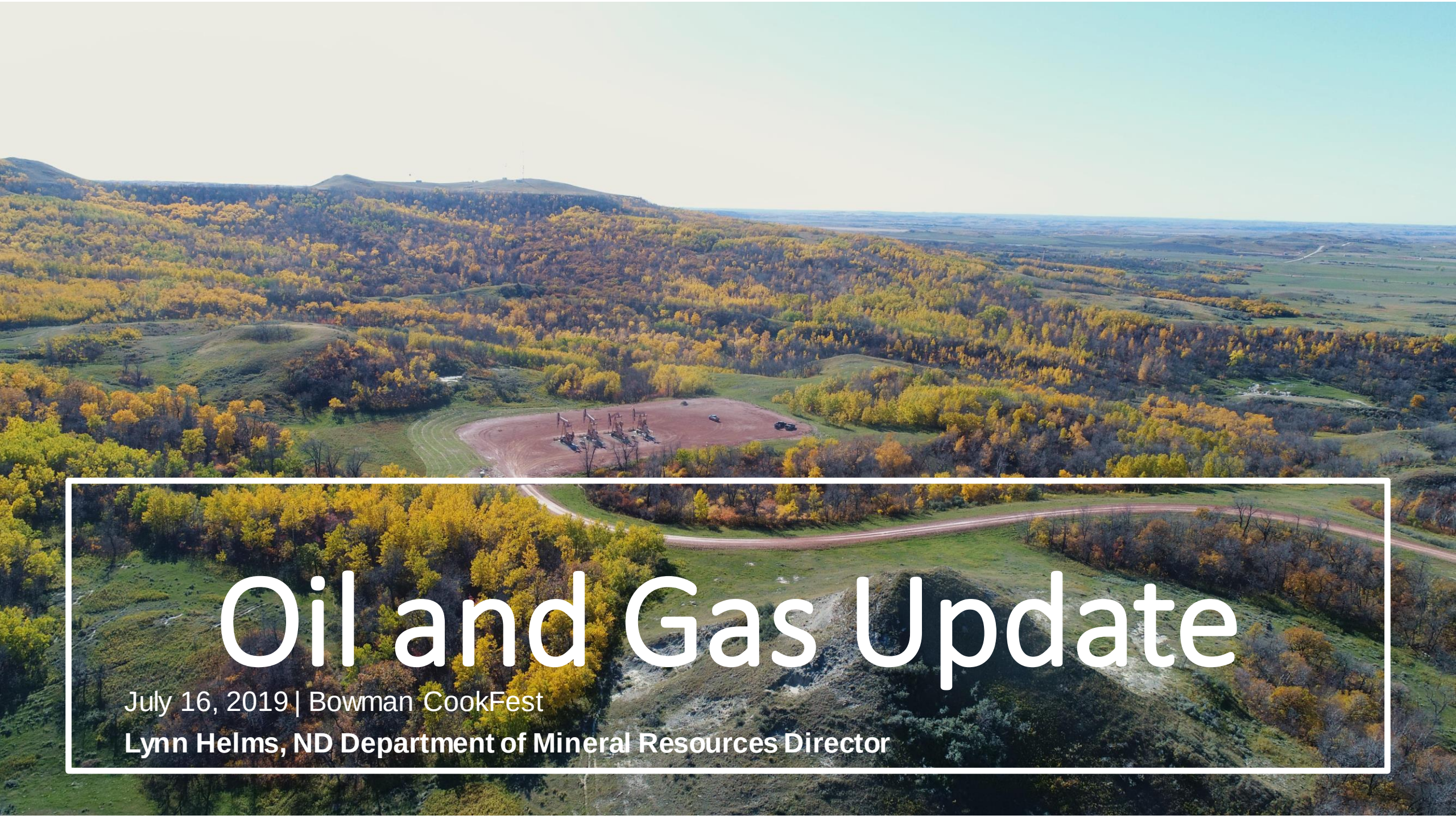


Oil and Gas Update

July 16, 2019 | Bowman CookFest

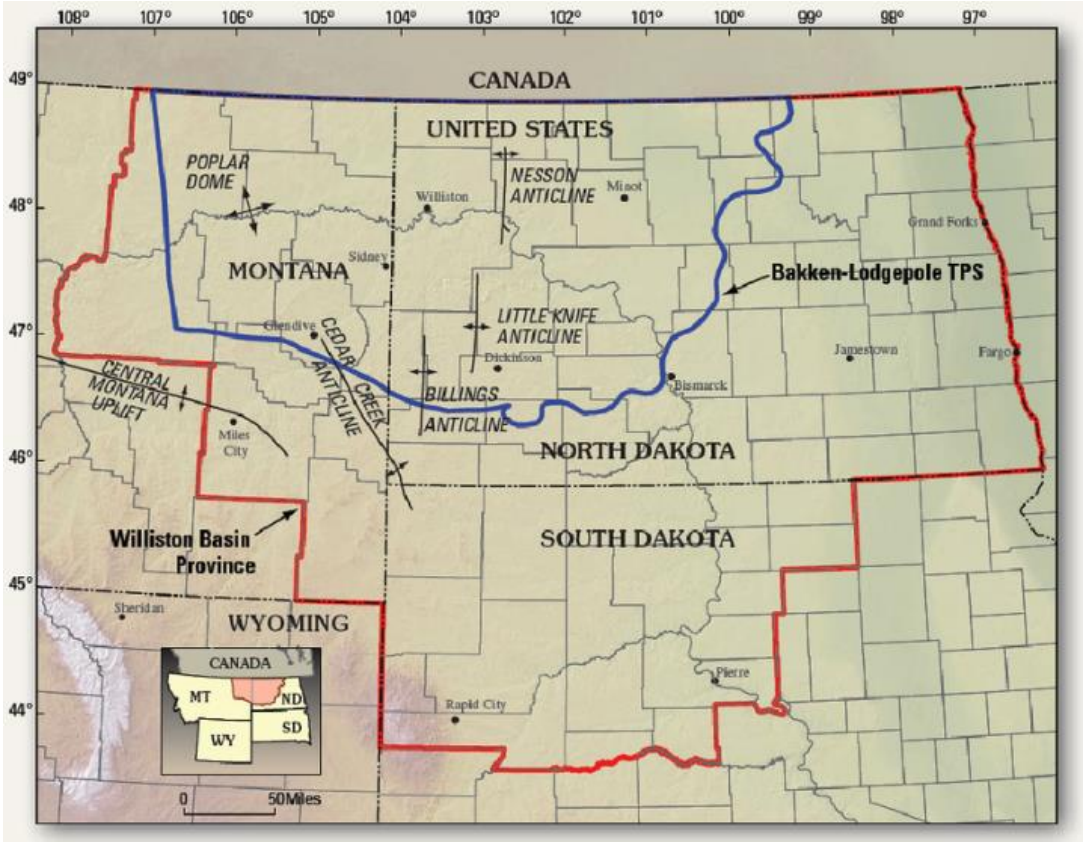
Lynn Helms, ND Department of Mineral Resources Director

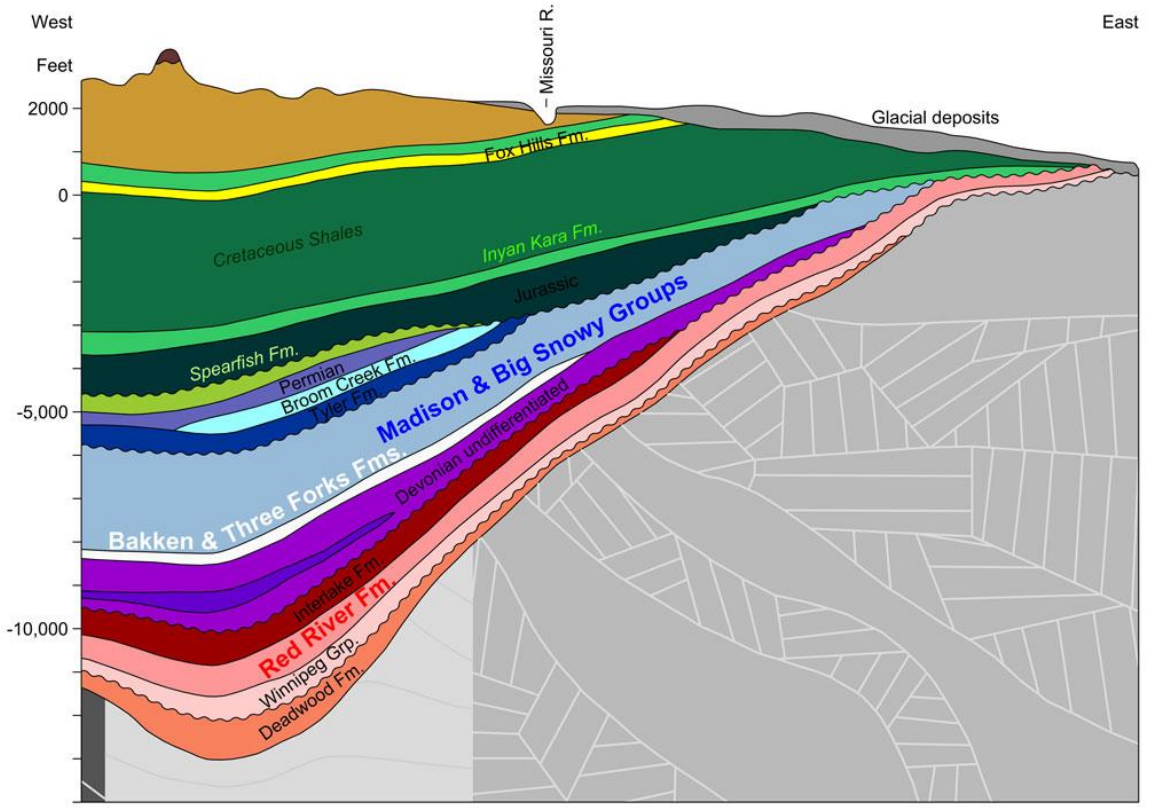
THE DRILL DOWN:

- Permitting and Wells
- Active Drilling Rigs
- Oil and Gas Production
- Enhanced Oil Recovery
- Bowman County Forecast
- Mineral Interests
- 2019 Legislation & Rulemaking

OIL AND GAS DIVISION

“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.”





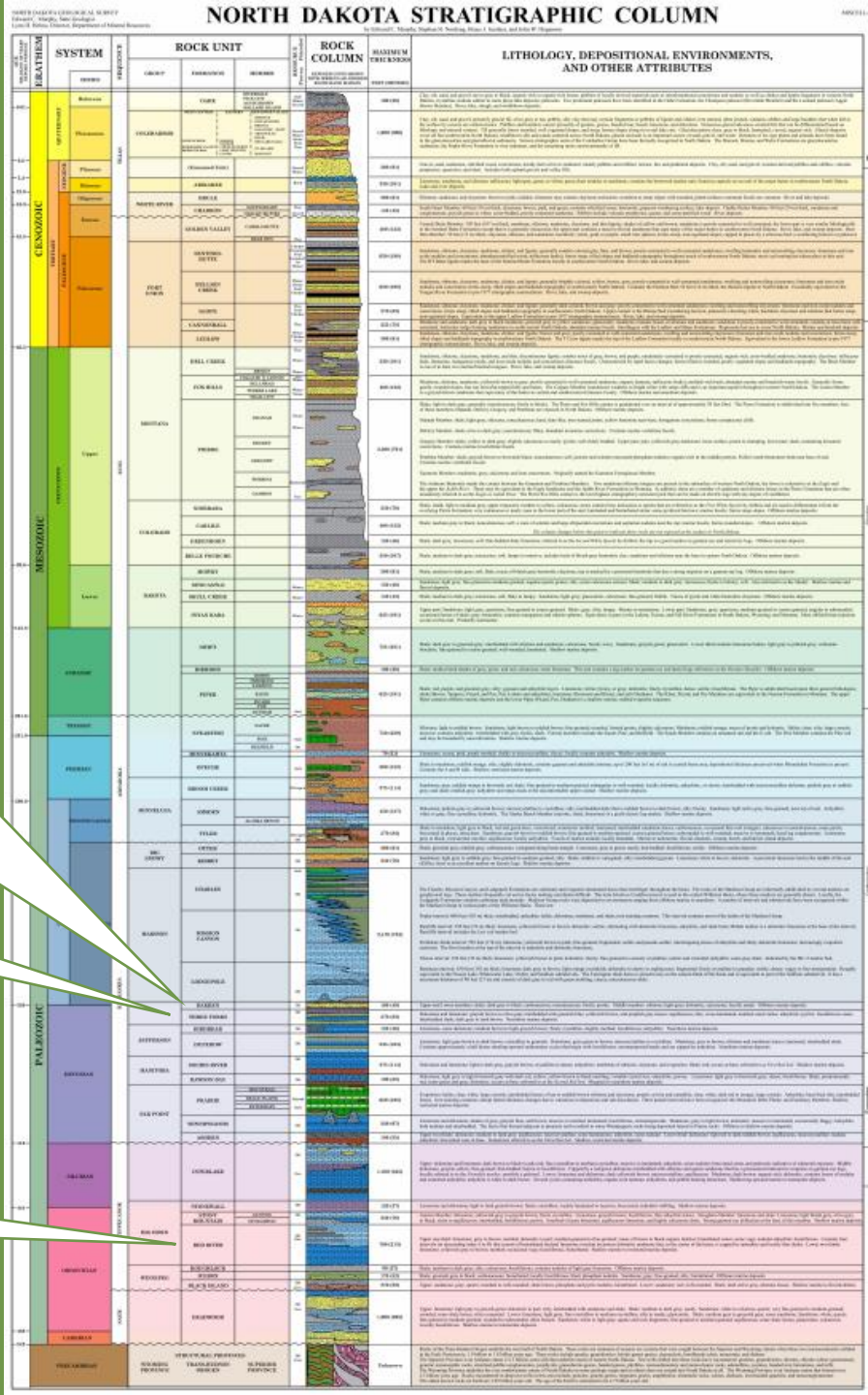
WILLISTON BASIN

STRATIGRAPHIC COLUMN

Bakken Formation
- ~360 Million Years Old
- Paleozoic Era
- Mississippian/Devonian Period
- ~110′ thick

Three Forks / Sanish
- ~370 Million Years Old
- Paleozoic Era
- Devonian Period
- ~240′ thick

Red River
- ~450 Million Years Old
- Paleozoic Era
- Ordovician Period
- ~700′ thick



Permitting and Wells

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL & GAS DIVISION
2019 MONTHLY STATISTICAL UPDATE

Month	Monthly Oil Production	Wells Producing	Average Daily Production	Permits				Spuds	Average Rig Count
				Dev	Ext	WC	Total		
Jan	43,519,155	15,424	1,403,844	127	0	0	127	98	66
Feb	37,425,711	15,156	1,336,633	109	0	0	109	85	64
Mar	43,144,557	15,365	1,391,760	133	0	0	133	128	66
Apr	41,735,647	15,490	1,391,188	128	0	1	129	109	63
May	43,191,793	15,698	1,393,284	140	0	0	140	147	65
Jun									
Jul									
Aug									
Sep									
Oct									
Nov									
Dec									
Totals	165,825,070		1,370,455	637	0	1	638	567	65

