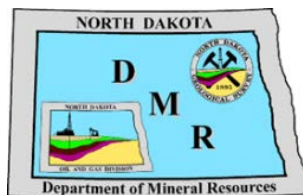


**NORTH DAKOTA**  
**DEPARTMENT OF MINERAL RESOURCES:**  
**OIL & GAS UPDATE**

---

**July 2018 | NDPC CookFest**



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# PRODUCTION

GAS CAPTURE

SPIll REPORTING

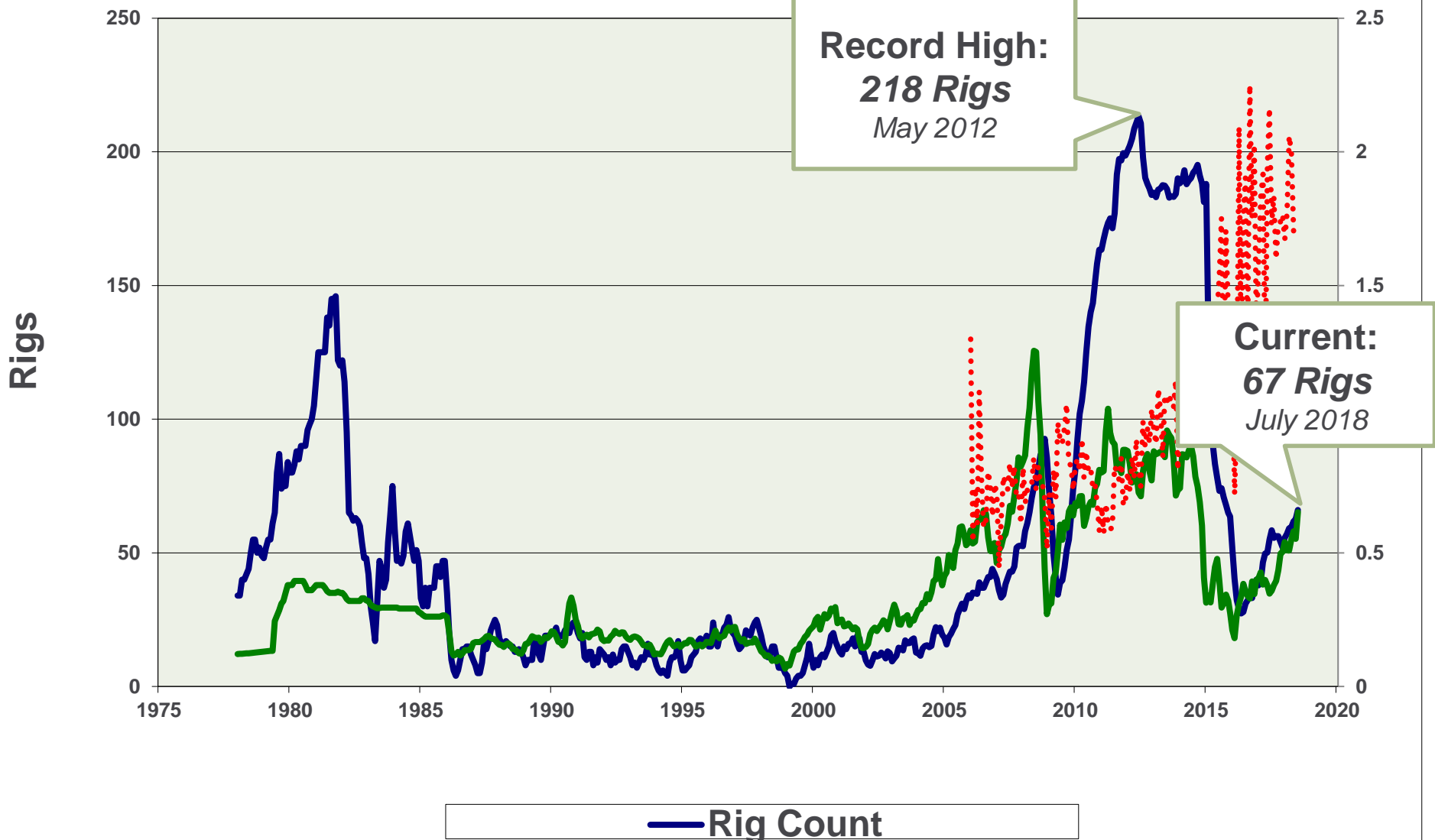
ROYALTY STATEMENTS

ORDINARY HIGH WATER MARK SURVEY

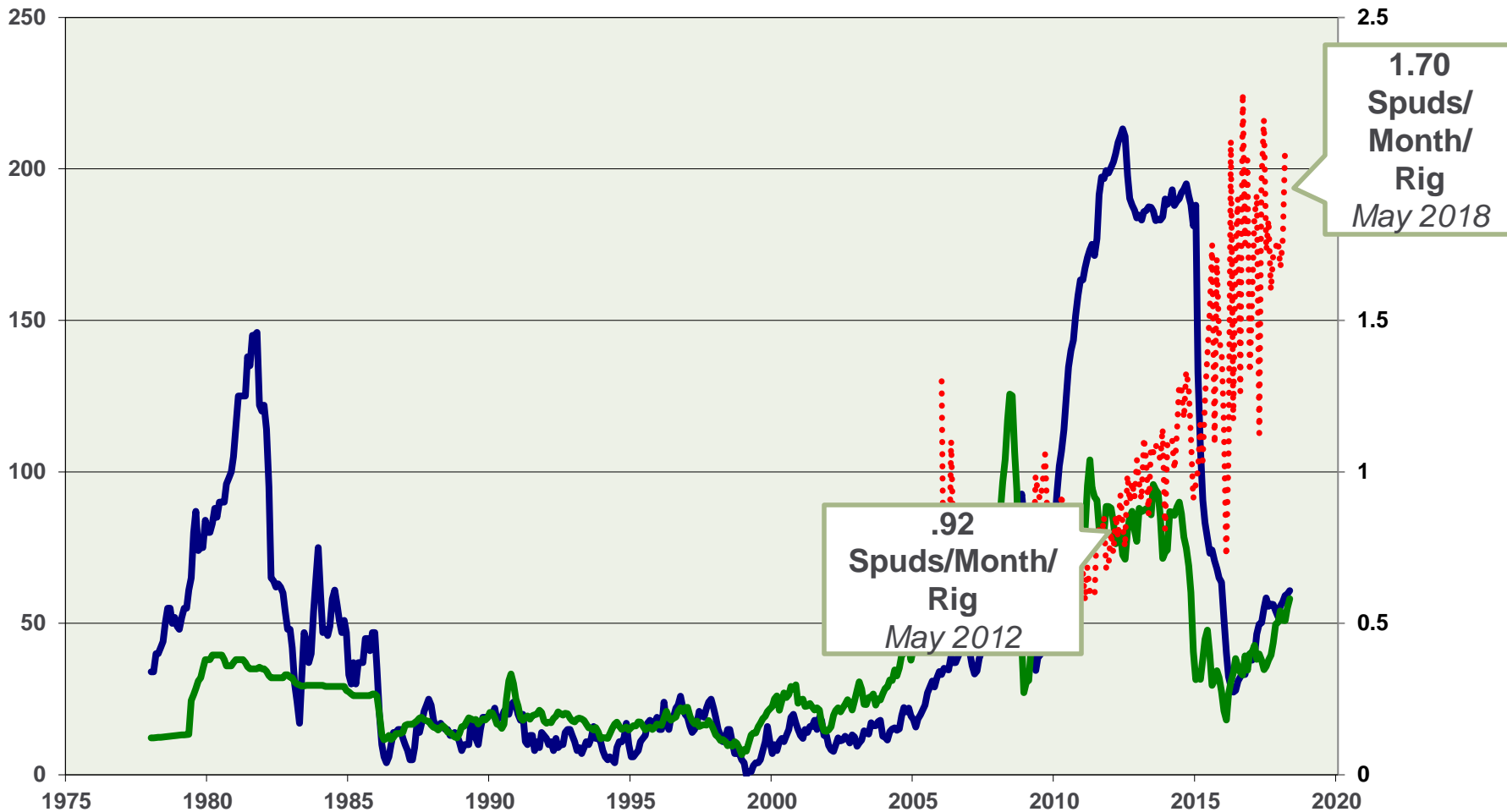
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Raising the bar in 2018

