

**U.S. House of Representatives
Committee on Oversight and Government Reform
Field Hearing
July 14, 2012
Fargo, North Dakota**

**Testimony by Lynn D. Helms, Director
North Dakota Industrial Commission
Department of Mineral Resources**

North Dakota's Bakken Resource

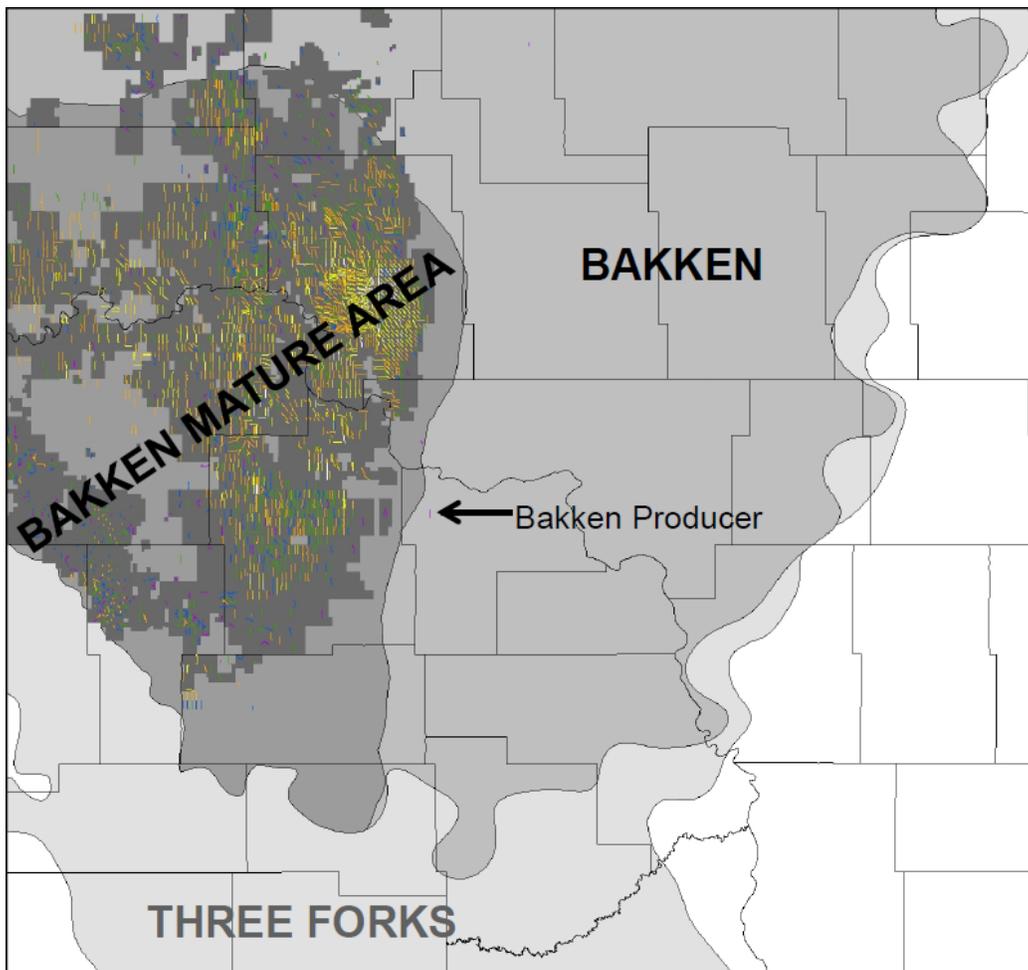
The Bakken Formation is a large unconventional resource that underlies most of the western portion of the state of North Dakota. The United States Geological Survey (USGS) stated in their April 2008 report that it is the largest continuous resource they have assessed in the lower 48 states.

