BAY

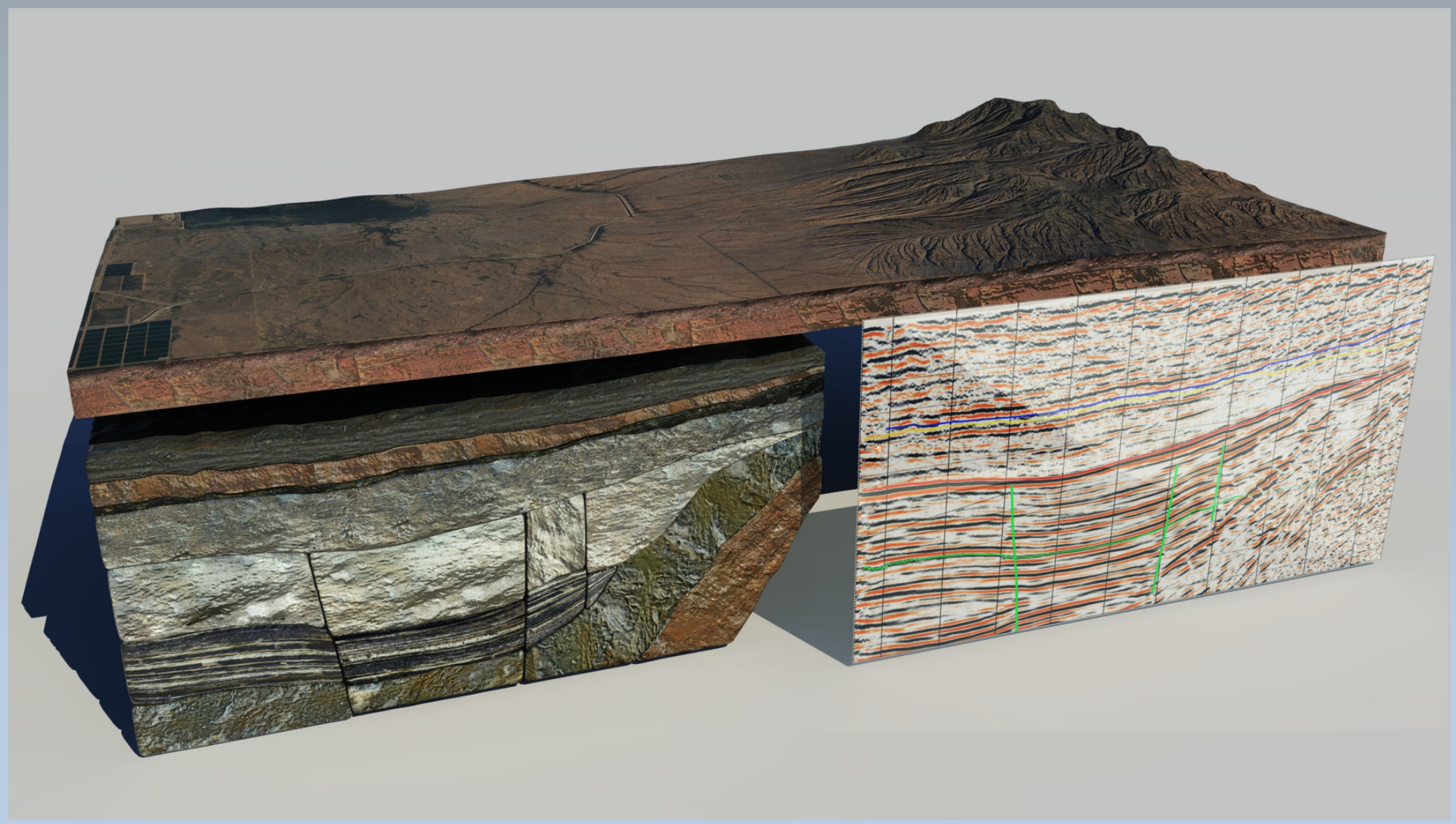
GEOPHYSICAL

A Full Service Geophysical

Data Acquisition Company

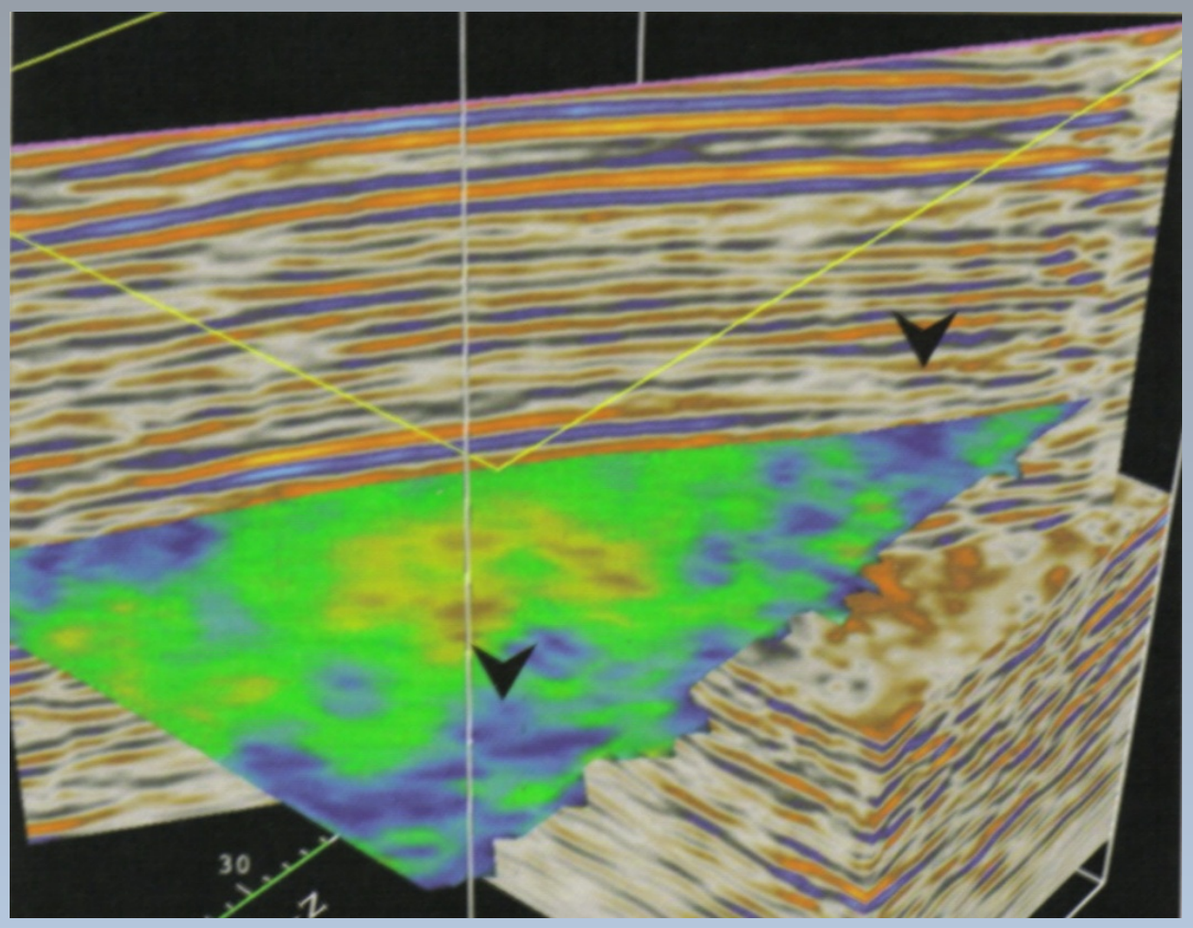
Bay Geophysical's Specialties

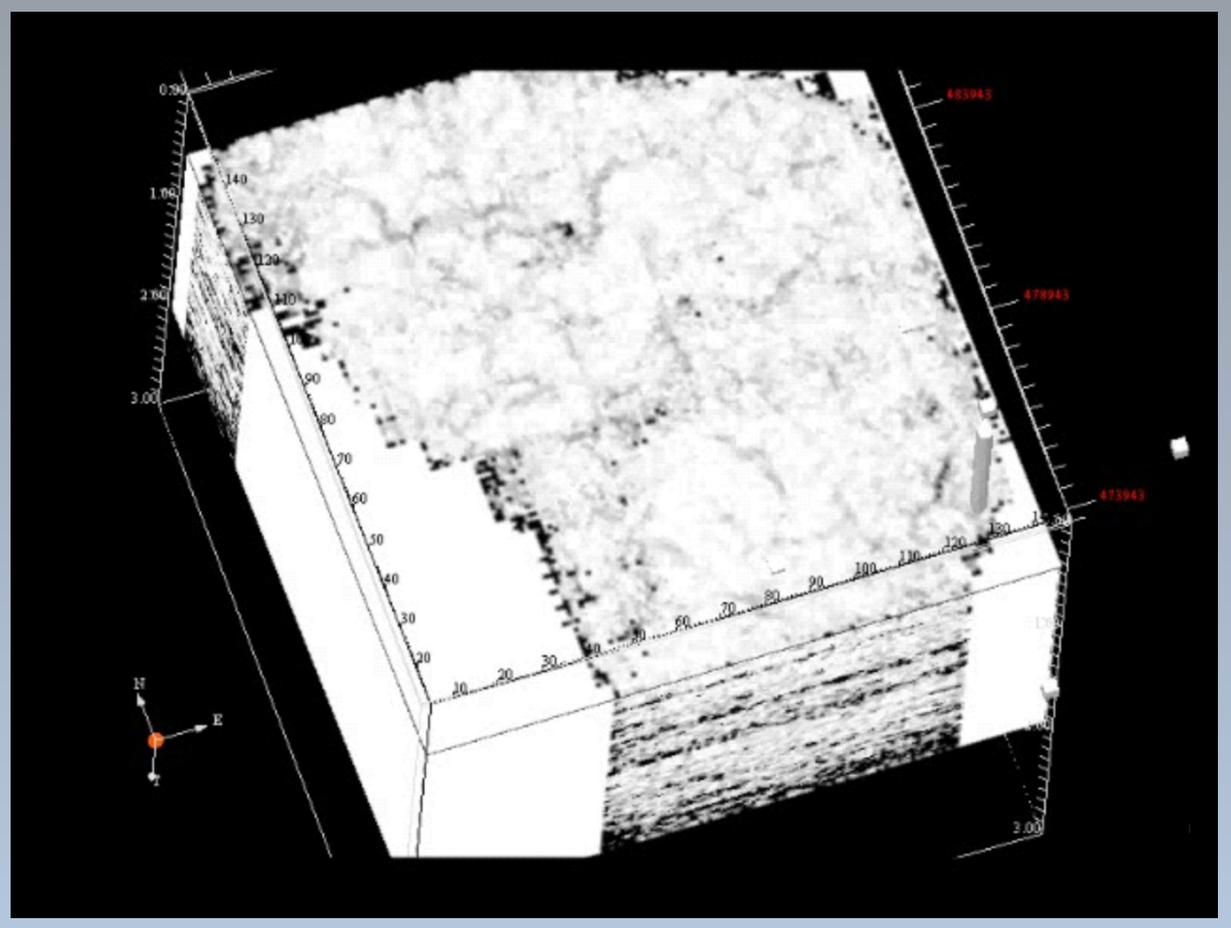
- Oil & Gas Exploration
- Gas Storage Facilities
- CO_2 Injection Studies