# North Dakota Average Monthly Rig Count



# North Dakota Average Monthly Rig Count

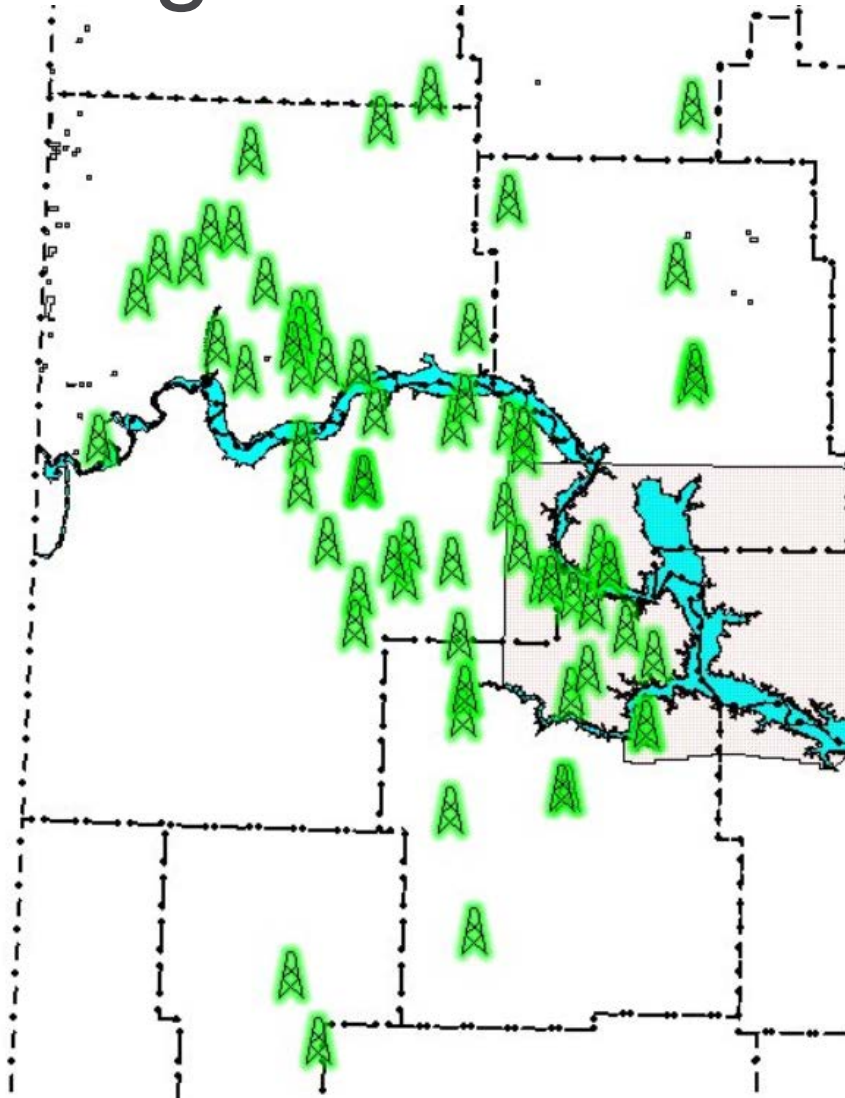


— Rig Count

— ND Sweet Oil Price

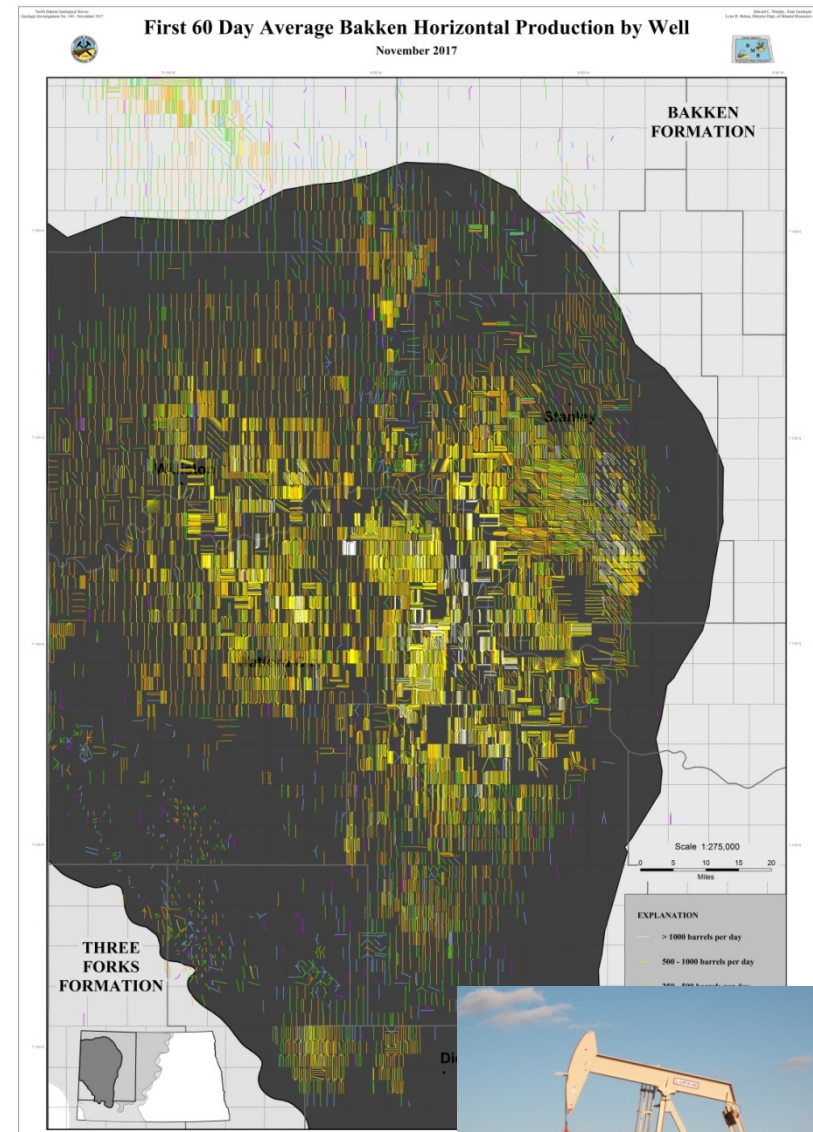
..... Spuds / Month / Rig

# Rigs

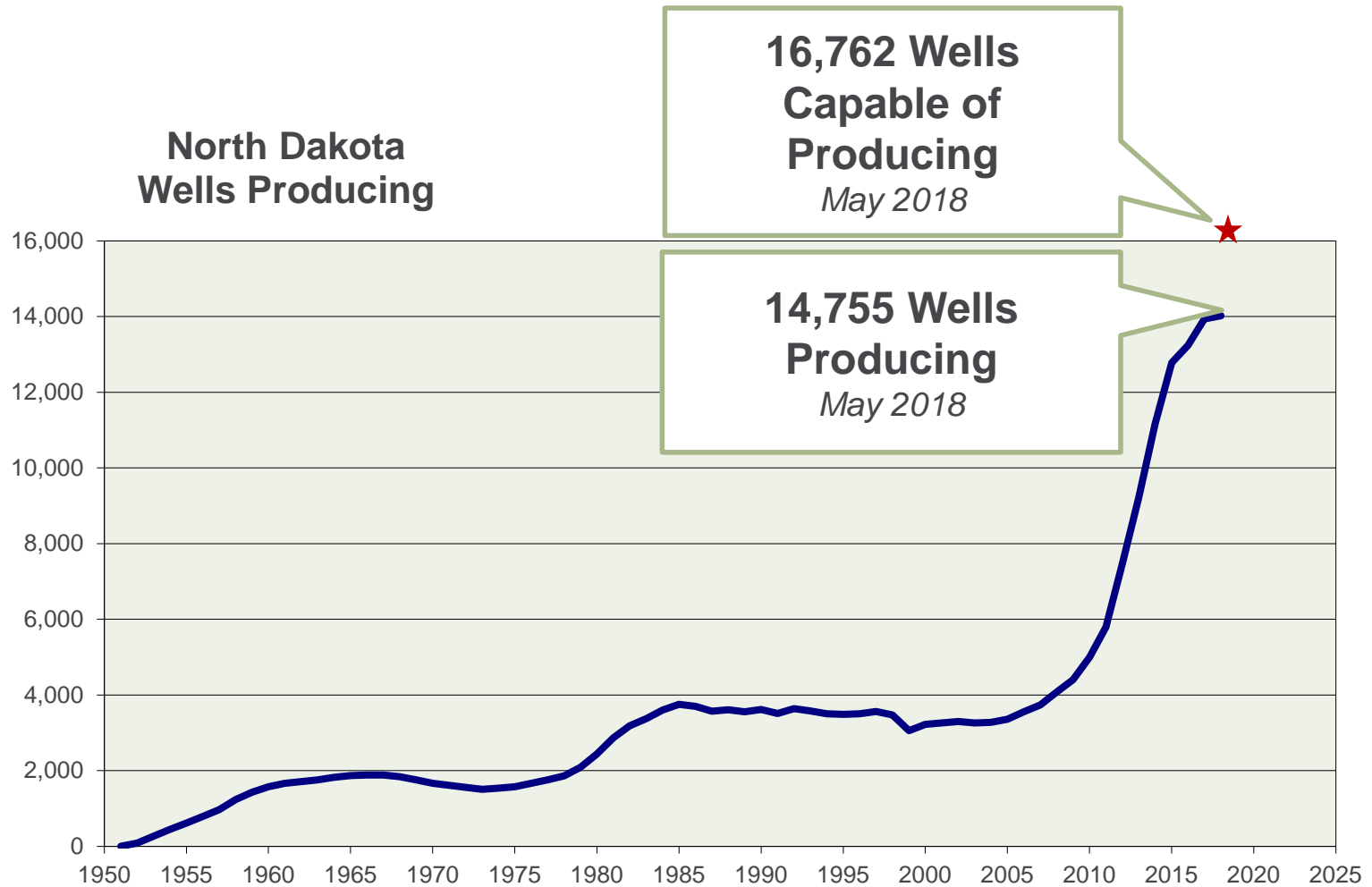


# Wells

<b>Active</b>	14,755
Conventional	1,959
Bakken/Three Forks	12,796
<b>Inactive</b>	1,569
+\$55 for 90 days 12/20/17	
<b>Waiting on Completion</b>	955
+\$55 for 90 days 02/03/18	
<b>Permitted</b>	1,878
+\$60 for 90 days NYMEX April 2018	
<b>Increase Density</b>	13,084
Approved 07/06/18	
<b>Total</b>	<b>32,241</b>
<b>Estimated Final</b>	<b>55,000-65,000</b>

