statistical analysis of oil composition data on the oil samples analyzed to date.
    - Continued analyzing the CO_2-dominated "miscible" phase data generated for crude oil at several different pressures.
    - A summary of all oil and CO_2 gas stream samples collected for analyses to date is provided in Table 9.
- With regard to **modeling** and **simulation** efforts:
    - Consistent progress since April 2011.
    - Continued dynamic reservoir pressure and multiphase fluid flow simulation efforts. The modeling and simulation focus remains on Bell Creek Field Phase Areas 1–4. Accomplishments and activities include the following:
        - History matching is complete for Bell Creek Phase Areas 1–3. Predictive simulation is complete for Bell Creek Phase Areas 1 and 2. Long-term simulations of CO_2 migration are complete for Bell Creek Phase Areas 3–7.
        - History matching of the primary depletion and waterflooding stages is complete for Bell Creek Phase Area 4 based on the V2 geologic model.

Table 9. Oil and CO_2 Gas Stream Sampling and Analyses

Date Sampled	Purchase/ Recycle[1]	Production Stream by Development Phase, Well[1]									
		Phase 1				Phase 3			Phase 4		
		56-14R	32-02	05-06	04-04	28-02	21-10	21-14	34-09	34-07	34-03
Jan 2014		O	O	O							
March 2014		O	O								
May 2014	P	O	O	O							
June 2014	PR	O	O	O							
July 2014	PR	O	O	O							
Sept 2014	PR	OG	OG	O							
Oct 2014	PR	O	O								
Nov/Dec 2014		OG	OG	G							
Jan 2015			O	OG							
March 2015		G	G	G							
April 2015	PR										
June 2015		O	O	O							
July 2015	PR	G	G	G							
Sept 2015	PR										
Nov 2015		O		O							
Jan 2016	PR										
April/May 2016		O	O	O	O	O	O	O			
June/July 2016	PR	O		O	O	O	O	O			
Aug/Sept 2016		O	O		O	O	O	O	O		
Oct 2016				O							
Nov/Dec 2016[2]	PR	O	O	O	O	O	O	O	O	O	O
Feb 2017[2]		O	O		O	O	O	O	O	O	O

[1] P = purchase CO_2 gas stream, R = recycle CO_2 gas stream, O = produced oil stream, and G = produced CO_2 gas stream.
[2] Oil samples collected but not yet analyzed.

- Worked on testing the Phase Area 4 simulation model using the new V3 geologic model. V3 has an improved permeability distribution based on seismic attribute data and a revised depositional model. Reservoir layering and gridding are also improved, but more complex, in the V3 geologic model.
- Worked on analyzing the material balance relationship between water injection and liquid production in the waterflooding stage in Bell Creek Phase Area 4 in the V2 geologic model.
- Analyzed water injection and individual well injectivity in Bell Creek Phase Area 4.
- Completed history match for the waterflooding and CO_2-flooding stages in the Bell Creek Phase Area 4 area using the V3 simulation model.

♦ Applied Linux system administration skills learned in the course attended February 9–10, 2017, to improve the security of the geophysics Linux workstation.

- Continued with a hysteresis study to inform V3 simulation model parameters, including the following:
  - Discussed conditions to use in the study.
  - Selected an initial set of samples, and performed characterization tests to be used for narrowing down the final sample set.
  - Completed porosity and air permeability measurements on the initial sample set to use for final sample selection for flow-through testing.
  - Determined bulk resistivity on samples prior to saturation.
  - Completed laboratory preparations of the relative permeability system.
  - Selected four samples for continued testing, with a low- and a high-permeability sample from each of two wells.
  - Performed laboratory tests on a trial sample and on the first study sample. Determined CO_2 permeability, brine permeability, oil permeability, and hysteresis.
  - Worked on data processing.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 10 – Site Closure

Significant accomplishments for Task 10 for the reporting period included the following:

- No activity this quarter.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 11 – Postinjection Monitoring and Modeling

Significant accomplishments for Task 11 for the reporting period included the following:

- No activity this quarter.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 12 – Project Assessment

Significant accomplishments for Task 12 for the reporting period included the following:

- Received approval for D57 entitled "Annual Assessment Report" on February 8, 2017.
- Began work on the BP5 program year (PY) 10 annual report.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 13 – Project Management

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

- Assigned the role of Assistant PCOR Partnership Manager to Mr. Neil Wildgust. He will be supporting each task leader and PCOR Partnership Manager Charlie Gorecki.
- Drs. David Nakles and Nicholas Azzolina have joined the EERC team. The CETER Group, as an entity, is no longer involved with the PCOR Partnership.
- Received approval for M36 entitled "Technical Advisory Board Meeting Scheduled" on January 3, 2017.
- Attended the IEA Greenhouse Gas R&D Programme Fiscal Year 2017 (FY17) RCSP Expert Review held January 23–27, 2017, in Pittsburgh, Pennsylvania. Charlie Gorecki, the PCOR Partnership Project Manager, presented an update on PCOR Partnership activities, including how these activities are meeting the goals of the RCSP Program. This was followed by a question-and-answer session and deliberation by the panel. Several staff members from the EERC participated via phone.
- The PCOR Partnership Project Manager attended a site visit to Southern Company in Birmingham, Alabama, hosted by Richard Esposito, Southeast Regional Carbon Sequestration Partnership (SECARB), on January 5–6, 2017, to discuss potential areas of collaboration.
- Hosted an Energy Roundtable at the EERC on January 20, 2017. Key PCOR Partnership partners discussed the primary focus of current energy topics and gave brief updates from their companies perspective. This information will be used to help inform PCOR Partnership activities.
- Attended the SECARB 12th Annual Stakeholders' Briefing held March 8–9, 2017, in Atlanta, Georgia. Presented "Lasting Impacts of the Plains CO_2 Reduction (PCOR) Partnership Program" on March 8, 2017.
- Attended and presented "The Plains CO_2 Reduction (PCOR) Partnership Program Update" to the CCUS Working Group at the North American Energy Ministers Trilateral (NAEMT) Meeting/Workshop, held March 28–30, 2017, in Pittsburgh, Pennsylvania.

- Submitted a form that gives a brief overview of some the PCOR Partnership program highlights on March 10, 2017, for the Carbon Sequestration Leadership Forum (CSLF) Mid-Year Meeting to be held April 30 – May 4, 2017, upon request from DOE.
- Responded to a DOE request to provide an update on international participation during the period of January–March 2017, including ongoing and future activities.
- Continued working on the revised Adaptive Management Approach BPM (D102). Completed addressing comments provided by PCOR Partnership Technical Advisory Board (TAB) members. Once finished, the revised final version with be provided to DOE.
- Held a meeting to discuss the latest PCOR Partnership programmatic risk assessment. Developed a plan to finalize the results and incorporate lessons learned into future PCOR Partnership deliverables (e.g., risk assessment BPM). Worked on updating the latest PCOR Partnership programmatic risk assessment based on January 2017 meeting feedback.
- Held a task leader meeting February 9, 2017. Topics discussed included the January 2017 RCSP peer review, planning for the 2017 annual TAB and PCOR Partnership meetings, Bell Creek and Aquistore project updates, deliverables, past and upcoming conferences, and task leader updates.
- Continued planning for the 2017 PCOR Partnership Annual Membership Meeting, including potential meeting dates and venues.
- Continued planning the 2017 TAB meeting, including the following:
  - Determined final dates of the meeting: May 22–24, 2017.
  - Worked on finalizing the hotel contract in San Francisco, California.
  - Sent meeting information to the TAB members.
  - Worked on a draft agenda.
  - Worked with the hotel to ensure TAB members are registered.
  - Determined EERC attendees.
- Deliverables and milestones completed in January:
  - December monthly update
  - Task 2: D22 – Coal Powered
  - Task 3: D76 – Regulatory Perspective Regarding the Geologic Storage of CO_2 in the PCOR Partnership Region
  - Task 13: D58/D59 – Quarterly Progress Report/Milestone Quarterly Report
- Deliverables and milestones completed in February:
  - January monthly update
- Deliverables and milestones completed in March:
  - February monthly update
  - Task 1: M60 – Data Submitted to EDX
  - Task 4: D35 – BPM for Site Characterization
  - Task 9: M63 – Initial Analysis of Processed InSAR Data Completed
  - Task 14: M23 – WWG Conference Call Held