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL & GAS DIVISION

2019

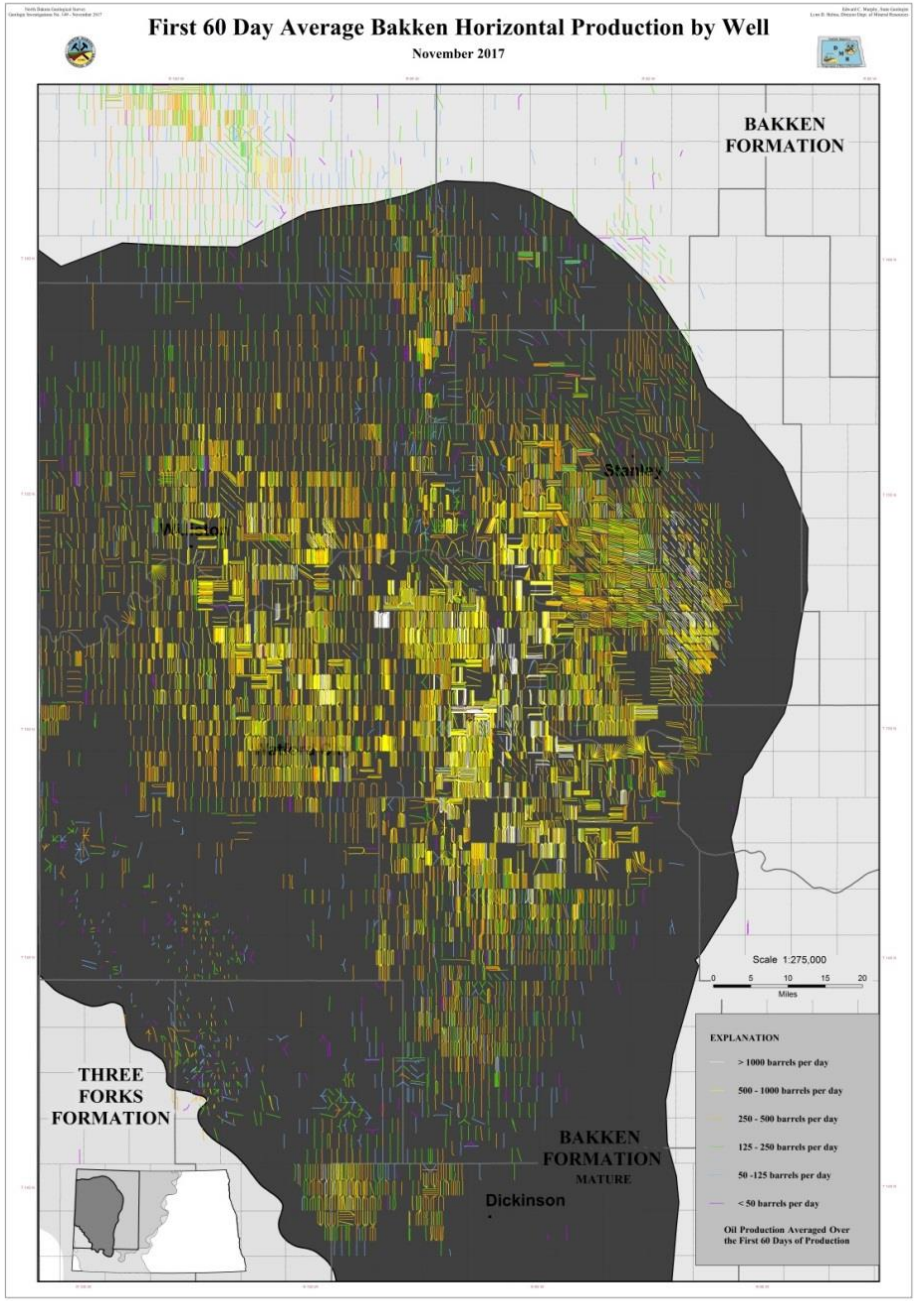
Month	Monthly Oil Production	Wells Producing	Average Daily Production	Permits Total	Permits Spuds	Average Rig Count
Jan	43,519,155	15,424	1,403,844	127	98	66
Feb	37,425,711	15,156	1,336,633	109	85	64
Mar	43,144,557	15,365	1,391,760	133	128	66
Apr	41,735,647	15,490	1,391,188	129	109	63
May	43,191,793	15,698	1,393,284	140	147	65
Jun						
Jul						
Aug						
Sep						
Oct						
Nov						
Dec						
Totals	165,825,070		1,370,455	638	567	65

2018

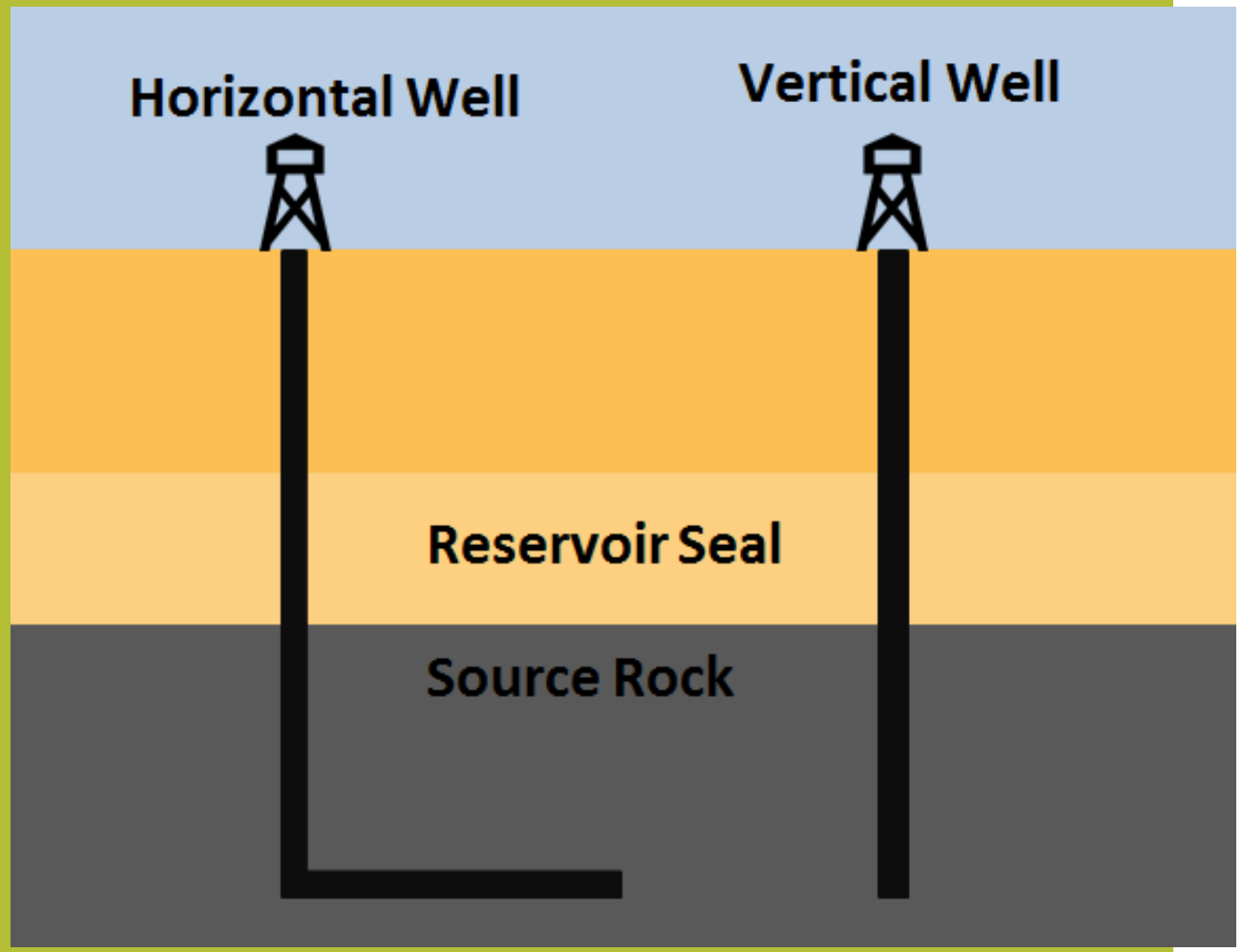
Permits Total	Permits Spuds	Average Rig Count
151	93	56
96	100	57
108	122	59
104	119	60
121	104	62
113	102	63
163	123	66
152	140	61
113	106	65
183	143	67
116	123	64
92	116	67
1512	1391	62

WELLS

Active Conventional Bakken/Three Forks	15,397 1,706 13,691
Inactive >$50 for 90 days Jan. 2019	1,517
Waiting on Completion >$55 for 90 days Feb. 2019	867
Permitted >$60 for 90 days	1,880
Increase Density Approved 03/31/19	13,948
Total	**33,609**
Estimated Final **$60/BO = 60-70 Rigs = 20 Yr** **$80/BO = 70-80 Rigs = 70 Yr**	 **40,000** **85,000**



Active Drilling Rigs

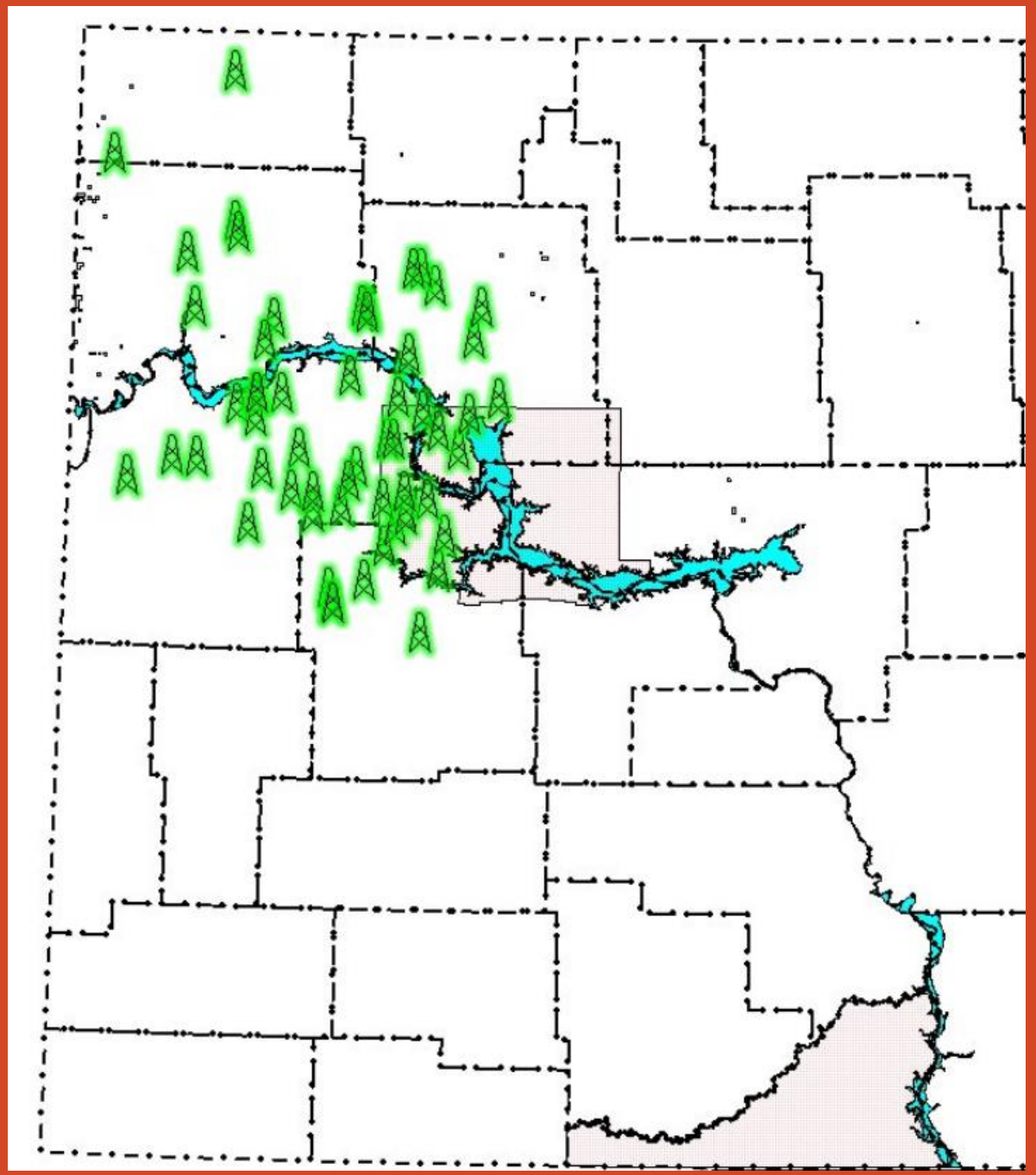


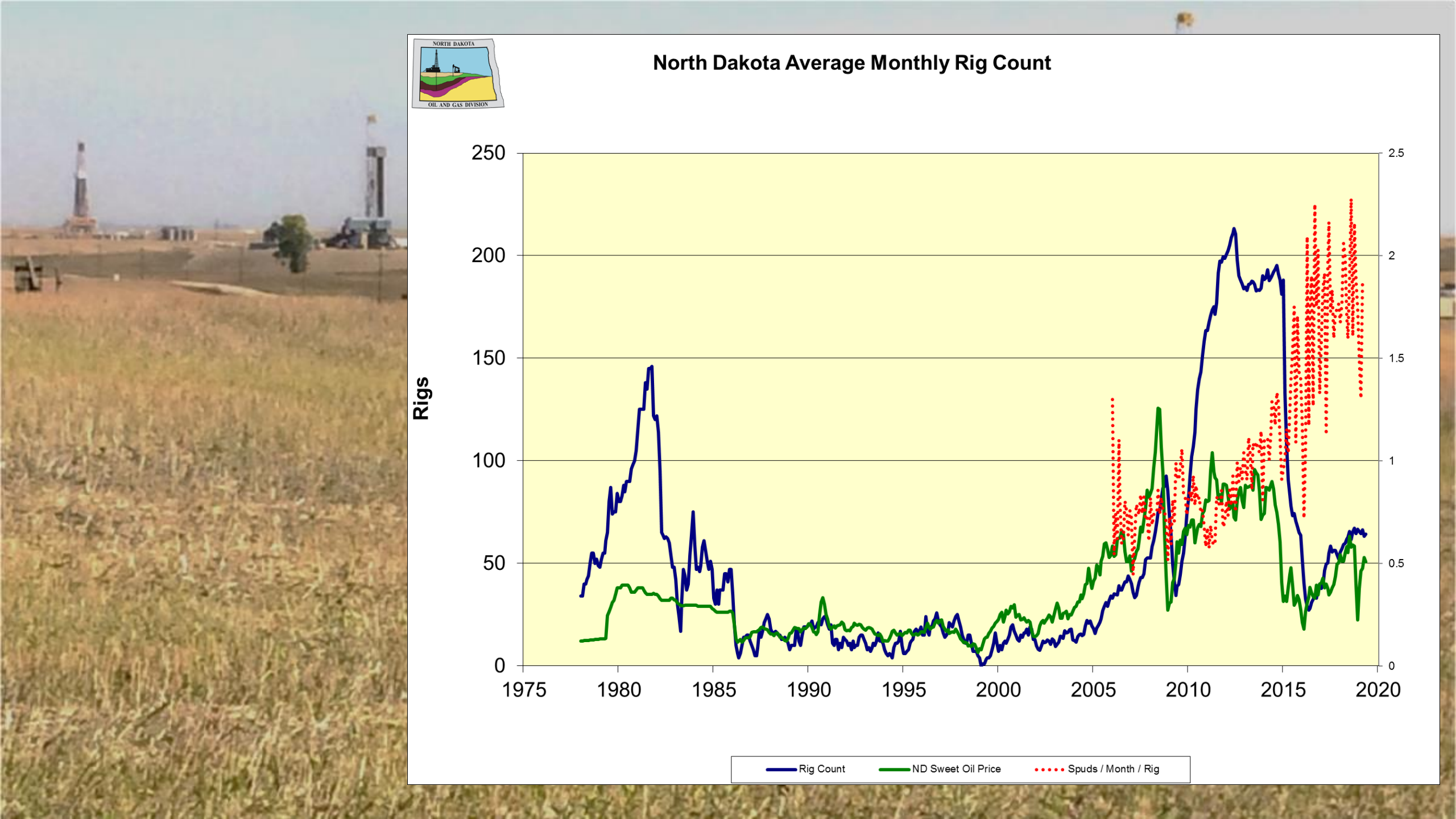
VERTICAL & HORIZONTAL WELLS

- Vertical or “Conventional” drilling was the 1st method of accessing oil reserves with a smaller reach. Resulted in more wells in a geographic area.
- Horizontal Drilling capabilities emerged allowing for:
  - Ability to reach difficult targets
  - Ability to drain a broader area
  - Increase are of well
  - Improve productivity of fractured reservoirs
  - Seal or relieve pressure in an out-of-control well.