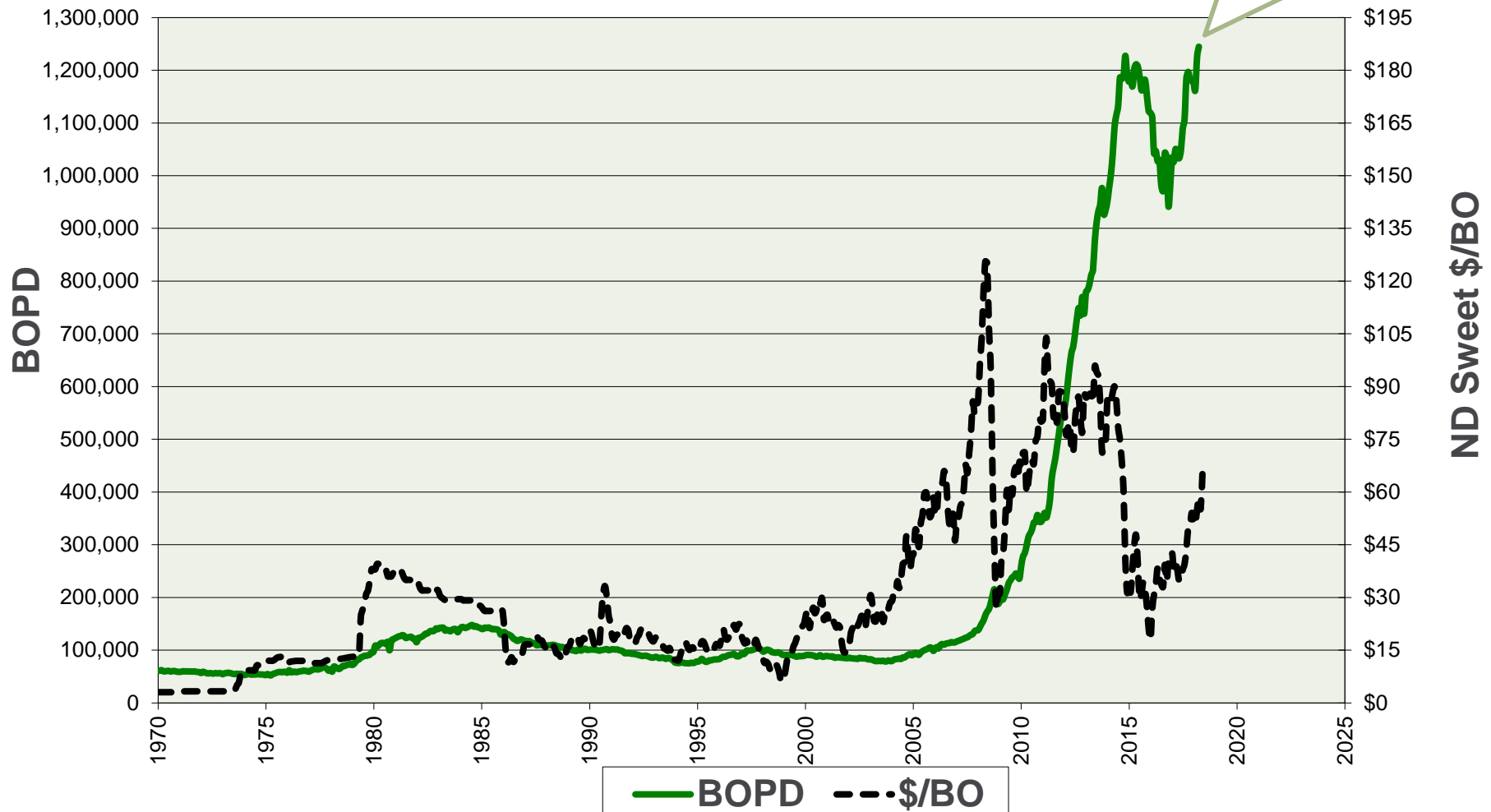


# Rig & Well Counts



# Oil & Gas Production

## North Dakota Daily Oil Produced and Price

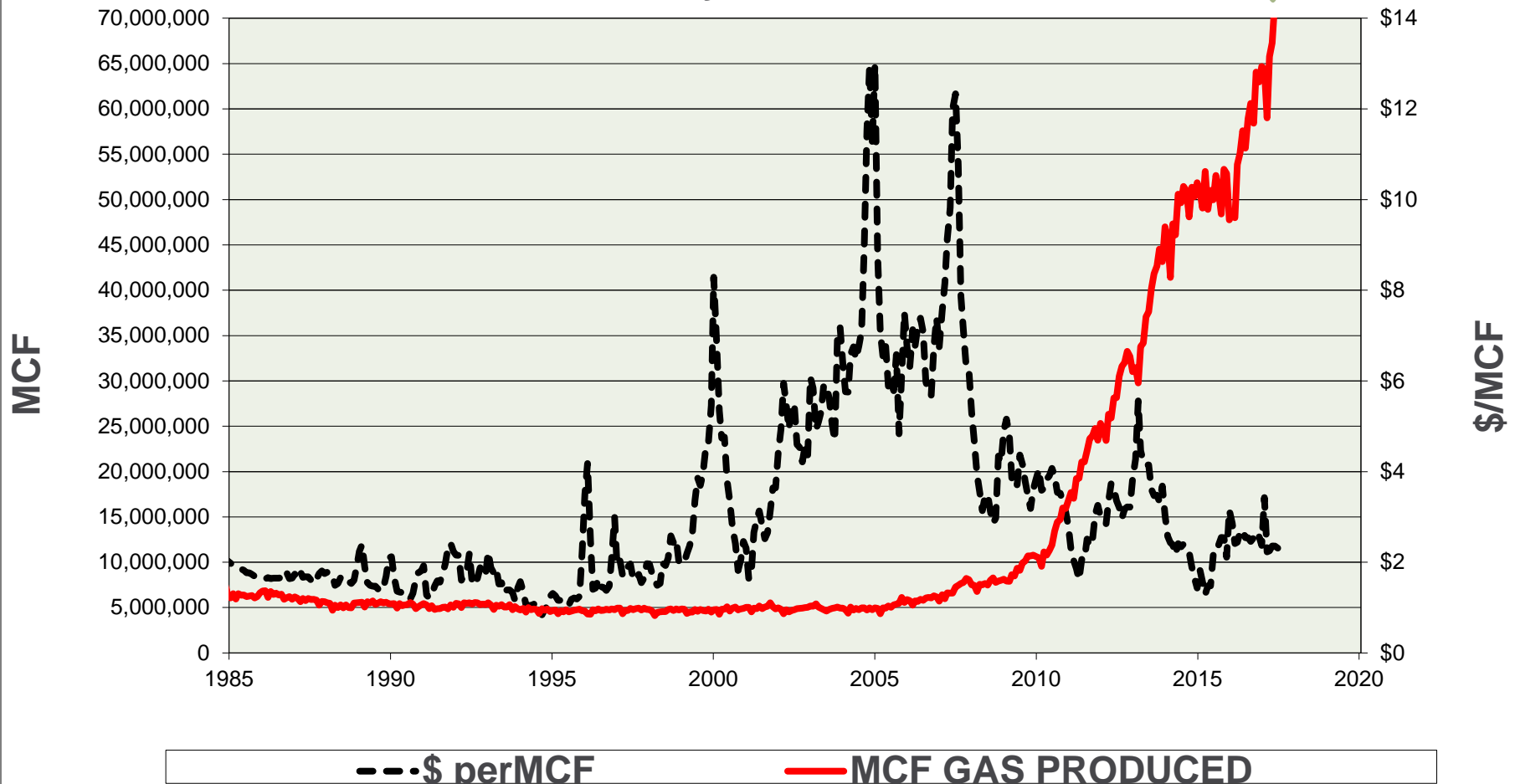




# Oil & Gas Production

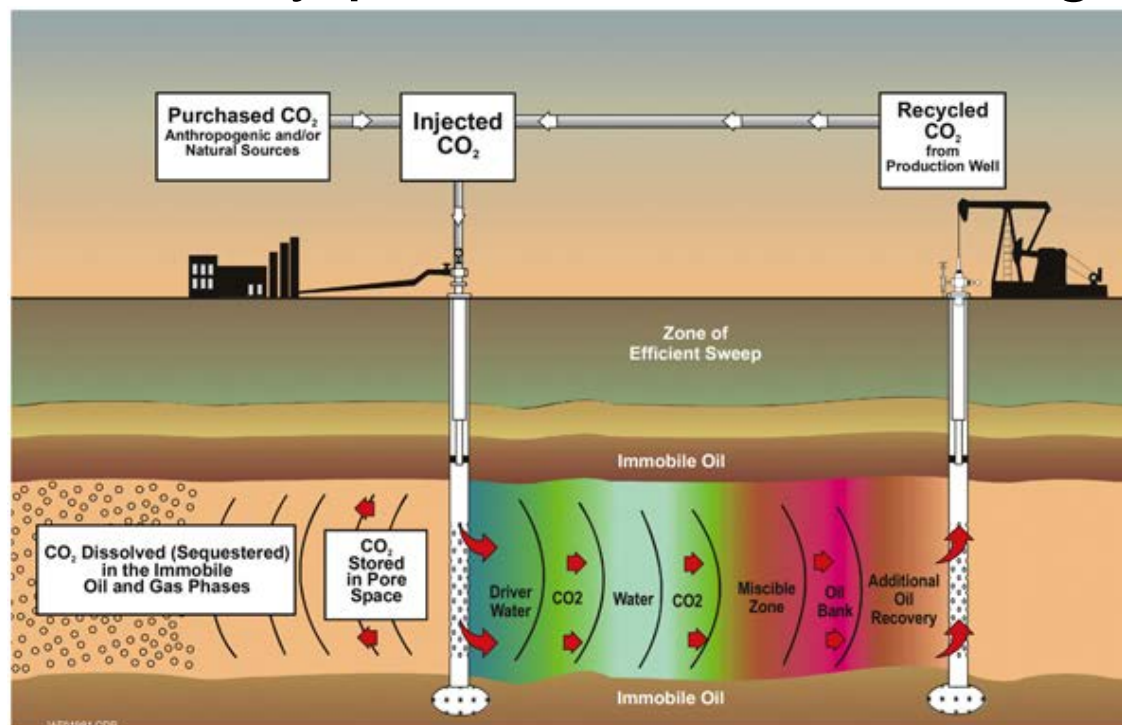
**All-time high**  
**71,881,378 MCF**  
**2,318,754 MCF/day**  
*May 2018*

## North Dakota Monthly Gas Produced and Price



# 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<sub>2</sub> Storage in CO<sub>2</sub> Enhanced Oil Recovery Projects, prepared for UK Department of Energy & Climate Change, November 2010.

# Enhanced Oil Recovery (EOR)<sup>1</sup>

- EOG is the 1<sup>st</sup> company to say it has significantly increased oil production from an unconventional play using gas injection.
- Field tests since program started in 2013:
  - The production increases on 15 wells indicated from 30-70% reserve gains.
  - A 32-well test in 2016 added 300,000 bbl of oil at \$6/bbl finding cost.
  - Work is ongoing on 100 wells in six areas in 2017.

