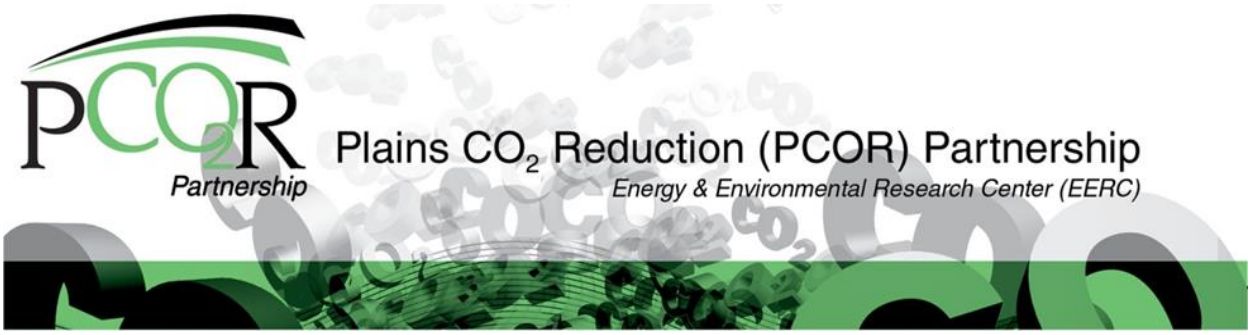

PERMITTING REVIEW – UPDATE 4

Plains CO_2 Reduction (PCOR) Partnership Phase III
Task 3 – Deliverable D8

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INTRODUCTION

This document, prepared by the Energy & Environmental Research Center's (EERC's) Plains CO_2 Reduction (PCOR) Partnership, provides a brief update on the requirements to conduct a geologic carbon dioxide (CO_2) storage project in the United States or Canada. Little has changed in the United States since the third permitting review, submitted in September 2016 (Wilson and others, 2016), with the exception that the state of Wyoming's Department of Environmental Quality submitted its Class VI Underground Injection Control (UIC) Program primacy application to the U.S. Environmental Protection Agency (EPA) on January 31, 2018. In January 2017, the EERC submitted a report to the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) that provides a regulatory perspective on the geologic storage of CO_2, describing the regulatory frameworks that were evolving in the PCOR Partnership region states and Canadian provinces at that time (Wilson and others, 2017). The information provided herein gives a broad overview of the regulatory requirements and the authorities involved. As of this writing, EPA has the authority to permit CO_2 geologic storage wells in all 50 states. Additionally, EPA requires geologic storage projects to comply with the Mandatory Greenhouse Gas Reporting Program (e-CFR, 2018). In Canada, the provinces have the authority to permit geologic storage projects.

Because of the evolving nature of regulatory frameworks at various levels of government as well as daily changes in congressional reporting, this document is intended to provide general overviews of rules and policies and can be considered to be up to date as of February 28, 2018, unless otherwise noted.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Underground Injection Control

In December 2010, EPA finalized the requirements for a new well class (Class VI) under the authority of the Safe Drinking Water Act's UIC Program. The rule establishes federal requirements for the underground injection of CO_2 for the purpose of long-term underground storage, or geologic storage.

Numerous elements of the Class VI rule deal with various aspects of permitting and operating a UIC Class VI injection well, including the following:

- Site characterization requirements
- AOR (area of review) delineation and reevaluation
- Well construction and operation requirements
- Testing and monitoring requirements
- Site-specific project plan development
- Financial responsibility for the life of the project
- Postinjection site care monitoring
- Injection depth waiver
- Consideration for wells transitioning from Class II (enhanced resource recovery wells) to Class VI (direct geologic storage wells)

A series of guidance documents have been developed to provide information and possible approaches for addressing each of the elements listed above. Aside from the primacy manual for state directors, the guidance documents below follow the sequence of activities that an owner or operator will perform over time at a proposed and/or permitted geologic storage site. The following are the guidance documents that have been finalized by EPA:

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Primacy Manual for State Directors (April 2014; www.epa.gov/sites/production/files/2015-07/documents/epa816b14003.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Site Characterization Guidance (May 2013; www.epa.gov/sites/production/files/2015-07/documents/epa816r13004.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Area of Review Evaluation and Corrective Action Guidance (May 2013; www.epa.gov/sites/production/files/2015-07/documents/epa816r13005.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Testing and Monitoring Guidance (March 2013; www.epa.gov/sites/production/files/2015-07/documents/epa816r13001.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Project Plan Development Guidance (August 2012; www.epa.gov/sites/production/files/2015-07/documents/epa816r11017.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Construction Guidance (May 2012; www.epa.gov/sites/production/files/2015-07/documents/epa816r11020.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class Financial Responsibility Requirements and Guidance (July 2011; www.epa.gov/sites/production/files/2015-07/documents/uicclass6reasearchandanalysis updatedpg84.pdf, accessed February 2018)

EPA also finalized and released documents that are quick reference guides on Class VI program implementation considerations:

- Additional Tools for UIC Program Directors Incorporating Environmental Justice Considerations into the Class VI Injection Well Permitting Process (June 2011; www.epa.gov/sites/production/files/2015-07/documents/epa816r11002.pdf, accessed February 2018)

- Additional Considerations for UIC Program Directors on Interstate Coordination Requirements for the Class VI Injection Well Permitting Process (June 2011; www.epa.gov/sites/production/files/2015-07/documents/epa816r11003.pdf, accessed February 2018)

- Additional Considerations for UIC Program Directors on the Public Participation Requirements for Class VI Injection Wells (June 2011; www.epa.gov/sites/production/ files/2015-07/documents/uic-quick-reference-guide_public-participation_final-508.pdf accessed February 2018)

- Underground Injection Control (UIC) Class VI Program: Public Participation Considerations for Geologic Sequestration Projects Fact Sheet (December 2010; www.epa.gov/sites/production/files/2015-07/documents/uic-quick-reference-guide_ public-participation_final-508_0.pdf, accessed February 2018)

The remaining EPA draft guidance documents are closed for public review but are yet to be finalized (guidance documents located at www.epa.gov/uic/draft-class-vi-guidance-documents-closed-public-comment [accessed February 2018] are listed below):

- Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Program on Guidance on Transitioning Class II Wells to Class VI Wells (December 2013; www.epa.gov/sites/production/files/2015-7/documents/epa816p13004.pdf, accessed September 2016; no longer available at this link)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Guidance on Class VI Well Plugging, Post-Injection Site Care, and Site Closure Guidance (April 2013; www.epa.gov/sites/production/files/2015-07/documents/ epa816p13005.pdf, accessed February 2018)

- Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Recordkeeping, Reporting, and Data Management Guidance for Owners and Operators (March 2013; www.epa.gov/sites/production/files/2015-

09/documents/gs_well_recordkeeping_reporting_and_data_management_guidance_for_owners_and_operators.pdf, accessed February 2018)

In the final rule, EPA gave states a deadline of September 6, 2011, to apply for primary enforcement responsibility, or primacy, over Class VI wells. No states met this deadline; therefore, as of September 7, 2011, EPA directly implemented the Class VI program nationally. As a result, in order to permit a CO_2 geologic storage project, potential owners or operators of a CO_2 geologic storage well must submit a permit application to the appropriate EPA regional office. While no PCOR Partnership owners or operators have applied for or received a permit, six permits were issued by EPA in Region 5 in the state of Illinois (U.S. Environmental Protection Agency, 2018c). Two permits were issued for an Archer Daniels Midland, Inc. (ADM) project in Decatur, Illinois (U.S. Environmental Protection Agency, 2018c), and four others were issued for the FutureGen 2.0 project near Jacksonville, Illinois, which has had its funding revoked by DOE. States in the PCOR Partnership region are divided among three different EPA regions, as shown in Table 1.

Table 1. PCOR Partnership States by EPA Region

State(s)	EPA Region
Minnesota, Wisconsin	Region 5
Nebraska, Iowa, Missouri	Region 7
Montana, Wyoming, North Dakota, South Dakota	Region 8

Direct federal implementation of the Class VI program will remain in effect until such time that a state-submitted primacy application is approved by EPA. As previously mentioned, any state has the right to apply for primacy if it so chooses.