ADVANCEMENTS IN DRILLING TODAY

- More efficient rigs
  - MWD and Mud Motors
  - PDC Bits
  - Walking Rigs
  - Batch Drilling
- More efficient rig teams
  - MWD, Geologists, Rig Hands, Tool Pusher, Company Rep
  - Targeted deposits
- Next Generation Fracking
- Better well control




North Dakota Average Monthly Rig Count
NORTH DAKOTA
OIL AND GAS DIVISION
Rigs
250
200
150
100
50
0
2.5
2
1.5
1
0.5
0
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Rig Count
ND Sweet Oil Price
Spuds / Month / Rig

North Dakota Production

NORTH DAKOTA PRODUCTION-MAY 2019

1,393,284
BARRELS PER DAY

1,403,808
January 2019

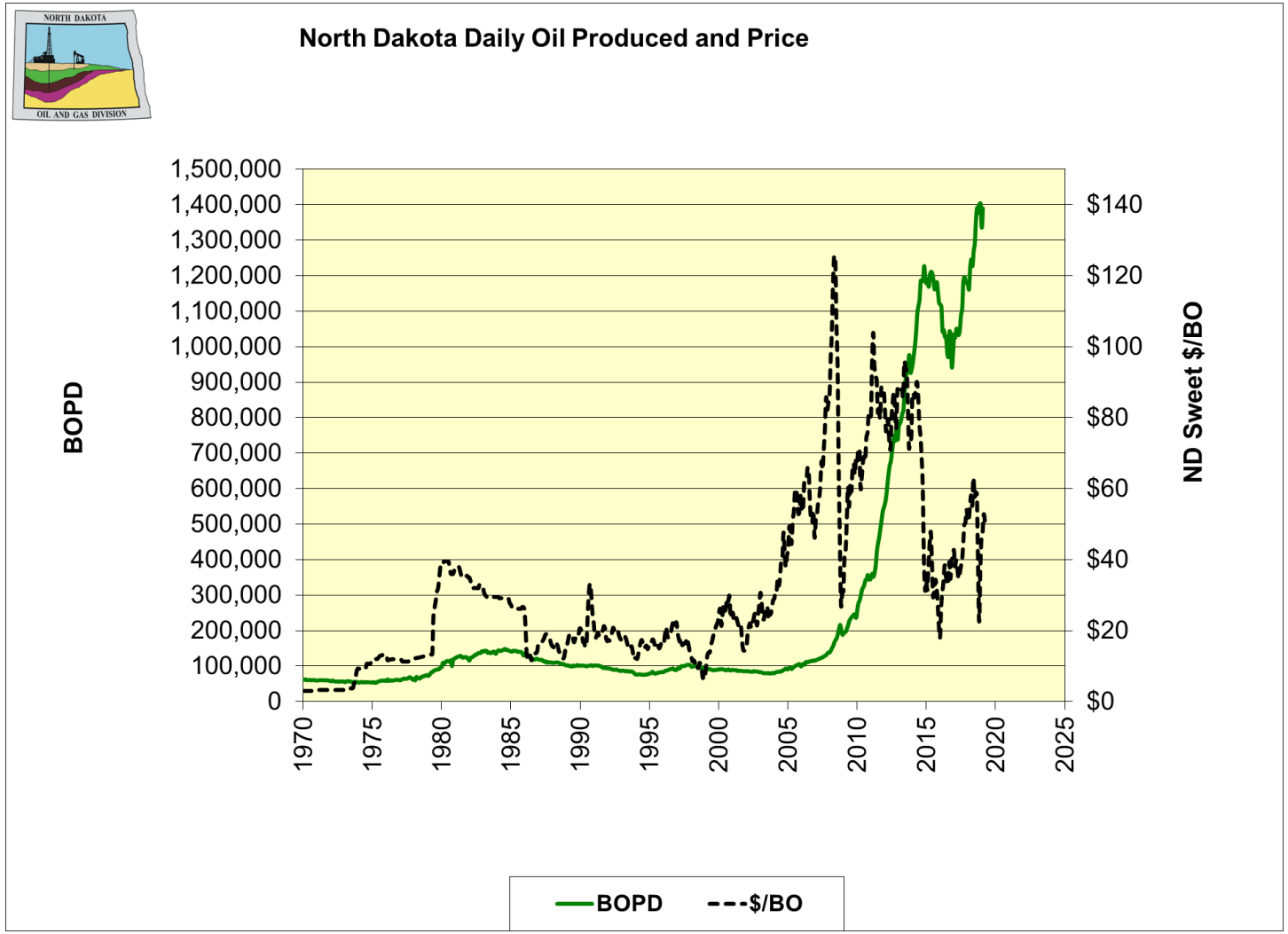
2,821,672
MCF PER DAY

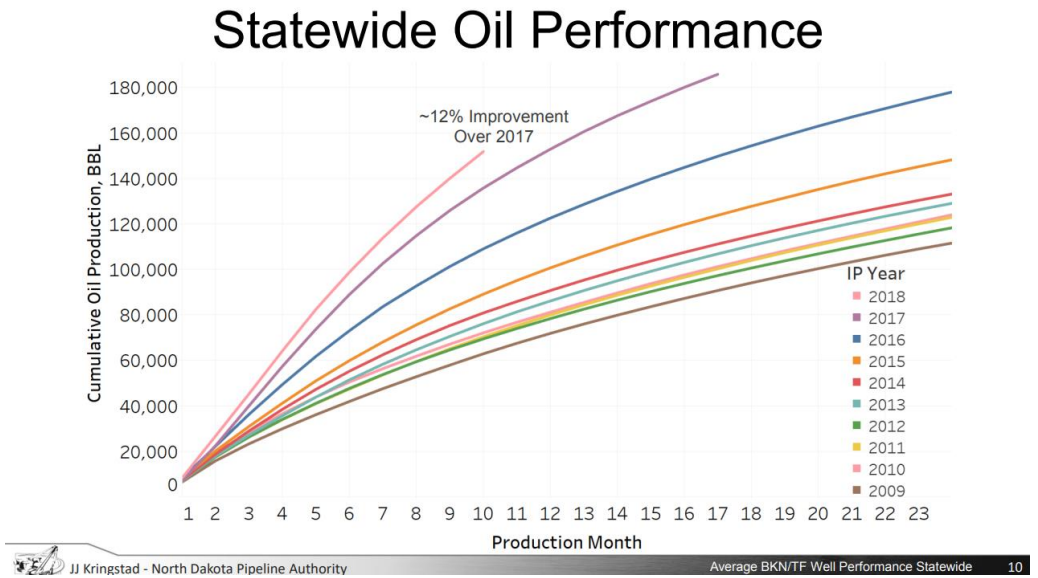
2,833,131