- Shallow Engineering & Environmental
- Subsurface Hydrogeologic Studies
- Mineral Exploration

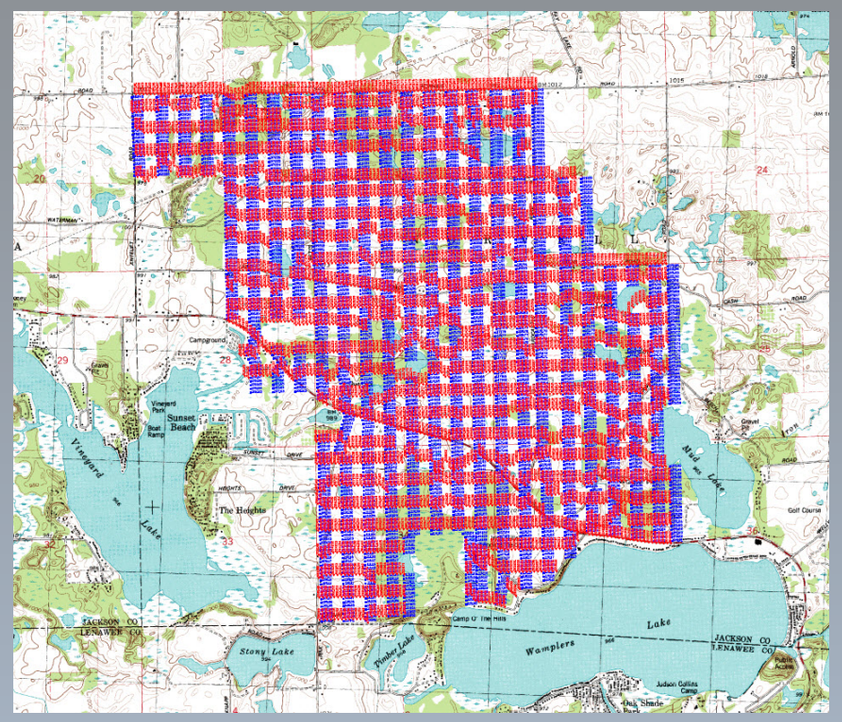
Bay Geophysical provides services for design, implementation, acquisition and interpretation of seismic surveys both land and marine.



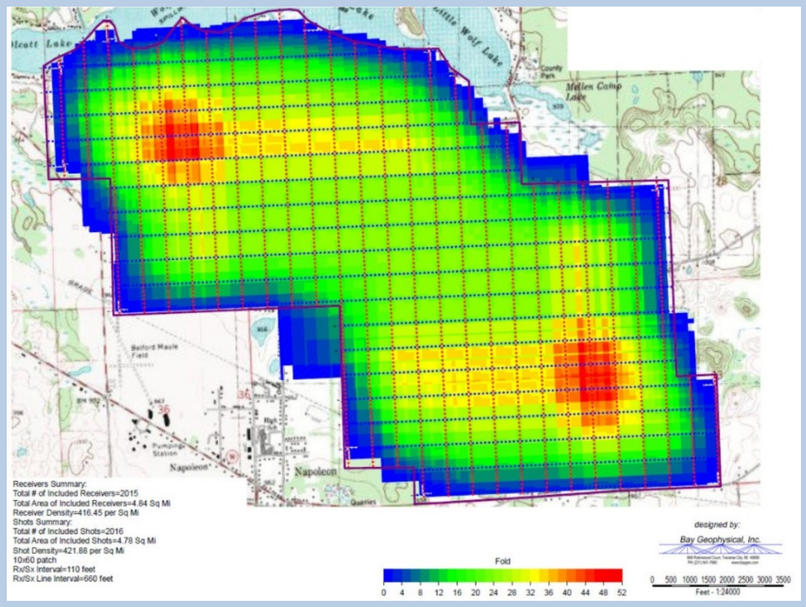


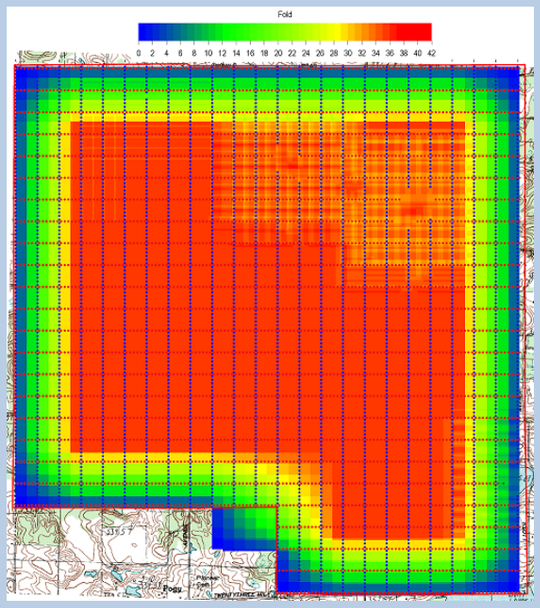
- High resolution P-Wave (2-D & 3-D) reflection surveys, Shear wave and multi-component reflection surveys and refraction surveys with targets depths ranging from 5 feet – 15,000 feet.
- Variety of energy sources: vibroseis, impulse and shothole.

Seismic Survey Design, Modeling and Analysis



- Model 3-D designs accommodating cultural features and hazard surveys such as pipelines, leases and permits before data acquisition to facilitate the best subsurface coverage for our clients.
- Ray trace analysis allows field observers to identify and confirm target reflections in the raw shot record.
- Fold distribution analysis of proposed 3-D seismic survey geometry





Seismic Data Acquisition

Bay employs vibroseis or impulsive energy sources as dictated by the survey environment.

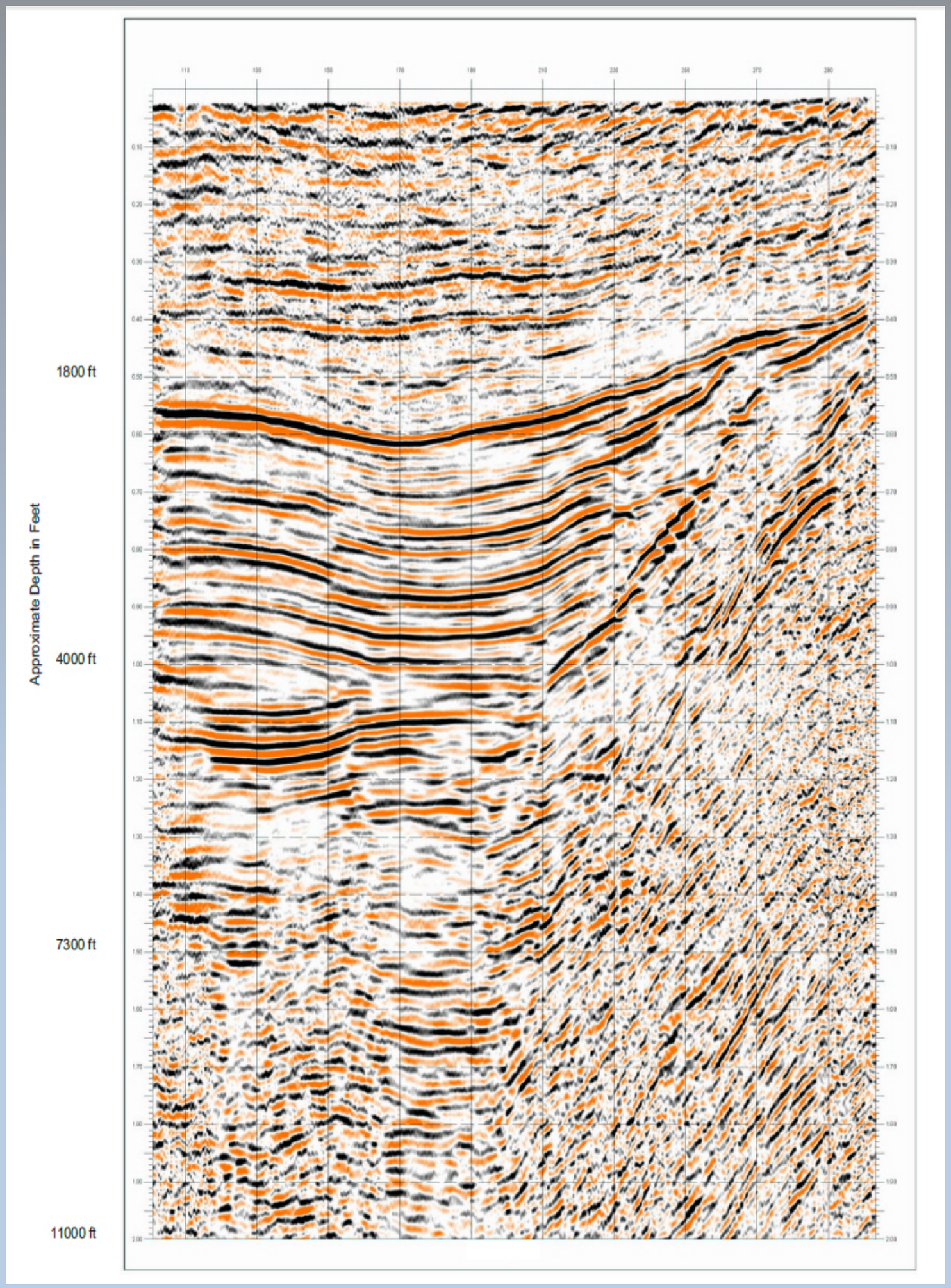
Seismic Data Acquisition

Next Generation Vibroseis Systems

- Smaller footprint optimized for environmentally/culturally restricted and populated areas, reduced agricultural impact by 30%
- Increased force, bandwidth output, and focused output
- Improved low frequency performance and signal to noise ratio
- Low source generated ground pressure
- Quieter with new sound limiting systems
- Keeps source non-intrusive