The upper and lower members of the Bakken are world class source rocks. Published estimates of Bakken oil generation potential range from 10 billion barrels (Dow 1974) to 300 billion barrels (Flannery and Krause 2006). The unpublished work of Price estimated the Bakken oil generation potential at up to 503 billion barrels. The geological models presented by Price (unpublished) and by Flannery and Kraus (2006) were based on considerable input from North Dakota Geological Survey geologists, samples from the North Dakota Core and Sample Library, and the well files from the North Dakota Oil and Gas Division.

The original oil in place in the Bakken and Three Forks Formations within the thermally mature portion of the State of North Dakota is estimated by the North Dakota Department of Mineral Resources to be more than **300 billion barrels**. This estimate validates the highest oil generation estimates of Price (unpublished) and Flannery and Kraus (2006).

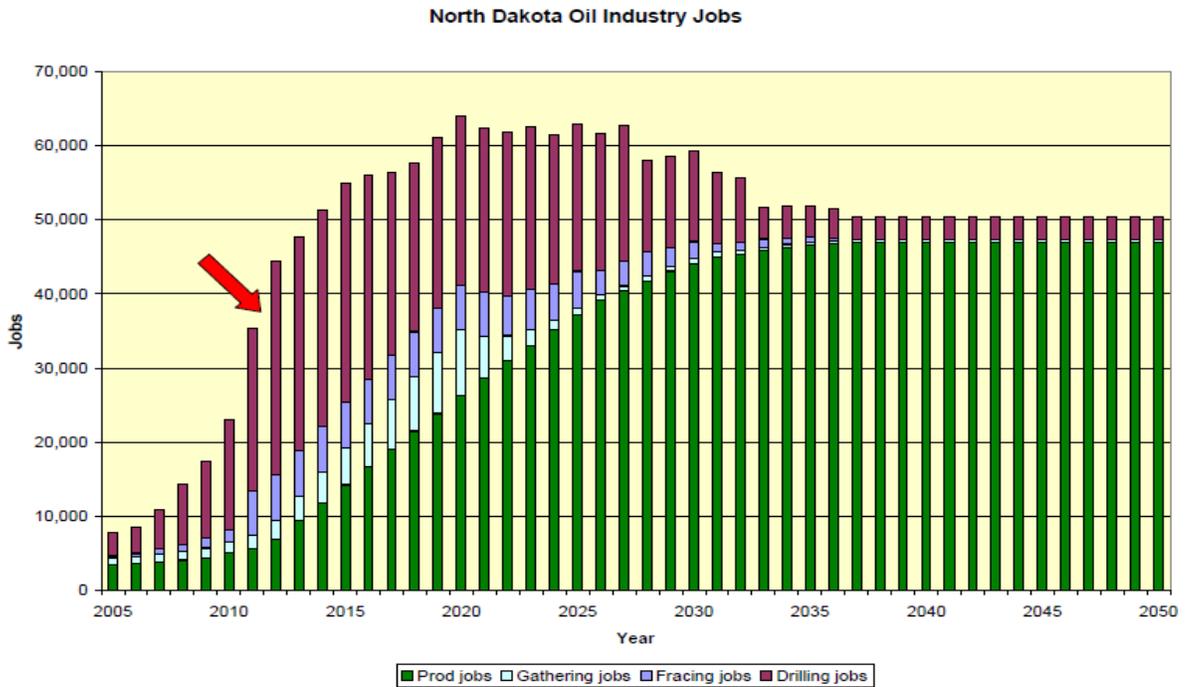
The Bakken estimated ultimate recovery using current drilling and completion practices has been estimated at approximately **2.5 – 5.0 percent** of original oil in place, which is equal to **7–15 billion barrels**. North Dakota Bakken wells are still undergoing adjustments and modifications to the drilling and completion practices. Technology and the price of oil will dictate what is ultimately recoverable from this formation. A one percent increase in recovery equals three billion barrels, which is equal to five months of United States consumption.

The thermally mature portion of the Bakken underlies 7-9 million acres in western North Dakota. The current North Dakota drilling rig fleet is capable of drilling 2,150-2,580 wells each year full development could require 16 to 18 years.