April 2019

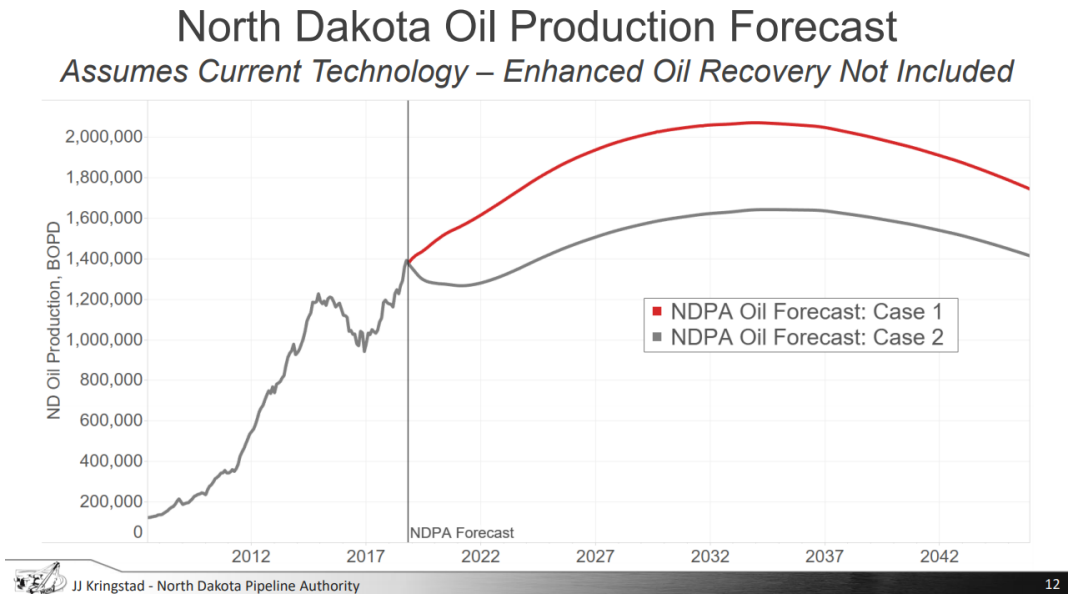
15,698
PRODUCING WELLS

NEW RECORD

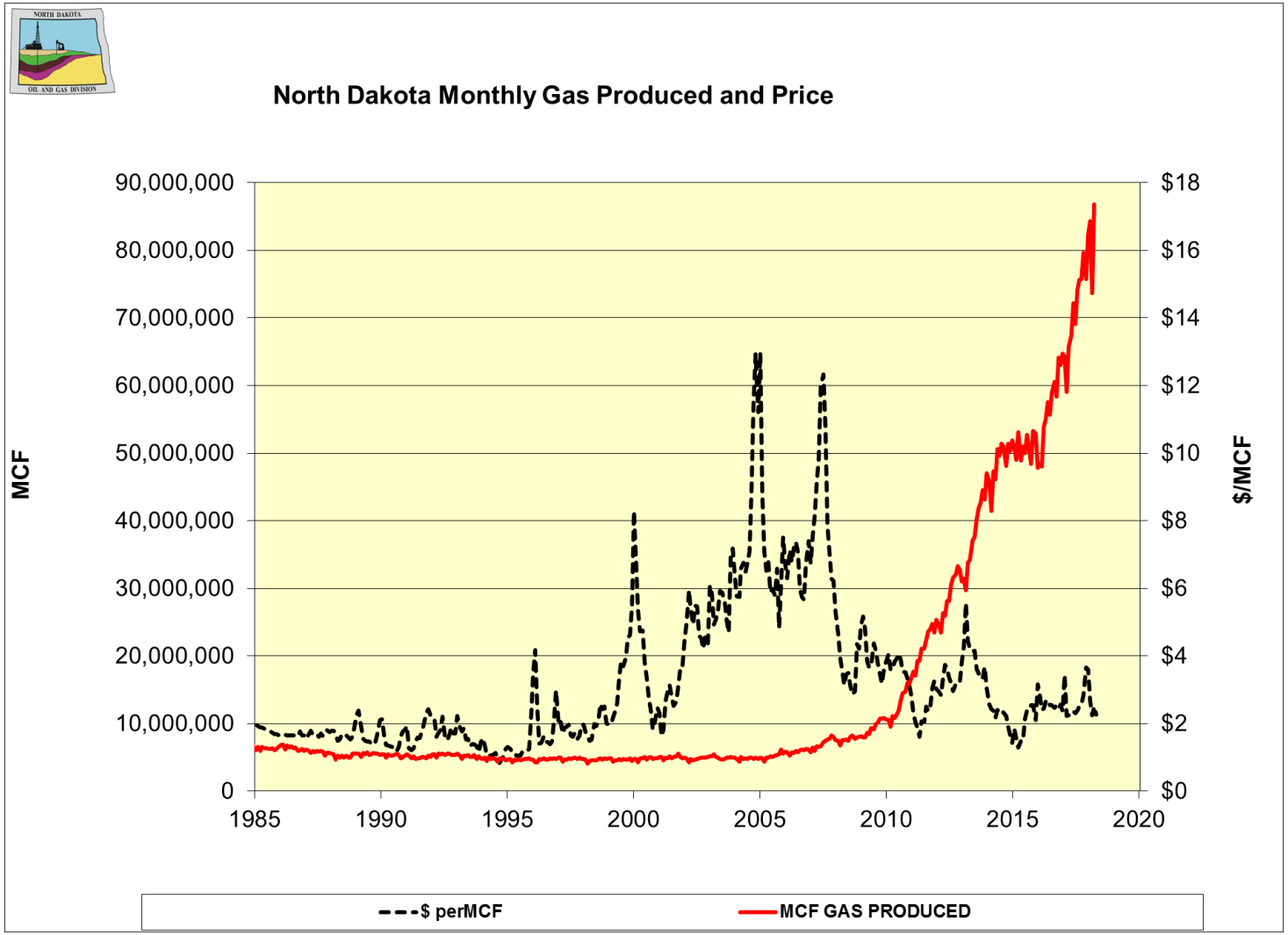
DAILY OIL PRODUCTION

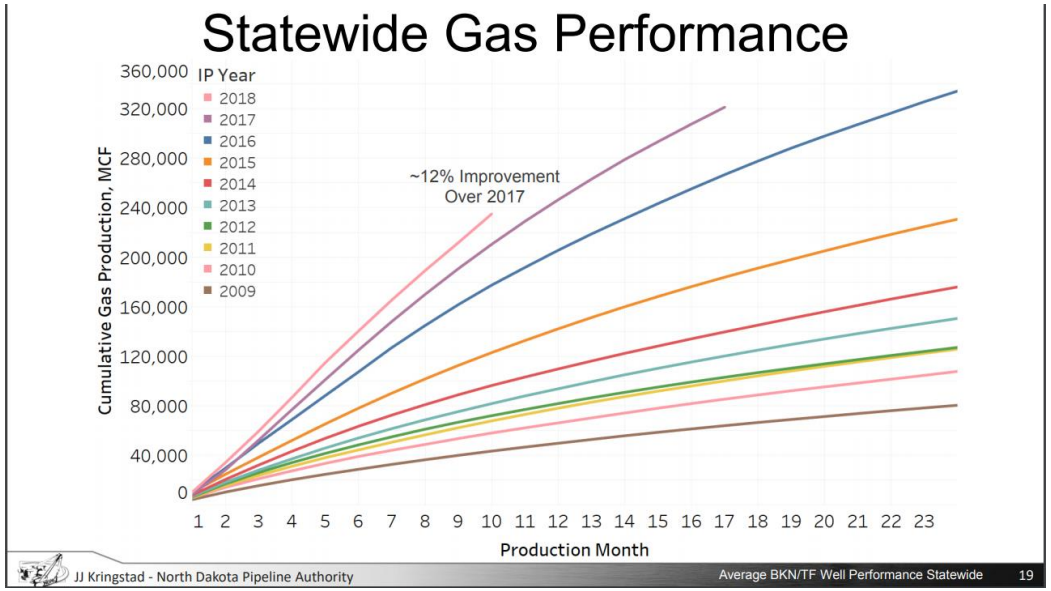


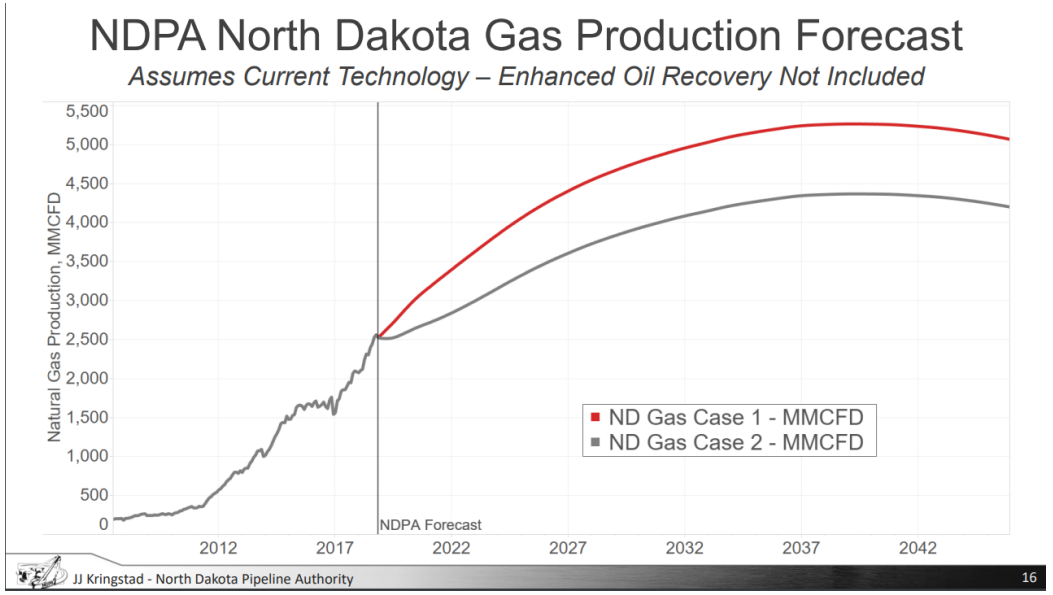




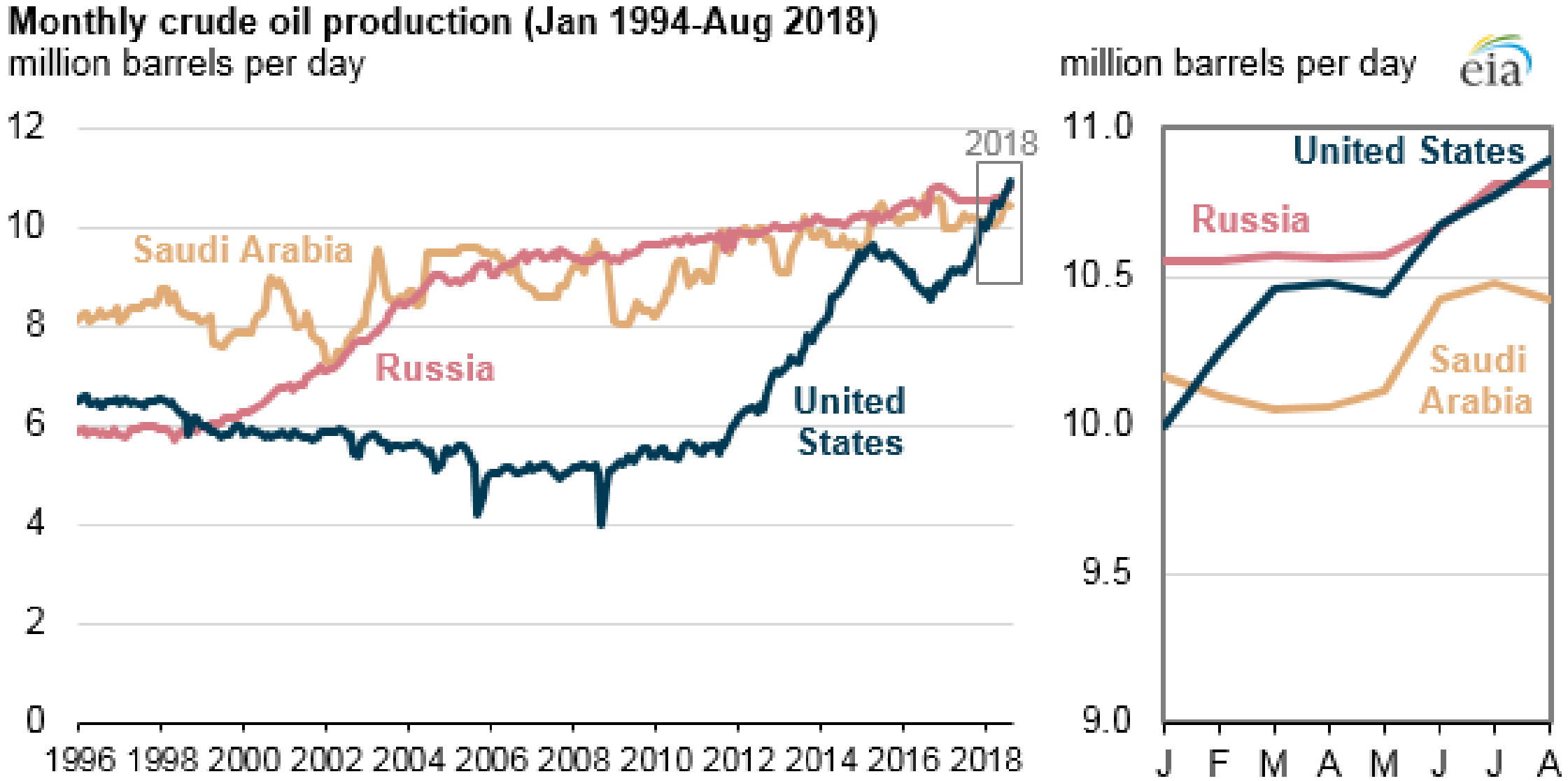
DAILY GAS PRODUCTION





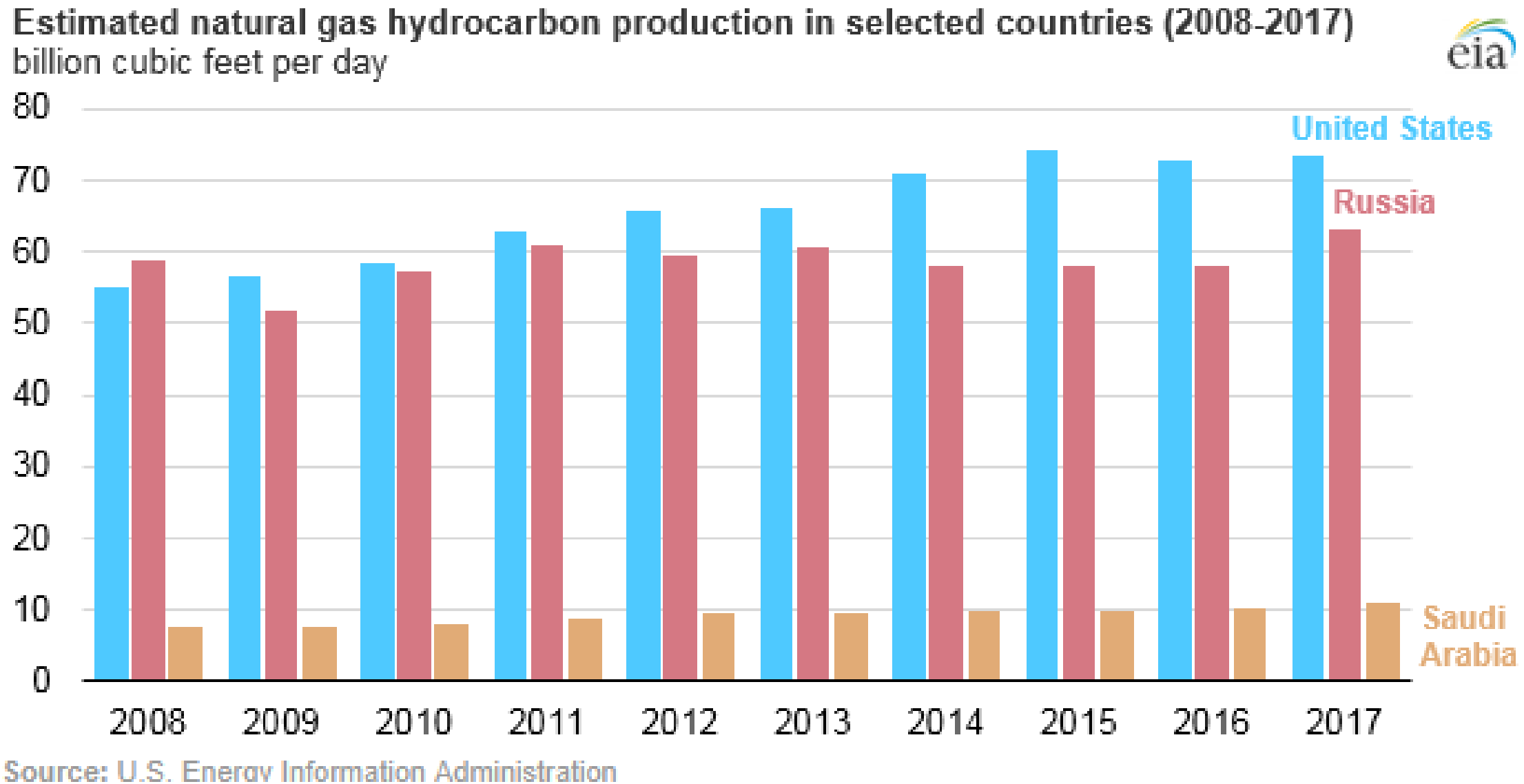


U.S. NUMBER ONE



Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*

U.S. NUMBER ONE



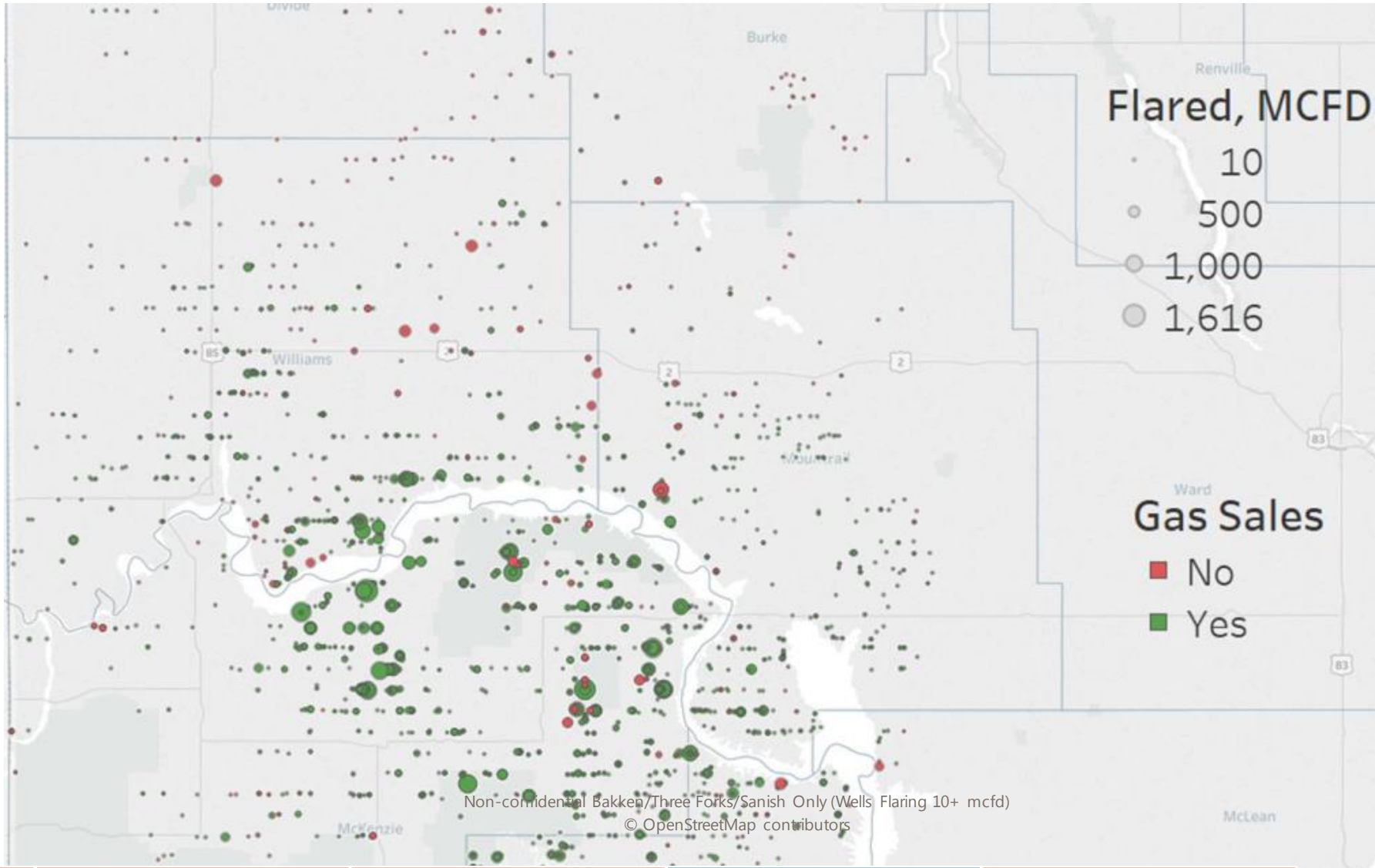
Gas Capture & Utilization

GAS CAPTURE POLICY

NDIC Order 24665

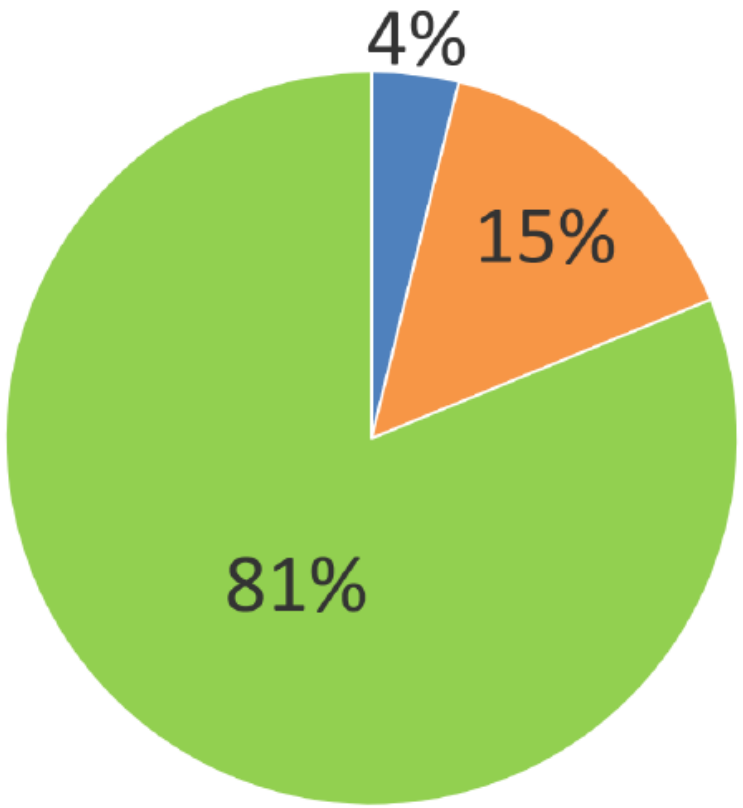
Policy Goals

- Increase the volume of captured gas and reduce the percentage of flared gas
- Incentivize investment in gas capture infrastructure



