



NORTH DAKOTA  
CarbonSAFE

# ACTIVITY FAQs

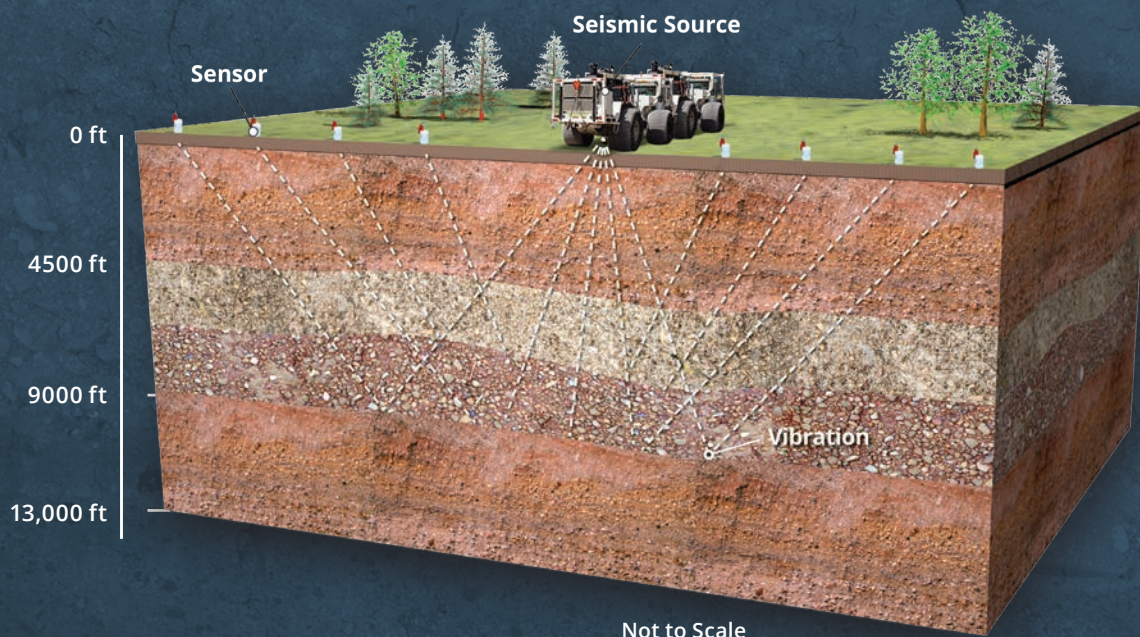
INVESTIGATING SAFE, PERMANENT GEOLOGIC STORAGE OF CO<sub>2</sub> IN NORTH DAKOTA

## Geophysical Survey near Milton R. Young Station

In late summer 2020, a field crew will conduct a geophysical survey near Milton R. Young Station to collect information about rock layers in the deep subsurface. The data gathering is part of Project Tundra and the North Dakota CarbonSAFE research effort, which is assessing safe, permanent, commercial-scale geologic storage for carbon dioxide from Young Station.

### What Is a Geophysical Survey?

A truck-mounted device called a seismic source generates vibrations using a metal plate that is laid on the ground and shaken side to side. The vibrations travel deep into the earth and are reflected back to the surface. Sensors at the surface record the reflected vibration. Geophysicists decipher these signals to learn about the subsurface rock layers.



Geophysical surveys are a common data collection tool and have been used in every county in western North Dakota.

### What Is the Benefit of the Survey?

Researchers will use the data from the geophysical survey to evaluate rock layers up to nearly 2 miles below the surface, develop more accurate computer models to simulate where injected CO<sub>2</sub> might travel, and evaluate the suitability of the storage zones. This information will help with permitting the commercial geologic storage deep underground should the project move forward.

### What Is the Community Impact?

Safety and courtesy are top priorities during this survey. A low-level noise similar to that of a passing truck will be generated at each location from the vibrating truck-mounted plates. A person standing 100 feet from the source will not feel ground vibration. Care will be taken to avoid or minimize any environmental impacts and maintain normal traffic flow. The work will be carried out under a permit issued by the North Dakota Industrial Commission.

