

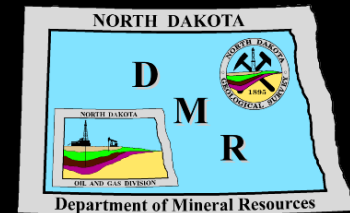
DEVELOPMENT OF THE BAKKEN RESOURCE

UND Law Students

Bismarck, ND – March 6, 2015



School of Law

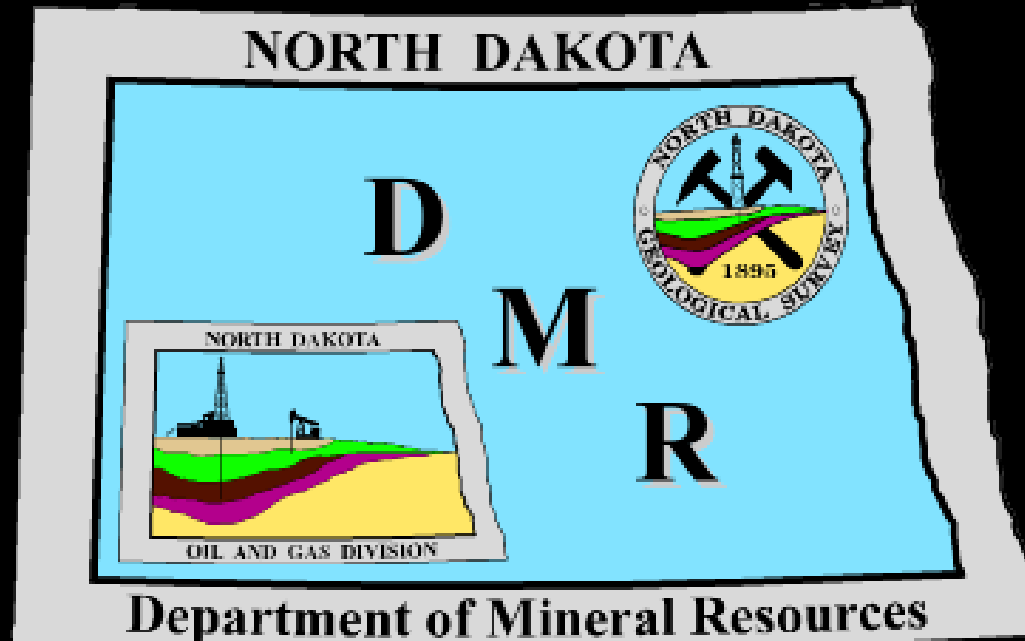


North Dakota Development

- **Regulations**
- **Resource Play**
- **Development**
- **Hearing Procedure**
- **Bakken Results**

*Bruce E. Hicks
Assistant Director
NDIC-DMR-OGD
Bismarck, ND*

North Dakota Department of Mineral Resources



<https://www.dmr.nd.gov/oilgas/>

<https://www.dmr.nd.gov/ndgs/>

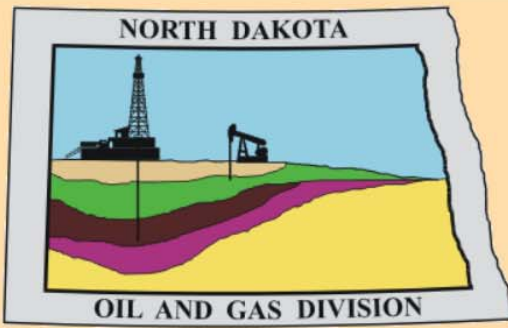
600 East Boulevard Ave. - Dept 405

Bismarck, ND 58505-0840

(701) 328-8020

(701) 328-8000

- Services
- Rules & Regulations
- Forms
- Hearing Dockets
- Active Drilling Rigs
- Daily Activity Reports
- Confidential Well List
- General Statistics
- Seismic
- Well Search
- Report a Spill/Incident
- Gathering Lines
- GIS Map Server
- Publications
- Surface Mineral Owner
- Basic Services
- Premium Services
- Electronic Filing
- Related Links
- FAQ & Web Help
- Employment Opportunities
- Contact Us
- Employee Directory
- Email Addresses



Welcome to the North Dakota Industrial Commission, Department of Oil and Gas Division, Home page.

[Director's Cut - 05/13/2014](#) and [Recent Presentations](#)

The Director's Cut is an update on current activity in the North Dakota oil patch from the Director of the ([View past Director's Cuts](#) [Webinars](#))

View [press releases](#) from the Oil and Gas Division

[North Dakota Industrial Commission Permitting Policies](#)

["Diesel fuel" in HF stimulation now requires UIC approval](#)

[Bakken and Three Forks Information!](#)

[Class VI Primacy Application for the authority to regulate the Geologic Storage of Carbon Dioxide](#)

Available on the ND Petroleum Council web site are the [Surface Owner Information Center](#), the [Royalty Owner Information Center](#) and the P that were used at the [2012 Williston Basin Petroleum Conference](#).

The Oil and Gas Division regulates the drilling and production of oil and gas in North Dakota. Our mission is to encourage and promote the development, production, and utilization of oil and gas in the state in such a manner as will prevent waste, maximize economic recovery, and fully protect the correlative rights of all owners to the end that the landowners, the royalty owners, the producers, and the general public realize the greatest possible good from these vital natural resources.

Phone: (701) 328-8020
Fax: (701) 328-8022
Mail:
 NDIC Oil and Gas Division
 600 East Boulevard Ave Dept 405
 Bismarck, ND 58505-0840
General Shipping:

North Dakota Development

- **Regulations**
 - Spacing
 - Pooling
 - Unitization
- Resource Play
- Development
- Hearing Procedure
- Bakken Results

Spacing

Drilling Units

- **NDAC Sec 43-02-03-18**
 - **One hor well per Section (640 acres)**
 - **Exception—notice & hearing**

Spacing Units

- **Comm order after notice & hearing**
 - **Multiple hor wells per SU (2-30+)**
 - **320,640,960,1280,1920,2640,3200,5280**

North Dakota Development

- **Regulations**
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Pooling

NDCC Sec 38-08-08

- **Two or more separately owned tracts**
- **No voluntary pooling**
- **NDIC “shall” force pool all interests**

North Dakota Development

- **Regulations**
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Unitization

NDCC Sec 38-08-09.3

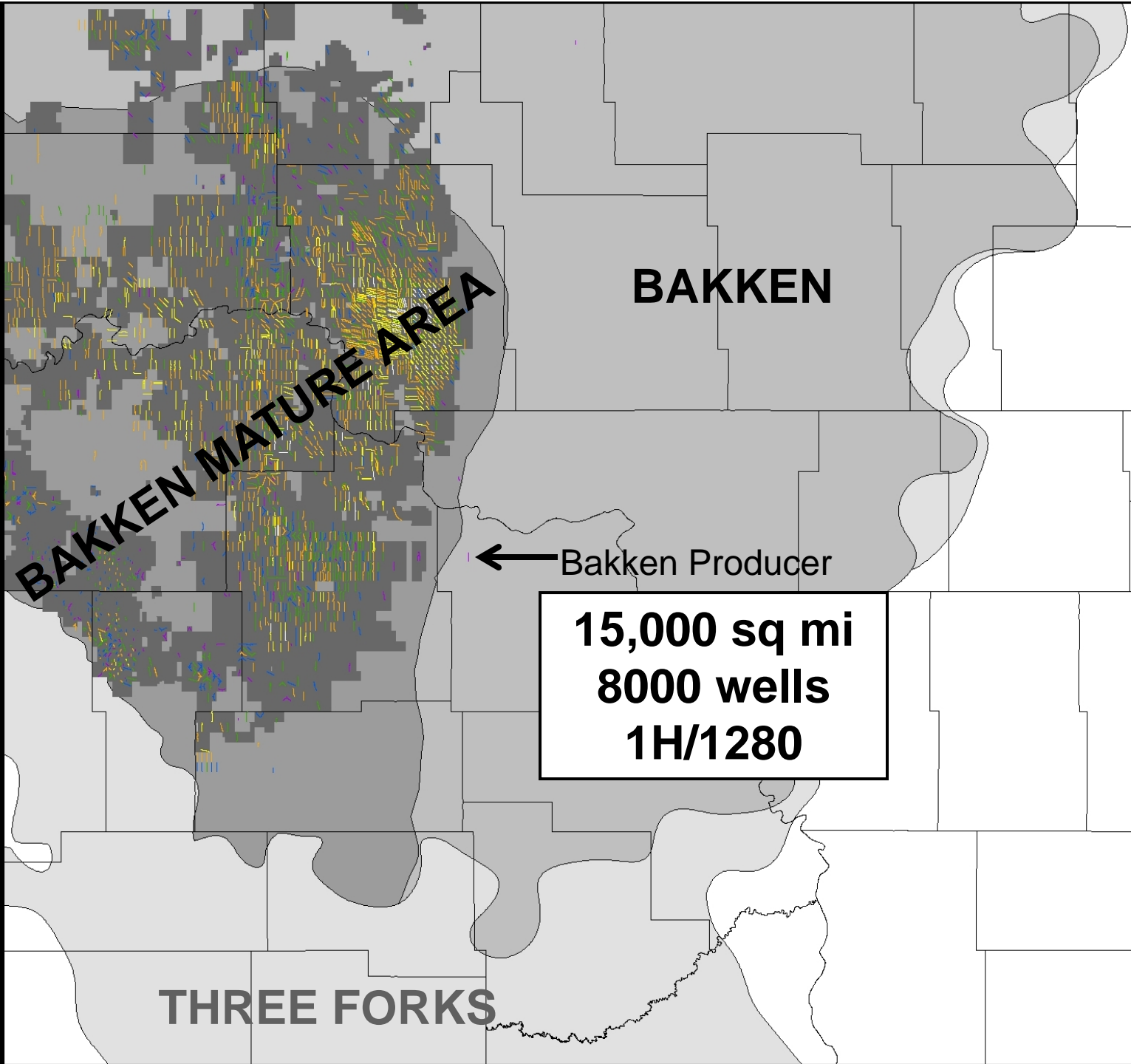
- **Project to substantially increase recovery**
- **EOR unnecessary for approval**

NDCC Sec 38-08-09.5

- **60% MIO approval**
- **60% WIO approval**
- **Grail-Bakken Unit**
 - **Heard in Grand Forks 11-13-2013**
 - **Passed IC 2-1, failed to achieve 60% MIO**

North Dakota Development

- Regulations
 - Spacing units
 - Pooling
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BAKKEN MATURE AREA