74%	77%	80%	85%	88%	91%
Oct 2014-Dec 2014	Jan 2015-March 2016	April 2016-Oct 2016	Nov 2016-Oct 2018	Nov 2018-Oct 2020	Nov 2020

CAPTURING NATURAL GAS IN ND



Statewide

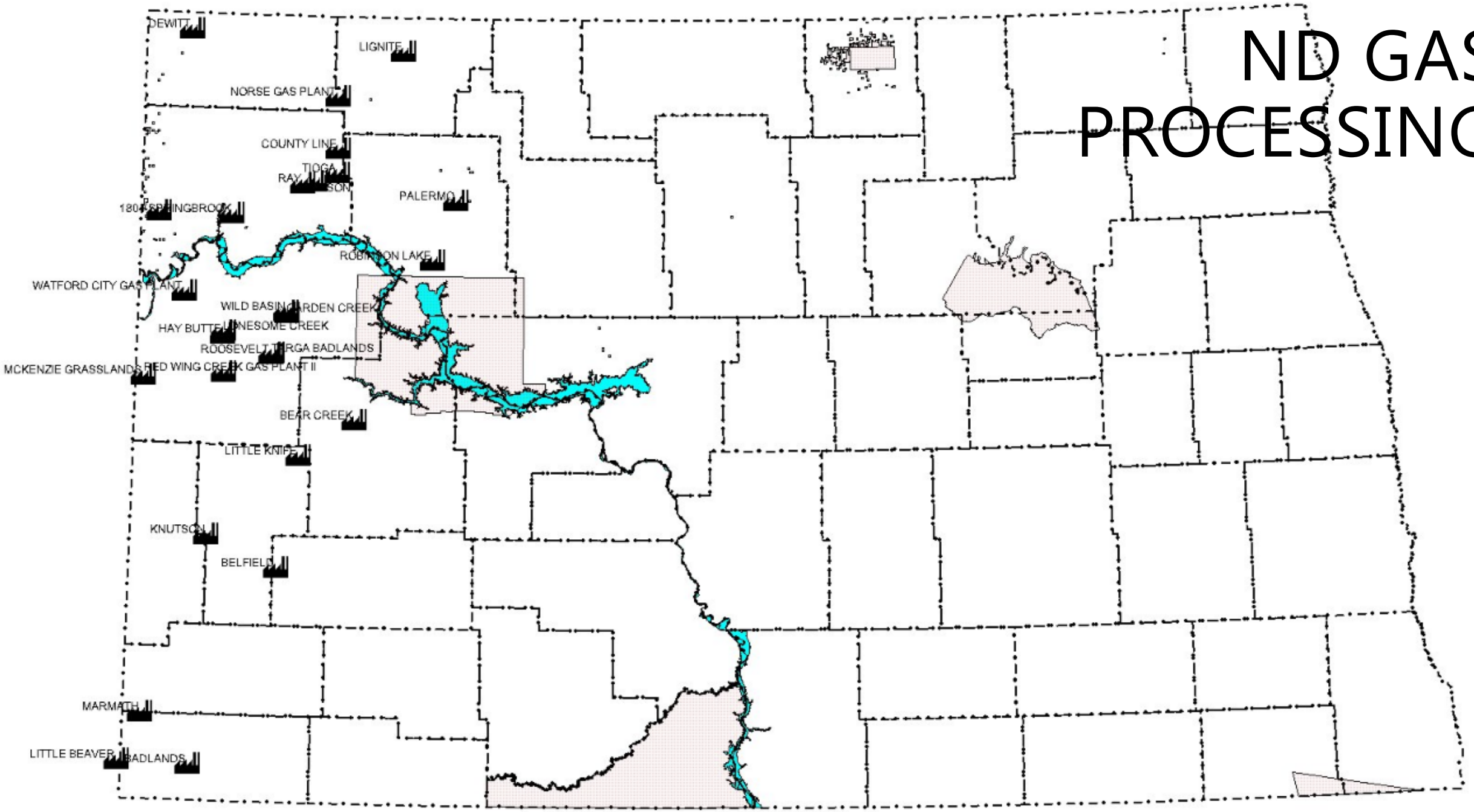
GREEN – % of gas captured and sold
Blue – % flared from zero sales wells
Orange – % flared from wells with at least one mcf sold.

Simple Terms

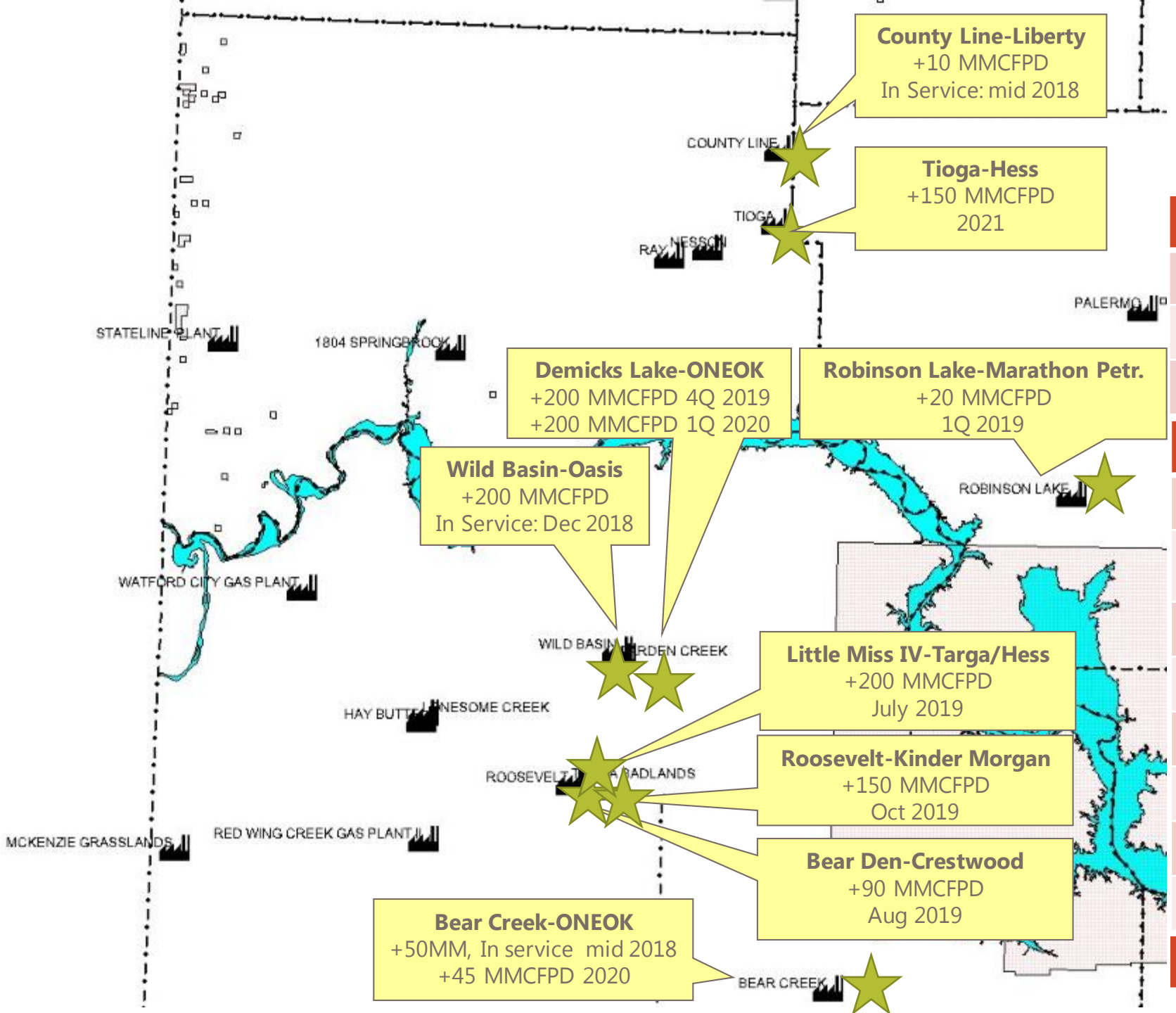
Blue – Lack of pipelines
Orange – Challenges on existing infrastructure

May 2019 Data – Non-Confidential Wells

ND GAS PROCESSING



GAS PLANT EXPANSIONS

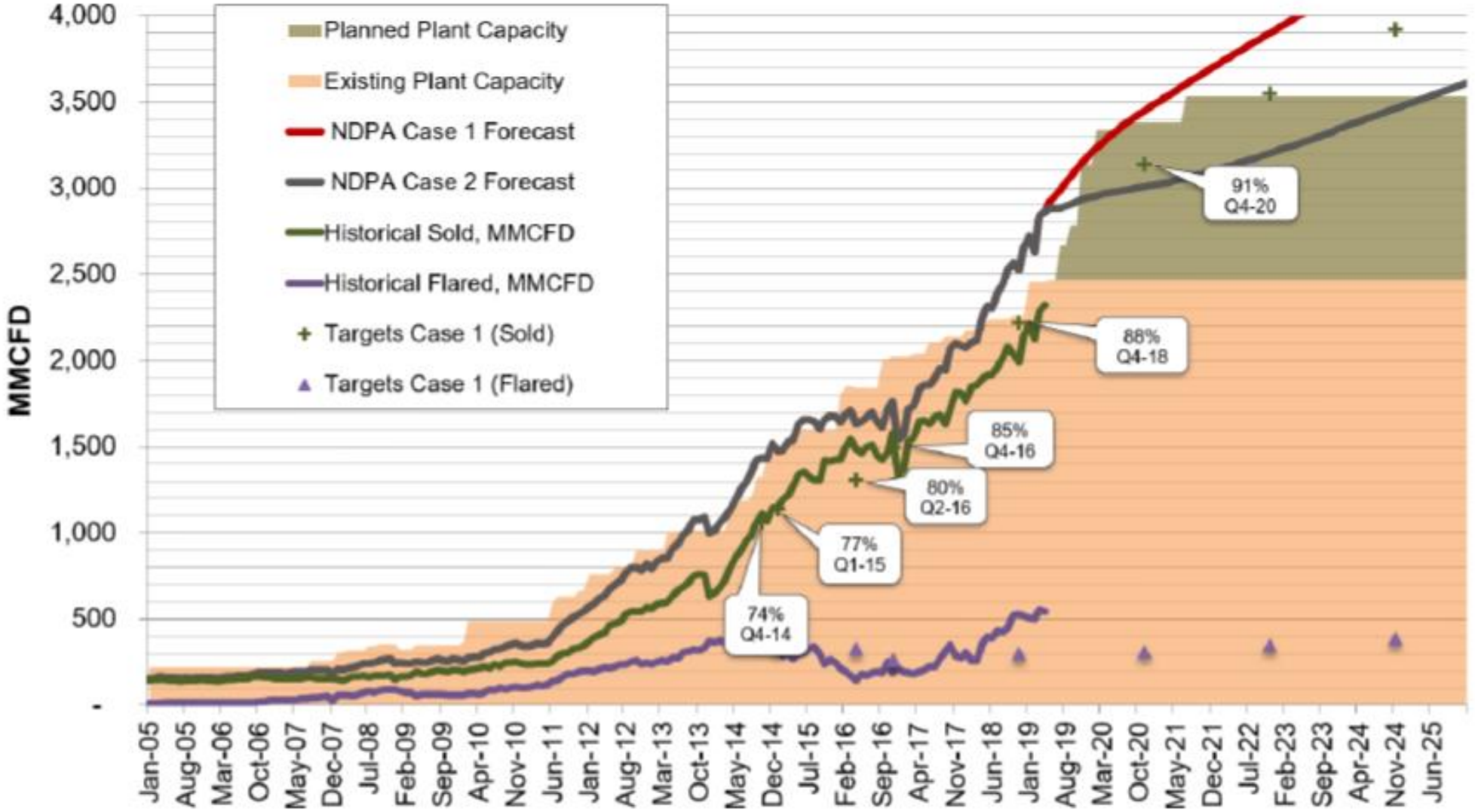


2018	MMCFPD	Incr	Start Date
Bear Creek	80→ 130	+50	In Service
County Line	20→30	+10	In Service
Wild Basin	145→345	+200	In Service

2019	MMCFPD	Incr	Start Date
RobinsonLk	130→150	+20	1Q 2019
Targa/Hess, LM4		+200	Jul 2019
Bear Den	30→120	+90	Aug 2019
Demicks Lake		+200	4Q 2019
Roosevelt	50→200	+150	Oct 2019
Demicks Lake	200→400	+200	1Q 2020
Bear Creek	130→175	+45	2020
Tioga, Hess	250→ 400	+150	2021