# Enhanced Oil Recovery (EOR)<sup>1</sup>

## Inputs and Outputs

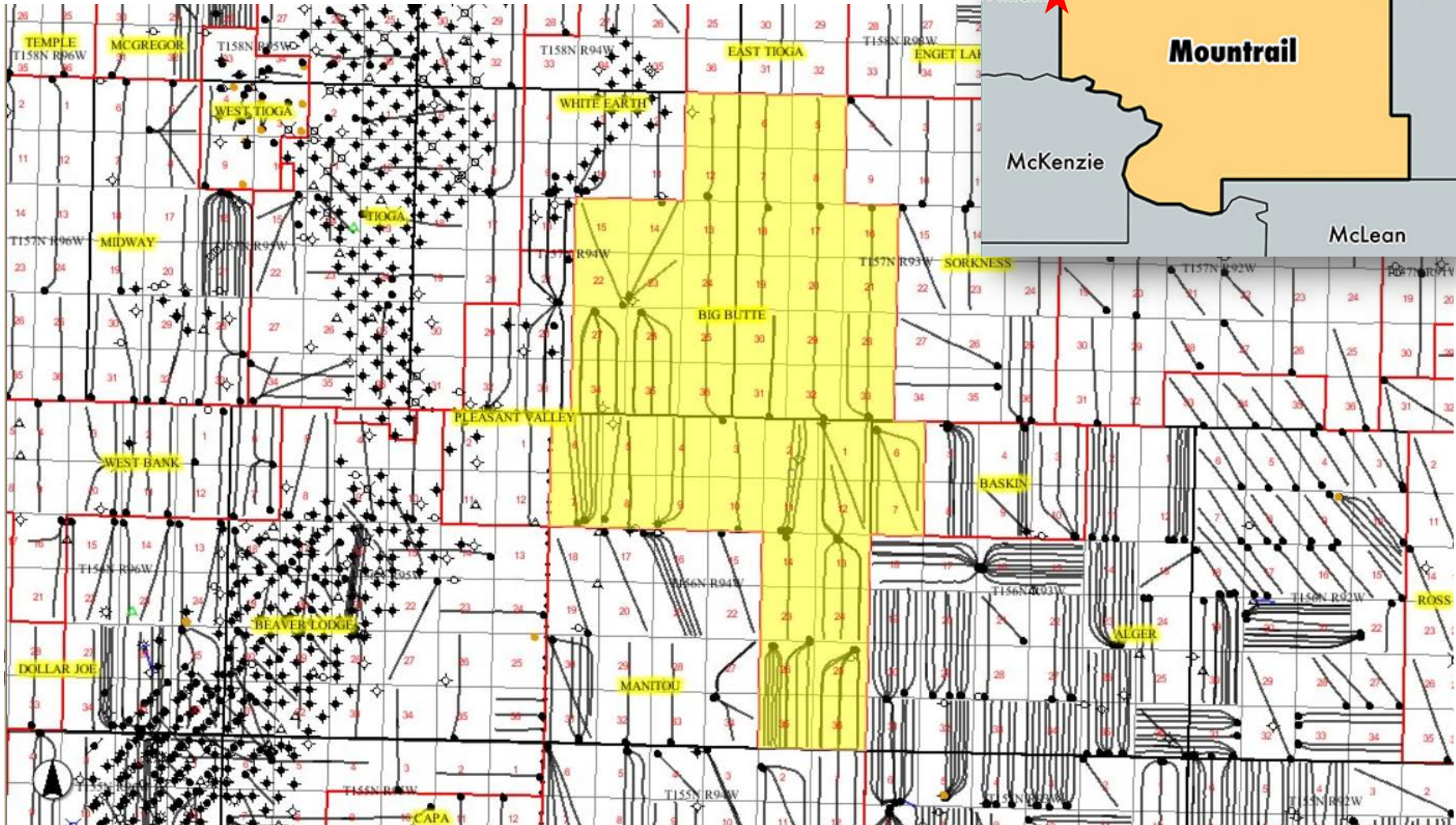
- Additional capital costs average about \$1 million per well
- The process uses associated gas from its wells
- Production response is in 2-3 months
- \$1 invested adds \$2 to net present value

## It Works if:

- The formation is able to contain high-pressure gas injection near the well.
- Wellbores contact the most productive rock.
- The completion maximizes the fractured area within a restricted zone around the wellbore.

<sup>1</sup> Source: EOG

# Big Butte

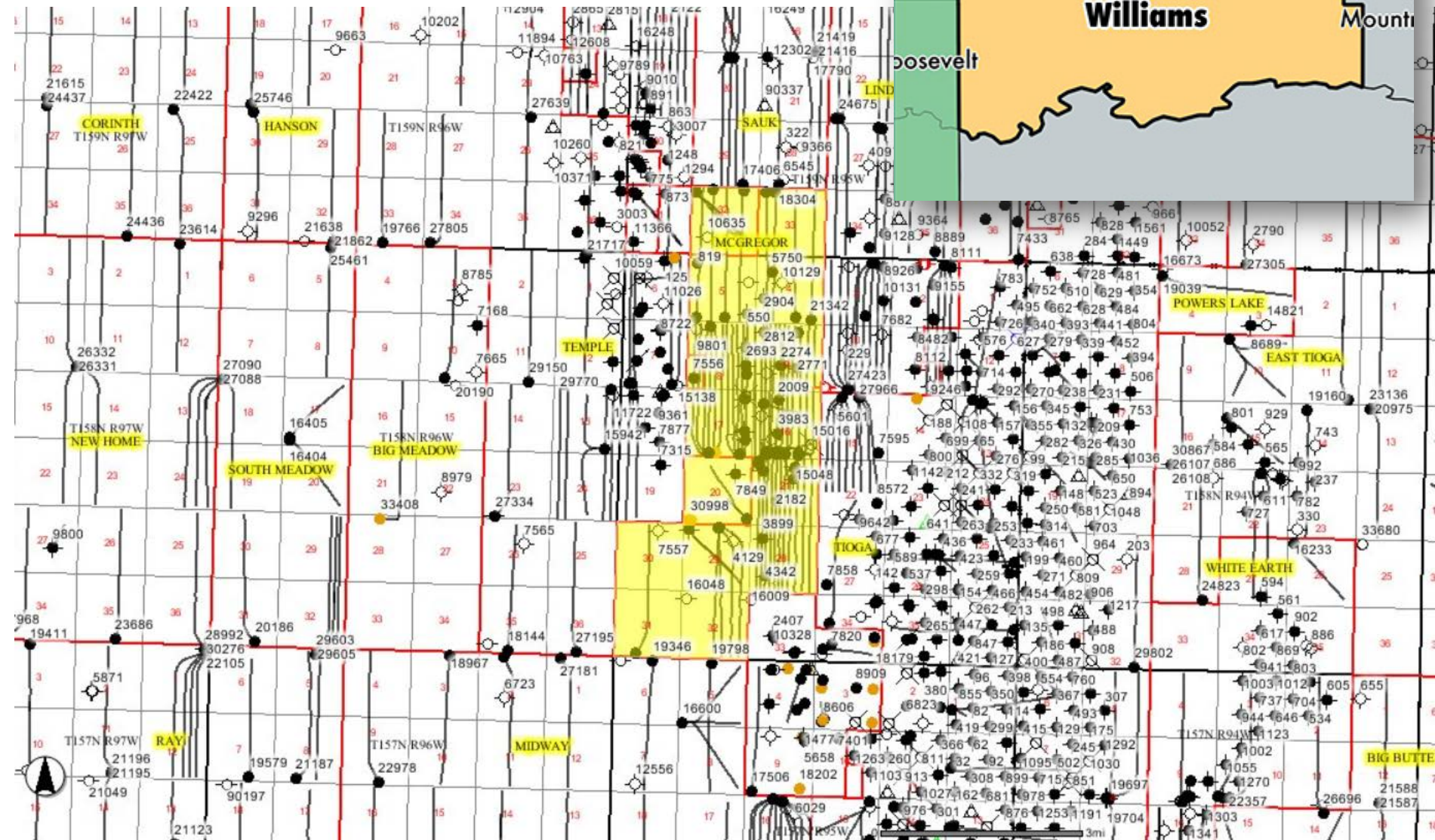
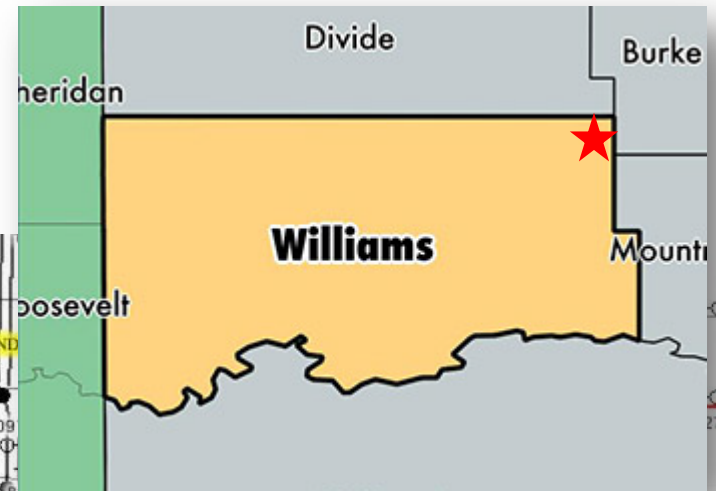