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 14 – RCSP WWG Coordination

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

- Received approval for D106 entitled "Special Issue of IJGGC [*International Journal of Greenhouse Gas Control*] – Nexus of Water and Carbon Capture and Storage" on January 3, 2017.
- A researcher participated as a panelist for the "Science Challenges to Improve Industrial Water Use" at the DOE workshop: Basic Research Needs for the Energy–Water Nexus: New Approaches to Ensure Robust and Secure Energy and Water Systems on January 4–6, 2017, in Bethesda, Maryland. Over 150 participants and observers representing the national labs, academia, and industry were invited and tasked with providing an assessment of the basic science bottlenecks and gaps in the fundamental understanding of issues related to the energy–water nexus. Priority research directions were established for improving water use in industrial applications, reducing water use in energy production, challenges to increase fit-for-purpose water availability, and crosscutting basic science in the energy–water nexus.
- Continued work on D107 (Journal Article or Topical Report – Major Research Focuses for Water and CCS), including the following:
  - Expanded the draft outline.
  - Reviewed and discussed the expanded draft outline internally.
  - Prepared a draft vision statement and table of contents. Discussed draft materials with Andrea McNemar, DOE NETL. Incorporated Ms. McNemar's comments.
  - Updated the draft for distribution to the WWG.
  - Worked on the introduction and background sections.
- Held the quarterly WWG conference call on March 30, 2017. Agenda items included discussion of the draft outline of D107, suggestions for an annual meeting speaker, and partnership updates.
- Reviewed the WWG Web site to identify necessary updates. Began preparing text related to the IJGGC effort.

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

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 15 – Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project

This task ended Quarter 2, BP4, Year 7 (February 2014).

Task 16 – Characterization of the Basal Cambrian System

This task ended Quarter 2, BP4, Year 7 (March 2014).

PHASE III COST STATUS

The approved BP5 (Modification No. 35) budget along with actual costs incurred and in-kind cost share reported are shown in Table 10. A spending plan for BP5 and actual incurred cost by quarter of cash funds for BP5 are provided in Figure 6 and Table 11.

Table 10. Phase III Budget – BP5

Organization	Approved Budget, $*	Actual Costs Incurred, $
DOE Share – Cash	13,946,212	6,446,068
Nonfederal Share	5,711,194	5,758,823
Total	19,657,406	12,204,891

*As of Modification No. 35.

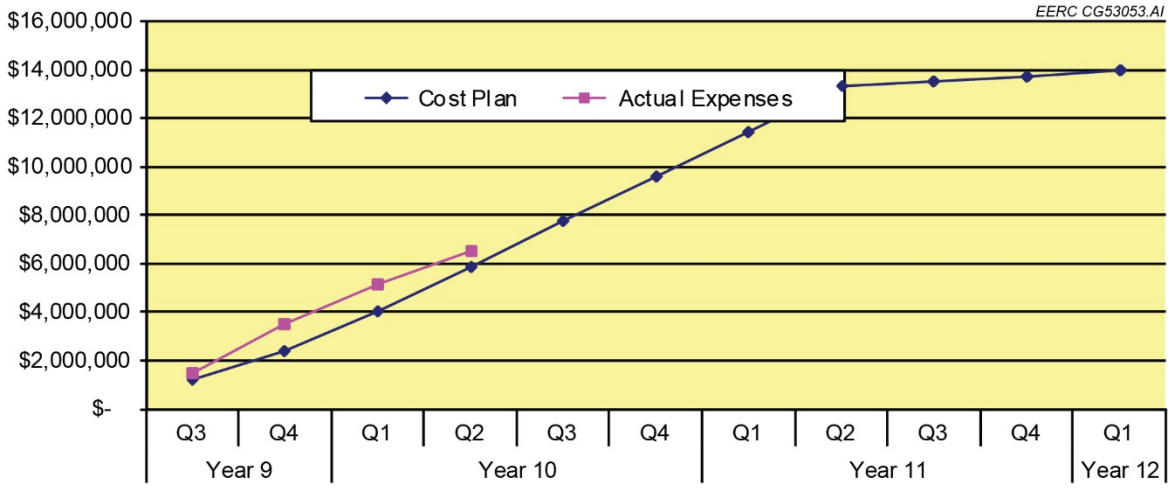


Figure 6. PCOR Partnership Phase III, BP5, Years 9–12 funding (cash only).

PHASE III SCHEDULE STATUS

Table 12 lists all deliverables and milestones by quarter, with completion dates, through the end of the reporting period (see Table 13 for the Gantt chart for BP5, Years 9–12).

Table 11. Phase III, BP5, Years 9–12 Spending Plan

Budget Period 4 | Budget Period 5

Baseline Reporting Quarter	Year 9								Year 10							
	Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4	
	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total
Baseline Cost Plan																
Federal Share	$ 2,250,000	$ 62,873,437	$ 2,250,000	$ 65,123,437	$ 1,202,894	$ 1,202,894	$ 1,202,894	$ 2,405,788	$ 1,623,146	$ 4,028,934	$ 1,855,986	$ 5,884,920	$ 1,855,986	$ 7,740,906	$ 1,855,986	$ 9,596,892
Nonfederal Share	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Planned	$ 2,250,000	$ 65,285,408	$ 2,250,000	$ 67,535,408	$ 1,202,894	$ 1,202,894	$ 1,202,894	$ 2,405,788	$ 1,623,146	$ 4,028,934	$ 1,855,986	$ 5,884,920	$ 1,855,986	$ 7,740,906	$ 1,855,986	$ 9,596,892
Actual Incurred Cost																
Federal Share	$ 1,909,898	$ 57,914,662	$ 2,562,356	$ 60,477,018	$ 1,497,211	$ 1,497,211	$ 1,962,929	$ 3,460,140	$ 1,623,146	$ 5,083,286	$ 1,362,782	$ 6,446,068				
Nonfederal Share	$ (4,110)	$ 2,991,641	$ 10,655	$ 3,002,296	$ 7,501	$ 7,501	$ 30,340	$ 37,841	$ 10,788	$ 48,629	$ 530	$ 49,159				
Total Incurred Cost	$ 1,905,788	$ 60,906,303	$ 2,573,011	$ 63,479,314	$ 1,504,712	$ 1,504,712	$ 1,993,269	$ 3,497,981	$ 1,633,934	$ 5,131,915	$ 1,363,312	$ 6,495,227				
Variance																
Federal Share	$ 340,102	$ 4,958,775	$ (312,356)	$ 4,646,419	$ (294,317)	$ (294,317)	$ (760,035)	$ (1,054,352)	$ -	$ (1,054,352)	$ 493,204	$ (561,148)				
Nonfederal Share	$ 4,110	$ (579,670)	$ (10,655)	$ (590,325)	$ (7,501)	$ (7,501)	$ (30,340)	$ (37,841)	$ (10,788)	$ (48,629)	$ (530)	$ (49,159)				
Total Variance	$ 344,212	$ 4,379,105	$ (323,011)	$ 4,056,094	$ (301,818)	$ (301,818)	$ (790,375)	$ (1,092,193)	$ (10,788)	$ (1,102,981)	$ 492,674	$ (610,307)				