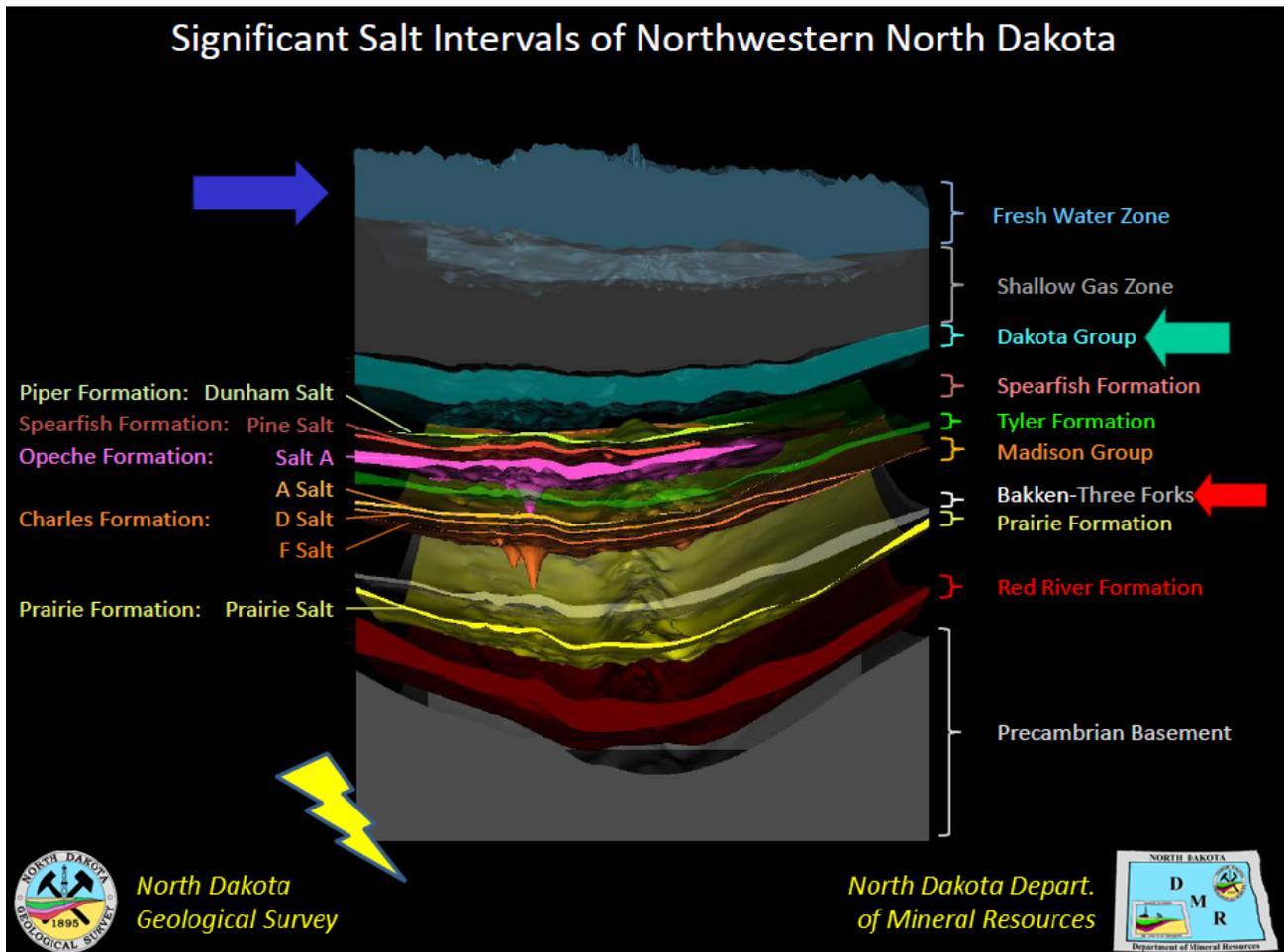


Production from Bakken development has moved North Dakota from number eight to number two among US states in daily production. To achieve those production levels has required significant increases in pipeline, natural gas processing, electric generation and transmission, and refining capacity.