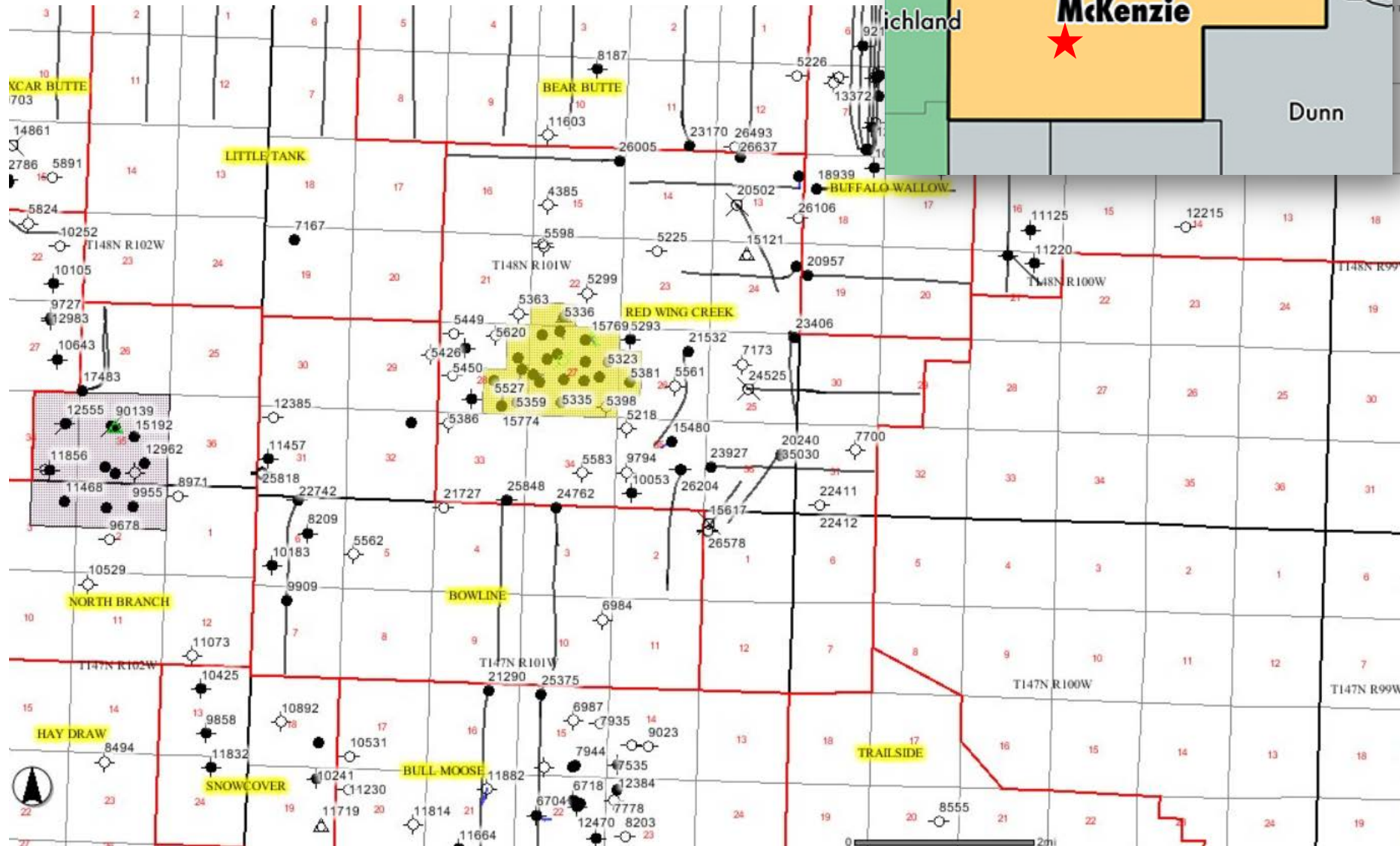




# McGregor



# Red Wing Creek







PRODUCTION

**GAS CAPTURE**

Spill Reporting

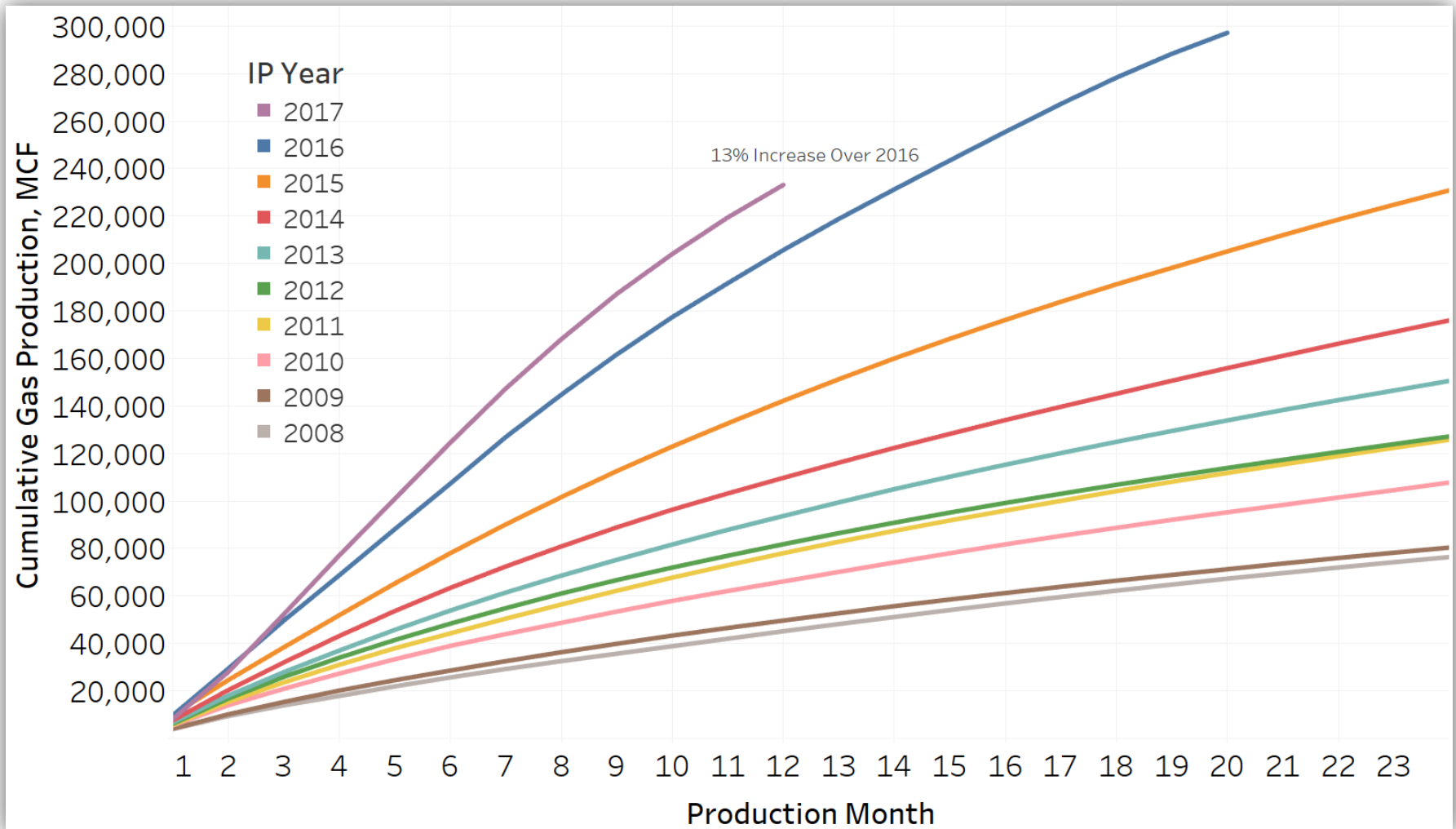