Total	$1.5 Billion	+1,165 MMCFPD

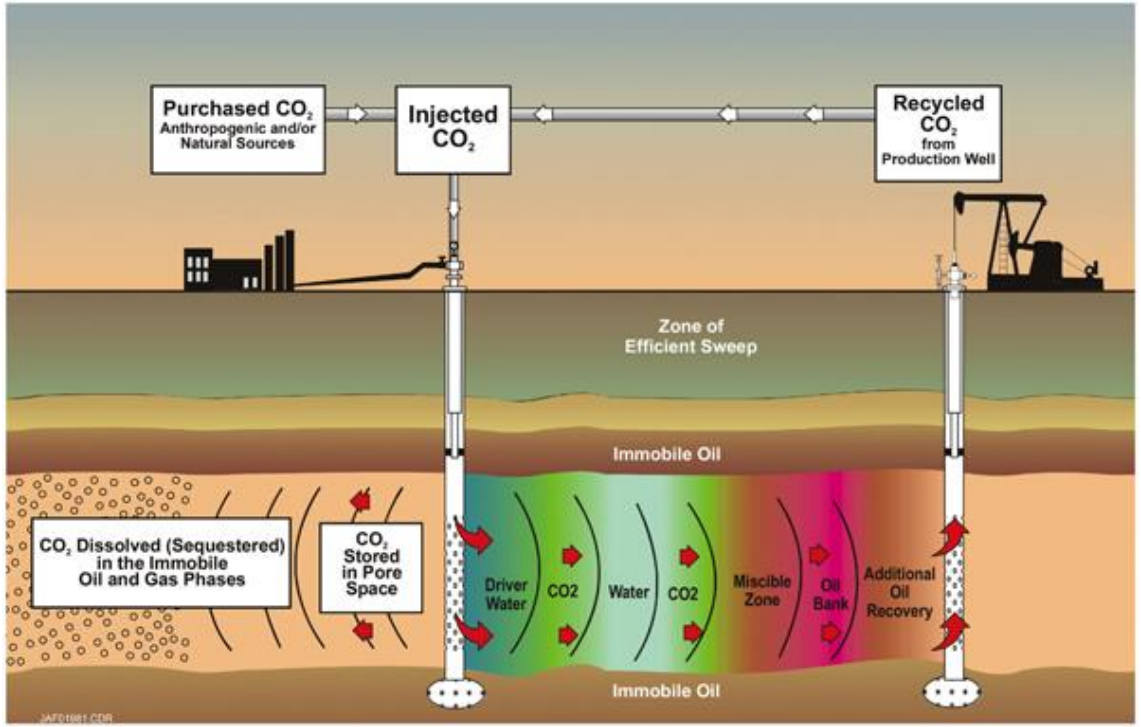
CAPTURING NATURAL GAS IN ND



Enhanced Oil Recovery

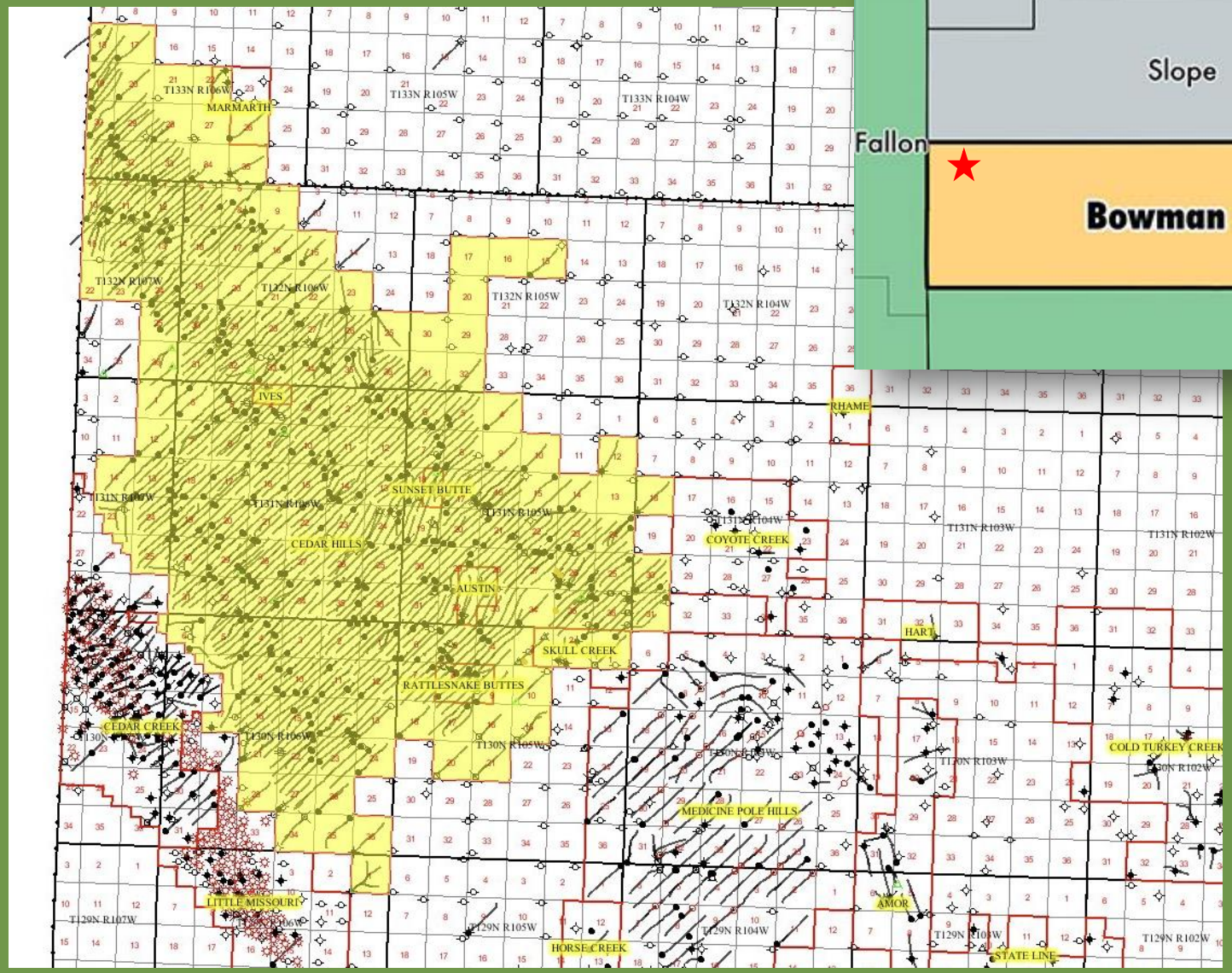
ENHANCED OIL RECOVERY (EOR)

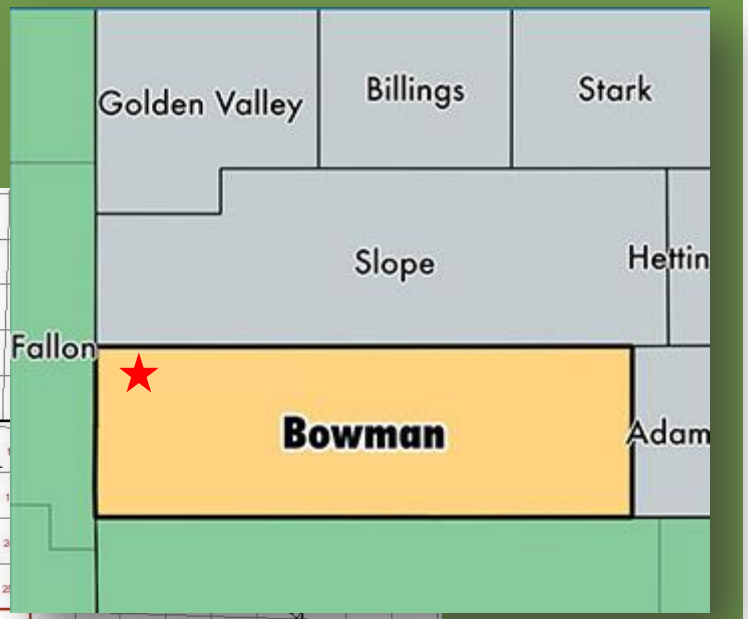
- Injection of fluids or gasses into reservoir to “push” the additional oil and/or natural gas that was difficult or did not initially product to surrounding wells.



Source: Advanced Resources International and Melzer Consulting, Optimization of CO_2 Storage in CO_2 Enhanced Oil Recovery Projects, prepared for UK Department of Energy & Climate Change, November 2010.

CEDAR HILLS





North Unit

Operator: Continental Resources, Inc

Pool: Red River Basin

Injectate: Air from 2003 to date. Water from 2002 to date.

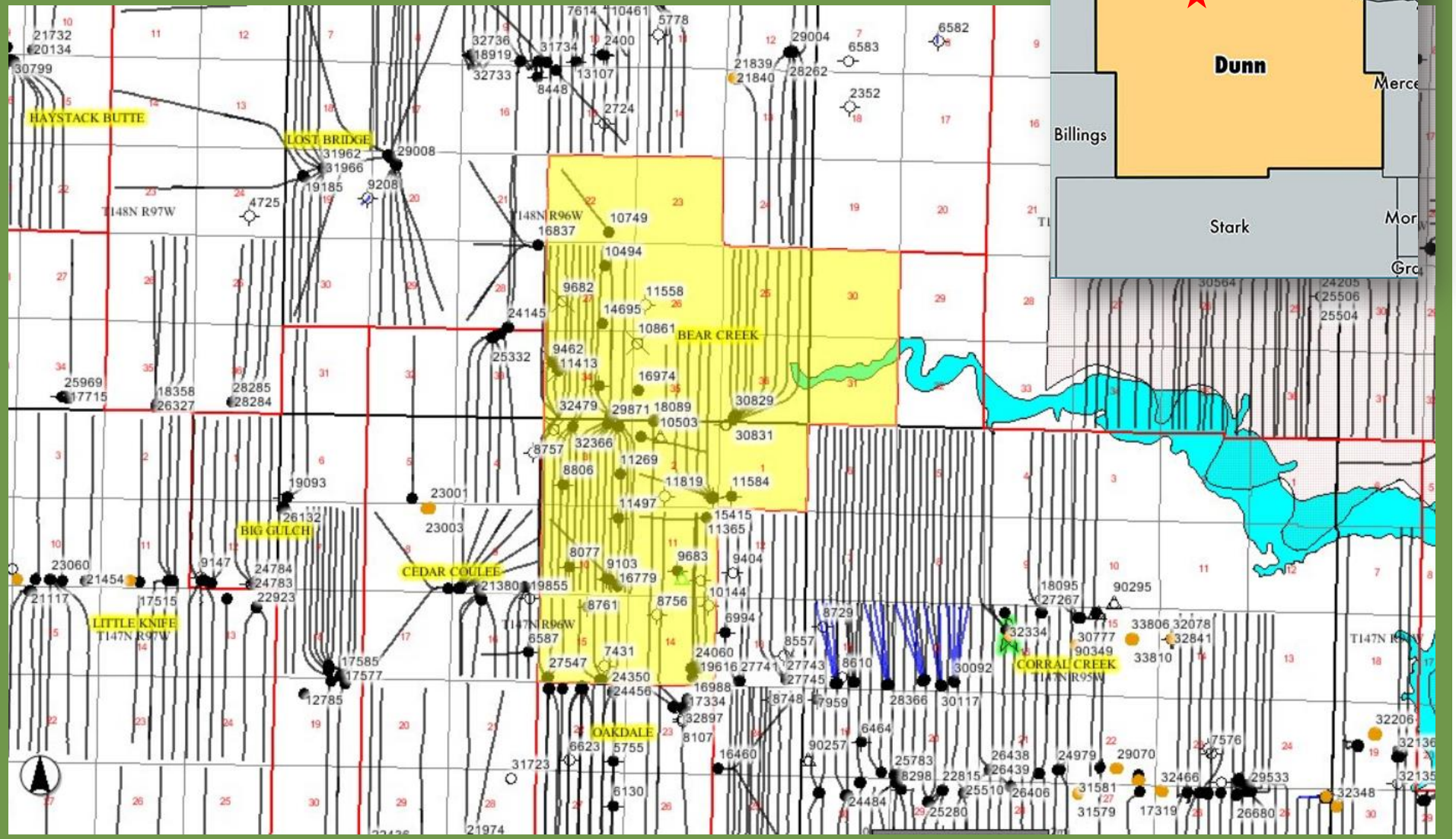
South Unit

Operator: Denbury Onshore, LLC

Pool: Red River Basin

Injectate: Water from 2001 to date and currently investigating CO2 potential

BEAR CREEK



Operator: XTO Energy, Inc.

Pool: Duperow

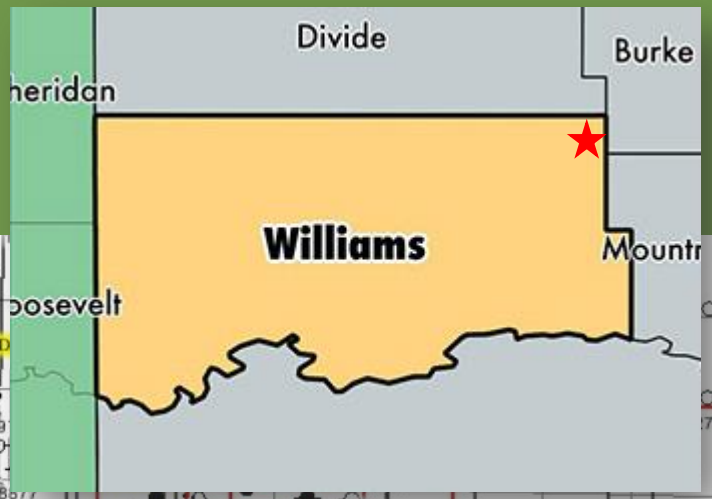
Injectate:

Water from 1992 to 2010.

Implemented a short term pilot project for CO_2.