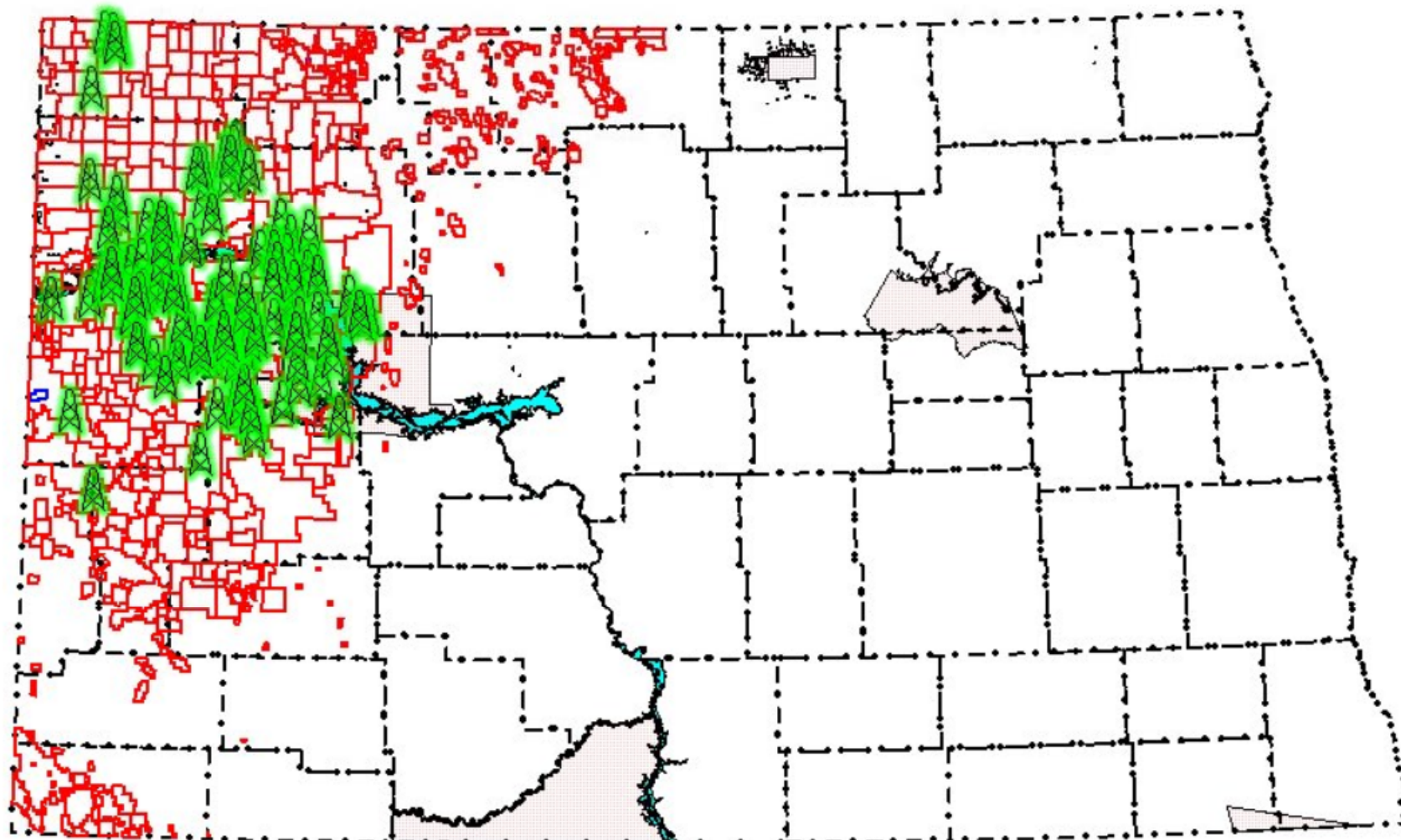
BAKKEN

← Bakken Producer

15,000 sq mi
8000 wells
1H/1280

THREE FORKS

NORTH DAKOTA – 113 DRILLING RIGS – MARCH 2015



Current drilling activity is focused

in Mountrail, Dunn, McKenzie, and Williams Counties.

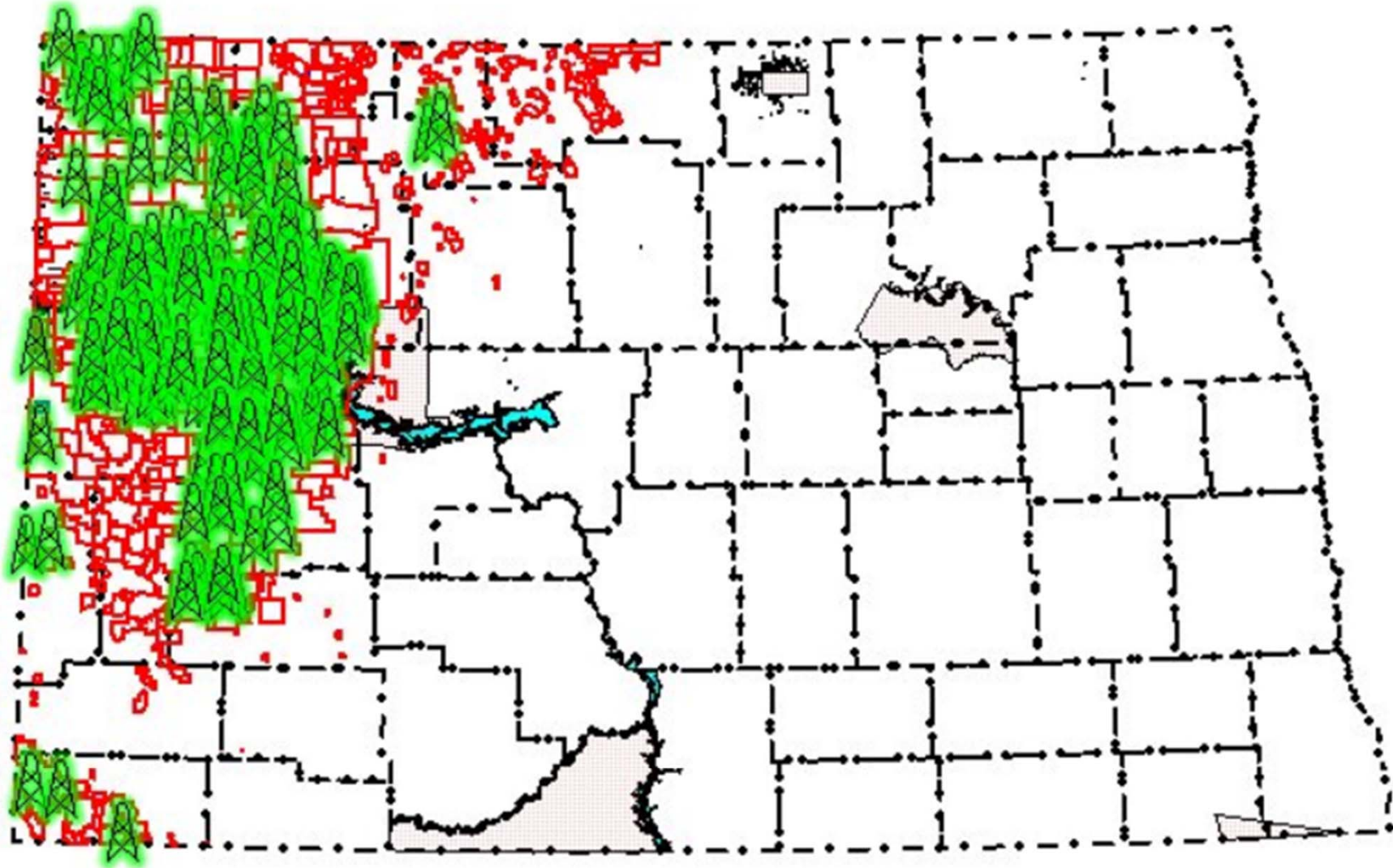
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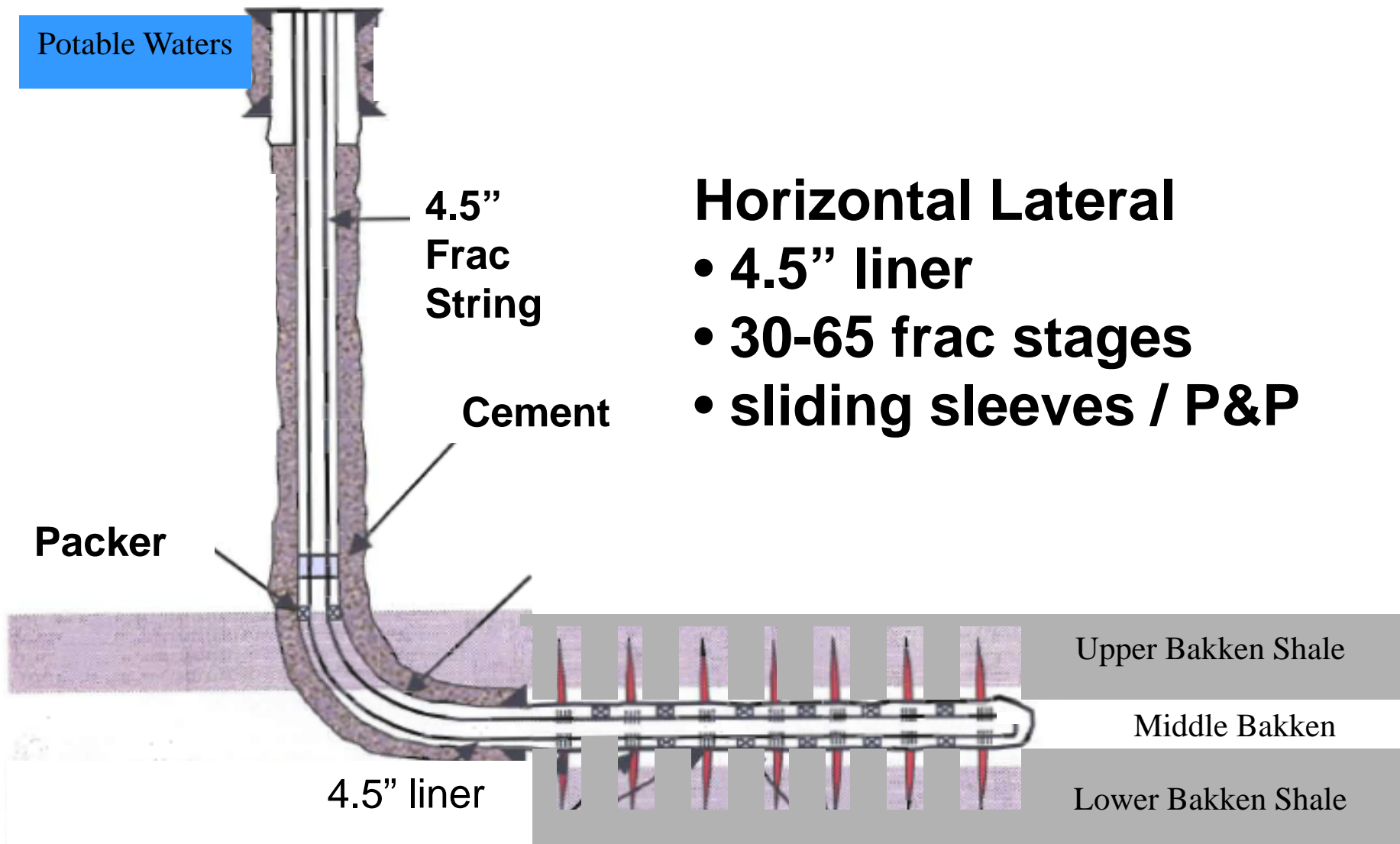
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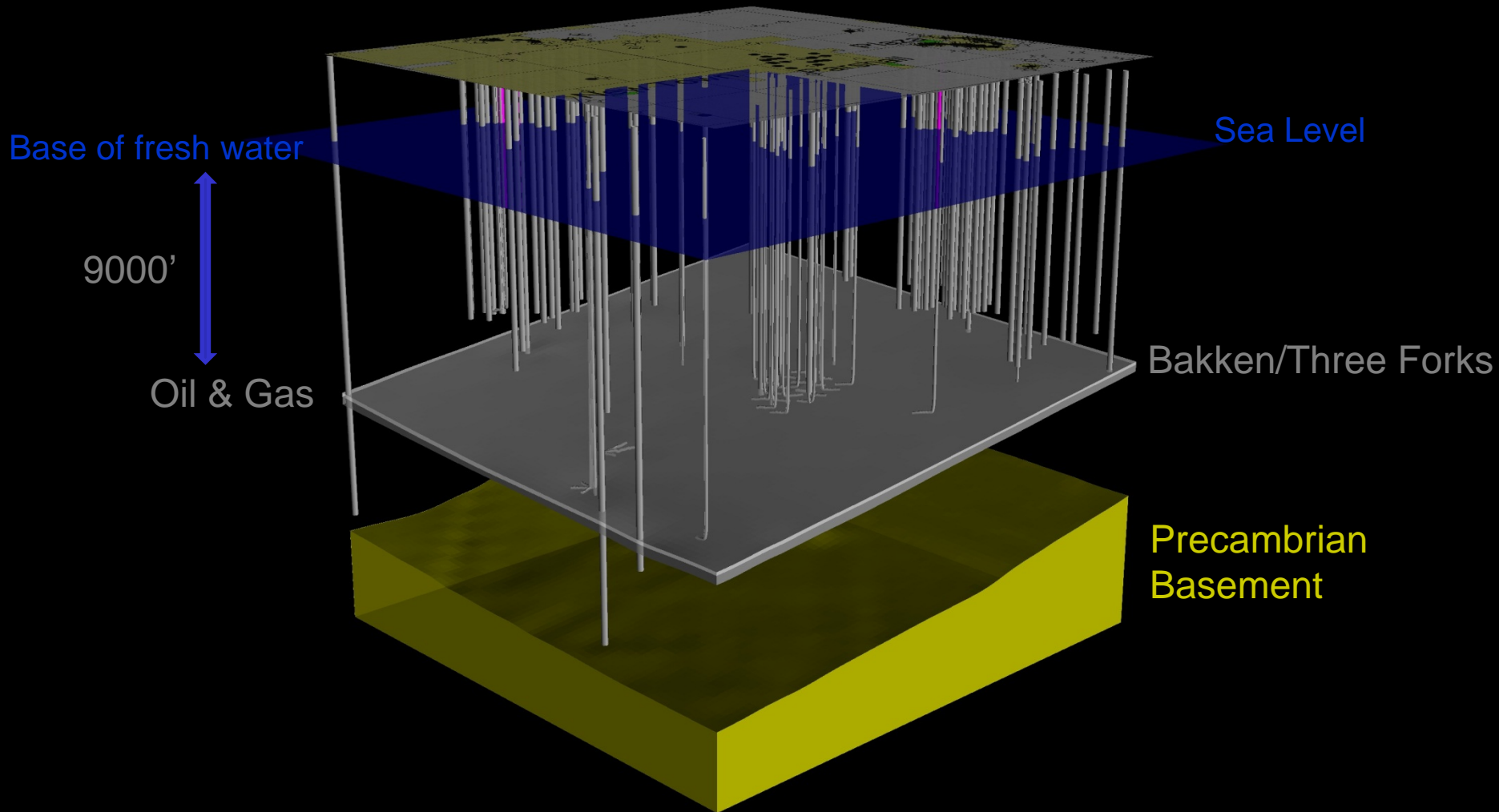
NORTH DAKOTA – 191 DRILLING RIGS – DECEMBER 2014