Budget Period 5

Baseline Reporting Quarter	Year 11								Year 12							
	Q1		Q2		Q3		Q4		Q1							
	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total	Q1	Cum. BP Total						
Baseline Cost Plan																
Federal Share	$ 1,855,987	$ 11,452,879	$ 1,855,987	$ 13,308,866	$ 212,449	$ 13,521,315	$ 212,449	$ 13,733,764	$ 212,448	$ 13,946,212						
Nonfederal Share	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -						
Total Planned	$ 1,855,987	$ 11,452,879	$ 1,855,987	$ 13,308,866	$ 212,449	$ 13,521,315	$ 212,449	$ 13,733,764	$ 212,448	$ 13,946,212						
Actual Incurred Cost																
Federal Share	$ -	$ -	$ -	$ -												
Nonfederal Share	$ -	$ -	$ -	$ -												
Total Incurred Cost	$ -	$ -	$ -	$ -												
Variance																
Federal Share	$ -	$ -	$ -	$ -												
Nonfederal Share	$ -	$ -	$ -	$ -												
Total Variance	$ -	$ -	$ -	$ -												

Table 12. Phase III Milestones and Deliverables

Title/Description	Due Date	Actual Completion Date
Year 1 – Quarter 1 (October–December 2007)		
D37: Task 4 – Fort Nelson Test Site – Geological Characterization Experimental Design Package	12/31/07	12/28/07
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

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual 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 CCS and Water, Part Subtask 14.2 – White Paper on Nexus of CCS and Water	2/28/09	2/27/09
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	Not applicable	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 3 – 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 . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual 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

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual 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	1/14/11
D31: Task 4 – Bell Creek Test Site – Geological Characterization Experimental Design Package	1/31/11	1/27/11
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/11	1/31/11
M23: Task 14 – Monthly WWG Conference Call Held	1/31/11	1/19/11
M28: Task 4 – Bell Creek Geological Experimental Design Package Completed	1/31/11	1/27/11
D15: Task 2 – Bell Creek Test Site Fact Sheet	2/28/11	2/28/11
M23: Task 14 – Monthly WWG Conference Call Held	2/28/11	Waived by DOE
D10: Task 1 – Demonstration Project Reporting System Update	3/31/11	3/25/11
D18: Task 2 – Bell Creek Test Site PowerPoint Presentation (update)	3/31/11	3/31/11
D26: Task 2 – Fort Nelson Test Site Poster	3/31/11	3/31/11
D28: Task 3 – Environmental Questionnaire – Bell Creek Test Site	3/31/11	3/30/11
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCS Activities	3/31/11	3/31/11
M23: Task 14 – Monthly WWG Conference Call Held	3/31/11	3/22/11
Year 4 – Quarter 3 (April–June 2011)		
M30: Task 5 – Bell Creek Test Site Baseline MVA Initiated	4/01/11	3/24/11
M23: Task 14 – Monthly WWG Conference Call Held	4/30/11	4/21/11
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/11	4/29/11
D88: Task 13 – Programmatic Risk Management Plan	4/30/11	4/29/11
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/11	5/31/11
D34: Task 4 – Bell Creek Test Site – Baseline Hydrogeological Final Report	5/31/11	5/31/11

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 4 – Quarter 3 (April–June 2011) (continued)		
M23: Task 14 – Monthly WWG Conference Call Held	5/31/11	5/5/11
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (update)	6/30/11	6/30/11
M23: Task 14 – Monthly WWG Conference Call Held	6/30/11	6/23/11
M24: Task 14 – WWG Annual Meeting Held	6/30/11	5/5/11
Year 4 – Quarter 4 (July–September 2011)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/11	7/28/11
M23: Task 14 – Monthly WWG Conference Call Held	7/31/11	7/26/11
D29: Task 3 – Permitting Action Plan	8/31/11	8/31/11
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/11	8/31/11
D67: Task 9 – Fort Nelson Test Site – Simulation Report	7/31/11	8/31/11
M23: Task 14 – Monthly WWG Conference Call Held	8/31/11	8/24/11
D1: Task 1 – Review of Source Attributes	9/30/11	9/21/11
D4: Task 1 – Permitting Review – Basic EPA Requirements[+]	9/30/11	9/30/11
D9: Task 1 – Updated DSS	9/30/11	9/23/11
D25: Task 2 – Bell Creek Test Site Poster	9/30/11	9/30/11
D50: Task 9 – Bell Creek Test Site – Site Characterization, Modeling, and Monitoring Plan	9/30/11	9/30/11
M23: Task 14 – Monthly WWG Conference Call Held	9/30/11	Waived by DOE
M31: Task 9 – Bell Creek Test Site – Site Characterization, Modeling, and Monitoring Plan Completed	9/30/11	9/30/11
M33: Task 16 – Basal Cambrian Baseline Geological Characterization Completed	9/30/11	9/29/11
Year 5 – Quarter 1 (October–December 2011)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/11	10/31/11
M23: Task 14 – Monthly WWG Conference Call Held	10/31/11	10/26/11
M23: Task 14 – Monthly WWG Conference Call Held	11/30/11	11/30/11
D57: Task 12 – Project Assessment Annual Report	12/31/11	12/30/11
M23: Task 14 – Monthly WWG Conference Call Held	12/31/11	Waived by DOE
M34: Task 16 – Basal Cambrian Static Geological Model Completed	12/31/11	12/21/11

[+] Name change requested September 28, 2011, and approved October 3, 2011.

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 5 – Quarter 2 (January–March 2012)		
M16: Task 4 – Bell Creek Test Site – Initiation of Production and Injection Simulation	1/13/12	12/29/11
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/12	1/31/12
D65: Task 4 – Fort Nelson Test Site – Site Characterization Report	1/31/12	1/31/12
D81: Task 1 – Regional Carbon Sequestration Atlas (update)	1/31/12	1/31/12
M23: Task 14 – Monthly WWG Conference Call Held	1/31/12	1/19/12
M29: Task 4 – Fort Nelson Site Characterization Report Completed	1/31/12	1/31/12
D91: Task 16 – Report – Geological Characterization of the Basal Cambrian System in the Williston Basin	2/29/12	2/29/12
M23: Task 14 – Monthly WWG Conference Call Held	2/29/12	2/28/12
D5: Task 1 – Second Target Area Completed	3/31/12	3/30/12
D18: Task 2 – Bell Creek Test Site PowerPoint Presentation (update)	3/31/12	3/30/12
M10: Task 4 – Bell Creek Test Site Wellbore Leakage Data Collection Completed	3/31/12	3/12/12
M36: Task 13 – Annual Advisory Board Scheduled	3/31/12	3/28/12
M23: Task 14 – Monthly WWG Conference Call Held	3/31/12	3/27/12
Year 5 – Quarter 3 (April–June 2012)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/12	4/30/12
M23: Task 14 – Monthly WWG Conference Call Held	4/30/12	Waived by DOE
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/12	5/31/12
M23: Task 14 – Monthly WWG Conference Call Held	5/31/12	5/31/12
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (update)	6/30/12	6/29/12
D41: Task 4 – Fort Nelson Test Site – Geochemical Report	6/30/12	6/29/12
D84: Task 6 – Report – A Phased Approach to Building Pipeline Network for CO_2 Transportation During CCS	6/30/12	6/29/12
M23: Task 14 – Monthly WWG Conference Call Held	6/30/12	6/28/12
M24: Task 14 – WWG Annual Meeting Held	6/30/12	5/3/12
M32: Task 4 – Fort Nelson Geochemical Report Completed	6/30/12	6/29/12