Approved for Natural Gas injection – currently waiting on injection to begin

MCGREGOR



Operator: Liberty Resources Management, LLC

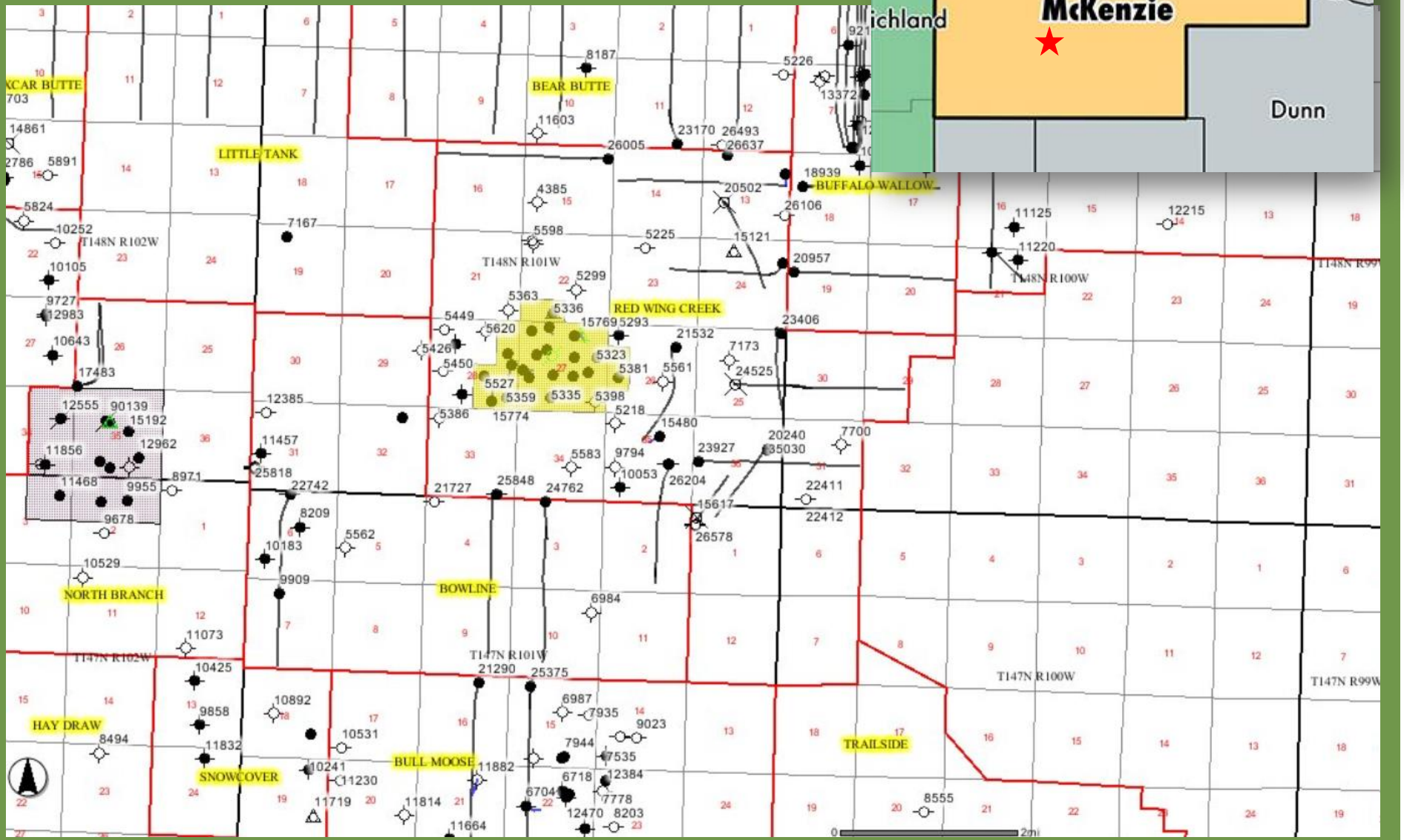
Pool: Bakken

Injectate:

Natural Gas from 2018 to present.

Currently injecting in alternating pattern into several wells on a 1280-acre spacing unit.

RED WING CREEK



Operator: True Oil LLC

Pool: Madison

Injectate:

Natural Gas from 1981 to 1997;

Propane from 1983 to 2010;

Ethane from 2017 to 2019;

Approved for Butane – currently waiting on injection to begin.

FOREMAN BUTTE

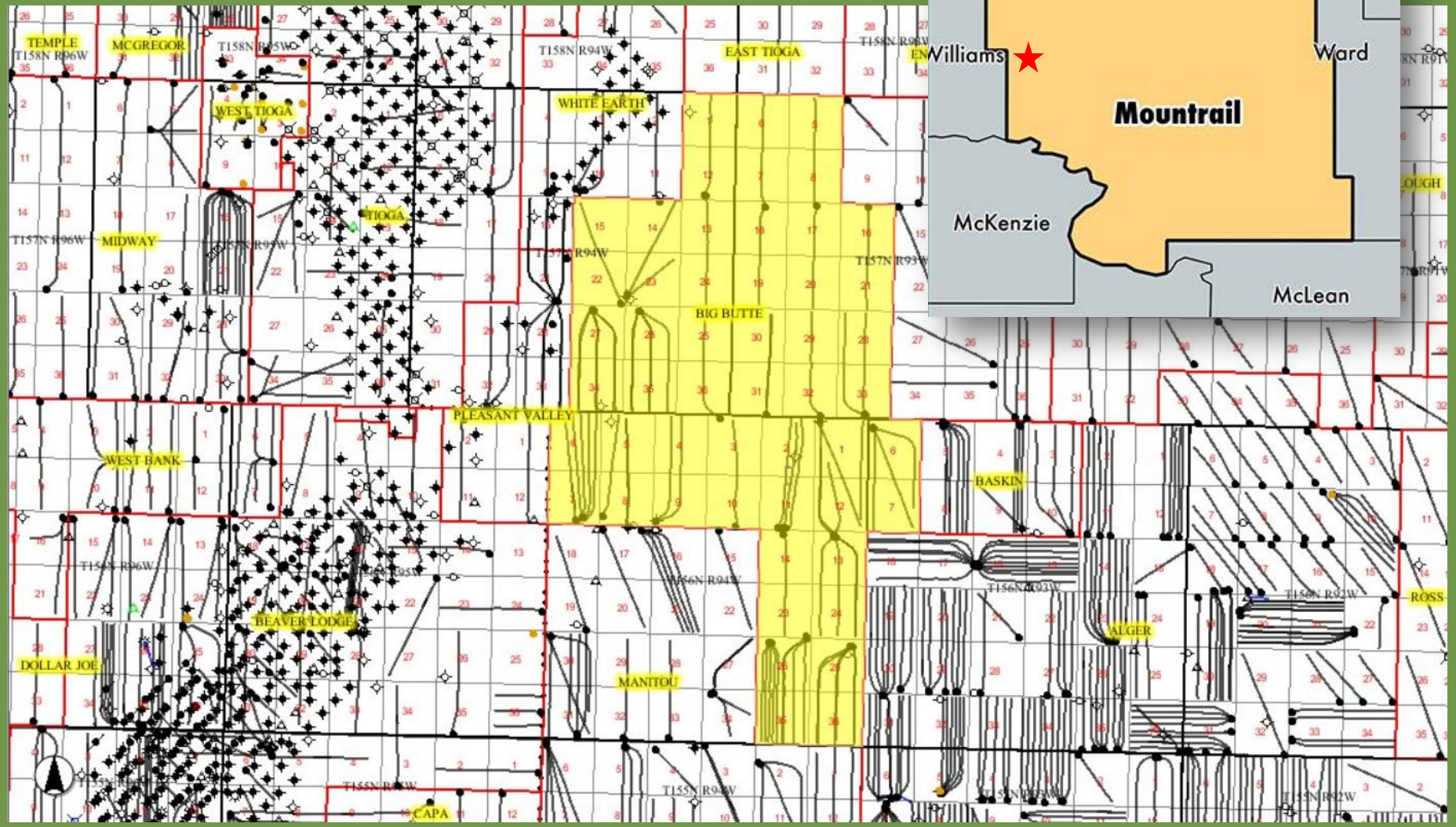
Operator: Samson Oil and Gas USA, Inc.

Pool: Madison

Injectate:

Water injection pilot project

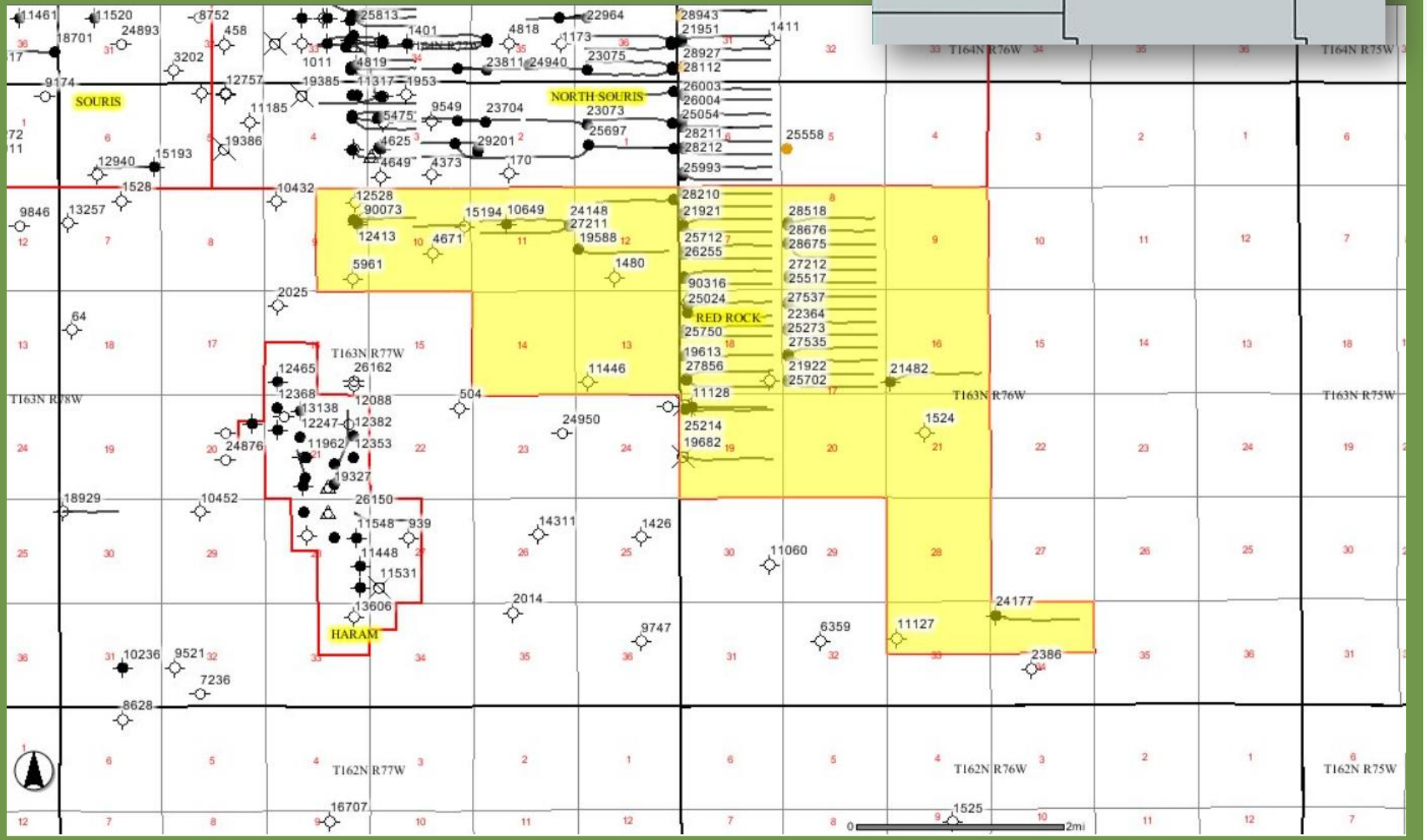
BIG BUTTE



Operator: Hess Bakken Investments II, LLC

Pool: Bakken

RED ROCK



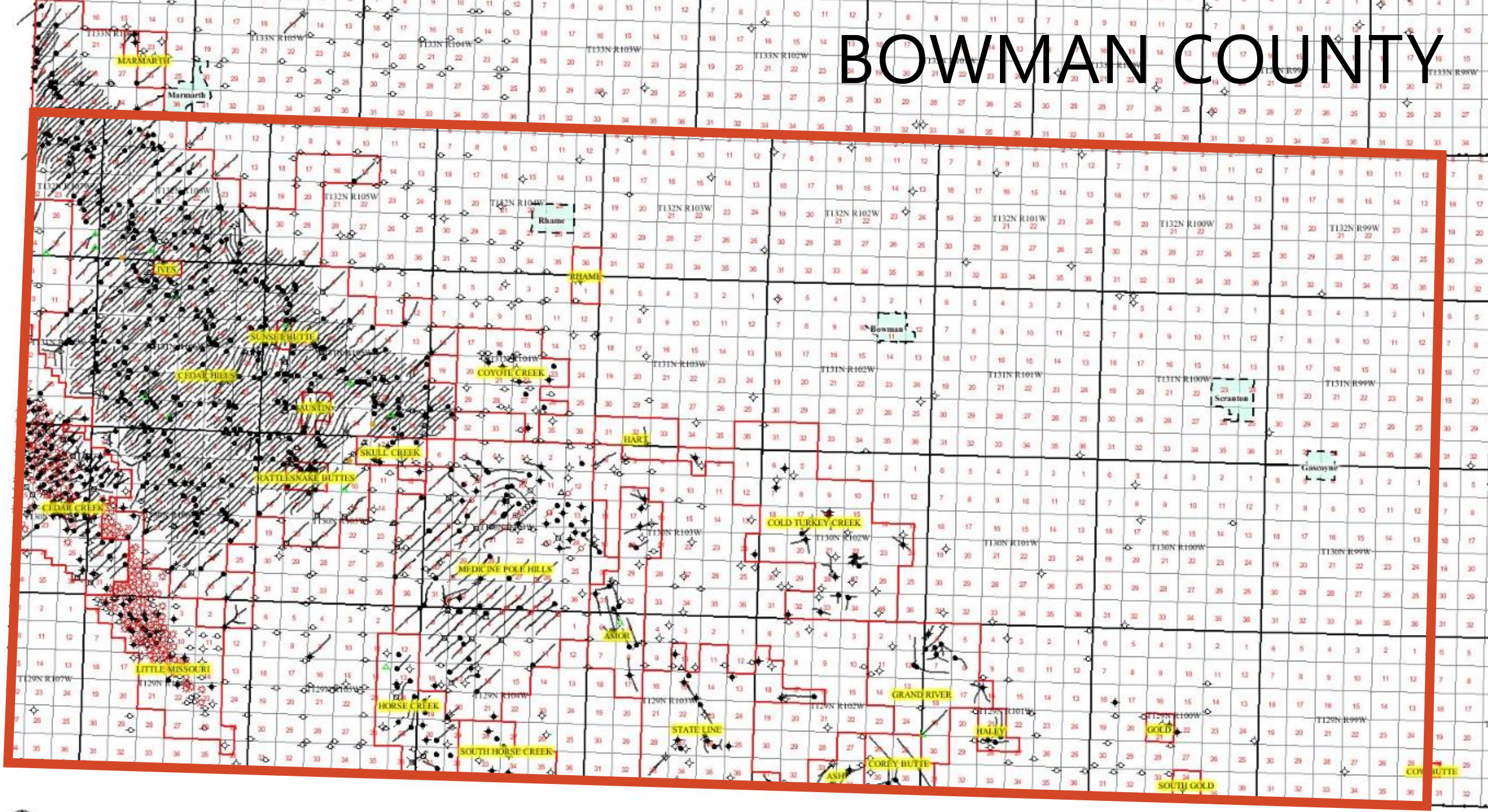
Operator: Ballantyne Oil, LLC

Pool: Spearfish

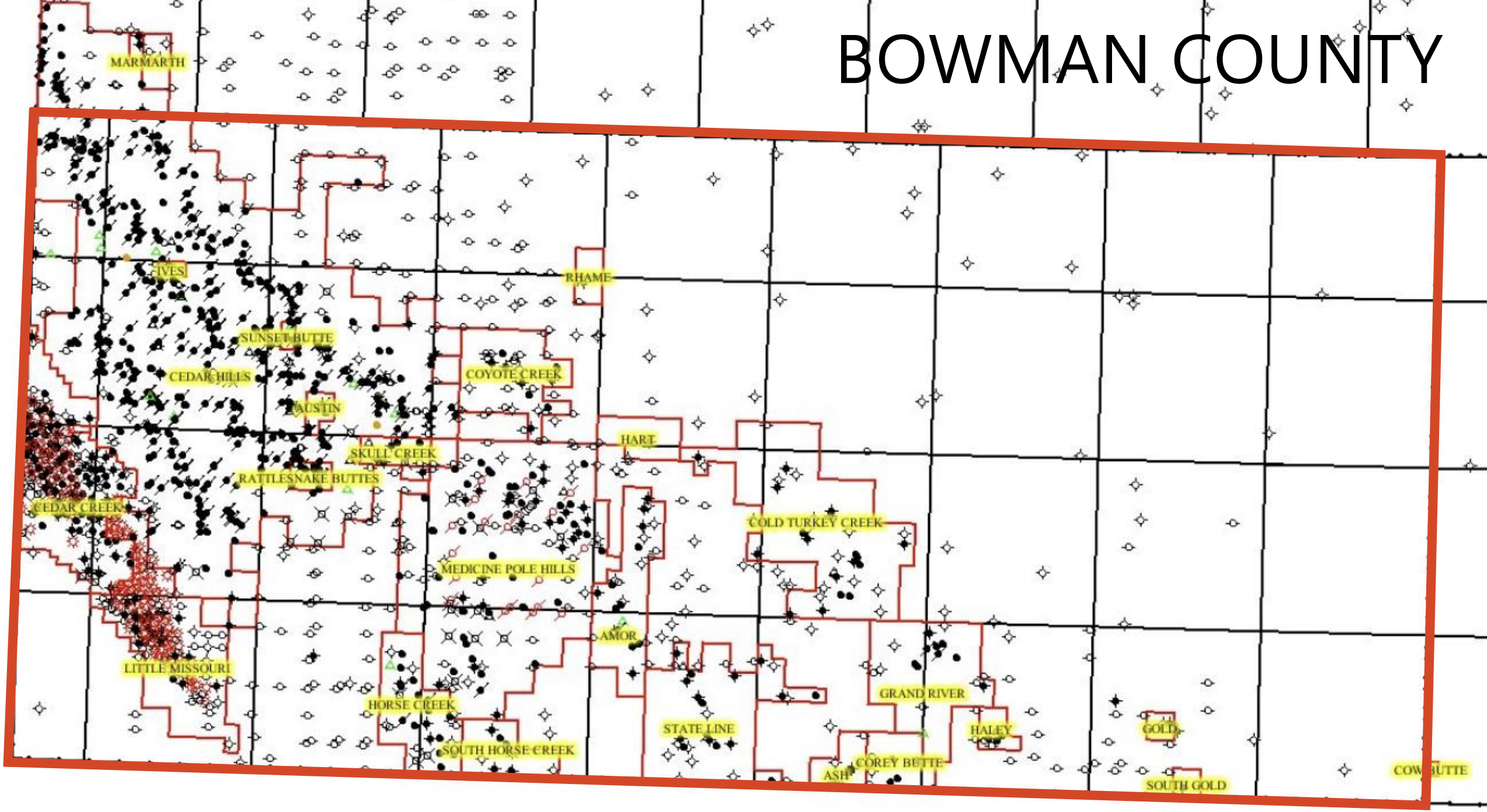
Injectate: Water injection pilot project – currently waiting on injection to begin.

Bowman County

BOWMAN COUNTY



BOWMAN COUNTY

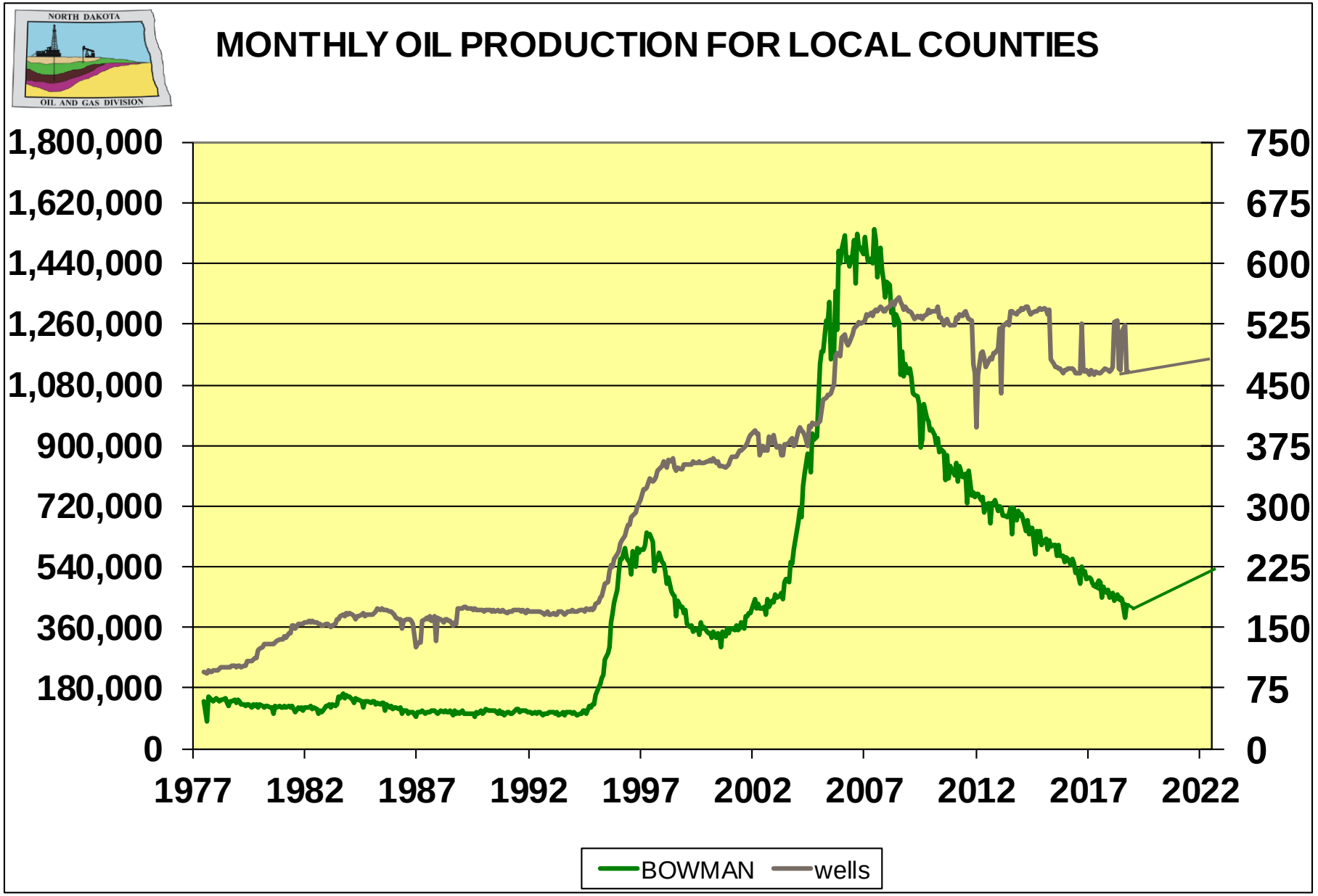


WELLS

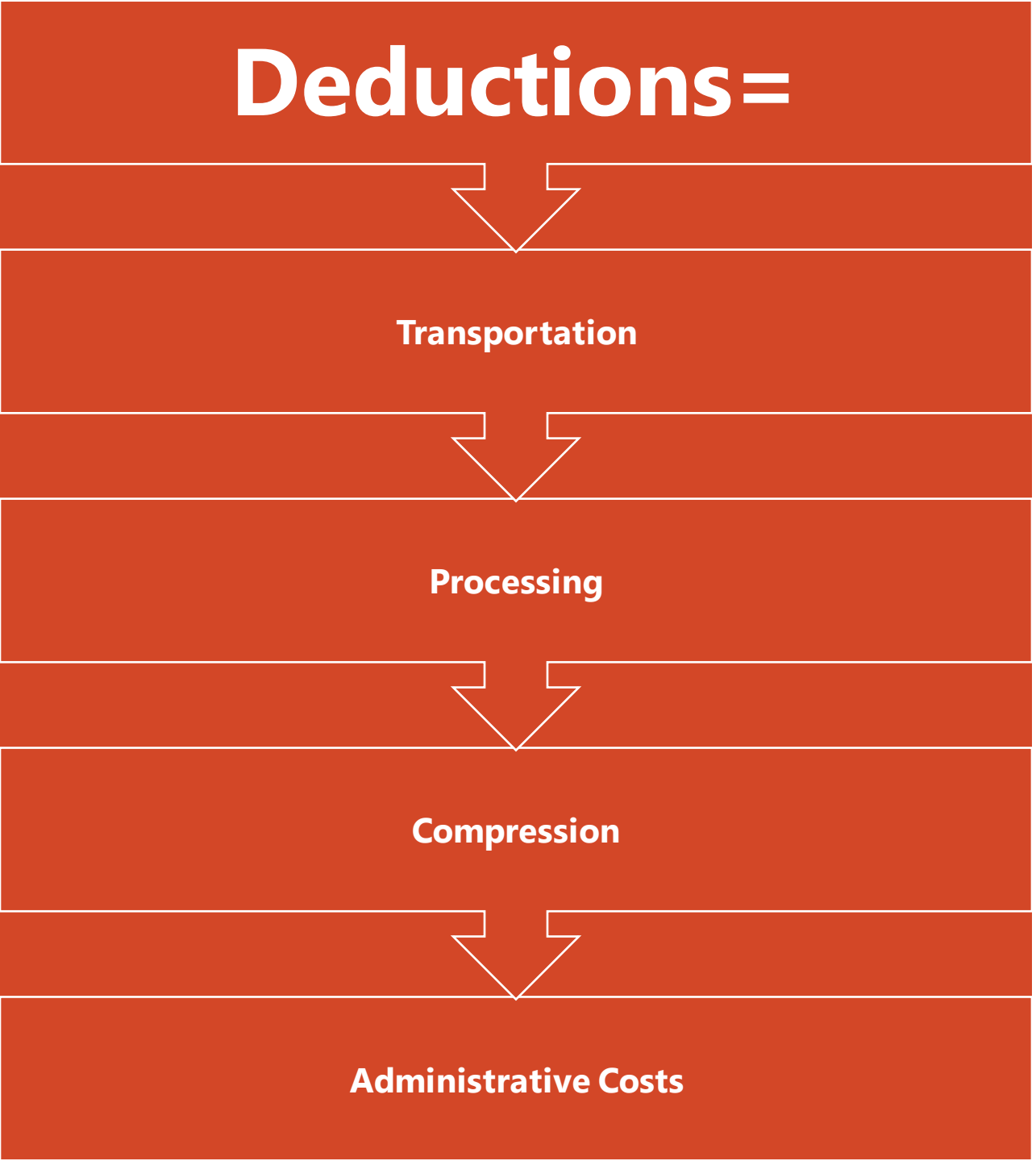
Bowman County

Well Status	Type of Well								
	AI Air Injection	GASD Dry Gas	GS Gas Storage	OG Oil and Gas	ST Stratigraphic Test	SWD Salt Water Disposal	WI Water Injection	WS Water Source	TOTAL
Active (A)	14	155	-	360	-	20	282	15	**846**
Confidential	-	-	-		-	-	-	-	**5**
Temporarily Abandoned (TA)	14	3	-	26	-	2	1	1	**50**
Inactive (IA)	3	1	-	7	-	-	2	-	**13**
Abandoned (AB)	2	5	-	1	-	1	-	-	**9**
DRY	-	21	-	145	1	1	2	-	**170**
Plugged and Abandoned (PA)	6	38	1	94	-	4	6	1	**150**
Permit Now Cancelled (PNC)	-	33		293	-	2	-	1	**329**
TOTAL	**39**	**256**	**1**	**926**	**1**	**30**	**293**	**18**	**1,572**

PRODUCTION


NORTH DAKOTA
OIL AND GAS DIVISION
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES
1,800,000
1,620,000
1,440,000
1,260,000
1,080,000
900,000
720,000
540,000
360,000
180,000
0
750
675
600
525
450
375
300
225
150
75
0
1977
1982
1987
1992
1997
2002
2007
2012
2017
2022
BOWMAN
wells

Mineral Interests



ROYALTY STATEMENTS

ADMINISTRATIVE CODE 43-02-06-01

Royalty Owner Information Statement

Price: Addition of natural gas liquids to the price breakdown.

Deductions & Adjustments: Will be broken into two sections

- Adjustments: The amount and purpose of each adjustment or correction made
- Deductions: The amount and purpose of each deduction separated into four categories: Transportation, Processing, Compression & Administrative Costs

Changes effective: July 1, 2019

ROYALTY STATEMENTS

ADMINISTRATIVE CODE 43-02-06-01.1

Ownership Interest Information Statement

Operator or payor shall provide the mineral owner with a statement identifying:

- Spacing unit for the well (AND the effective date of the spacing unit change if applicable);
- the net mineral acres owned by the mineral owner;
- the gross mineral acres in the spacing unit; and
- the mineral owner's decimal interest that will be applied to the well.

Statement will be sent within 120 days after the end of the month of the first sale of production from a well OR change in the spacing unit of a well.

Changes effective: July 1, 2019

2019 Legislation & Rulemaking

LEGISLATIVE SESSION

PASSED

- HB 1383 & SB 2261 Mitigation
- SB 2211 Trust Lands OHWM Ownership Determination
- SCR 4010 Royalty Deductions Study
- HR 1014 DMR Budget
- HB 1429 Extraction Tax Incentive for Captured CO2
- SB 2037 High Level Radioactive Waste
- SB 2123 DMR Confiscation Authority
- SB 2344 Pore Space

FAILED

- HB 1480 Flared Gas Solutions (13:33)
- HCR 3013 Spacing and Pooling = Eminent Domain (8:33)
- SB 2332 Increased Flaring Restrictions (15:32)
- HB 1290 Prohibit Entry & Search of Buildings on Land (4:43)

OTHER LEGISLATIVE IMPACTS

- Washington State Senate Bill 5579 threatens to disrupts 150,000-200,000 barrels per day.
  - Industrial Commission reviewing next steps – No action has been taken at this time.

RULEMAKING PROCESS

2019	**May-September**	• Recommendations sought for rule changes from staff. • Request for approval to proceed with rulemaking from Industrial Commission. • Legal rules notice published in ND newspapers statewide.
	October-December	• **Rules hearings held in DMR office locations: Bismarck, Dickinson, Williston and Minot.** • **Public comment period after final rules hearing.** • Finalize responses to comments and make appropriate amendments to rules. • Request approval of rules from Industrial Commission. • Submit rules for legal opinion from Office of the Attorney General.
2020	**January-March**	• File rules and Attorney General opinion with ND Legislative Council. • Notification period of upcoming Administrative Rules Committee Hearing. • **Administrative Rules Committee Hearing.**
	April	• Adoption and implementation of final rules.

A few items up for review:

- **Permitting:** Clarification of permit application requirements for wells, treating plants and other facilities.
- **Royalty Statements:** Additional information relating to owner's value and any interest changes.
- **Bonding:** Review of bond amounts and requirements for geophysical exploration, treating plants, and non-producing wells (AB/TA Status).
- **Gathering Pipelines:** Review of Gathering Pipeline notifications of milestones (new construction/in-service)

North Dakota
Department of Mineral Resources

www.dmr.nd.gov

Phone: 701.328.8020 **Email: oilandgasinfo@nd.gov**
Mailing Address: 600 East Boulevard Ave. Dept 405; Bismarck, ND 58505