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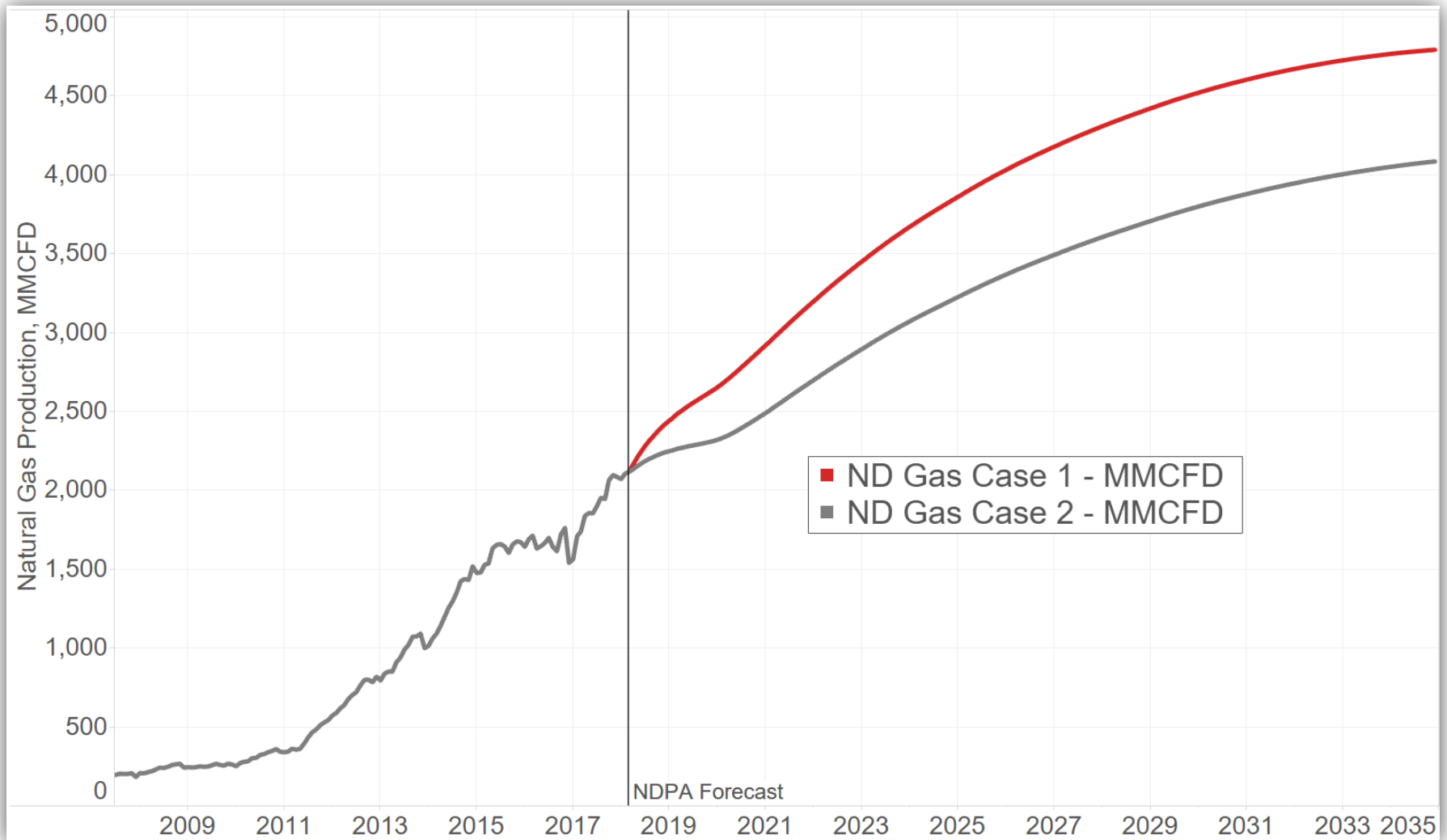
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Raising the bar in 2018