**Current drilling activity is focused
in Mountrail, Dunn, McKenzie, and Williams Counties.**

TYPICAL HORIZONTAL OIL WELL

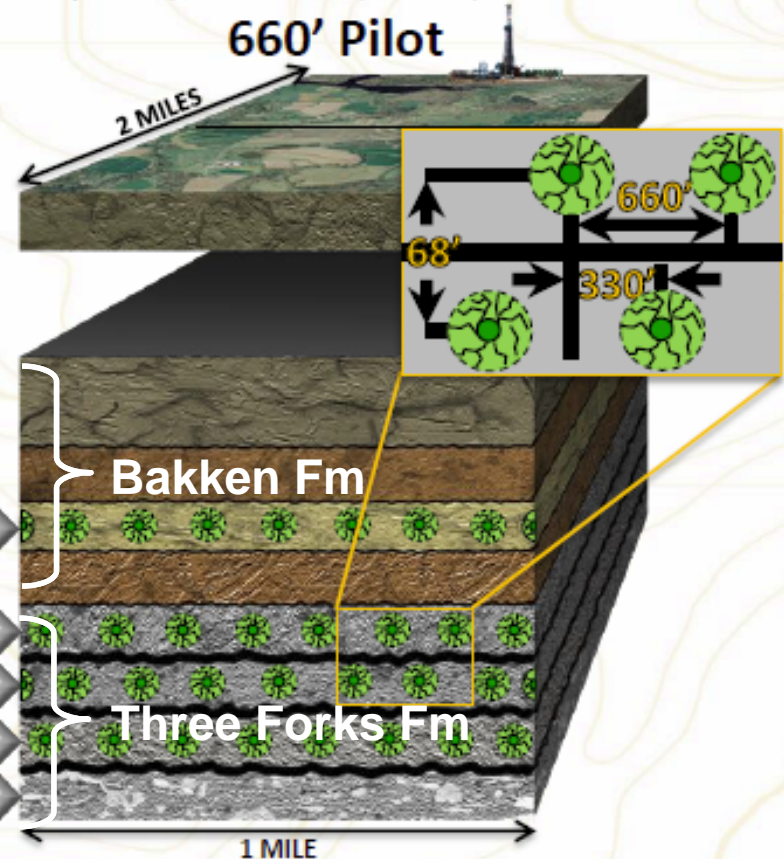
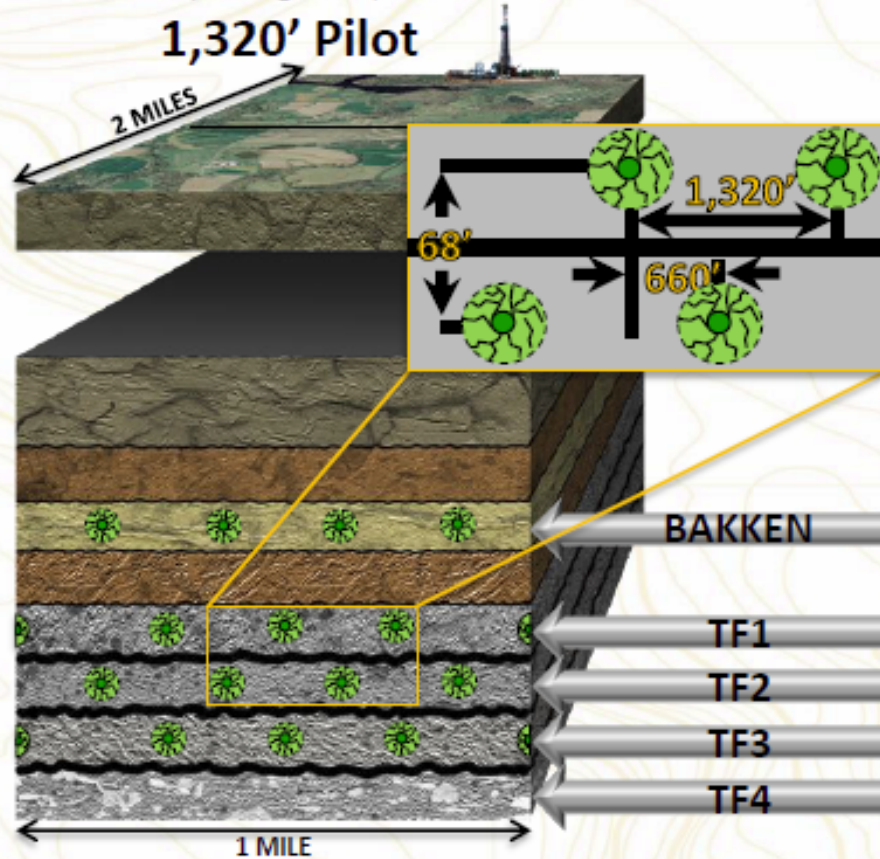




1,320' & 660' Pilot Density Projects: 2013-14

Hawkinson, Tangsrud, and Rollefstad

Wahpeton, Lawrence, Mack, and Hartman



- 3 project areas
- 1,320 ft. same-zone spacing
- 34 new wells (gross)

- 4 project areas
- 660 ft. same-zone spacing
- 31 new wells (gross)

North Dakota Development

- Regulations
- Resource Play
- **Development**
 - **Uniform Spacing—orderly development**
 - Multi-well locations—small footprint
 - Energy Corridors—industry & residents
- Hearing Procedure
- Bakken Results

ArcIMS Viewer



Five Spacing Patterns

Townships

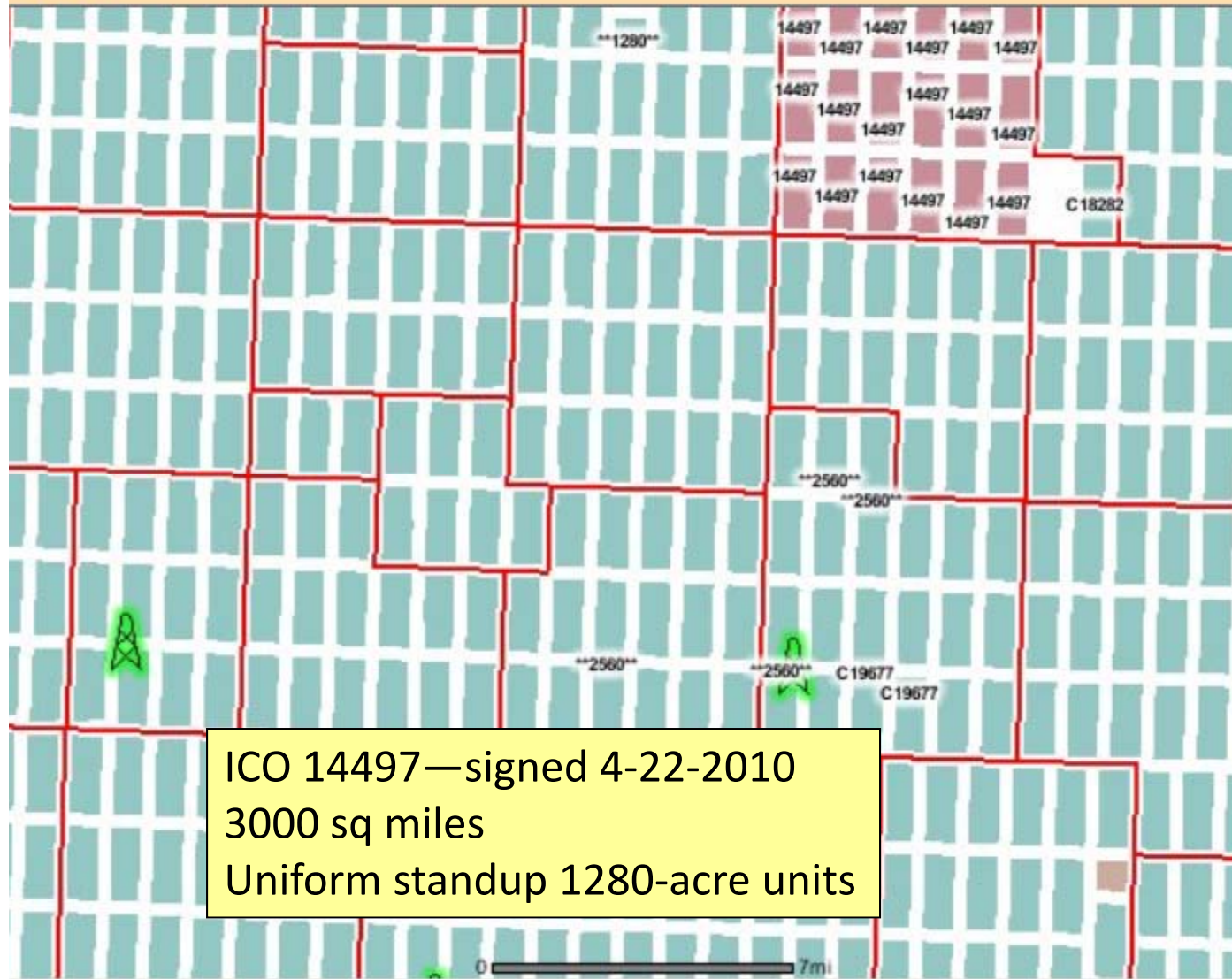
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- Topo/
- Topo/
- NAIP

ewer

Download Shape Files



ICO 14497—signed 4-22-2010
3000 sq miles
Uniform standup 1280-acre units

ND OIL & GAS LAYERS

- Oil and Gas
 - Wells
 - Permit Status Before Spud
 - Rig Location
 - Directional Surveys
 - Directional Legs
 - Horizontal Surveys
 - Horizontal Legs
 - Cases Docketed
 - Oil Fields
 - Unit Boundaries
 - Inspector Areas
- Drilling / Spacing
 - Seismic
- Gas Plants
- Other
- Imagery
 - Topo/DRG 250k
 - Topo/DRG 100k
 - NAIP 2009

Refresh Map

Auto Refresh

Help:

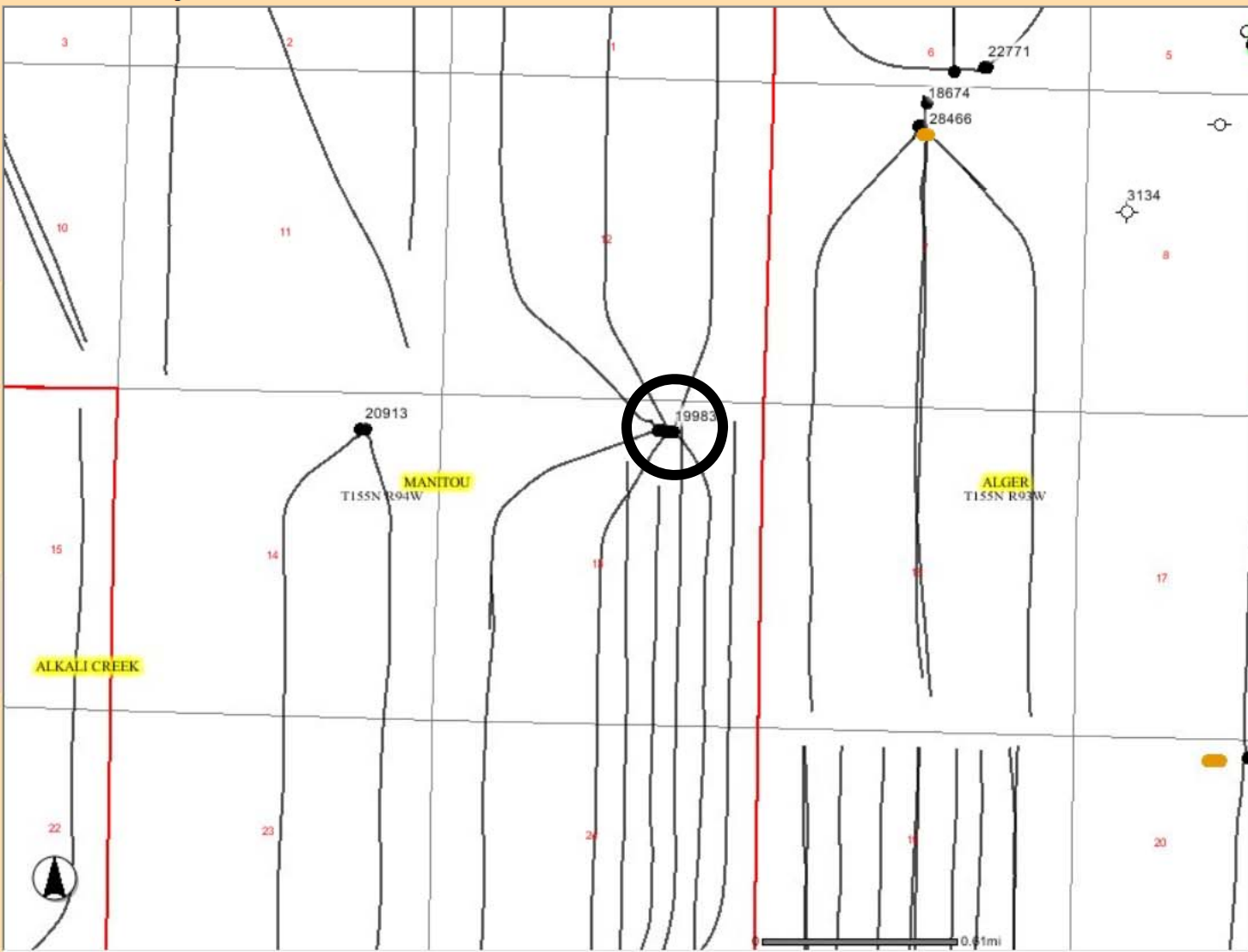
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- An open group, click to close.
- A map layer.

North Dakota Development

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Oil and Gas Subscription: ArcIMS Viewer

- Legend / Layers
- Overview Map
- View Entire State
- Previous View
- Clear Selection
- Search
- Create PDF
- Zoom In
- Zoom Out
- Pan
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- Select Object
- Buffer
- Distance
- Find Well
- Find Field / Unit
- Find Section



Wells
Selection cleared.

- ND OIL & G
- Oil and Gas
- Wells
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- US Fr
- Imagery
- Topo/DRG
- Topo/DRG
- NAIP 2014

Refresh

Auto

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- A map layer.
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- A visible group/layer, d



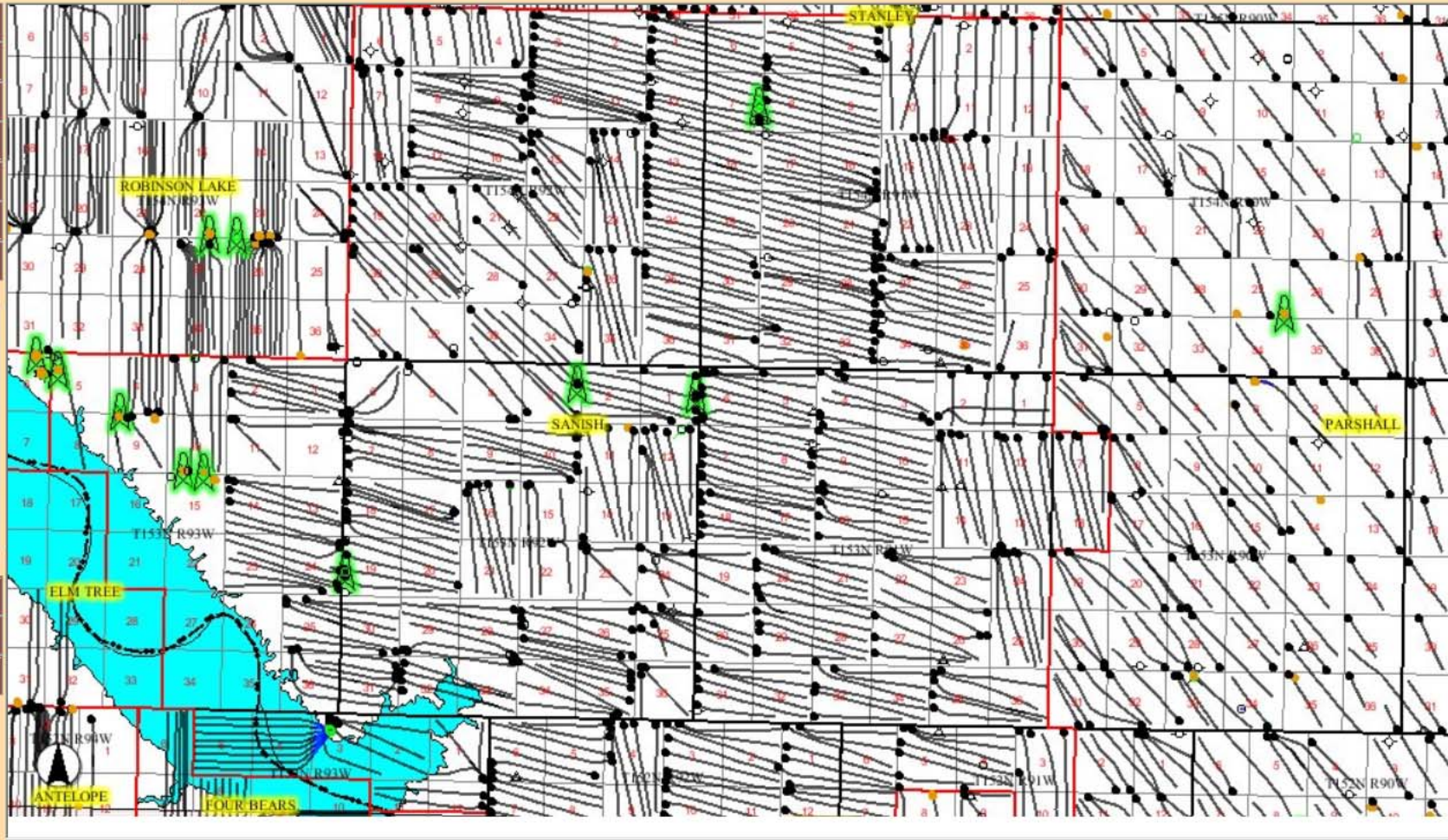
Vern Whitten Photography

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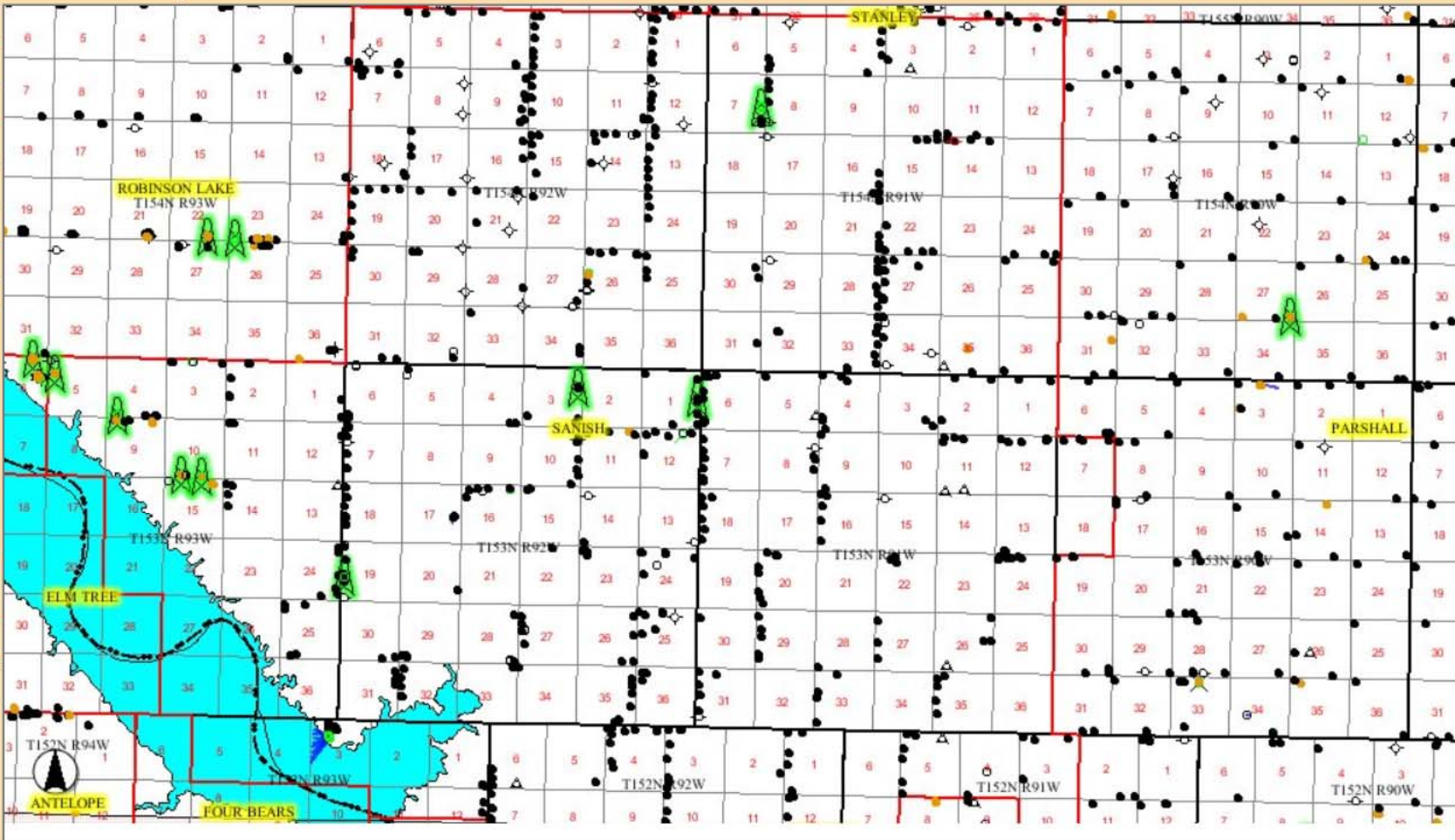
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Pan