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 5 – Quarter 4 (July–September 2012)		
D13: Task 2 – Public Site Updates	7/31/12	7/31/12
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/12	7/31/12
D67: Task 9 – Fort Nelson Test Site – Simulation Report	7/31/12	7/31/12
M23: Task 14 – Monthly WWG Conference Call Held	7/31/12	7/24/12
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/12	8/31/12
M23: Task 14 – Monthly WWG Conference Call Held	8/31/12	8/30/12
D1: Task 1 – Review of Source Attributes	9/30/12	9/28/12
D10: Task 1 – DPRS Update	9/30/12	9/28/12
M23: Task 14 – Monthly WWG Conference Call Held	9/30/12	9/27/12
Year 6 – Quarter 1 (October–December 2012)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/12	10/31/12
M23: Task 14 – Monthly WWG Conference Call Held	10/31/12	10/25/12
M23: Task 14 – Monthly WWG Conference Call Held	11/30/12	11/28/12
D57: Task 12 – Project Assessment Annual Report	12/31/12	12/28/12
M23: Task 14 – Monthly WWG Conference Call Held	12/31/12	Waived by DOE
Year 6 – Quarter 2 (January–March 2013)		
D32: Task 4 – Bell Creek Test Site – Geomechanical Final Report	1/31/13	1/31/13
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/13	1/31/13
M23: Task 14 – Monthly WWG Conference Call Held	1/31/13	1/16/13
D14: Task 2 – General Phase III Fact Sheet (update)	2/28/13	2/28/13
M23: Task 14 – Monthly WWG Conference Call Held	2/28/13	2/28/13
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCS Activities	3/31/13	Waived by DOE (journal article)
D89: Task 16 – Report – Geochemical Evaluation of the Basal Cambrian System	3/31/13	3/28/13
D99: Task 14 – Water/CCS Nexus-Related Fact Sheet	3/31/13	3/22/13
M23: Task 14 – Monthly WWG Conference Call Held	3/31/13	3/28/13
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/13	3/27/13

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 6 – Quarter 3 (April–June 2013)		
D15: Task 2 – Bell Creek Test Site Fact Sheet (update)	4/15/13	3/25/13
D16: Task 2 – Fort Nelson Test Site Fact Sheet (update)	4/30/13	Waived by DOE
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/13	4/30/13
M14: Task 4 – Bell Creek Test Site Geological Characterization Data Collection Completed	4/30/13	4/30/13
M23: Task 14 – Monthly WWG Conference Call Held	4/30/13	4/25/13
M35: Task 16 – Basal Cambrian Dynamic Capacity Estimation Completed	4/30/13	4/30/13
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/13	5/31/13
D43: Task 5 – Bell Creek Test Site – Monitoring Experimental Design Package	5/31/13	5/31/13
M23: Task 14 – Monthly WWG Conference Call Held	5/31/13	5/30/13
M27: Task 5 – Bell Creek Test Site – MVA Equipment Installation and Baseline MVA Activities Completed	5/31/13	5/31/13
M23: Task 14 – Monthly WWG Conference Call Held	6/30/13	6/27/13
M26: Task 9 – Bell Creek Test Site – CO_2 Injection Initiated	6/30/13	May 2013 – sent 6/25/13
M37: Task 3 – IOGCC (Interstate Oil and Gas Compact Commission) Task Force Subgroup Meeting 2 Held	5/9/13	5/29/13
M42: Task 3 – Findings and Recommendations of the Operational and Postoperational Subgroups Presented to the Carbon Geologic Storage (CGS) Task Force	6/30/13	6/20/13 – sent 6/28/13
Year 6 – Quarter 4 (July–September 2013)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/13	7/31/13
D33: Task 4 – Bell Creek Test Site – Geochemical Final Report	7/31/13	7/31/13
M12: Task 4 – Bell Creek Test Site Geochemical Work Completed	7/31/13	7/31/13
M23: Task 14 – Monthly WWG Conference Call Held	7/31/13	7/25/13
D64: Task 4 – Bell Creek Test Site – Site Characterization Report	8/31/13	8/29/13
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/13	8/30/13
D81: Task 1 – Regional Carbon Sequestration Atlas (update)	8/31/13	5/1/13
M23: Task 14 – Monthly WWG Conference Call Held	8/31/13	Waived by DOE

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 6 – Quarter 4 (July–September 2013) (continued)		
D1: Task 1 – Review of Source Attributes	9/30/13	9/5/13
D6: Task 3 – Permitting Review – Update 1	9/30/13	9/24/13
D48: Task 7 – Bell Creek Test Site – Procurement Plan and Agreement Report	9/30/13	9/24/13
D90: Task 16 – Report – Wellbore Evaluation of the Basal Cambrian System	9/30/13	9/5/13
D94:Task 2 – Aquistore Project Fact Sheet	9/30/13	9/30/13
D95: Task 2 – Aquistore Project Poster	9/30/13	9/30/13
D98: Task 3 – Report – Findings, Recommendations, and Guidance of CGS Task Force	9/30/13	8/30/13
M23: Task 14 – Monthly WWG Conference Call Held	9/30/13	9/30/13
M38: Task 3 – IOGCC Task Force Wrap-Up Meeting Held	9/30/13	8/16/13 – sent 9/5/13
M39: Task 3 – IOGCC Task Force Editing Subgroup Meeting Held	9/30/13	6/3/13 – sent 9/5/13
M40: Task 15 – Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project Completed	9/30/13	9/24/13
Year 7 – Quarter 1 (October–December 2013)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/13	10/31/13
D42: Task 5 – Bell Creek Test Site – Injection Experimental Design Package	10/31/13	10/30/13
D99: Task 14 – Water–CCS Nexus-Related Fact Sheet	10/31/13	10/31/13
M23: Task 14 – Monthly WWG Conference Call Held	10/31/13	10/31/13
M23: Task 14 – Monthly WWG Conference Call Held	11/30/13	11/21/13
M23: Task 14 – Monthly WWG Conference Call Held	12/31/13	Waived by DOE
M24: Task 14 – WWG Annual Meeting Held	12/31/13	8/19/13
M43: Task 9 – Bell Creek Test Site – First Full-Repeat Sampling of the Groundwater-Soil Gas-Monitoring Program Completed	12/31/13	11/15/13 – sent 12/13/13
Year 7 – Quarter 2 (January–March 2014)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/14	1/31/14
D57: Task 12 – Project Assessment Annual Report	1/31/14	1/31/14
M23: Task 14 – Monthly WWG Conference Call Held	1/31/14	1/28/14
M41: Task 6 – Decision to Incorporate Ramgen Compression Technology into Bell Creek Project	1/31/14	1/29/14