# Gas Performance



# Gas Production Forecast

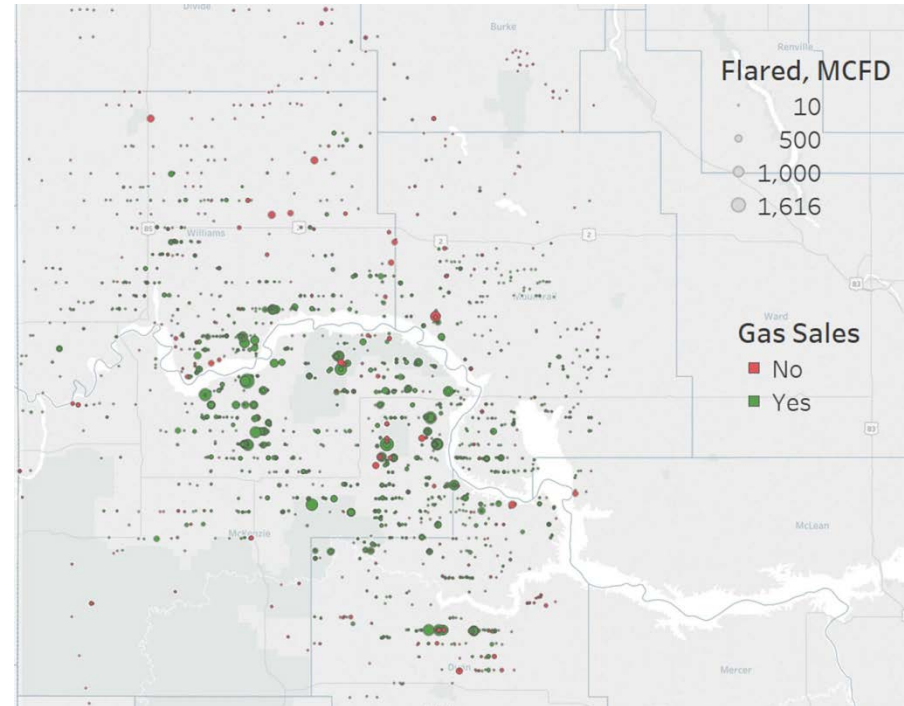


# Gas Capture Policy

## NDIC Order 24665

### Policy Goals

- Reduce flared volume of gas
- Reduce number of wells flaring
- Reduce the duration of flaring from wells



Non-confidential Bakken/Three Forks/Sanish Only (Wells Flaring 10+ mcfd)