Oil and Gas Subscription: ArcIMS Viewer

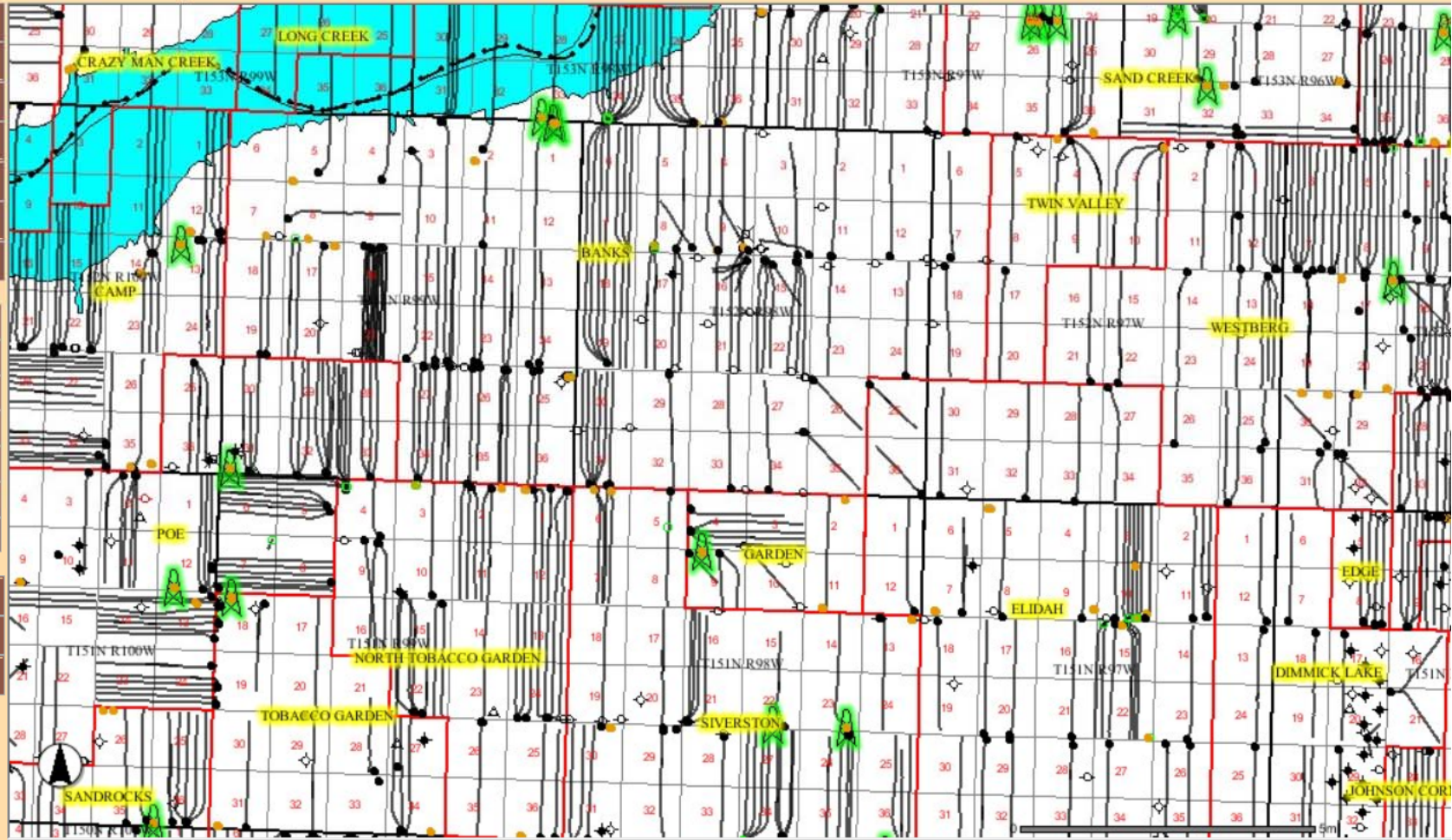
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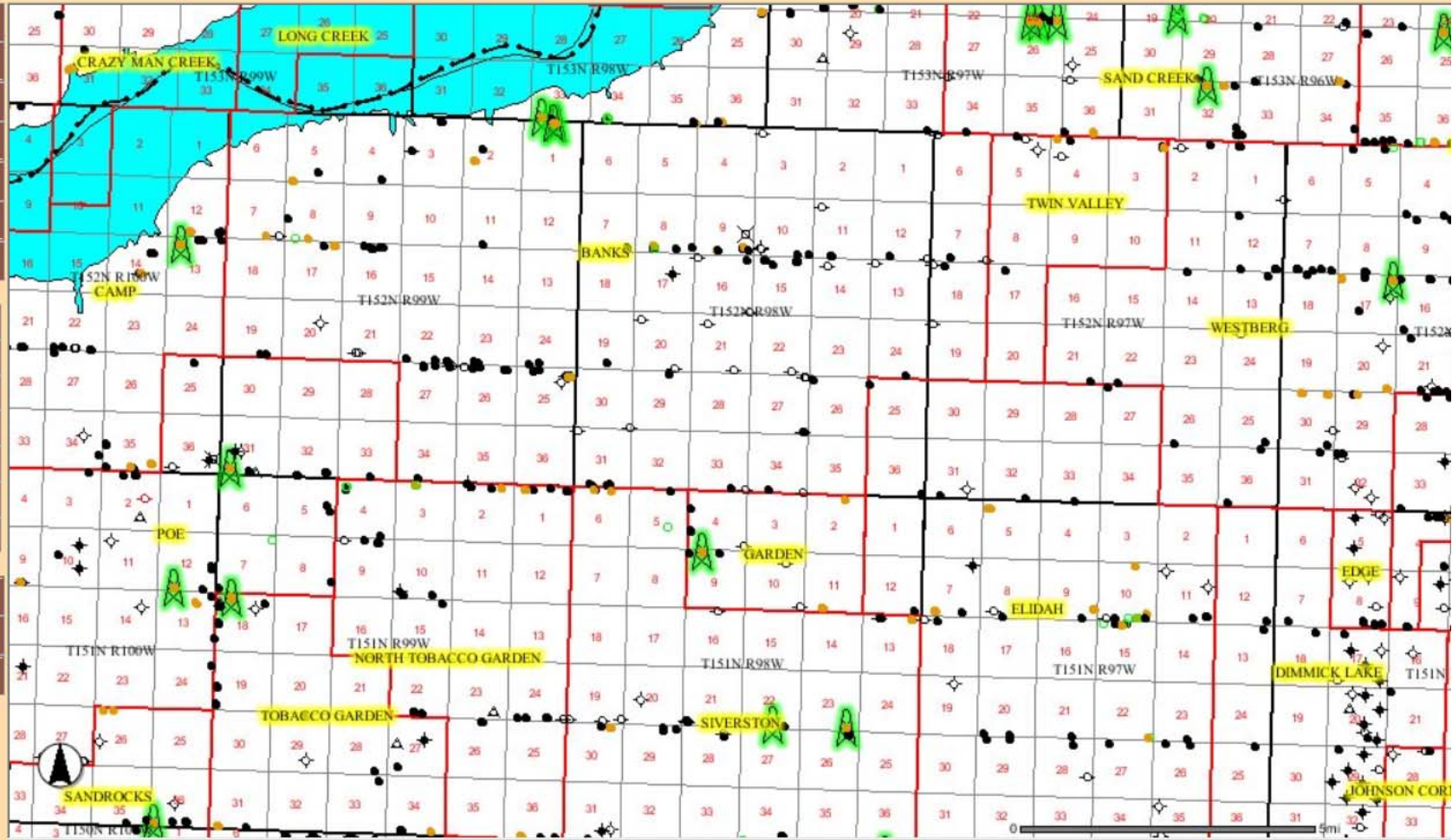
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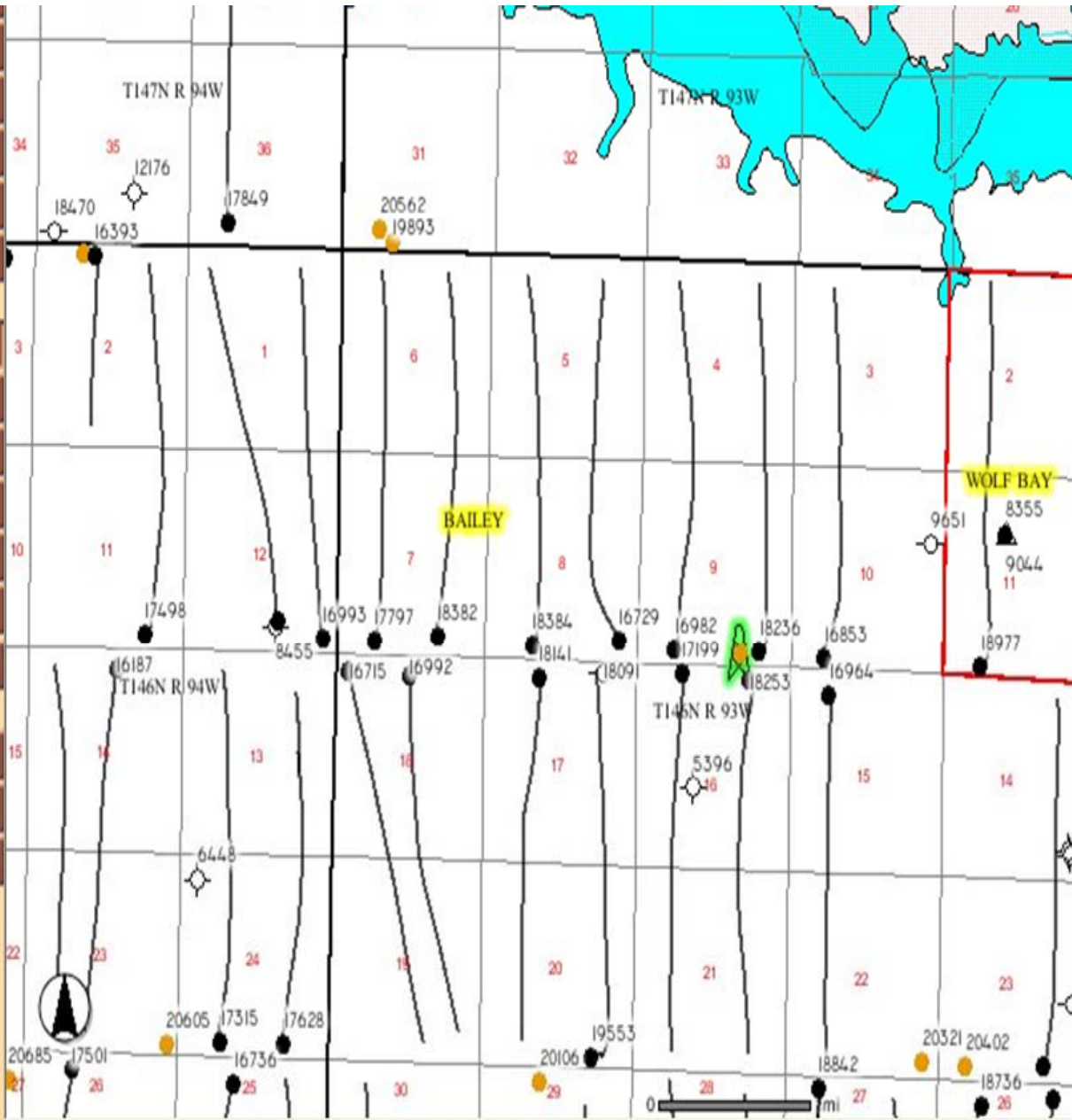
Energy Corridor

- uniform development
- pipelines, electrical, traffic
- less impact on adjacent roads

Vern Whitten Photography

View Entire State
Previous View
Clear Selection
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Generate PDF

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Find Section



Major Rivers
Selection cleared.