Seismic Data Acquisition

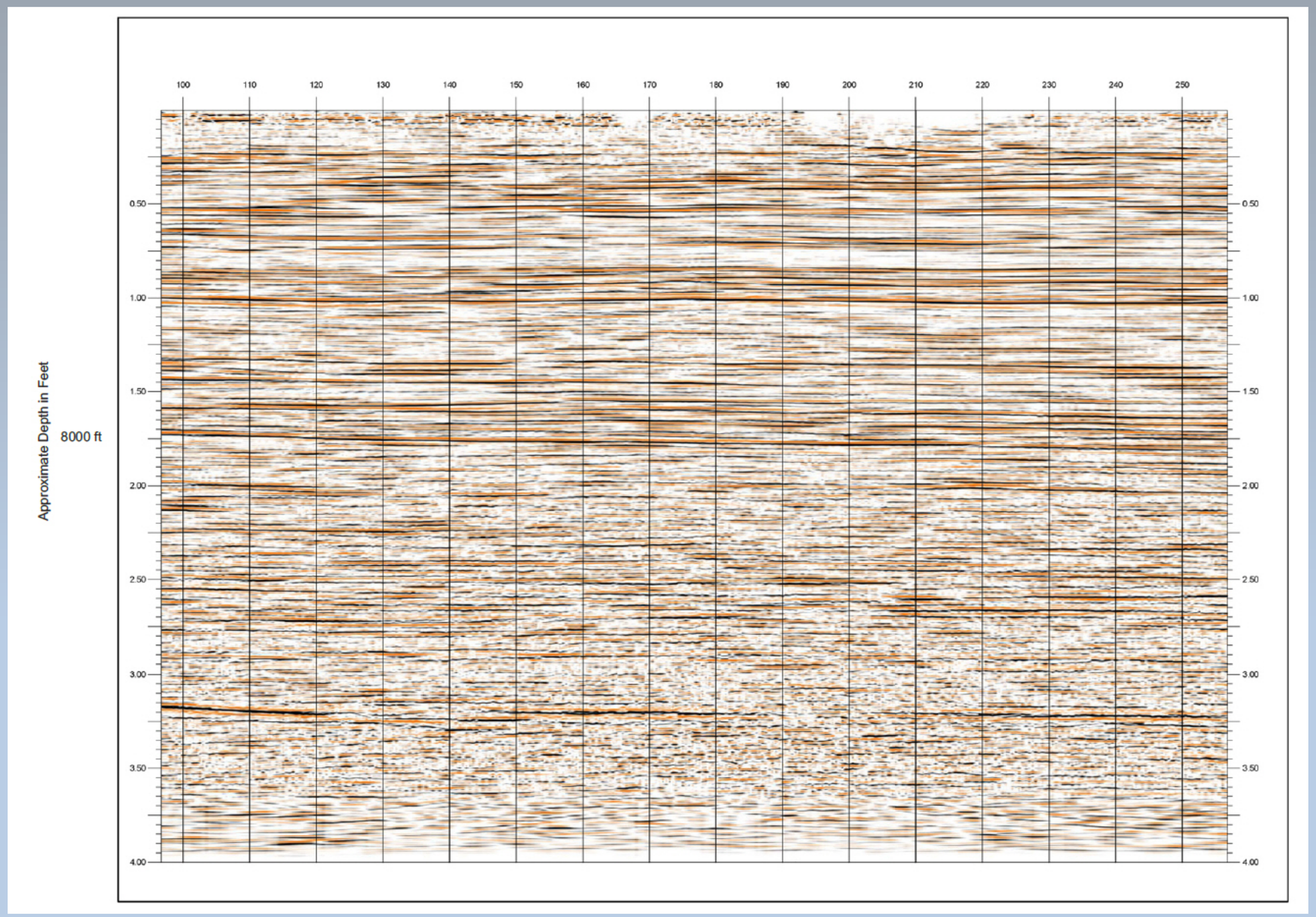
Next Generation Vibroseis Systems



Data acquired in Arizona with 2 IVI EnviroVibe systems with depth imaging >11,000 feet

Seismic Data Acquisition

Next Generation Vibroseis Systems



Data acquired in California with 3 IVI EnviroVibe systems with 3+ seconds of data

Seismic Data Acquisition

Acquisition Systems

Wireless Seismic RT System

Multiple crew next generation wireless system with real-time monitoring and recording

Wireless System

ARAM Aries II Cable System (same number of channels)

Less cultural interference, reduced environmental impact, real-time data acquisition, real-time parameter selection and continuous QA/QC.

Seismic Data Acquisition

Acquisition Systems

Wireless Seismic RT System 2

Simple solution to natural and cultural features

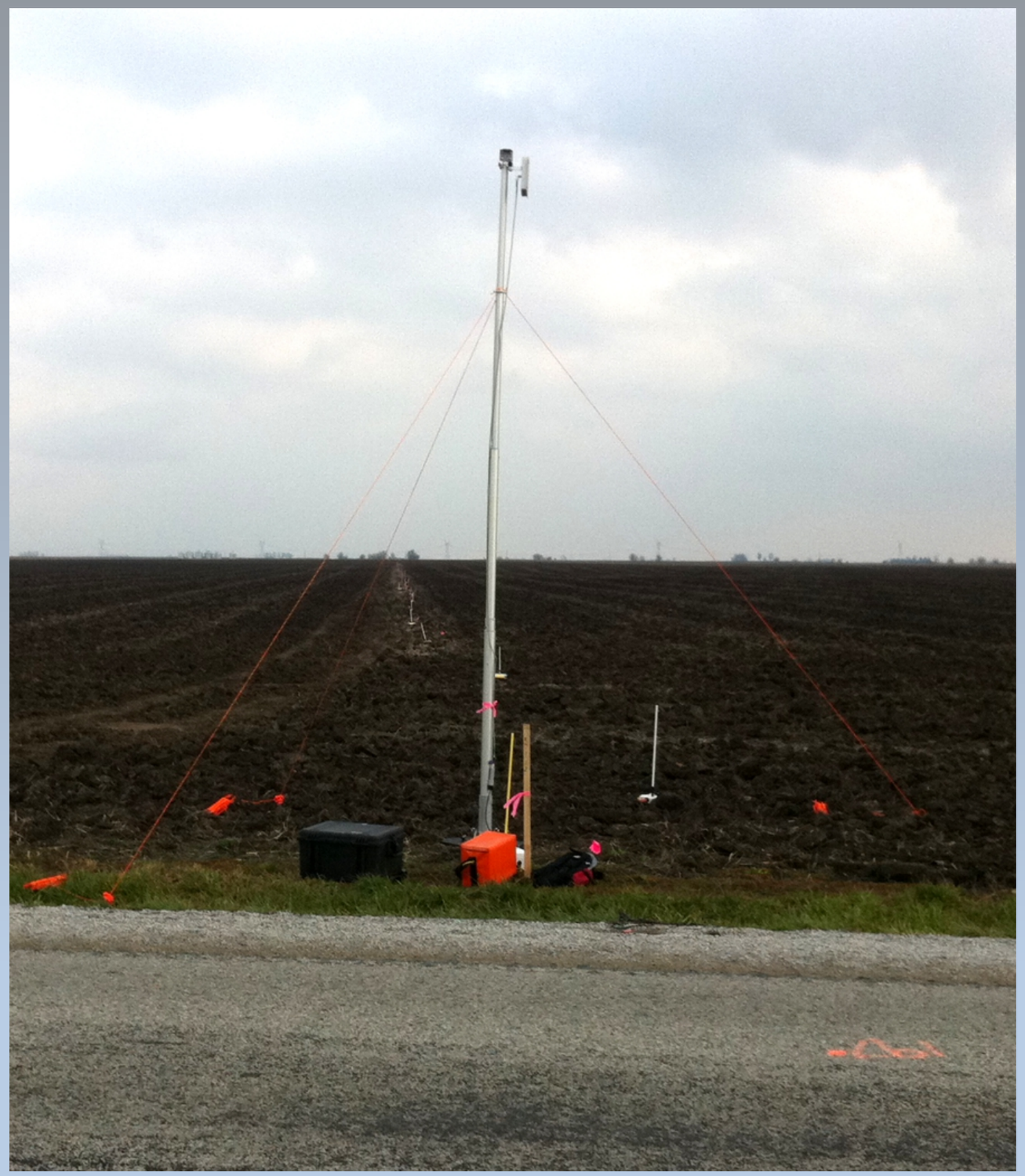
- Cable-less crossings (roads, railroads, rivers etc.)
- Greatly reduces agricultural damages
- Increased field flexibility (farmers planting/harvesting, no-permits)

Seismic Data Acquisition

Acquisition Systems

Wireless Seismic RT System 2

Real-time Data acquisition: cable-less and wireless



Real-time data acquisition means no “shooting blind”, no data harvesting/physical data collection and no loss of data due to theft or loss of box.

Seismic Data Acquisition

Acquisition Systems

Wireless Seismic RT System 2
Real-time Data acquisition: cable-less and wireless

Unlike “cable-less” systems, the Wireless Seismic system is a real-time data acquisition system with continuous QC and real-time noise monitor.

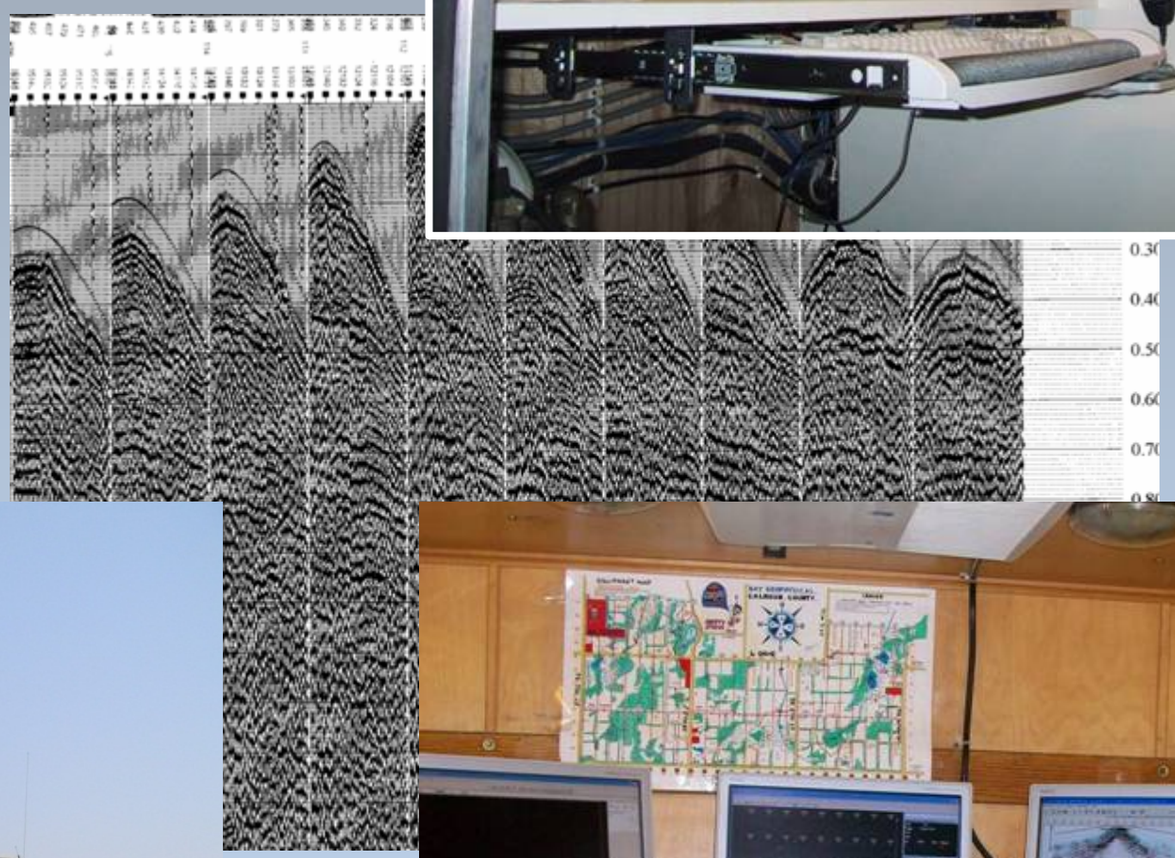
No surprise noise-trains after acquisition.