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 7 – Quarter 2 (January–March 2014) (continued)		
D86: Task 15 – Updated Regional Implementation Plan for Zama	2/28/14	2/28/14
M23: Task 14 – Monthly WWG Conference Call Held	2/28/14	2/27/14
D24: Task 2 – PCOR Partnership Region Sequestration General Poster (update)	3/31/14	3/27/14
D36: Task 4 – Bell Creek Test Site – Wellbore Leakage Final Report	3/31/14	3/19/14
D92: Task 16 – Report – Storage Capacity and Regional Implications for Large-Scale Storage in the Basal Cambrian System	3/31/14	3/27/14
D93: Task 1 – Geological Modeling and Simulation Report for the Aquistore Project	3/31/14	3/25/14
D96: Task 4 – Bell Creek Test Site – 3-D Seismic and Characterization Report	3/31/14	3/27/14
M23: Task 14 – Monthly WWG Conference Call Held	3/31/14	3/25/14
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/14	3/4/14 Sent 3/25/14
M44: Task 9 – Bell Creek Test Site – First 3-D VSP Repeat Surveys Completed	3/31/14	3/1/14 Sent 3/25/14
Year 7 – Quarter 3 (April–June 2014)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/14	4/30/14
M23: Task 14 – Monthly WWG Conference Call Held	4/30/14	4/24/14
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/14	5/30/14
D101: Task14 – WWG Web Site Content Update	5/31/14	5/30/14
M23: Task 14 – Monthly WWG Conference Call Held	5/31/14	5/21/14
D44: Task 5 – Bell Creek Test Site – Drilling and Completion Activities Report	6/30/14	5/30/14
M23: Task 14 – Monthly WWG Conference Call Held	6/30/14	6/26/14
M45: Task 9 – Bell Creek Test Site – First Full-Repeat of Pulsed Neutron Logging Campaign Completed	6/30/14	6/9/14
M46: Task 9 – Bell Creek Test Site – 1 Year of Injection Completed	6/30/14	6/26/14

Continued…

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 7 – Quarter 4 (July–September 2014)		
D13: Task 2 – Public Site Updates	7/31/14	7/29/14
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/14	7/31/14
M23: Task 14 – Monthly WWG Conference Call Held	7/31/14	7/17/14 WebEx
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/14	8/27/14 Exec. Sum.
M23: Task 14 – Monthly WWG Conference Call Held	8/31/14	Waived by DOE
D1: Task 1 – Review of Source Attributes	9/30/14	9/24/14
D7: Task 1 – Third Target Area Completed	9/30/14	9/26/14
D93: Task 1 – Geological Modeling and Simulation Report for the Aquistore Project	9/30/14	9/30/14
D100: Task 9 – Fort Nelson Test Site – Best Practices Manual – Feasibility Study	9/30/14	9/30/14
M23: Task 14 – Monthly WWG Conference Call Held	9/30/14	9/30/14
Year 8 – Quarter 1 (October–December 2014)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/14	10/31/14
D99: Task 14 – Water/CCS Nexus-Related Fact Sheet	10/31/14	10/31/14
M23: Task 14 – Monthly WWG Conference Call Held	10/31/14	10/28/14
M48: Task 9 – Bell Creek Test Site – 1 Million Metric Tons of CO_2 Injected	10/31/14	10/29/14
M23: Task 14 – Monthly WWG Conference Call Held	11/30/14	11/25/14
D57: Task 12 – Project Assessment Annual Report	12/31/14	12/30/14
M24: Task 14 – WWG Annual Meeting Held	12/31/14	8/11/14
Year 8 – Quarter 2 (January–March 2015)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/15	1/30/15
D32: Task 4 – Bell Creek Test Site – Geomechanical Report (Update 1)	1/31/15	1/28/15
M23: Task 14 – Monthly WWG Conference Call Held	1/31/15	1/27/15
M23: Task 14 – Monthly WWG Conference Call Held	2/28/15	2/26/15
D25: Task 2 – Bell Creek Test Site Poster (update)	3/31/15	2/5/15
M23: Task 14 – Monthly WWG Conference Call Held	3/31/15	3/25/15
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/15	3/31/15

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 8 – Quarter 3 (April–June 2015)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/15	4/29/15
M23: Task 14 – Monthly WWG Conference Call Held	4/30/15	4/28/15
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/15	6/1/15
M23: Task 14 – Monthly WWG Conference Call Held	5/30/15	5/28/15
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCUS (carbon capture, utilization, and storage) Activities (update)	5/31/15	5/29/15
M23: Task 14 – Monthly WWG Conference Call Held	6/30/15	6/23/15
M49: Task 9 – Bell Creek Test Site – 1.5 Million Metric Tons of CO_2 Injected	6/30/15	6/30/15
Year 8 – Quarter 4 (July–September 2015)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/15	7/31/15
M23: Task 14 – Monthly WWG Conference Call Held	7/31/15	Waived by DOE
M50: Task 9 – Bell Creek Test Site – 2 Years of Near-Surface Assurance Monitoring Completed	7/31/15	7/21/15
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/15	8/27/15 Exec. Sum.
M23: Task 14 – Monthly WWG Conference Call Held	8/31/15	Waived by DOE
M51: Task 9 – Bell Creek Test Site – Initial Analysis for First Large-Scale Repeat Pulsed-Neutron Logging Campaign Post-Significant CO_2 Injection Completed	8/31/15	8/31/15
D1: Task 1 – Review of Source Attributes (update)	9/30/15	9/23/15
D8: Task 3 – Permitting Review – Update 2	9/30/15	9/30/15
D49: Task 8 – Bell Creek Test Site – Transportation and Injection Operations Report	7/31/15	9/29/15
M23: Task 14 – Monthly WWG Conference Call Held	9/30/15	9/30/15
Year 9 – Quarter 1 (October–December 2015)		
D59/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/15	10/31/15
M23: Task 14 – Monthly WWG Conference Call Held	10/31/15	10/29/15
M23: Task 14 – Monthly WWG Conference Call Held	11/30/15	Waived by DOE
D57: Task 12 – Project Annual Assessment Report	12/31/15	12/31/15
M24: Task 14 – WWG Annual Meeting Held	12/31/15	8/20/15
M53: Task 9 – Expanded Baseline and Time-Lapse 3-D Surface Seismic Survey Completed	12/31/15	12/17/15

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 9 – Quarter 2 (January–March 2016)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/16	1/31/16
M23: Task 14 – Monthly WWG Conference Call Held	1/31/16	1/27/16
M54: Task 9 – Initial Processing and Analysis of Historic InSAR Data Completed	1/31/16	1/26/16
D14: Task 2 – General Phase III Fact Sheet (update)	2/29/16	2/26/16
D93: Task 1 – Geological Modeling and Simulation Report for the Aquistore Project (Update 2)	2/29/16	2/29/16
M23: Task 14 – Monthly WWG Conference Call Held	2/29/16	Waived by DOE
D11: Task 2 – Outreach Plan (update)	3/31/16	3/28/16
D45: Task 6 – Bell Creek Test Site – Infrastructure Development Report	3/31/16	3/31/16
M23: Task 14 – Monthly WWG Conference Call Held	3/31/16	Waived by DOE
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/16	3/31/16
M56: Task 9 – Life Cycle Analysis for Primary and Secondary Recovery Oil Completed	3/31/16	3/31/16
M58: Task 9 – Bell Creek Test Site – Completion of 2.75 Million Metric Tons of CO_2 Stored	3/31/16	3/22/16
Year 9 – Quarter 3 (April–June 2016)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/16	4/29/16
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/16	5/31/16
D101: Task 14 – WWG Web Site Content Update 1	5/31/16	5/31/16
M57: Task 9 – Life Cycle Analysis for EOR at the Bell Creek Field Completed	5/31/16	5/26/16
M23: Task 14 – WWG Conference Call Held	6/30/16	4/27/16
Year 9 – Quarter 4 (July–September 2016)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/16	7/29/16
D13: Task 2 – Public Site Updates	7/31/16	7/21/16
D16: Task 2 – Fort Nelson Test Site Fact Sheet (update)	8/31/16	8/29/16
D66: Task 9 – Bell Creek Test Site – Simulation Report (update)	8/31/16	8/31/16
D102: Task 13 – Best Practices Manual – Adaptive Management Approach	8/31/16	8/31/16
M59: Task 9 – Completed the PCOR Partnership Adaptive Management Approach Best Practices Manual	8/31/16	8/31/16