- Rig Location
- Directional Surveys
- Directional Legs
- Horizontal Surveys
- Horizontal Legs
- Cases Docketed
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- Inspector Areas
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- Seismic
- Gas Plants
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- Reservations
- Corporate Boundaries
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- County Roads
- Major Roads
- Major Rivers
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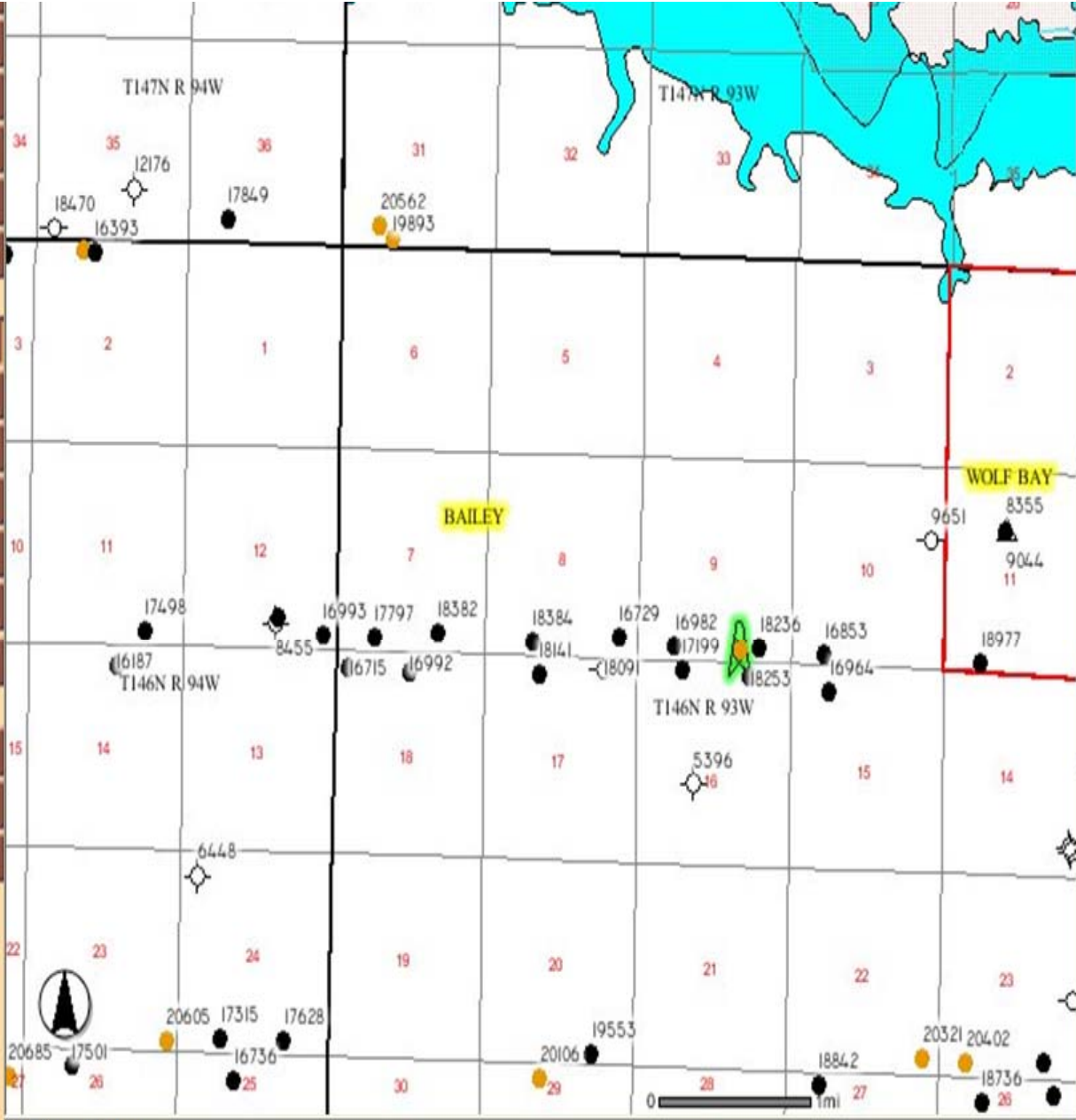
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Help:
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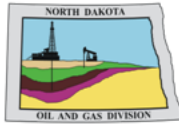
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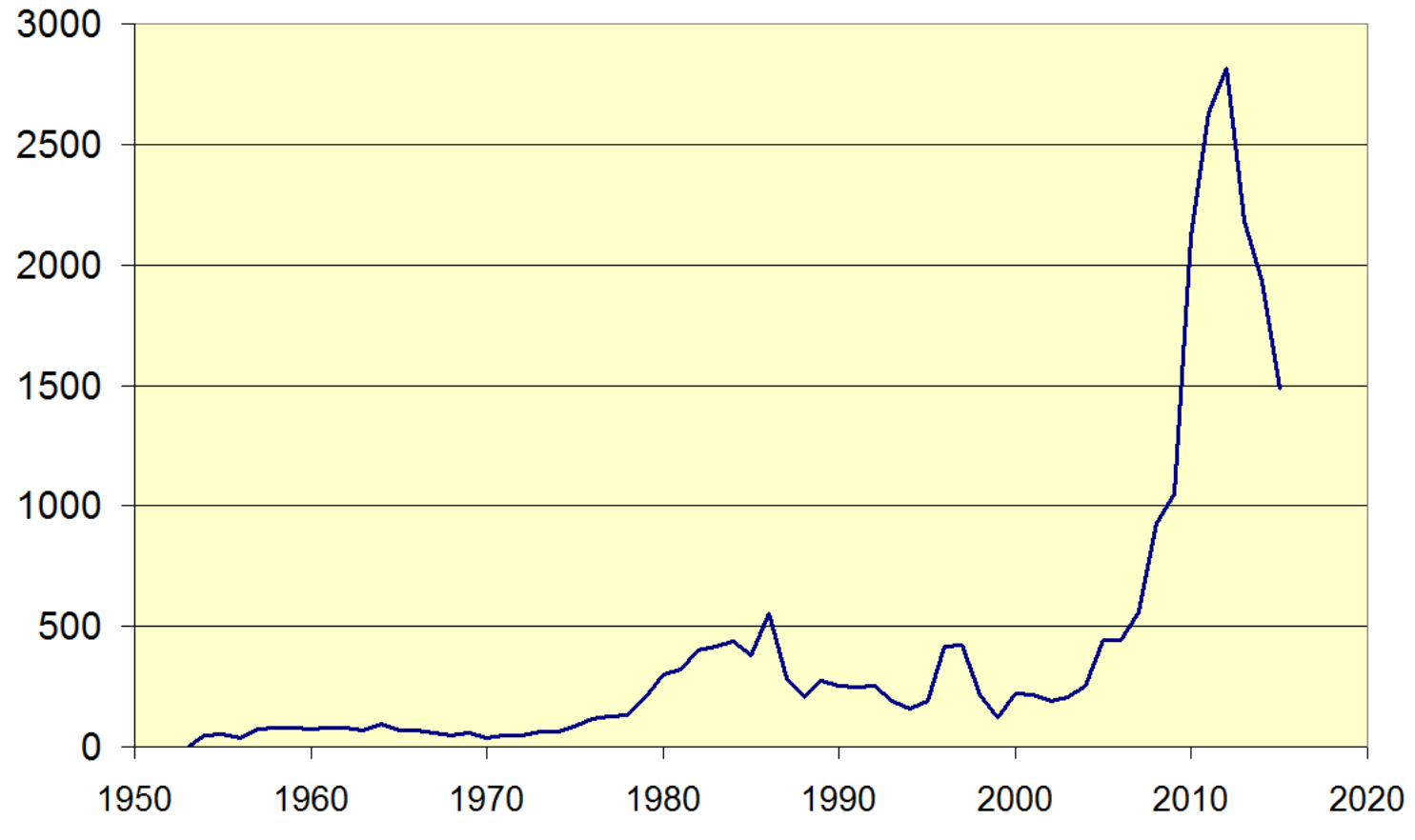
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North Dakota Development

- Regulations
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- **Hearing Procedure**
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North Dakota Industrial Commission Cases Heard



MONTHLY HEARINGS

Administrative Docket

- **pooling**
- **increase density wells**
- **saltwater disposal**

Regular Docket

- **hearing examiner—Asst Atty Gen**
- **create 1280-ac spacing unit**
- **create overlapping spacing units**
- **other exceptions to rules**

DISPOSING OF CASES

Industrial Commission

- **Gov, Atty Gen, Comm of Ag**
- **controversial cases**
- **orders denying the appl**
- **orders imposing fines**
- **orders involving unitization**

Director of Oil & Gas Division

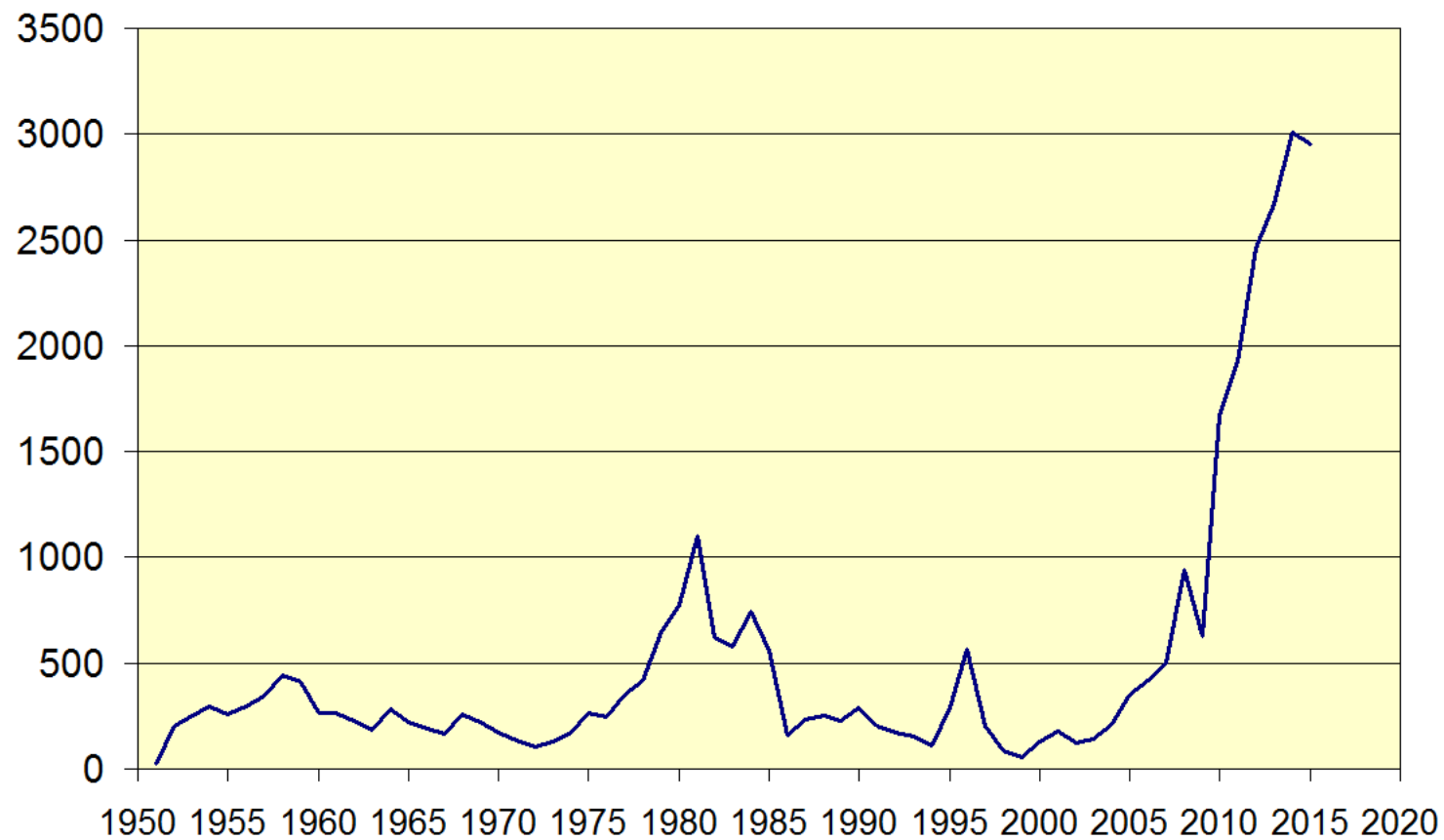
- **routine cases**
- **IC delegated cases**

