

RED TRAIL ENERGY CCS PROJECT

ACTIVITY FAQs

INTEGRATED CARBON CAPTURE AND STORAGE FOR NORTH DAKOTA ETHANOL PRODUCTION

Water and Soil Gas Sampling near Richardton, North Dakota

In spring, summer, and fall 2019, field crews from the Energy & Environmental Research Center (EERC) will collect groundwater and soil gas samples near Richardton to learn about natural changes in levels of carbon dioxide and other related components. The data gathering is part of the Red Trail Energy carbon capture and storage (CCS) research effort, which is investigating the feasibility of safe, permanent, commercial-scale geologic storage of CO₂ integrated with ethanol production. The groundwater and soil gas samples will provide regional data on natural cycles prior to potential CO₂ storage in the project area.

Why Are We Sampling?

Samples collected and analyzed before potential operations help determine the normal or natural environmental conditions within the project area. If the project advances, North Dakota regulations will require groundwater and soil gas monitoring as part of an extensive monitoring and safety program for sites where CO₂ may be permanently stored deep underground. These data would also help determine whether future changes in CO₂ levels come from natural seasonal cycles or further testing is needed.

For groundwater, the chemical makeup in freshwater aquifers depends on the rocks through which it moves and anything else that filters into the aquifer.

Soil gas comes from the biological activity of the soil's plant, animal, and microbial communities.

As part of the natural carbon cycle of these ecosystems, seasonal changes in CO₂ are being studied to define existing environmental conditions.



What Is the Benefit of Water and Soil Gas Sampling?

Healthy soil and groundwater are vital, and ensuring that the environment is not negatively impacted by this project is a top priority for Red Trail Energy. Understanding CO₂ behavior in the natural environment before any development occurs helps the operators design an effective monitoring plan as required by the permits prior to potential CO₂ storage. Establishing the natural levels and seasonal changes in CO₂ is also helpful when assessing future monitoring results.

What Is the Community Impact?

Safety and courtesy will be top priorities, and care will be taken to protect the environment during sampling activities. Red Trail Energy will seek permission from landowners before beginning any potential fieldwork. Three 2-day activities are expected to occur in spring, summer, and fall 2019. Crews will use one pickup on existing roads. Persons near sampling sites may hear a generator or air compressor as soil gas samples are collected.

What Do Landowners Need to Know?

Red Trail Energy will seek permission from and work with landowners to minimize inconveniences. Landowners will be notified before each sampling event. To collect the samples, EERC technicians will travel to sampling sites by pickup truck on existing roads. Collection requires an hour per site, and the overall sampling activity is projected to take 2 days each season. Landowners will receive the results of the groundwater and soil gas analyses approximately 3 months after each sampling event.

Where Are We Sampling?

Three water wells and 11 soil gas locations will be sampled during each seasonal event. All locations are near the Red Trail Energy facility and Richardton.



Technicians take some water measurements onsite before collecting groundwater to be analyzed in the laboratory.

How Is Sampling Carried Out?

Water samples will be drawn from existing wells using procedures that have no impact to the well or groundwater system. Soil gas sampling will require placement of temporary flags to mark the location that is tested each season. Sample collection at each site is expected to take 30 minutes to an hour, with the entire event lasting 2 days.



Soil gas is collected with a probe driven into the ground 3.5 feet during each sampling event.

What Are the Next Steps?

Information on project progress and other potential field activities will be available on the EERC's website. An open house showcasing results is planned for fall 2019. The final report will also be available to the public in summer 2020.

The ultimate goal of the **Red Trail Energy Carbon Capture and Storage (RTE CCS) Project**, a multiphase research and development effort, is to create the first integrated CCS system in North Dakota. Led by the Energy & Environmental Research Center (EERC) at the University of North Dakota, with support from RTE, the Industrial Commission of North Dakota Renewable Energy Program, and the U.S. Department of Energy, technical partners in this research include Trimeric Corporation, Schlumberger Carbon Services, and Computer Modelling Group.

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