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 9 – Quarter 4 (July–September 2016) (continued)		
D1: Task 1 – Review of Source Attributes (update)	9/30/16	9/29/16
D8: Task 3 – Permitting Review – Update 3	9/30/16	9/29/16
D55: Task 11 – Bell Creek Test Site – Cost-Effective Long-Term Monitoring Strategies Report	9/30/16	9/30/16
M23: Task 14 – WWG Conference Call Held	9/30/16	9/28/16
Year 10 – Quarter 1 (October–December 2016)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/16	10/27/16
D21: Task 2 – Bell Creek Test Site 30-minute Documentary	10/31/16	10/31/16
D105: Task 9 – Comparison of Non-EOR and EOR Life Cycle Assessments	10/31/16	10/31/16
D15: Task 2 – Bell Creek Test Site Fact Sheet (update)	11/30/16	11/30/16
M52: Task 9 – Initial Analysis of Extended Pulsed-Neutron Logging Campaign Data Completed	11/30/16	11/29/16
D57: Task 12 – Project Assessment Annual Report	12/31/16	12/30/16
D81: Task 1 – Regional Carbon Sequestration Atlas (update)	12/31/16	12/30/16
D106: Task 14 – Special Issue of IJGGC – Nexus of Water and Carbon Capture and Storage	12/31/16	12/29/16
M23: Task 14 – WWG Conference Call Held	12/30/16	11/16/16
M24: Task 14 – WWG Annual Meeting Held	12/31/16	8/18/16
M36: Task 13 – Annual Advisory Board Meeting Scheduled	12/31/16	12/28/16
Year 10 – Quarter 2 (January–March 2017)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/17	1/31/17
D22: Task 2 – Energy from Coal 60-minute Documentary	1/31/17	1/31/17
D76: Task 3 – Regional Regulatory Perspective	1/31/17	1/31/17
D35: Task 4 – Bell Creek Test Site – Best Practices Manual – Site Characterization	3/31/17	3/31/17
M23: Task 14 – WWG Conference Call Held	3/31/17	3/30/17
M60: Task 1 – Data Submitted to EDX	3/31/17	3/7/17
M63: Task 9 – Initial Analysis of Processed InSAR Data Completed	3/31/17	3/31/17

Continued . . .

Table 12. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 10 – Quarter 3 (April–June 2017)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/17	
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/17	
D69: Task 9 – Best Practices Manual – Simulation Report	5/31/17	
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCUS Activities	5/31/17	
D101: Task 14 – WWG Web Site Content Update 1	5/31/17	
D104: Task 9 – Analysis of Expanded Seismic Campaign	6/30/17	
M64: Task 9 – Initial Analysis of Expanded Seismic Campaign Data Completed	6/30/17	
M23: Task 14 – WWG Conference Call Held	6/30/17	
M47: Task 2 – Bell Creek Test Site 30-Minute Documentary Broadcast	6/30/17	
Year 10 – Quarter 4 (July–September 2017)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/17	
D66: Task 9 – Bell Creek Test Site – Simulation Report (Update 6)	8/31/17	
D81: Task 1 – PCOR Partnership Atlas (update)	8/31/17	
D103: Task 13 – Best Practices Manual – Programmatic Risk Management	8/31/17	
D1: Task 1 – Review of Source Attributes (update)	9/30/17	
M23: Task 14 – WWG Conference Call Held	9/30/17	
M55: Task 9 – Initial Trace Analysis Completed	9/30/17	
M62: Task 14 – Research Related to Water and CCS Nexus Completed	9/30/17	
Year 11 – Quarter 1 (October–December 2017)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/17	
D14: Task 2 – General Phase III Fact Sheet (Update)	10/31/17	
D51: Task 9 – Best Practices Manual – Monitoring for CO_2 Storage and CO_2 EOR	10/31/17	
D93: Task 1 – Geological Modeling and Simulation Report for the Aquistore Project (Update 3)	10/31/17	
D15: Task 2 – Bell Creek Test Site Fact Sheet (update)	11/30/17	
D54: Task 10 – Report – Site Closure Procedures	12/31/17	
D57: Task 12 – Project Assessment Annual Report	12/31/17	
M23: Task 14 – WWG Conference Call Held	12/31/17	
M24: Task 14 – WWG Annual Meeting Held	12/31/17	
M36: Task 13 – Annual Advisory Board Meeting Scheduled	12/31/17	