Workforce has now exceeded 35 thousand new workers and is not expected to peak until 2020 at approximately 65 thousand or more than 10 new hires per day. These new workers and their families will need housing, medical facilities, schools, recreation facilities, and all of the other services expected by our modern culture.



North Dakota's geology is ideal for application of 21st century unconventional resource play technology. The figure below illustrates how drinking water resources are separated from the disposal zone by one-half mile of bentonite shale and from the hydraulic fracturing in the Bakken pool by 1 ½ miles of rock that includes nine layers of impermeable unfracable salt. In addition the disposal zone is approximately two miles above the basal granite where earthquakes originate.



Not only is North Dakota's geology ideal, but our geography is as well. Mineral ownership is 82 percent private, 12 percent federal, and six percent state while surface ownership is 89 percent private, nine percent federal, and two percent state. It is this private ownership in a rural setting and the protections afforded private contracts in our state constitution that have made the development of the Bakken possible.

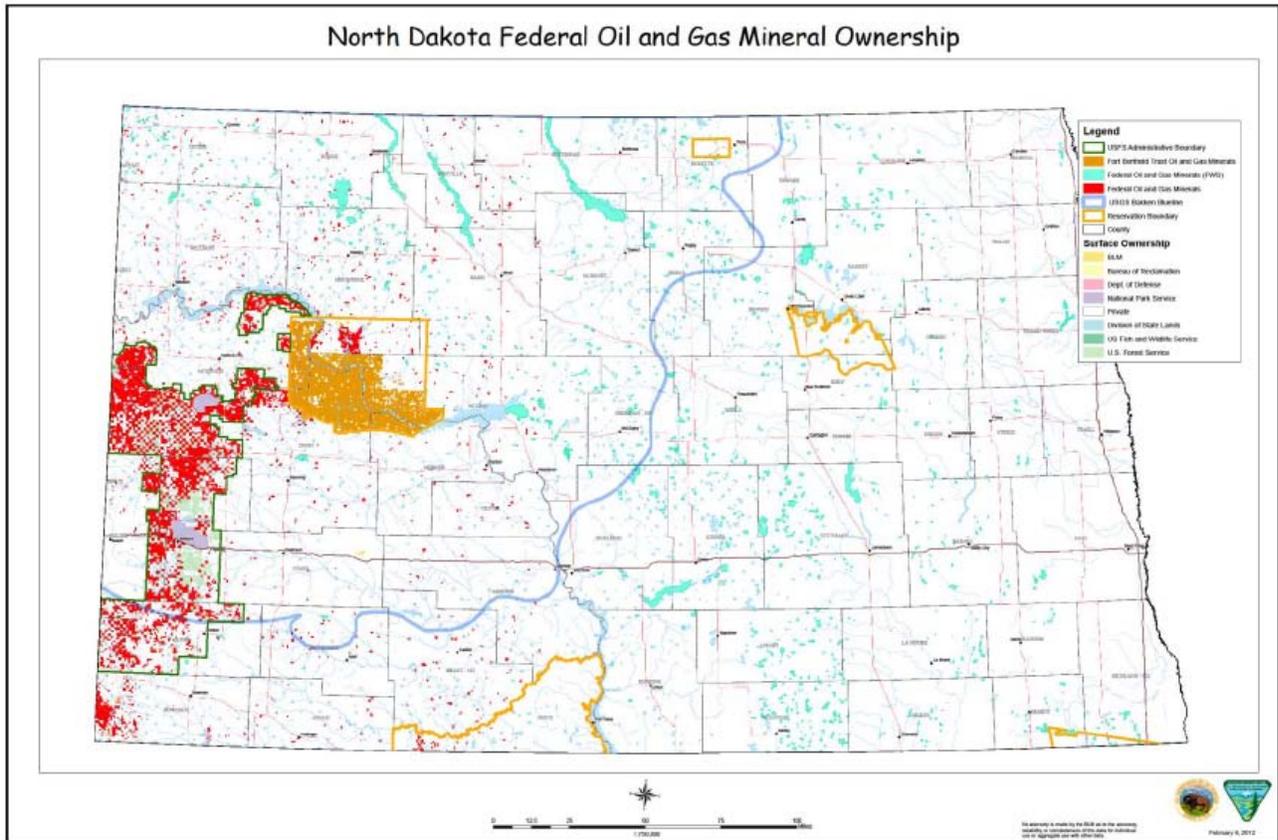
For example, of the current 215 drilling rigs operating in North Dakota 184 are operating on private, three on state, 27 on Indian Trust, and one on other federal lands. This is primarily due to the length of time required to obtain a federal drilling permit. These permits typically involve approval from more than one federal agency and more than six months compared to a drilling permit on private lands that involves one state agency and 15-20 days.