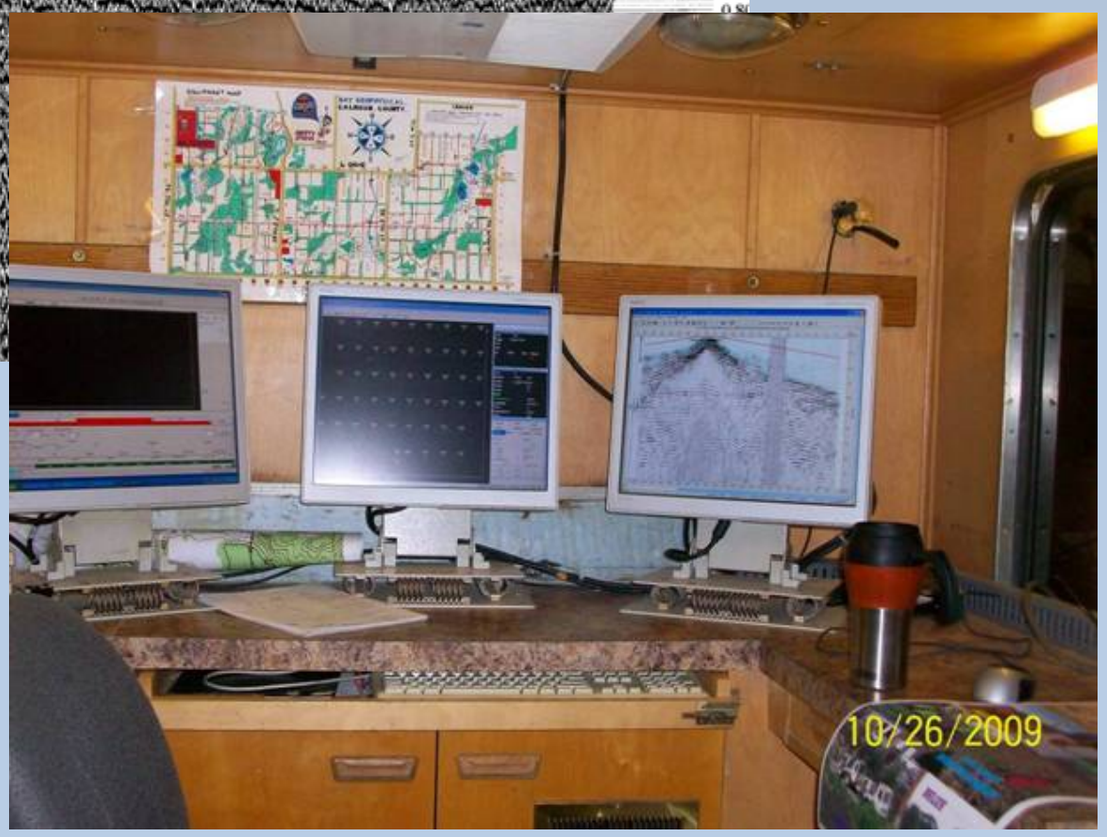
Seismic Data Acquisition

Acquisition Systems

ARAM Aries II

- 24-bit high definition recording using multiple energy sources
- 2-D or 3-D seismic surveys
- Bay has 1,000s of channels available
- Multiple crews
- Proven track record

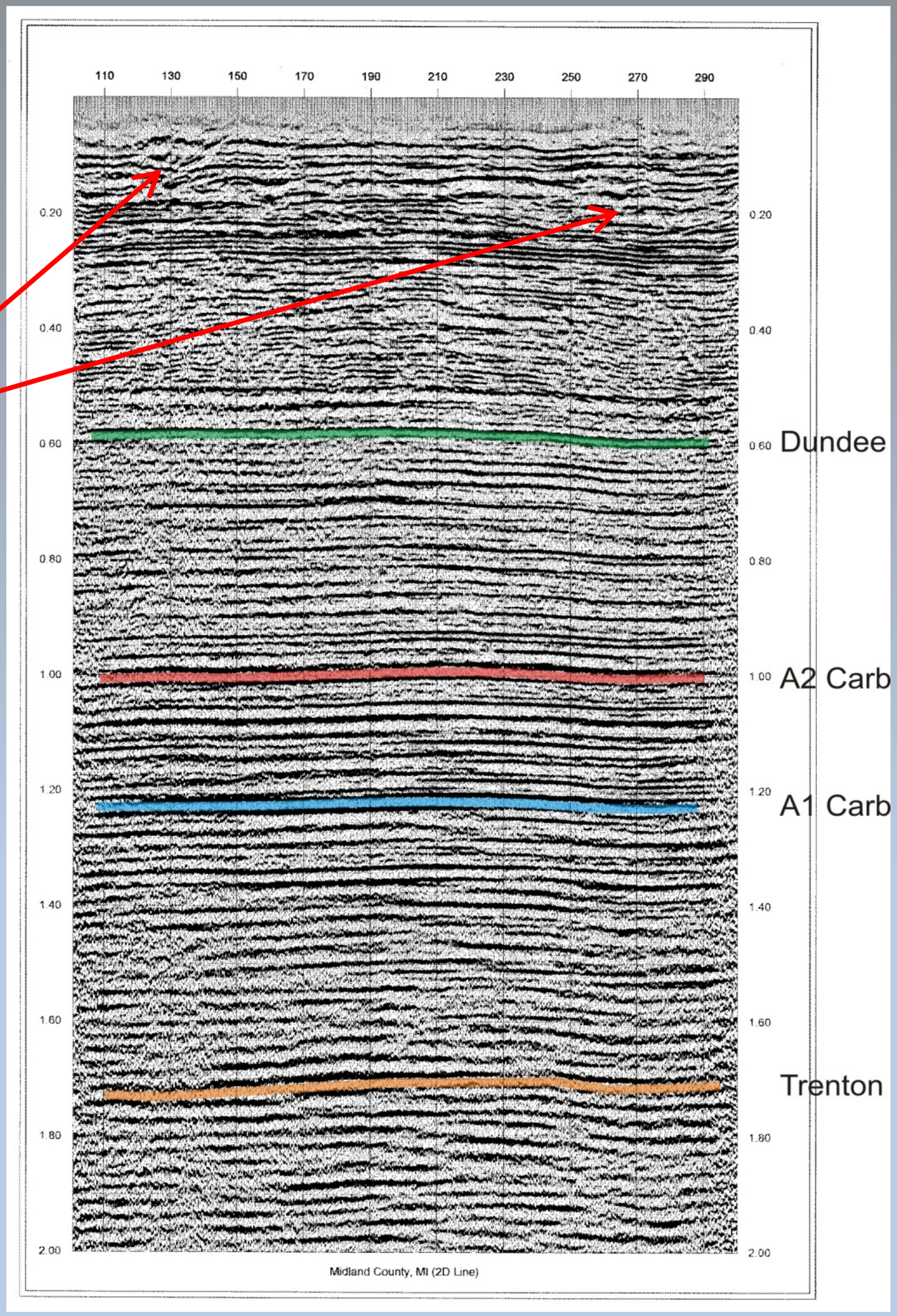




Why High Resolution?