Table 13. Phase III, BP5, Years 9–12 Gantt Chart

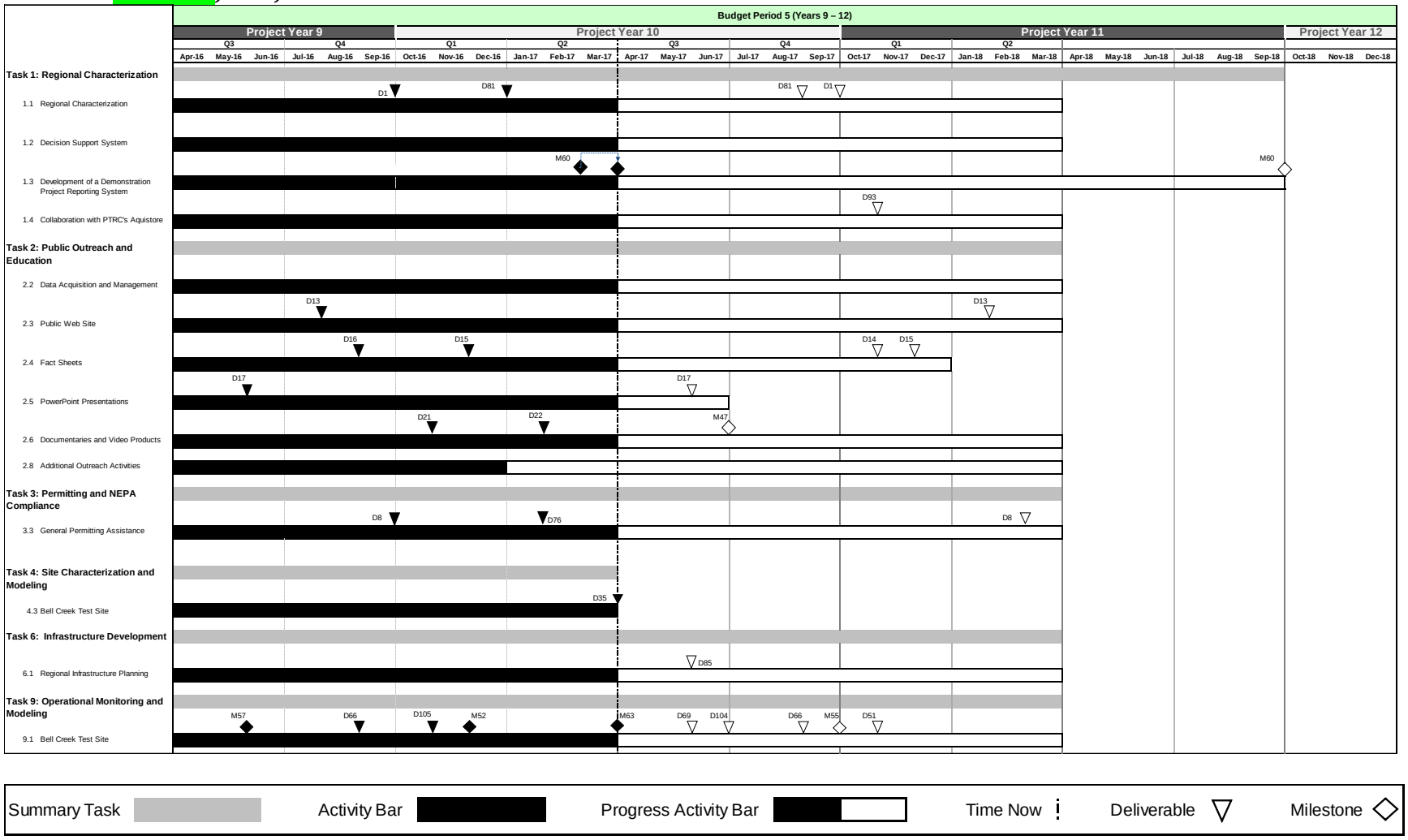


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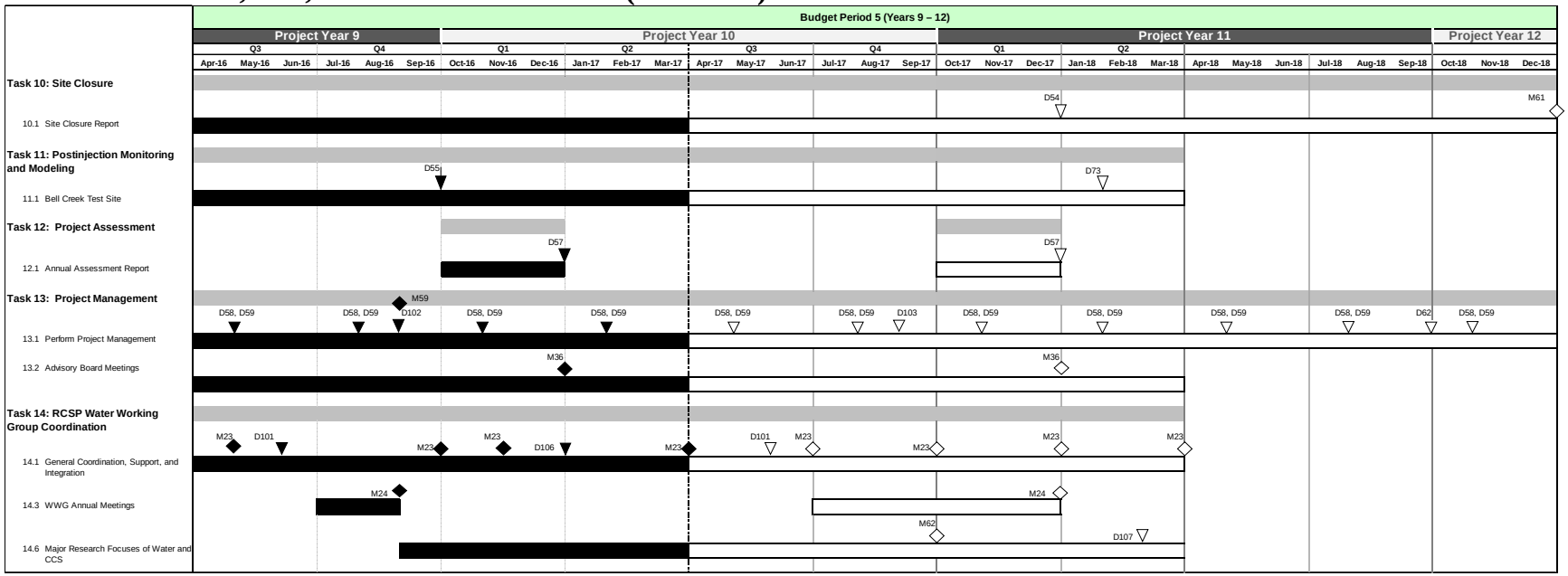
Table 13. Phase III, BP5, Years 9–12 Gantt Chart (continued)



Summary Task | Activity Bar | Progress Activity Bar | Time Now | Deliverable | Milestone

Key for Deliverables (D)				Key for Milestones (M)	
D1	Review of Source Attributes	D62	Final Report	M23	WWG Conference Call Held
D8	Permitting Review	D66	BC Test Site – Simulation Report	M24	WWG Annual Meeting Held
D13	Public Site Updates	D69	BC Test Site – Best Practices Manual – Simulation	M36	Annual Advisory Board Meeting Scheduled
D14	General Phase III Fact Sheet	D73	Report – Monitoring and Modeling Fate of Stored CO_2	M47	BC Test Site 30-minute Video Broadcast
D15	BC Test Site Fact Sheet	D76	Regional Regulatory Perspective	M52	BC Test Site – Initial Analysis of Extended Pulsed-Neutron Logging Campaign Data Completed
D16	Fort Nelson Test Site Fact Sheet	D81	Regional Carbon Sequestration Atlas	M55	Investigation of Crude Oil Compositional Changes During CO_2 EOR Completed
D17	General Phase III Information PowerPoint Presentation	D85	Report – Opportunities and Challenges Associated with CO_2 Compression	M57	Life Cycle Analysis for EOR Completed
D21	BC Test Site 30-minute Documentary	D93	Report – Geological Modeling and Simulation for the Aquistore Project	M59	Adaptive Management Approach Best Practices Manual Completed
D22	Energy from Coal 60-minute Documentary	D101	WWG Web Site Content Update	M60	Data Submitted to EDX
D35	BC Test Site – Best Practices Manual – Site Characterization	D102	Best Practices Manual – Adaptive Management Approach	M61	Site Closure for Bell Creek Test Completed
D51	BC Test Site – Best Practices Manual – Monitoring for CO_2 Storage and CO_2 EOR	D103	Best Practices Manual – Programmatic Risk Management	M62	Research Related to Water and CCS Nexus Completed
D54	Report – Site Closure Procedures	D104	BC Test Site – Analysis of Expanded Seismic Campaign	M63	Initial Analysis of Processed InSAR Data Completed
D55	BC Test Site – Cost-Effective Long-Term Monitoring Strategies Report	D105	Comparison of Non-EOR and EOR Life Cycle Assessment	M64	Initial Analysis of Expanded Seismic Campaign Data Completed
D57	Project Assessment Annual Report	D106	Special Issue of IJGGC – Nexus of Water and Carbon Capture and Storage		
D58	Quarterly Progress Report	D107	Journal Article or Topical Report – Major Research Focuses of Water and CCS		
D59	Milestone Quarterly Report				

April-17

PHASE III PRODUCTS OR TECHNOLOGY TRANSFER ACTIVITIES

During the reporting period, one abstract was accepted for presentation and two oral presentations were given at six different meetings and conferences. In addition, a quarterly progress report, five deliverables/milestones (two draft and three approved), and one value-added report were completed. Five deliverables from previous quarters also received approval. In addition to the products cited below, staff also undertook four project management site trips. For more detail, see the Meetings/Travel section.

Abstracts

Accepted

Gorecki, C.D., Ayash, S.C., Peck, W.D., Hamling, J.A., Sorensen, J.A., Daly, D.J., Jensen, M.D., Klapperich, R.J., Heebink, L.V., Pekot, L.J., Steadman, E.N., and Harju, J.A., 2016, The Plains CO_2 Reduction Partnership—CO_2 injection update and results of adaptive management approach [abs.]: 2017 Carbon Capture, Utilization & Storage Conference, Chicago, Illinois, April 10–13, 2017.

