Greenhouse Gas Control; Research Data from University of Houston Update Understanding of Greenhouse Gas Control (Geologic model and fluid flow simulation of Woodbine aquifer CO2 sequestration)

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2016 JUN 20 (VerticalNews) -- By a News Reporter-Staff News Editor at Global Warming Focus -- New research on Greenhouse Gas Control is the subject of a report. According to news reporting out of Houston, Texas, by VerticalNews editors, research stated, "Most simulation studies have focused on small-scale CO2 injection in deep saline aquifers. Recently, a significant amount of simulation studies on large-scale CO2 storage have been conducted."

Our news journalists obtained a quote from the research from the University of Houston, "This study investigates what an actual CO2 storage project might entail using field data for the Woodbine aquifer in East Texas. A geological model of the Woodbine aquifer was created based on existing structural, petrophysical, and aquifer data found in the Bureau of Economic Geology (BEG) website. A key feature in the model is the Mexia-Talco fault system that serves as a likely boundary between the saline aquifer region suitable for CO2 storage and an updip fresh water region. Three CO2 injection scenarios were considered: CO2 bulk injection and two aquifer management strategies (AMS). The AMS were CO2 injection with brine extraction; and CO2 injection with brine extraction, and concentrated brine reinjection (from desalination). Simulation results indicate that aquifer pressurization limits bulk injection of the CO2 from surrounding power plants to 20 years, but the AMS would store CO2 injected at the same rate for up to 240 years. The simulation also enabled investigation of fluid migration across the Mexia-Talco fault system by using a fault transmissibility multiplier to adjust fault transmissibilities. For bulk CO2 injection small leakage through or around the fault system permits a volume of brine equal to the injected CO2 volume eventually to leak into the fresh water aquifer. For the two AMS, fresh water is drawn into the saline aquifer during brine extraction, and brine and/or CO2 ultimately will migrate into the fresh water aquifer. The rate of fluid migration across the fault system depends on its transmissibility, and CO2 would leak into the fresh water aquifer after 905 and 1080 years for cases with fault transmissibility multiplier of 0.1 and 1, respectively."

According to the news editors, the research concluded: "Because fault displacements are typically more than 200 m (700 ft), and because there is a sharp contrast in salinity across the Mexia-Talco fault system, the likelihood of nonzero fault transmissibility may be low and may remain low provided that neither increased nor decreased pressure across the fault system from CO2 and concentrated brine injection or brine production alter the fault transmissibility over time."

For more information on this research see: Geologic model and fluid flow simulation of Woodbine aquifer CO2 sequestration. International Journal of Greenhouse Gas Control, 2016;49():1-13. International Journal of Greenhouse Gas Control can be contacted at: Elsevier Sci Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, Oxon, England. (Elsevier - www.elsevier.com; International Journal of Greenhouse Gas Control - www.journals.elsevier.com/international-journal-of-greenhouse-gas-control/)

Our news journalists report that additional information may be obtained by contacting O. Akinnikawe, University of Houston, Dept. of Petr Engn, Houston, TX 77204, United States.

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