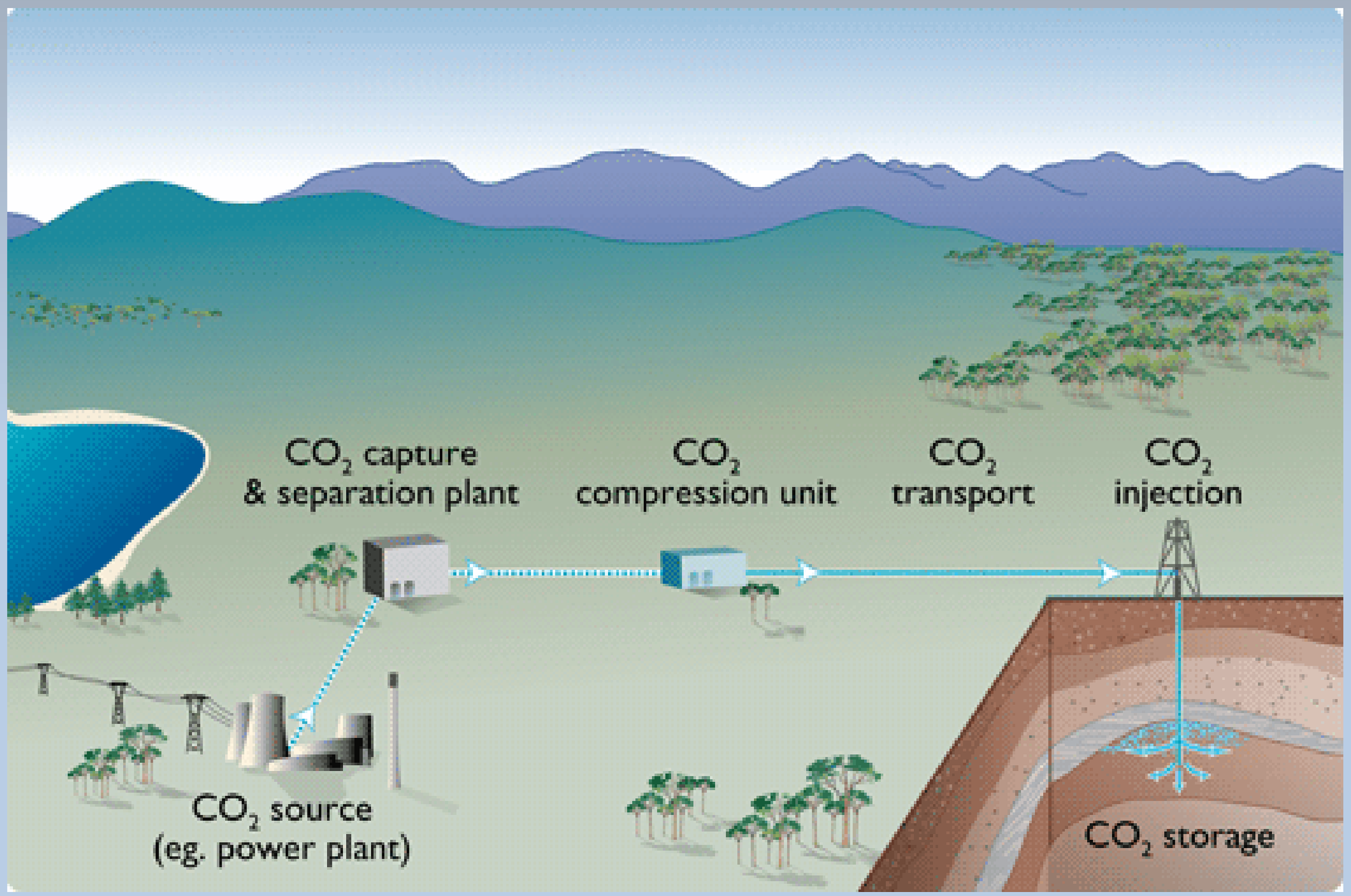
High resolution data allows shallow features and low velocity layers to be resolved with refraction statics, greatly reducing artificial rollover.

This high resolution seismic line was acquired with a single vibroseis source.



CO_2 Geosequestration Case Studies

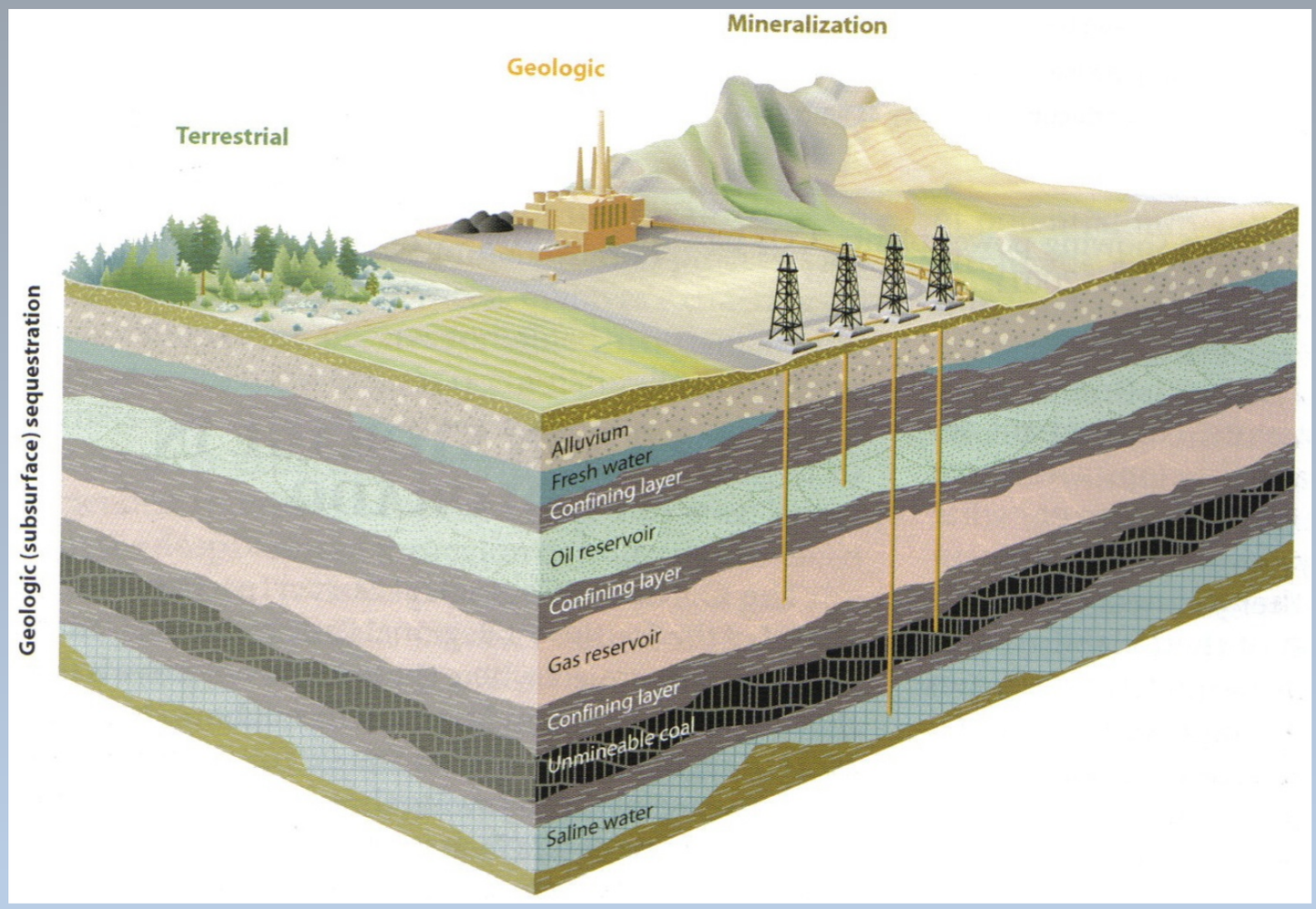
Bay took part in a consortium of private corporations and universities in the DOE program studying the feasibility and suitability of the long-term storage of CO_2 in deep subsurface geological reservoirs.



CO_2 Geosequestration Case Studies

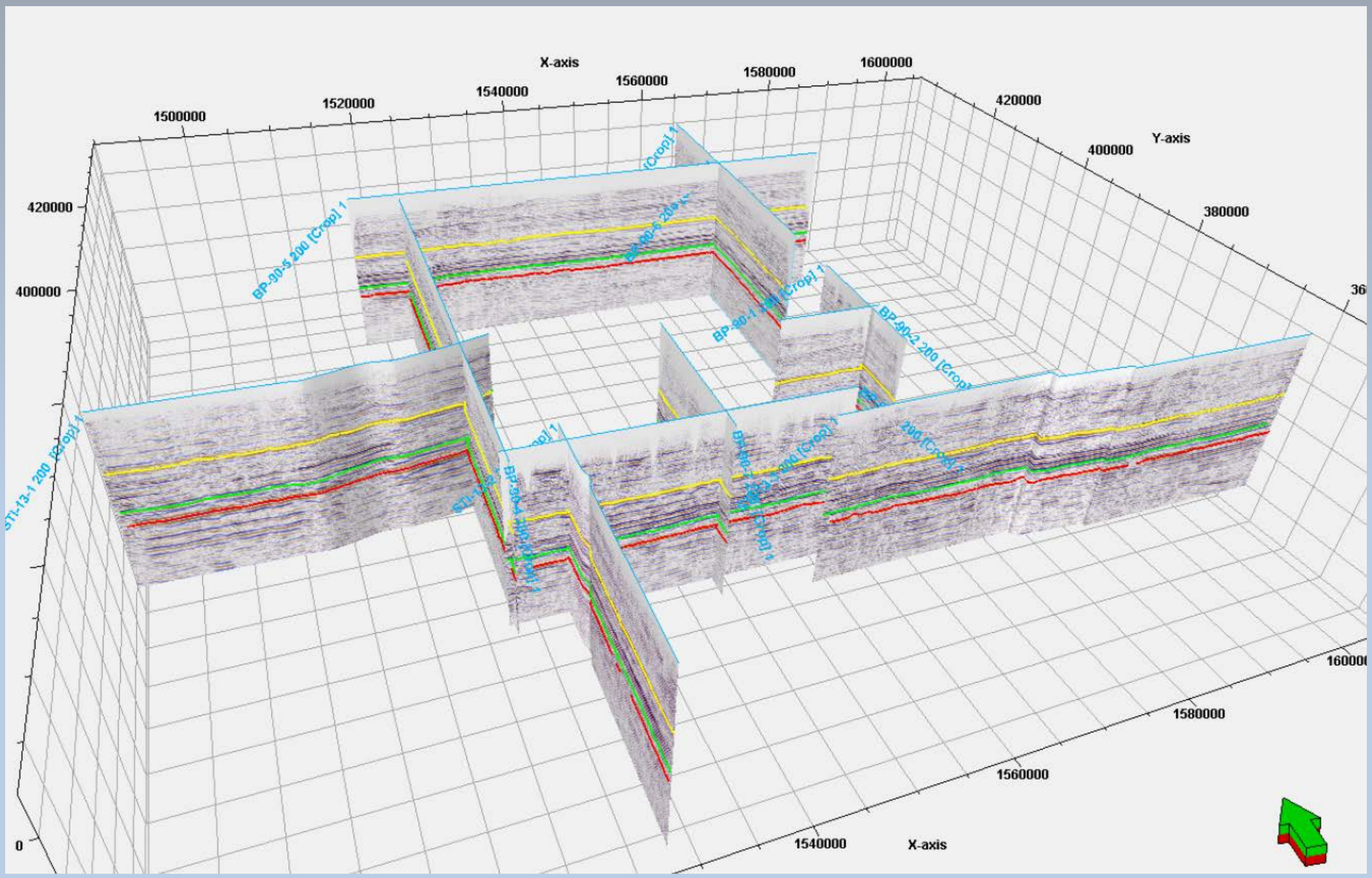
Potential Storage Sites

- Oil and Gas Reservoirs
- EOR
- Deep Coal Seams
- Deep Saline Formations
- Enhanced Coalbed Methane Recovery
- Salt Caverns
- Mineral Trapping



