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Comment submitted by Rod Allen

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General Comment

As an Illinois resident, tax payer, registered voter, state-certified geologist (retired), state-certified drinking-water-supply operator (retired), career water-resource scientist and educator, and a person concerned for the future of our state's natural resources, I ask the U.S. EPA to increase the time-frame for the Post Injection Site Care period beyond a 12-year period, to better determine and better ensure that underground conditions in the Area of Review are stable, and the overlying Underground Supplies of Public Water are well protected from the proposed, 6-year injection of a maximum total of 9 million metric tons of CO₂ into the Mt. Simon Formation by Marquis Carbon Injection in Putnam Co., Illinois.

I request changes to the Draft Marquis Carbon Injection Well Permit for following reasons.

1. The lithology and characteristics stated in the permit documents for the Eau Claire Formation (the confining layer for the injection zone) are not consistent with those described in Illinois State Geological Survey (ISGS) publications. Key ISGS publications (Handbook Of Illinois Stratigraphy, ISGS Bulletin 95, 1975; and online equivalent) state that the dominant rock type of the Eau Claire Formation in the project area is dolomitic sandstone, a lithology not suitable as a confining layer, and much less so for the purposes stated in the draft permit. Dolomitic sandstone is a poor confining layer for the project because it not only lacks low hydraulic conductivity but it might react in detrimental ways with the CO₂-rich fluids.
2. The chemistry and physical conditions of the project area will be subject to important detrimental changes once the CO₂ is injected underground under high pressure. Subsurface conditions will be subjected to physical, chemical and geologic changes for the six-year injection period, likely longer. Generating long-term monitoring data during the six-year injection and monitoring period will allow much better assessment of the long-term stability of the injection zone, the confining layer, and groundwater conditions, as well as possible induced seismicity, and the safety of overlying underground sources of drinking water. I request that the duration of the Post Injection Site Care (PISC) program be reconsidered at the end of the injection and monitoring period.

Deferring the determination of the PISC data collection and reporting duration until then allows the creation of monitoring program using real-time and longer-term information, rather than on a forecast based on predictive modeling and different (baseline) conditions.

3. The US EPA implemented the Class VI CO₂ sequestration well program in 2011, only 14 to 15 years ago. The proposed Class VI injection well is to sequester CO₂ for “a very long time”. The regulations were established to protect underground drinking water supplies, also for a very long time. It would seem prudent, appropriate and technically sound that the monitoring period for important groundwater drinking water supplies above the Area of Review be longer than 12 years, especially for a regulatory program with such a short track record.

For these reasons, I request that the following activities be included in the Draft Permit, in a manner consistent with the appropriate U.S. EPA Class VI Injection Well regulations.

1) Install two more deep monitoring wells in the injection zone, and two monitoring wells above the confining zone, positioned so that a total three wells would be available in each of the injection zone and above the confining zone to monitor physical and chemical groundwater conditions in the large Area of Review. The monitoring wells above the confining layer should be located to allow measuring and monitoring of groundwater conditions and water chemistry both up-gradient and down-gradient of the injection well. The monitoring wells in the Mt. Simon sandstone (the injection zone) should be located to allow measuring and monitoring of hydraulic parameters near opposite edges of the modeled Area of Review, and logged with down-hole geophysics to allow characterization of Eau Claire Formation over a broad area.

2) Use the results and conclusion from the 6-year Testing & Monitoring Plan (which is based on information collected during operation of the injection well) to revise and update the draft Post Injection Site Care document. I request that it would be at this time (after operation of the CO₂ injection well) that an appropriate duration of long-term monitoring/reporting, and the timeline for safe closure of the site, be established. The Draft Permit might be revised to require the Post Injection Site Care monitoring program have a 50-year duration, subject to revision in the final Testing & Monitoring Plan.

Please incorporate these recommendations into the Draft Marquis Carbon Class VI Injection Well Permit, unless a better solution has been offered to address my concerns.

Thank you for consideration of my comments.