Presentations

Gorecki, C.D., Ayash, S.C., Peck, W.D., and Wildgust, N., 2017, Plains CO_2 Reduction (PCOR) Partnership – Phase III: Presented at the 2017 Regional Carbon Sequestration Partnerships IEA Greenhouse Gas R&D Programme Expert Review – Development Phase (Phase III), Pittsburgh, Pennsylvania, January 23–27, 2017.

Harju, J.A., Gorecki, C.D., Ayash, S.C., and Ensrud, J.R., 2017, Lasting impacts of the Plains CO_2 Reduction (PCOR) Partnership Program: Presented at the Southeast Regional Sequestration Partnership 12th Annual Stakeholders' Briefing, Atlanta, Georgia, March 8–9, 2017.

Deliverables/Milestones

Draft Submitted

Crocker, C.R., and Daly, D.J., 2017, Coal powered! [DVD]: Plains CO_2 Reduction (PCOR) Partnership Phase III draft Task 2 Deliverable D22 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Glazewski, K.A., Aulich, T.R., Wildgust, N., Nakles, D.V., Hamling, J.A., Burnison, S.A., Livers, A.J., Salako, O., Sorensen, J.A., Ayash, S.C., Pekot, L.J., Bosshart, N.W., Gorz, A.J., Peck, W.D., and Gorecki, C.D., 2017, Best practices manual (BPM) for site characterization: Plains CO_2 Reduction (PCOR) Partnership Phase III draft Task 4 Deliverable D35 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Approved

Ayash, S.C., and Gorecki, C.D., 2016, Technical Advisory board meeting scheduled: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 13 M36 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2017-EERC-01-02, Grand Forks, North Dakota, Energy & Environmental Research Center, December.

Crocker, C.R., and Daly, D.J., 2017, The Bell Creek story – CO_2 in action [DVD]: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 2 Deliverable D21 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Gorecki, C.D., Harju, J.A., Steadman, E.N., Heebink, L.V., Romuld, L., Hamling, J.A., Sorensen, J.A., Pekot, L.J., Daly, D.J., Jensen, M.D., Peck, W.D., Klapperich, R.J., Bosshart, N.W., Votava, T.F., Ayash, S.C., and Ensrud, J.R., 2016, Annual assessment report: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 12 Deliverable D57 (October 1, 2015 – September 30, 2016) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2017-EERC-02-06, Grand Forks, North Dakota, Energy & Environmental Research Center, December.

Klapperich, R.J., Nakles, D.V., and Gorecki, C.D., 2016, Special issue of IJGGC – nexus of water and carbon capture and storage: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 14 Deliverable D106 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2017-EERC-01-03, Grand Forks, North Dakota, Energy & Environmental Research Center, December.

Peck, W.P., Battle, E.P., Grove, M.M., Glazewski, K.A., Riske, J.M., Gorecki, C.D., Steadman, E.N., and Harju, J.A., 2017, Plains CO_2 Reduction (PCOR) atlas (5th ed.): Plains CO_2 Reduction (PCOR) Partnership Phase III Task 1 Deliverable D81 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, February.

Draft Submitted and Approved

Bosshart, N.W., Hurley, J.P., Hamling, J.A., and Gorecki, C.D., 2017, Bell Creek test site – initial analysis of processed InSAR data completed: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 9 Milestone M63 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2017-EERC-03-13, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Peck, W.D., and Kalenze, N.S., 2017, Data submitted to EDX: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 1 Milestone M60 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2017-EERC-03-09, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Wilson, W.I., Doll, T.E., Nakles, D.V., Wildgust, N., and Gorecki, C.D., 2017, Regulatory perspective regarding the geologic storage of carbon dioxide (CO_2) in the PCOR Partnership

region: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 3 Deliverable D76 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2017-EERC-03-14, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Progress Reports

Monthlies

Gorecki, C.D., Steadman, E.N., Peck, W.D., Daly, D.J., Hamling, J.A., Jensen, M.D., Harju, J.A., Pekot, L.J., Heebink, L.V., Klapperich, R.J., and Ensrud, J.R., 2017, Plains CO_2 Reduction (PCOR) Partnership: Phase III monthly report (December 1–31, 2016) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Gorecki, C.D., Steadman, E.N., Peck, W.D., Daly, D.J., Hamling, J.A., Jensen, M.D., Harju, J.A., Pekot, L.J., Heebink, L.V., Klapperich, R.J., and Ensrud, J.R., 2017, Plains CO_2 Reduction (PCOR) Partnership: Phase III monthly report (January 1–31, 2017) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, February.

Gorecki, C.D., Steadman, E.N., Peck, W.D., Daly, D.J., Hamling, J.A., Jensen, M.D., Harju, J.A., Pekot, L.J., Heebink, L.V., Klapperich, R.J., and Ensrud, J.R., 2017, Plains CO_2 Reduction (PCOR) Partnership: Phase III monthly report (February 1–28, 2017) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Quarterlies

Gorecki, C.D., Harju, J.A., Steadman, E.N., Romuld, L., Sorensen, J.A., Daly, D.J., Hamling, J.A., Jensen, M.D., Peck, W.D., Klapperich, R.J., Heebink, L.V., Pekot, L.J., Ensrud, J.R., and Votava, T.J., 2017, Plains CO_2 Reduction Partnership Phase III: Task 13 Deliverable D58/D59 quarterly technical progress report (October 1 – December 31, 2016) 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, January.

Value-Added Products

Draft

Crossland, J.L., Daly, D.J., and Gorecki, C.D., 2017, Household energy and carbon Web pages report: Plains CO_2 Reduction (PCOR) Partnership Phase III draft value-added report (October 1 – December 31, 2016) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, February.

MEETINGS/TRAVEL

Representatives from the PCOR Partnership incurred travel costs for their participation in the following six meetings/conferences, two workshops, and four project management site trips. In addition, three off-site staff members traveled to the EERC on two separate occasions in this reporting period:

- January 3–6, 2017: traveled to Bethesda, Maryland, to participate as a panelist at the Basic Research Needs for Energy–Nexus Conference.
- January 4–8, 2017: traveled to Birmingham, Alabama, to visit Southern Company and tour project sites.
- January 4–13, 2017: traveled to Gillette, Wyoming, to collect PNLs at the Bell Creek site.
- January 10–17, 2017: traveled to Gillette, Wyoming, for Bell Creek project work.
- January 16–20, 2017: off-site staff traveled to Grand Forks, North Dakota, for project work and meetings.
- January 17–25, 2017: traveled to Gillette, Wyoming, for Bell Creek project work.
- January 23, 2017: traveled to Fargo, North Dakota, to work on the "Coal Powered" documentary with PPB.
- January 23–25, 2017: traveled to Pittsburgh, Pennsylvania, to attend and present at the FY17 Regional Sequestration Partnership Expert Review meeting.
- February 8–12, 2017: traveled to El Segundo, California, to attend a two-day Linux Sysadmin Training and Workshop.
- February 22–24, 2017: traveled to Glendive, Montana, for sampling at the Bell Creek site.
- February 26 – March 4, 2017: traveled to Houston, Texas, to attend Schlumberger's NExT Training "Practical Seismic Interpretation with Petrel."
- March 5–9, 2017: Traveled to Atlanta, Georgia, to attend the SECARB 12th Annual Stakeholders' Briefing.
- March 27–30, 2017: off-site staff traveled to Grand Forks, North Dakota, for project work and meetings.
- March 28–31, 2017: traveled to Pittsburgh, Pennsylvania, to attend the NAEMT CCUS Working Group Meeting and Energy Week 2017.

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