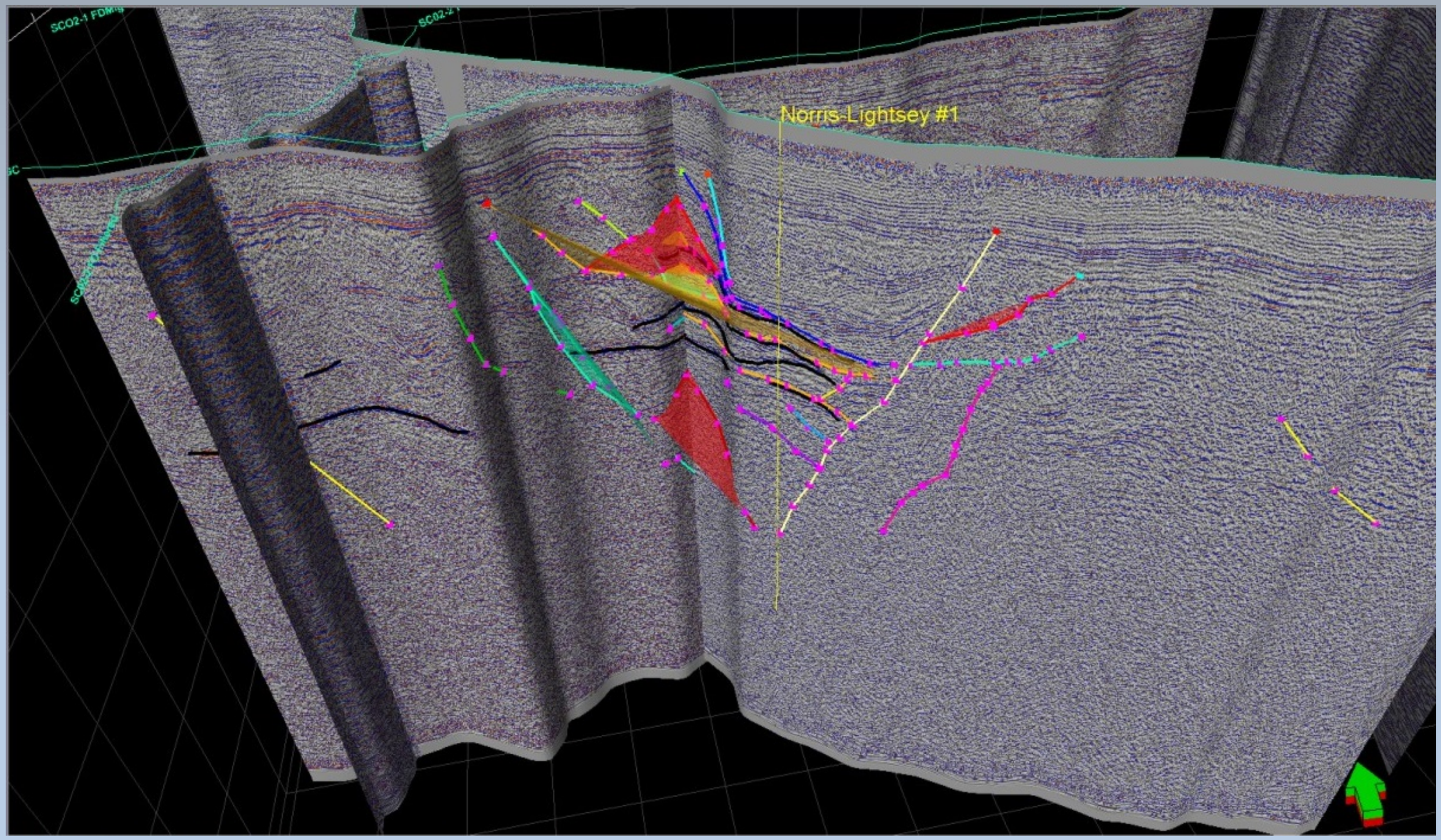
CO_2 Geosequestration Case Studies

Bay has acquired over 200 miles of high resolution seismic data for CO_2 injection studies with formation targets of 3,500 feet to over 13,000 feet in depth.



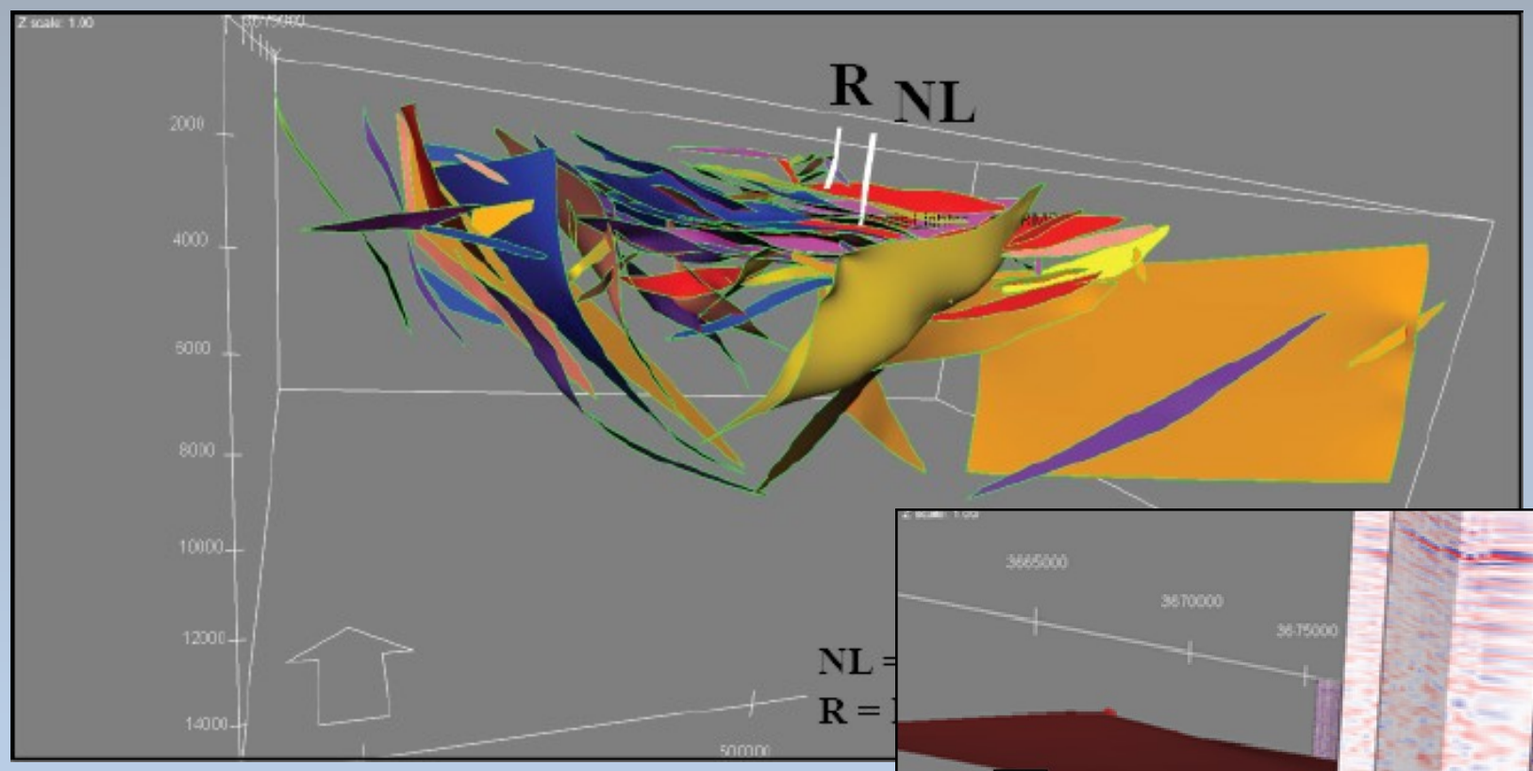
CO_2 Geosequestration Case Studies

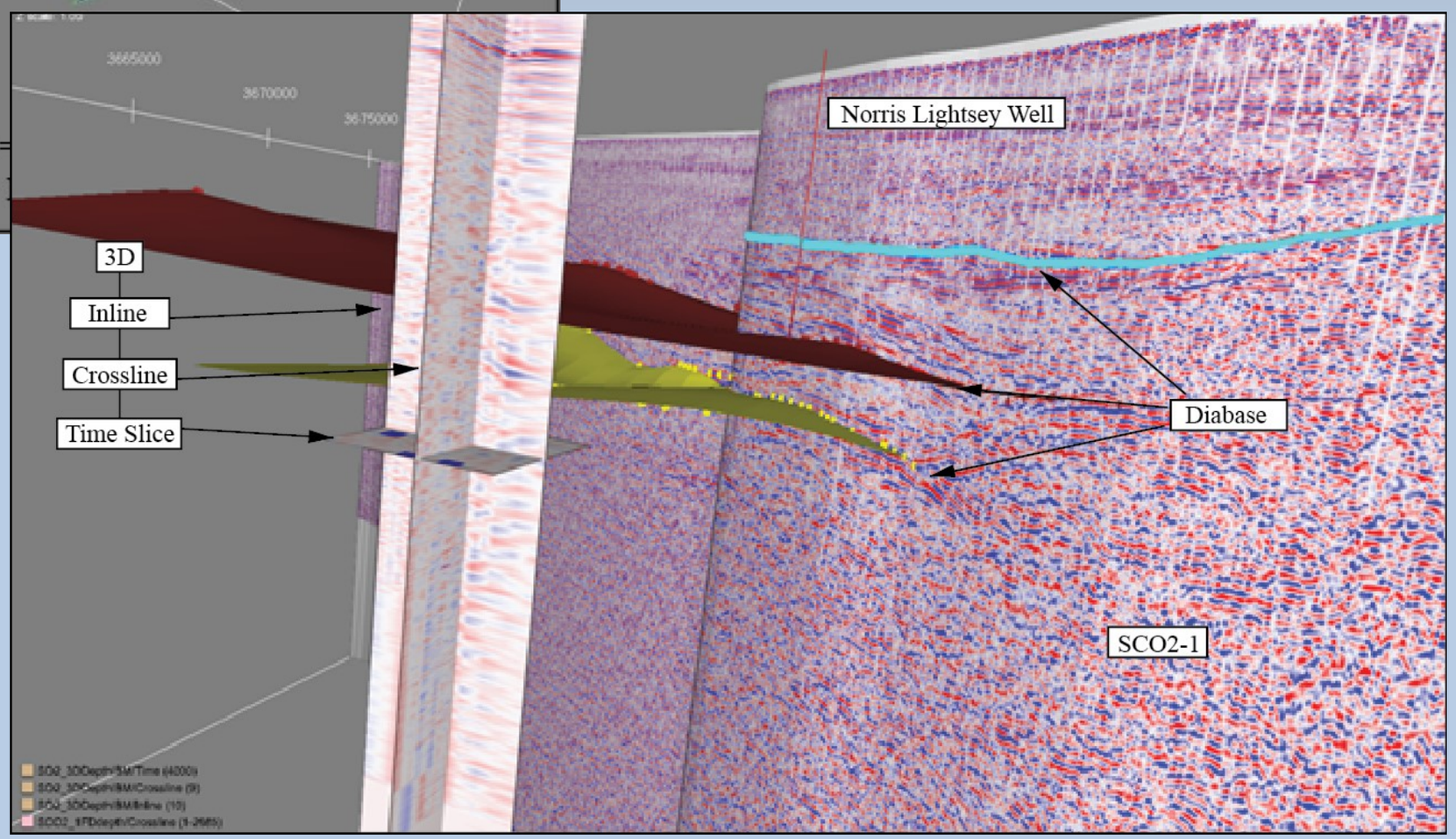
Bay successfully provided a geological model for CO_2 storage in rift fault systems. Additionally, Bay identified numerous step-ladder reservoirs in addition to stratigraphic traps, therefore increasing the number of possible reservoirs suitable for storage.