On June 21, 2013, the North Dakota Industrial Commission (NDIC) Department of Mineral Resources (DMR) Oil and Gas Division submitted its primacy application. On July 19, 2013, EPA returned the memorandum of agreement (MOA), requesting changes. On August 9, 2013, EPA Region 8 was to publish in the Federal Register and local publications Notice of Receipt of the North Dakota Class VI Primacy Application, with a 30-day public comment period (August 9 to September 9, 2013). By September 9, 2013, the end of the 30-day comment period, no requests for a public hearing had been received. On October 29, 2013, the NDIC DMR Oil and Gas Division finalized the MOA with EPA Region 8. The MOA was signed by Lynn Helms, DMR Director, on November 24, 2013, and by EPA Region 8 Administrator Shaun McGrath on November 29, 2013. It was anticipated to take at least 6 months before North Dakota would know whether the application was approved by EPA. EPA has not requested additional primacy information or clarification from North Dakota. With the change of Administration, President Trump in 2017 appointed Scott Pruitt EPA Director. On May 8 2017, EPA approved North Dakota's UIC Class VI Primacy application pending public comment (regulations.gov, 2017b). A request for public comment was published in the Federal Register on May 19, 2017 (regulations.gov, 2017a). Fifteen public comments were received by the July 18, 2017, deadline. As of this writing, final public response is being addressed by EPA, with application approval expected to be given and published in the Federal Register in March 2018.

On January 31, 2018, Water Quality Administrator Kevin Frederick with the state of Wyoming's Department of Environmental Quality said that Wyoming submitted its Class VI UIC primacy application to EPA. As of February 5, 2018, it had not been posted to its Web site (http://deq.wyoming.gov/wqd/).

EPA's Class VI UIC well classification has created many questions among state regulators and EOR operators. To address these concerns, Director of the Office of Ground Water and Drinking Water Peter Grevatt sent a memo on April 23, 2015, entitled "Key Principles in EPA's Underground Injection Control Program Class VI Rule Related to Transition of Class II Enhanced Oil or Gas Recovery (EOR) Wells to Class VI" to the Regional Water Division Director in an effort to clarify the transition of Class II wells to Class VI wells.

While this memo has helped to clarify some of the uncertainty in the EPA guidelines, it is the opinion of many EOR operators that several areas of uncertainty remain unaddressed. Clarifications that need to be addressed include the regulatory uncertainty created by the potential of a forced transition from UIC Class II to UIC Class VI and the legal and regulatory uncertainty as to impacts on existing state mineral law, state rights, pore space ownership, private property rights, mineral rights, and existing and future unitization agreements.

Additional information on the UIC Class VI Program can be found on EPA's Web site (U.S. Environmental Protection Agency, 2018b).

On August 8, 2015, the Obama Administration announced the Clean Power Plan (CCP), which requires states to reduce carbon pollution from power plants. To meet these carbon pollution standards, EPA's final rule (released August 3, 2015) relies heavily on CO_2 EOR and carbon capture and storage (CCS) as part of the best systems of emission reduction. The Obama Administration issued the CPP on October 23, 2015. The U.S. Court of Appeals for the D.C. Circuit has been holding CPP litigation in abeyance since April 28, 2017. On October 10, 2017, following a review, as directed by President Trump's Energy Independence Executive Order, the EPA proposed to repeal the Clean Power Plan (CPP) (Federal Register, 2017). EPA proposes a change in the legal interpretation that is consistent with section 111(d) of the Clean Air Act's text, context, structure, purpose, and legislative history, as well as with EPA's historical understanding and exercise of its statutory authority. EPA is accepting comments on the proposal until April 26, 2018 (U.S. Environmental Protection Agency, 2018a).

SUMMARY

As CCS regulatory and policy development continues to evolve at the state, provincial, and federal levels, the PCOR Partnership will continue to evaluate potential effects on CCS technology development and, where necessary, provide technical input and guidance to regulators and those making policy decisions in areas such as the transition from Class II to Class VI wells as it pertains to EPA's final rule, which relies heavily on CO_2 EOR and CCS as part of the best systems of emission reduction. As new rules and regulations evolve and are finalized, the PCOR Partnership will continue to provide its members with the most up-to-date information.

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