## What Do Landowners in the Survey Area Need to Know?

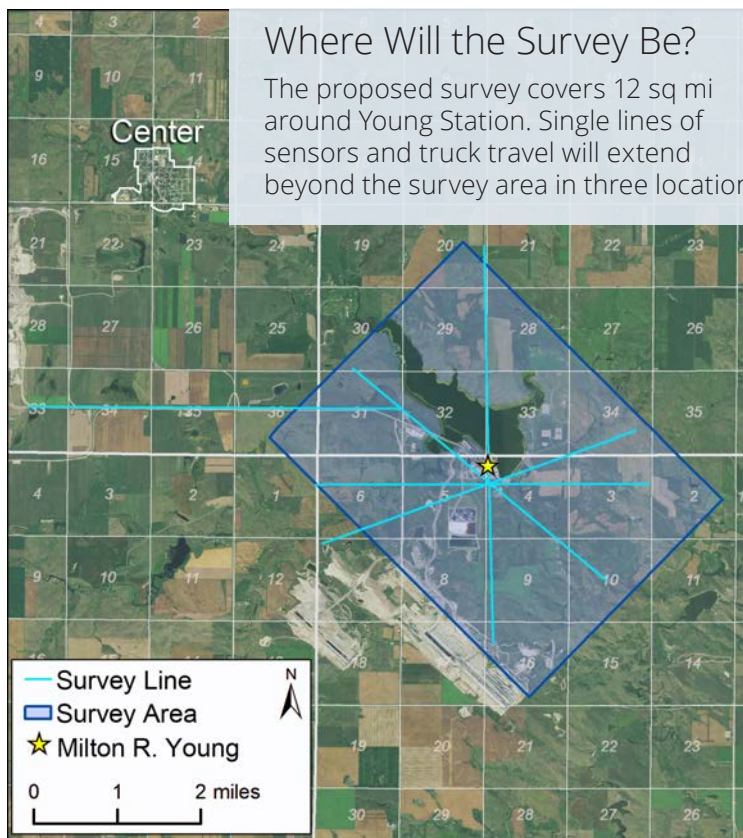
Project partner Minnkota Power Cooperative, Inc., recognizes the impact of survey work during the growing season and will contact landowners before the survey work to request permission to drive vehicles and place sensors on their land. The sensors will be pressed into the ground by hand by a field crew walking and driving pickups or ATVs. Once installed, the sensors will remain in place up to 3 weeks, until the survey is finished, as the vibroseis trucks travel through the survey area along lines spaced approximately 660 feet apart. The testing area avoids buildings and other infrastructure such as drinking water wells and pipelines. To protect the sensors, Minnkota requests that landowners avoid fieldwork in the survey area for the duration of the survey. Minnkota will work with landowners to minimize inconveniences and address concerns.

## How Will the Survey Be Carried Out?

The test involves a network of vibrational sensors and two truck-mounted seismic sources (called vibroseis trucks). Sensors will be inserted into the ground every 165 feet along lines that are spaced 330 feet apart to record reflected vibrations generated during the survey. The survey crew will drive two large vibroseis trucks along lines spaced 660 feet apart. At 165-foot intervals along lines, the trucks will stop and vibrate the ground for 1–2 minutes. The trucks will not vibrate the ground within 300 feet of buildings and other infrastructure. The sensors will be removed after the entire area has been surveyed.

## Where Will the Survey Be?

The proposed survey covers 12 sq mi around Young Station. Single lines of sensors and truck travel will extend beyond the survey area in three locations.



*Vibroseis trucks drive across the landscape, stopping to generate vibrations every 165 feet along a path throughout the study area, avoiding buildings and infrastructure.*



*Careful installation of the vibration-detecting sensor before the survey begins is essential to data collection and analysis. The sensors will stay in place throughout the entire survey.*

## What Are the Next Steps?

Other near-term field activities are planned for late summer and fall 2020. EERC field crews will be in the same area collecting other geophysical information using gravity and magnetic survey techniques. A drilling rig set up just south of Young Station will collect rock samples from deep underground. Learn more at the project websites: [www.projecttundra.com](http://www.projecttundra.com) and [undeerc.org/NDCarbonSAFE](http://undeerc.org/NDCarbonSAFE).

**The North Dakota CarbonSAFE project** is assessing safe, permanent geologic storage of carbon dioxide. Led by the Energy & Environmental Research Center at the University of North Dakota, partners include the U.S. Department of Energy National Energy Technology Laboratory, the North Dakota Industrial Commission Lignite Research Program, and Minnkota Power Cooperative.

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Learn more at [www.undeerc.org/NDCarbonSAFE](http://www.undeerc.org/NDCarbonSAFE) and [www.ProjectTundraND.com](http://www.ProjectTundraND.com)



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