CO_2 Geosequestration Case Studies

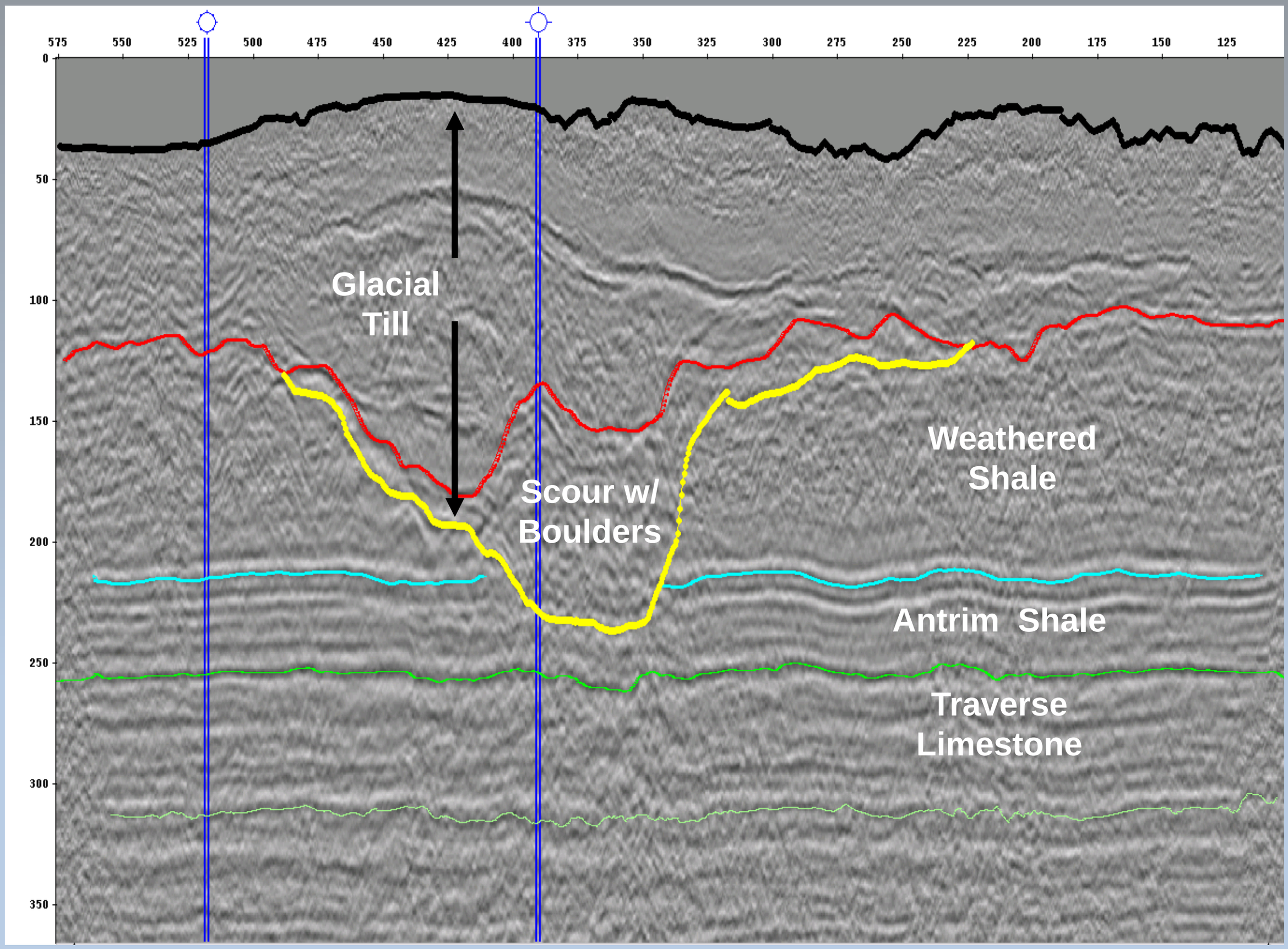
Bay's 2-D seismic program identified an area suitable for a well site for CO_2 injection. Bay acquired a 3-D seismic grid over the area, allowing for the estimation of CO_2 storage capacity and increased understanding of the structural and lithological properties of the caprock(s) and reservoir(s) at a higher spatial resolution than the 2-D program.