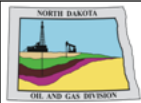
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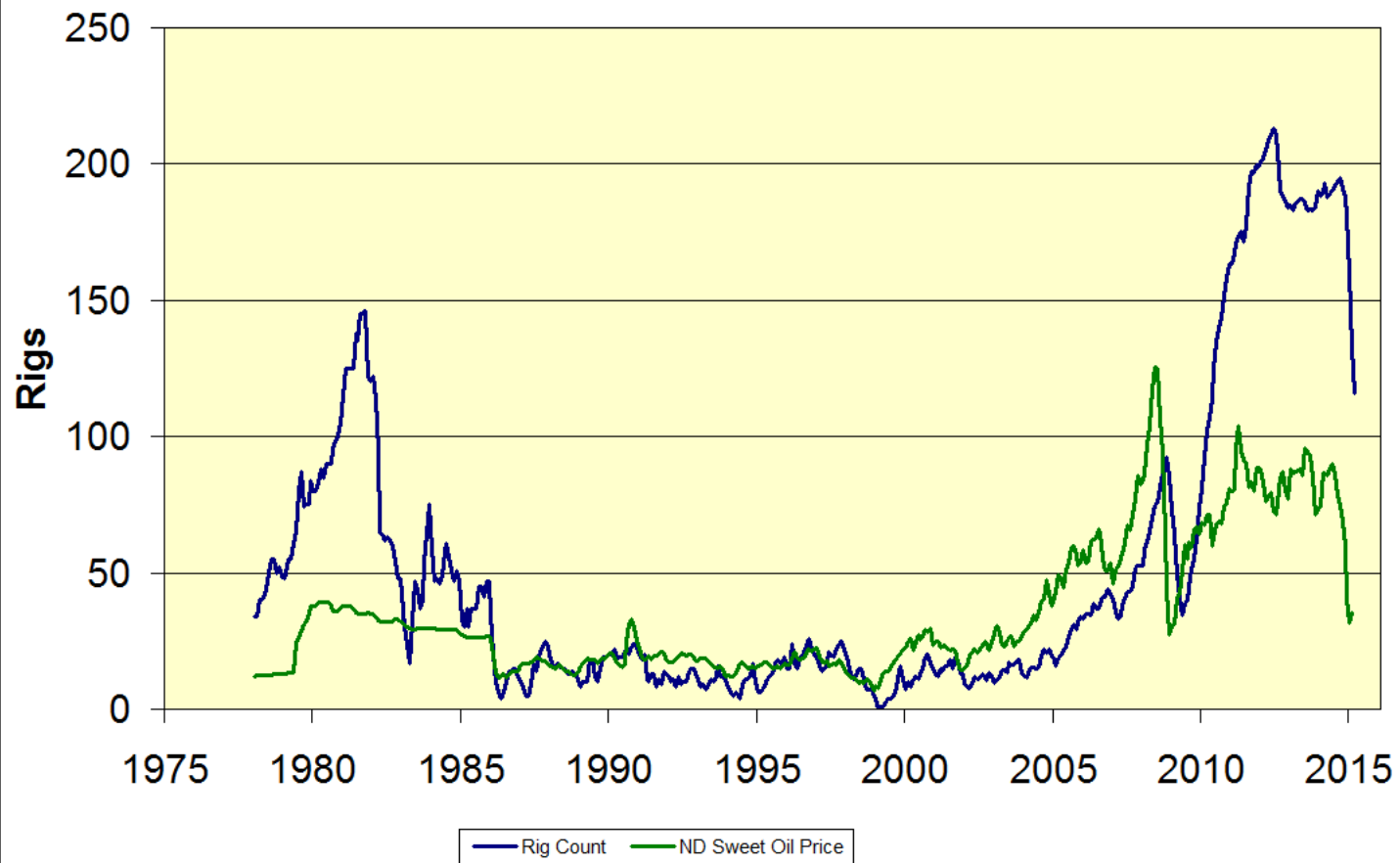


North Dakota New Well Permits Issued



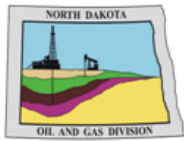


North Dakota Average Monthly Rig Count

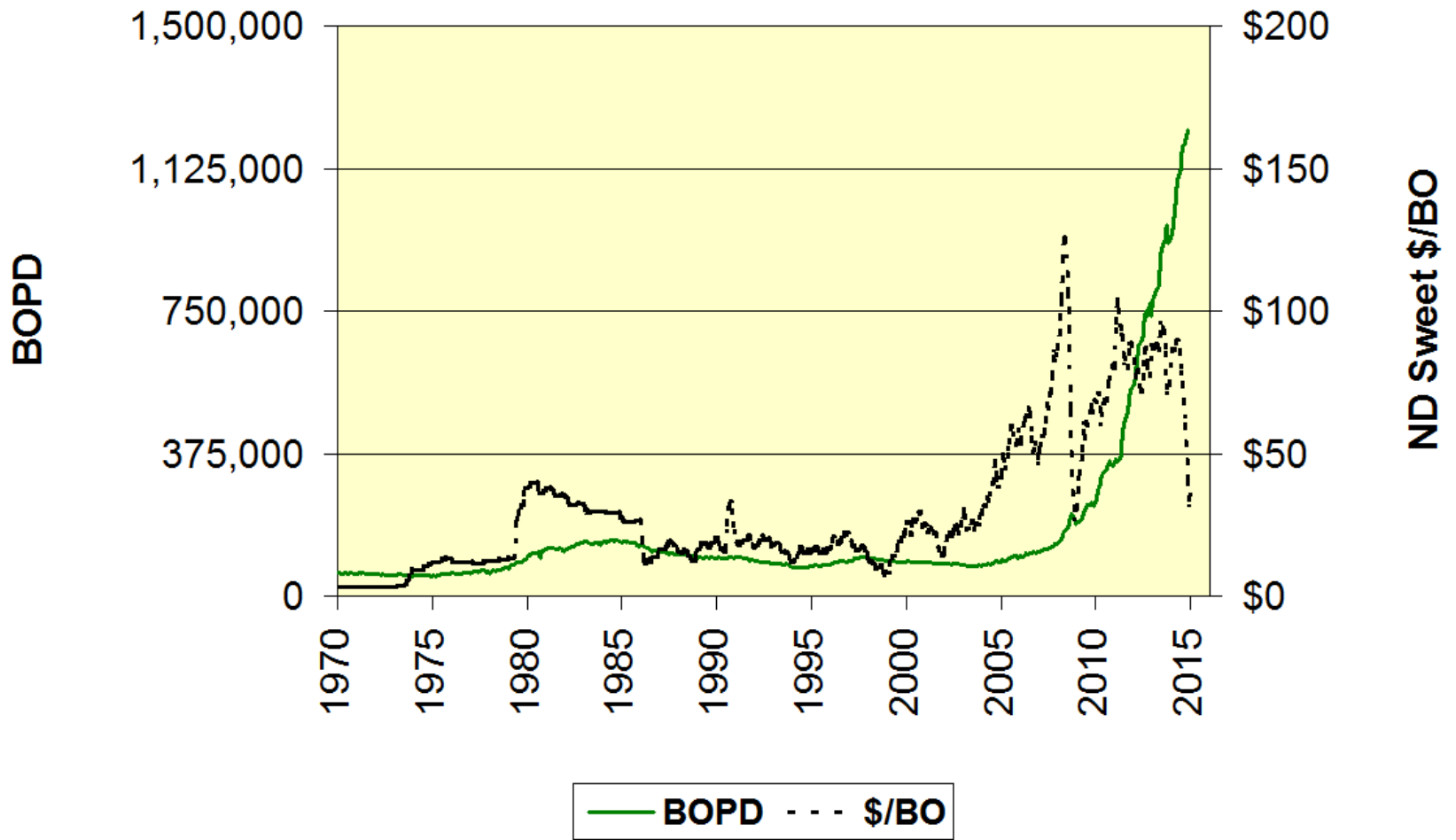


WELLS

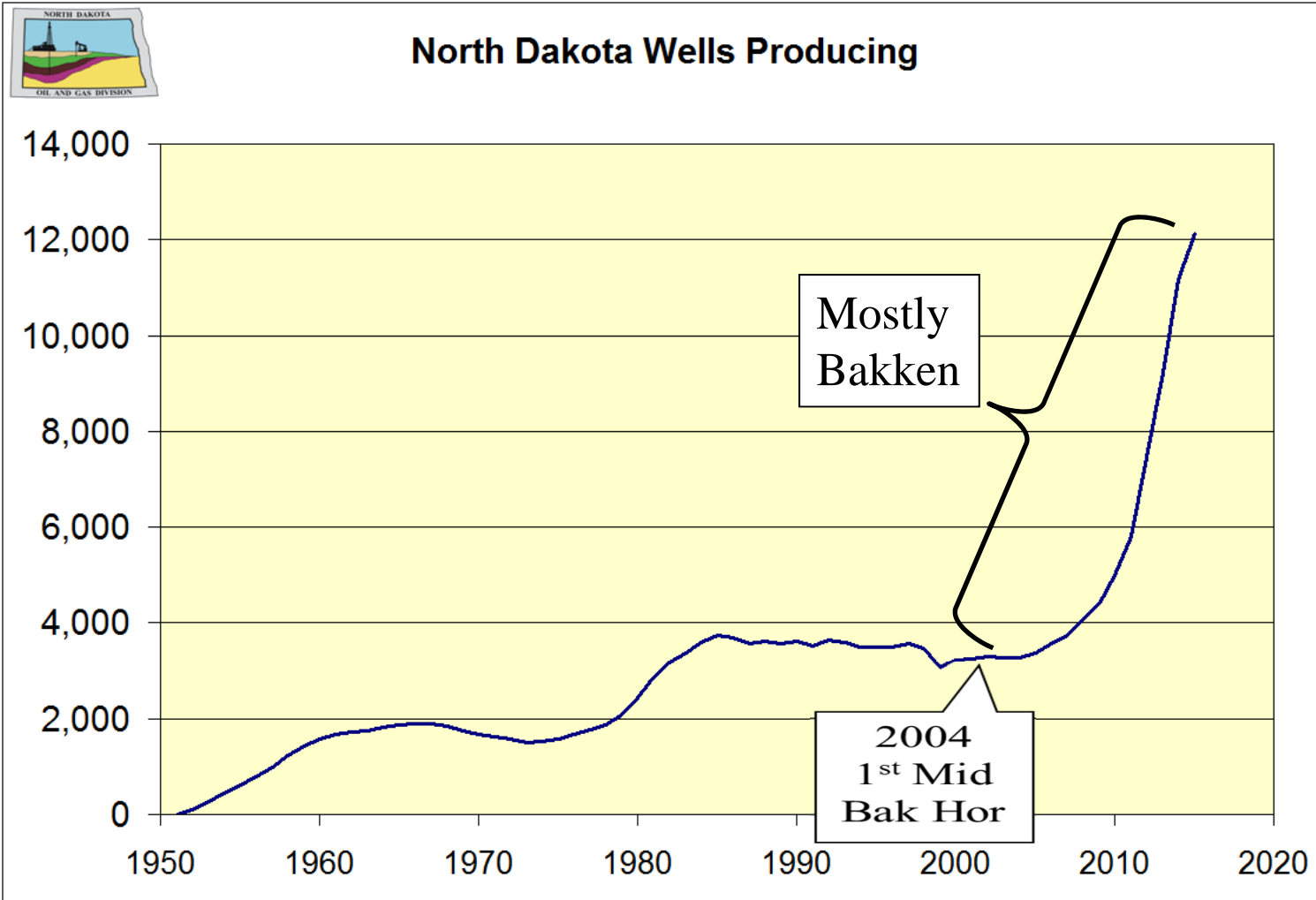
- **12,124 wells currently producing**
 - **8,804 Bakken**
- **< 1,000 to secure leases**
- **40,000 additional development wells**
 - **170 rigs – another 20 years**
- **Bakken Pool: 4 targets = more wells**



