

BELL CREEK TEST SITE – 1 YEAR OF INJECTION COMPLETED

Plains CO₂ Reduction (PCOR) Partnership Phase III Task 9 – Milestone M46

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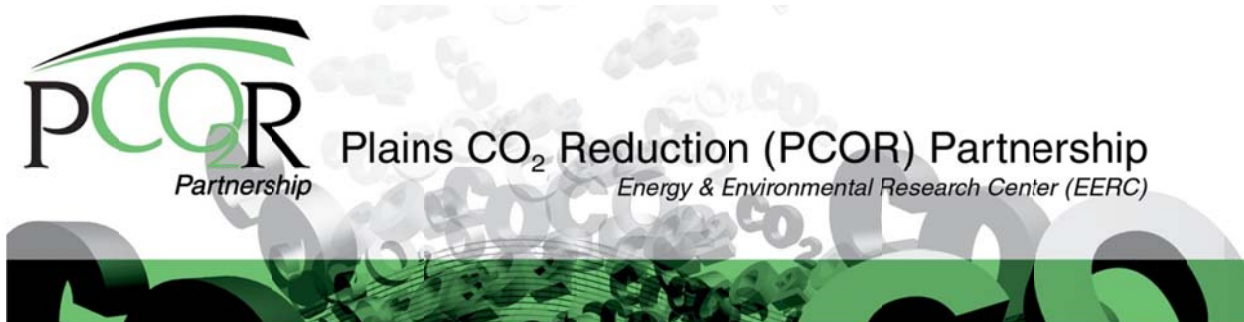
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BELL CREEK TEST SITE – 1 YEAR OF INJECTION COMPLETED

BACKGROUND

The Plains CO₂ 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 (EERC) at the University of North Dakota and includes stakeholders from the public and private sectors. The PCOR Partnership region includes all or part of nine U.S. states and four Canadian provinces.

Phase III, the development phase, is a 10-year effort (2007–2017) that extends the characterization (Phase I) and validation (Phase II) phases. The Phase III efforts of the PCOR Partnership include two large-volume demonstration tests, one in Canada (the Ft. Nelson project) and one in the United States (the Bell Creek project). The demonstration tests focus on injecting carbon dioxide (CO₂) into deep geologic formations for CO₂ storage.

Many different aspects of carbon capture and storage will be evaluated during the demonstrations, ranging from CO₂ capture, compression, and pipeline transport to injection, recycle; and monitoring, verification, and accounting.

1 YEAR OF CO₂ INJECTION ACHIEVED AS OF MAY 2014

The PCOR Partnership, led by the EERC, is working with Denbury Onshore LLC (Denbury) to study CO₂ storage associated with a commercial enhanced oil recovery (EOR) project at the Denbury-operated Bell Creek oil field located in southeastern Montana. Denbury is managing all injection, production, and recycle activities as part of its commercial CO₂ EOR operation. The EERC, through the PCOR Partnership, is studying the behavior of reservoir fluids and injected CO₂ to demonstrate safe, effective, commercial-scale incidental storage of CO₂ as well as developing practices and technologies that will allow future commercial-scale CO₂ storage projects to make informed decisions regarding site selection, injection programs, operations, and monitoring that maximize storage efficiency and effective storage capacity in clastic geologic formations.

Denbury is developing the Bell Creek oil field in a phased approach with each development phase corresponding to approximately 12 months of injection before the next development phase is brought online. Continuous CO₂ injection has been occurring at the Bell

Creek oil field since May of 2013, primarily in the Phase 1 development area. Currently, active injection is being expanded into the Phase 2 development area. The mass of injected CO₂ is being reported to the Montana Board of Oil & Gas (MBOG) by Denbury on a monthly basis. There is approximately a 2-month delay between when data are supplied to MBOG and when they are made publically available. Therefore, the official 1-year totals are not available at the writing of this milestone. Instead, the 1-year injection totals will be reported to DOE as part of the PCOR Partnership's regular quarterly reporting once the data become available. The authors can report that, as of the end of April 2014, 37 wells in the Bell Creek oil field have injected 741,528 metric tons of CO₂. At the current injection rate, the PCOR Partnership anticipates that 1,000,000 metric tons of CO₂ will be injected by the end of July or August of 2014.