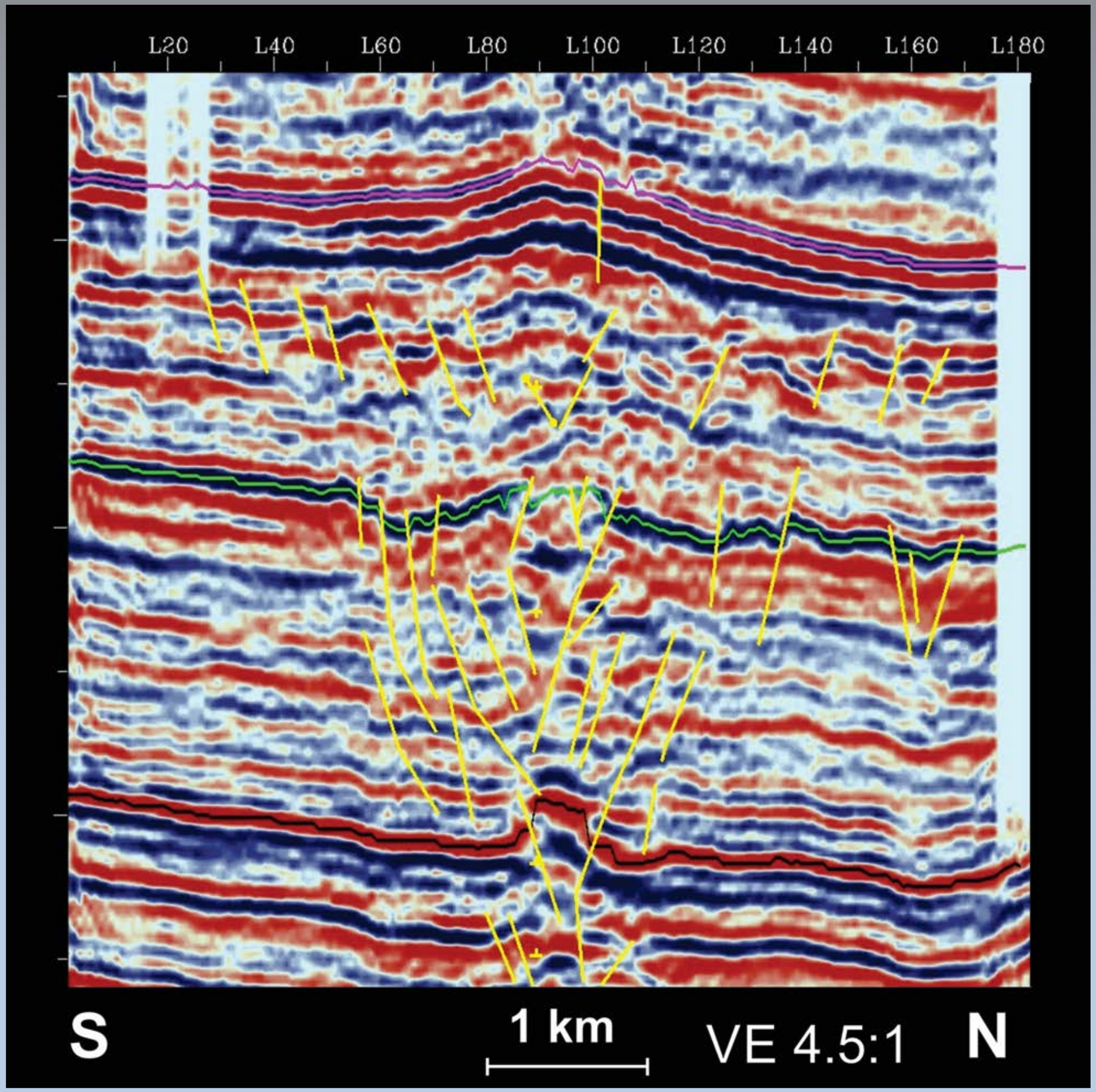


High Resolution Examples

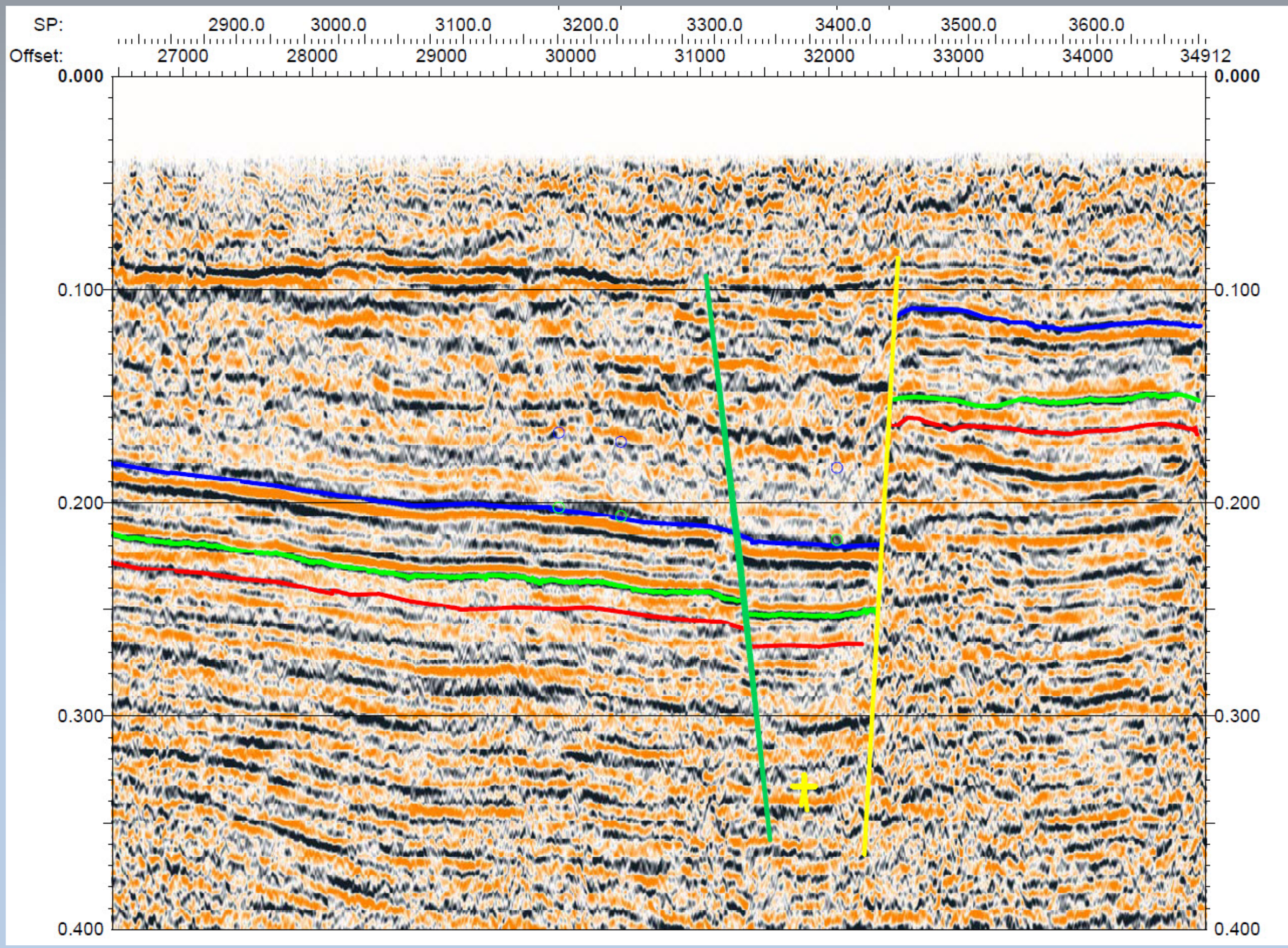
Shallow Gas Shale: Antrim Scour



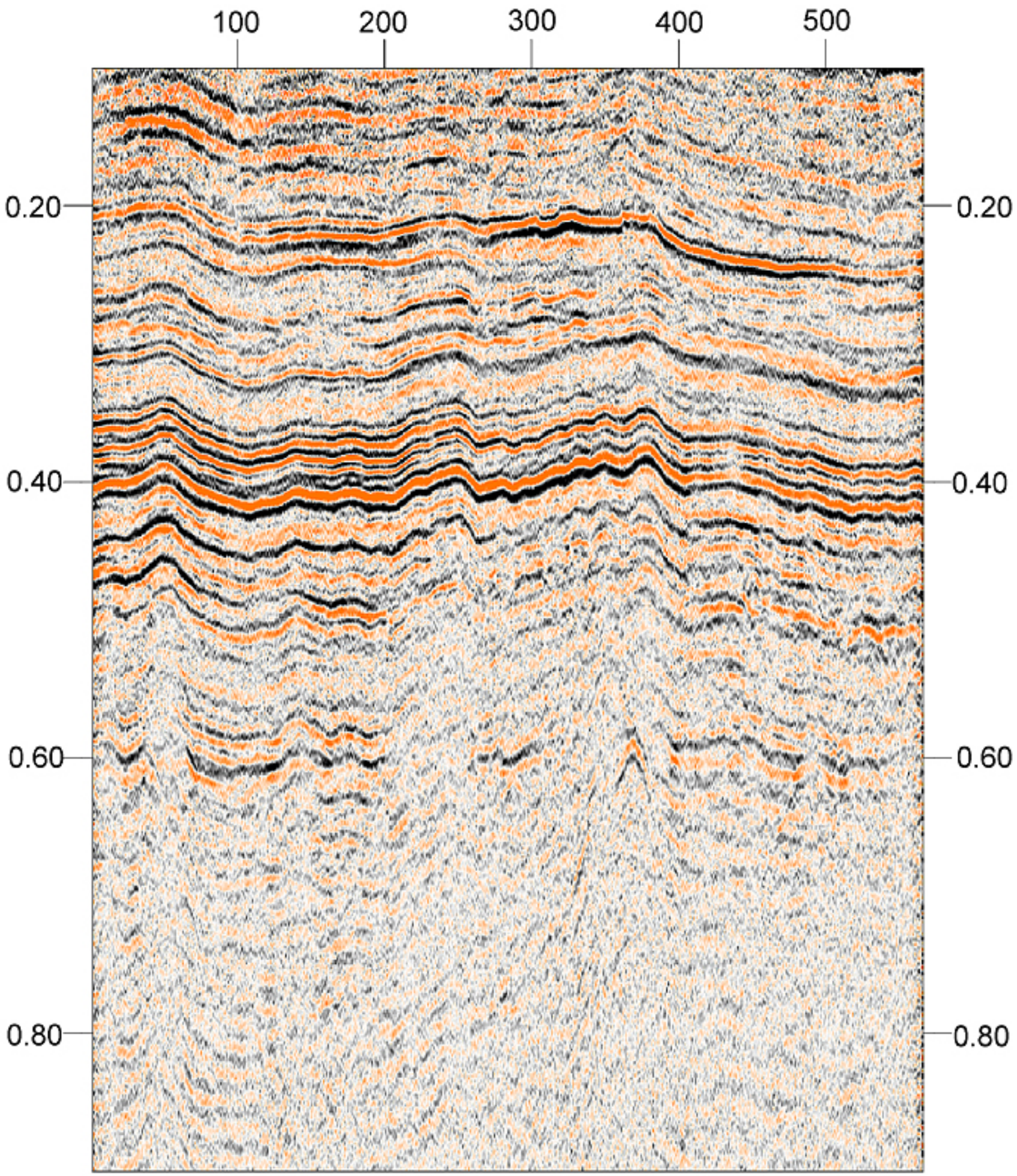
Fault and Fracture System



Coal Bed Fault Analysis
Southern Illinois

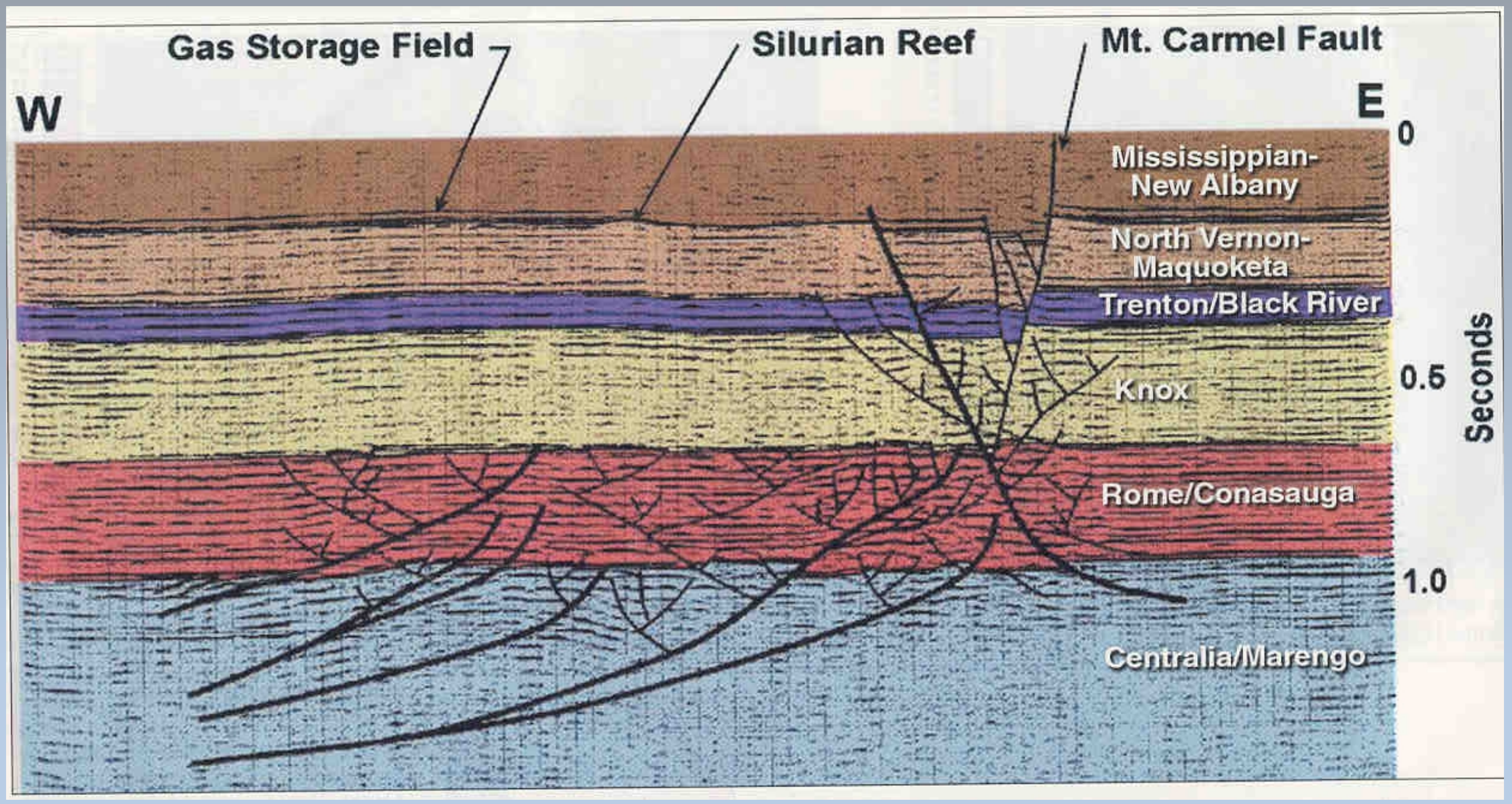


Northern Oklahoma



96-2608R9 (2D Line)
Northern Oklahoma

Gas Storage Field, Southern Indiana



Full HSE Capabilities

- *DOT and ATF compliant*
- *OSHA Training, including Hazwoper*
- *IAGC Compliant HSE*
- *NCA NQA-1 Compliant QA/QC Program*
- *MSHA Training*
- *Extensive Safety Program*

Client Relationships

Bay places a premium on maintaining our clients

For More Information, Please Contact Us

BAY

GEOPHYSICAL

Bay Geophysical, Inc.
528 Hughes Drive
Traverse City, MI
(231) 941-7660
info@baygeo.com