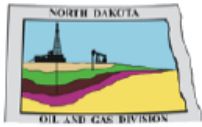
North Dakota Daily Oil Produced and Price



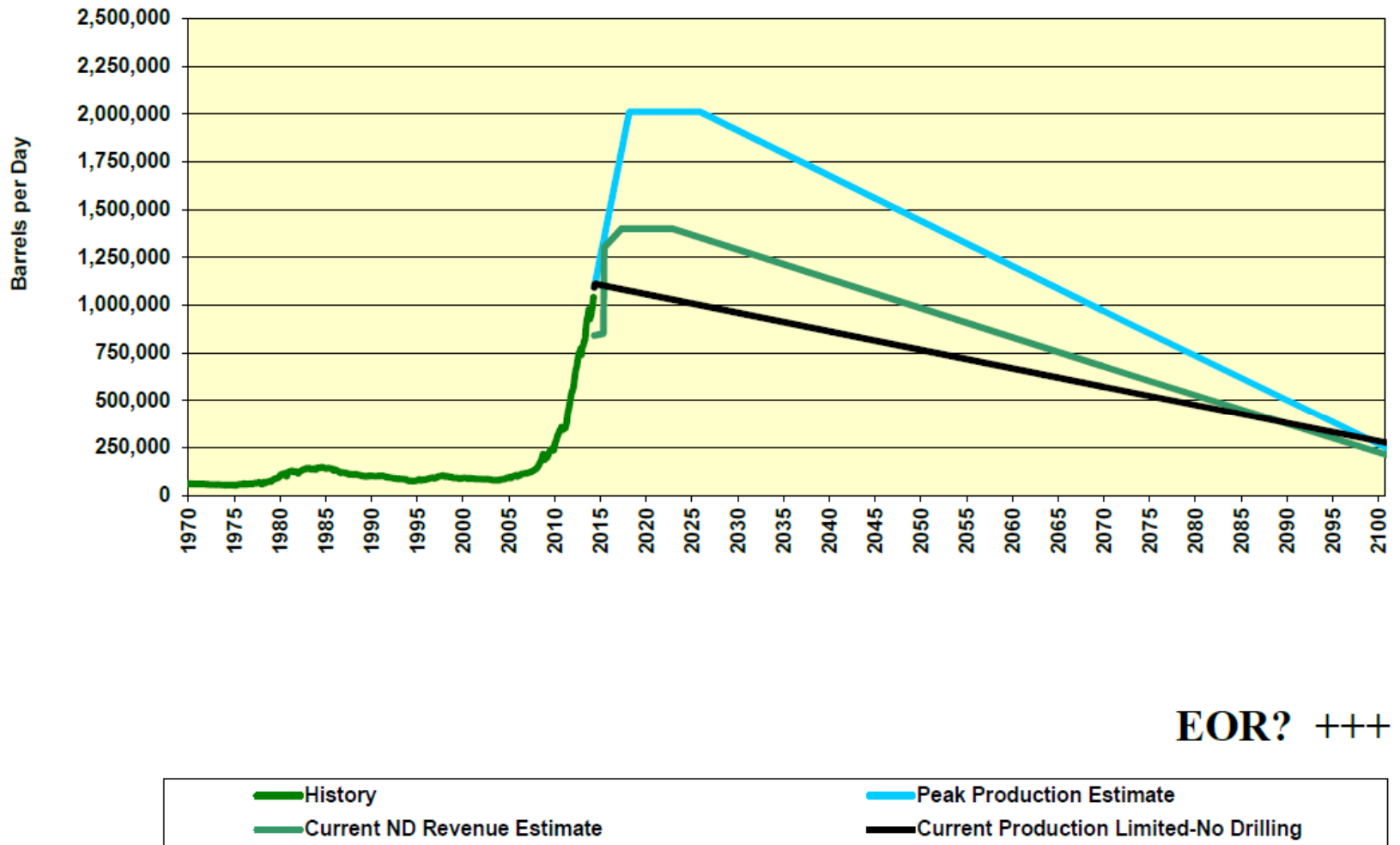
Production 1,227,344 bopd (appr 1,151,454 Bakken—94%)



12,124 total wells – 8,804 Bakken horizontal (73%)

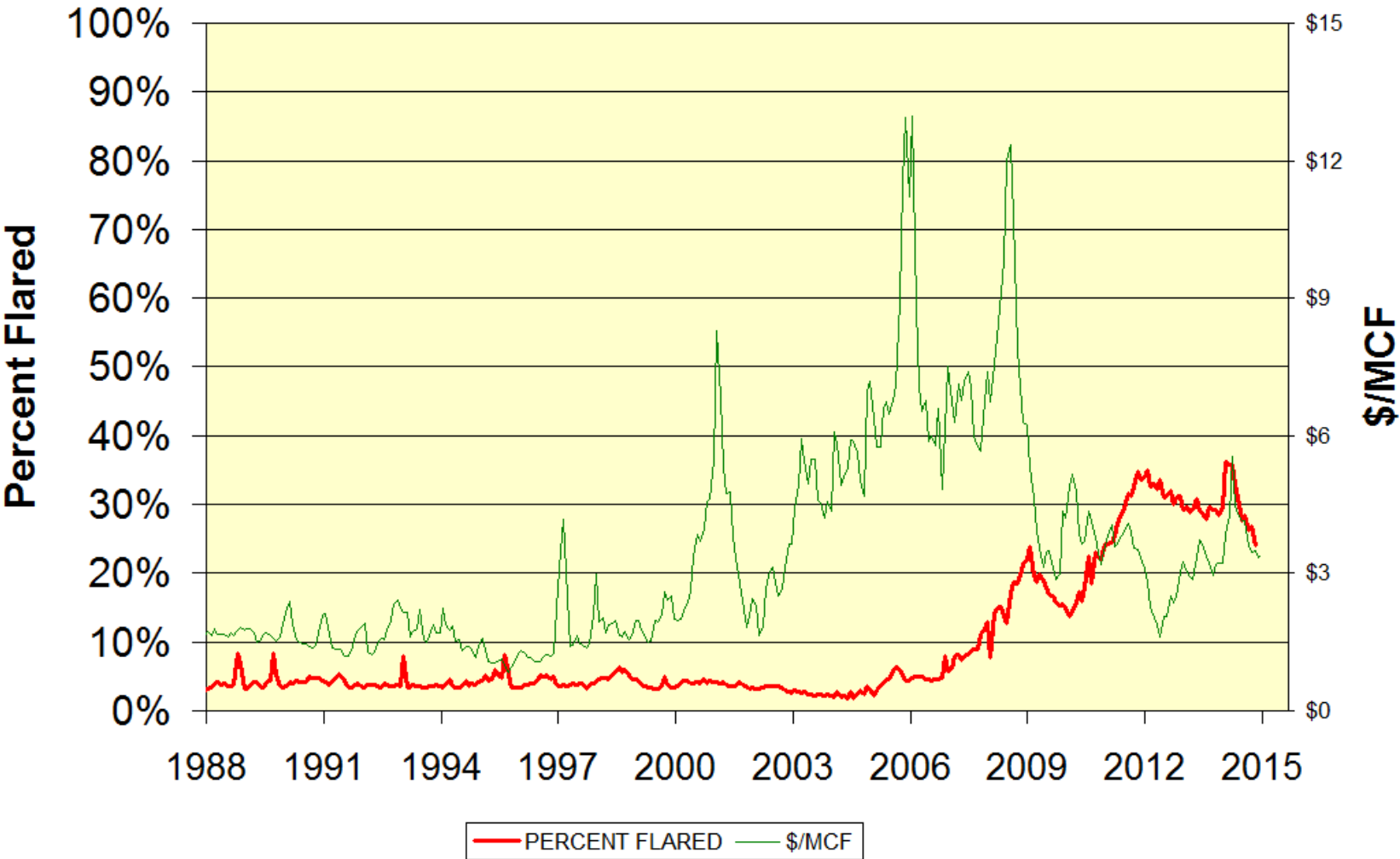


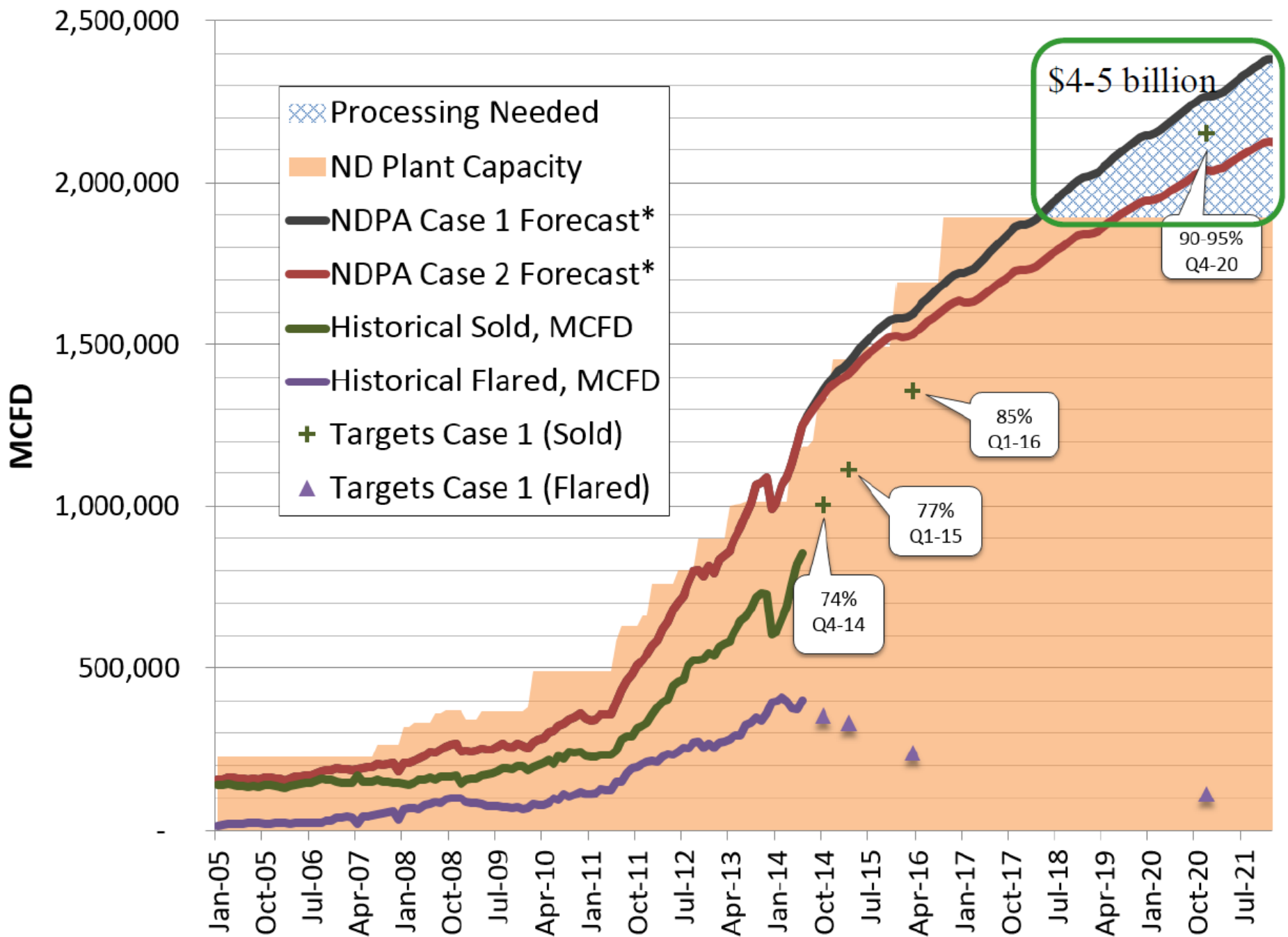
North Dakota Oil Production



EOR? +++

North Dakota Monthly Gas Flared





WHAT'S AHEAD

- **Spearfish horizontal play**
- **Tyler horizontal play**
- **Three Forks—testing lower benches**
- **Enhanced Recovery in Bakken**

Reclaimed Location