While the federal permitting process may make sense on where large blocks of land are managed for federal ownership or trust responsibilities, outside Fort Berthold and the Dakota Prairie Grasslands federal mineral tracts are small parcels that resulted from right of way acquisitions and bankruptcies. In nearly every case the surface estate has been sold resulting in a split estate situation where the processes required to obtain a federal permit impose regulatory burdens and development delays on private property owners. The following is a discussion of federal ownership in the current 7,289 Bakken pool spacing units in North Dakota:

91 percent of all Bakken spacing units contain some federal mineral ownership or trust responsibility.

In one-half of all spacing units federal mineral ownership or trust responsibility is less than 40 percent.

Outside of Fort Berthold reservation 34 percent of spacing units contain less than 160 acres of federal minerals. This is not enough ownership to determine whether development will occur, but is enough to prevent or delay the drilling of up to one-half the potential wells in the spacing unit. Federal rules will not permit a well bore to penetrate a federal mineral tract, no matter how small, without a federal lease and a federal drilling permit. The current Bureau of Land Management (BLM) hydraulic fracturing rule proposal will also require pre-approval of fracturing processes and chemicals.



North Dakota has worked hard to create a stable tax and regulatory environment that promotes venture capital investment. Our oil and gas rules are reviewed at least every two years through a public comment process where every comment must be considered in writing. This ensures that North Dakota regulations keep up with new technologies and economic conditions.

The North Dakota Industrial Commission has taken the following position on recent federal hydraulic fracturing rules and guidance:

- 1) This is a state's rights issue. States that have adopted hydraulic fracturing rules which include chemical disclosure, well construction, and well bore pressure testing should be exempted from the BLM rules and the EPA guidance.
- 2) The EPA study of potential hydraulic fracturing effects on ground water mandated by congress is not finished and there are currently no proven environmental contamination incidents.
- 3) As Chairman Hall has testified, the required consultation with the Three Affiliated Tribes has not occurred.
- 4) The definition of diesel fuel in the EPA guidance is too broad. It includes six CASRNs as well as any material referred to by one of their primary names or any associated common synonyms.
- 5) EPA made no attempt to identify what concentrations of the materials they propose to define as diesel fuel are dangerous. Hydraulic fracturing treatments that utilize concentrations of less than 10 percent of any material defined as diesel fuel should be exempt from permitting requirements.
- 6) The EPA guidance is written for Enhanced Oil Recovery wells or disposal wells completed with tubing and packer. Most of the requirements will not work mechanically on wells completed with swell packers and fractured down the production casing as is common in North Dakota.

Lynn Helms
Director, North Dakota Department of Mineral Resources

His work in the oil industry has taken Lynn Helms all over the world. Most recently, Lynn has served as Director of the North Dakota Industrial Commission Oil & Gas Division since July 1998 and Director of the Department of Mineral Resources since it was formed in July 2005. Before moving to Bismarck to work in state government, he worked as a production engineer, reservoir engineer, and asset team leader on projects in Abu Dhabi, Alaska, Arkansas, Louisiana, Mississippi, Montana, New Mexico, North Dakota, Texas, and Wyoming. Lynn earned his Bachelor of Science Degree in Engineering from South Dakota School of Mines and Technology. When he's not working Lynn enjoys spending his free time with his wife, college-aged children, and his four horses.