© OpenStreetMap contributors

74%  
Oct 2014-Dec  
2014

77%  
Jan 2015-  
March 2016

80%  
April 2016-  
Oct 2016

85%  
Nov 2016-  
Oct 2018

88%  
Nov 2018-  
Oct 2020

91%  
Nov 2020

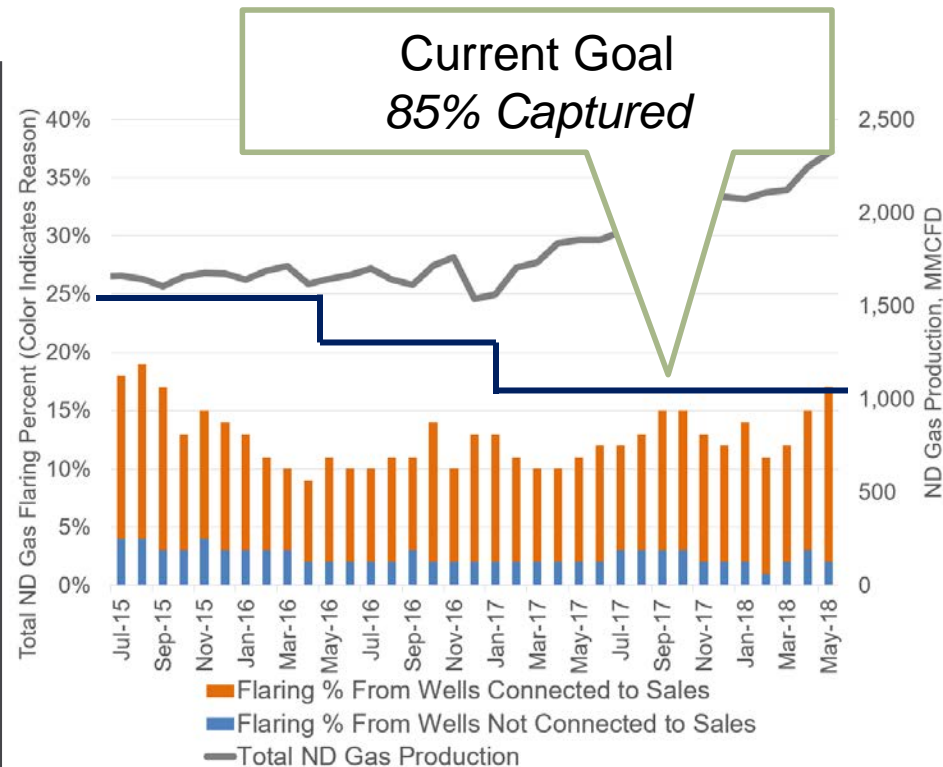
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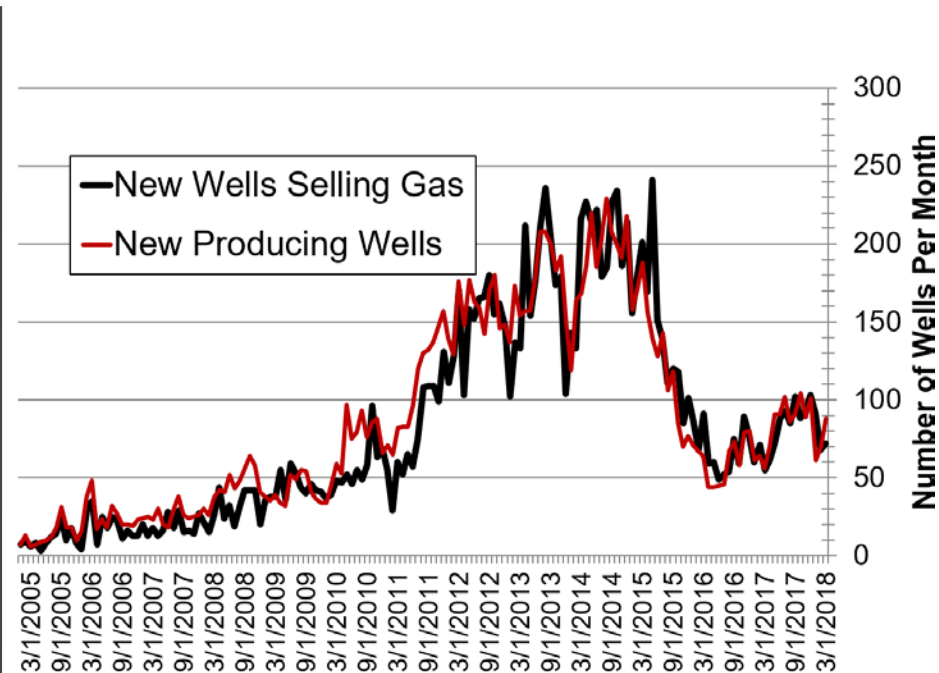
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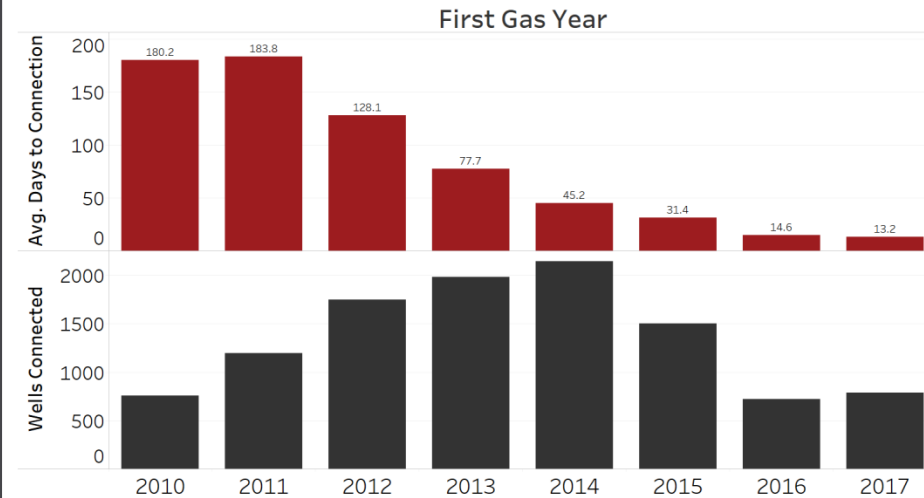
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# Gas Capture Policy

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# Gas Capture Policy

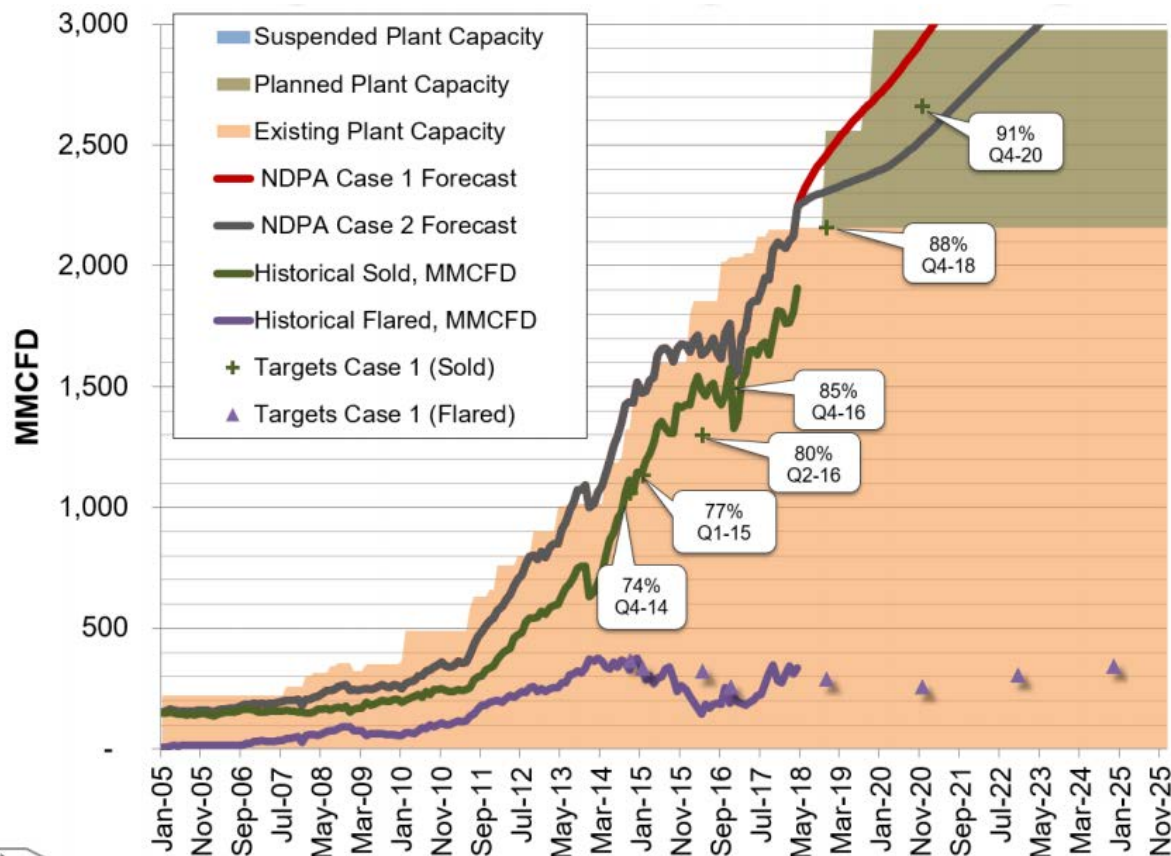
## What's Next?

### New Gas Processing Infrastructure:

- Oasis, Liberty Midstream, and Targa/Hess capacity to come in 2018

### Production Restrictions:

- 200bbls/day meeting at least 60% capture
- 100 bbls/day restrictions on all other wells



74%  
Oct 2014-Dec  
2014

77%  
Jan 2015-  
March 2016

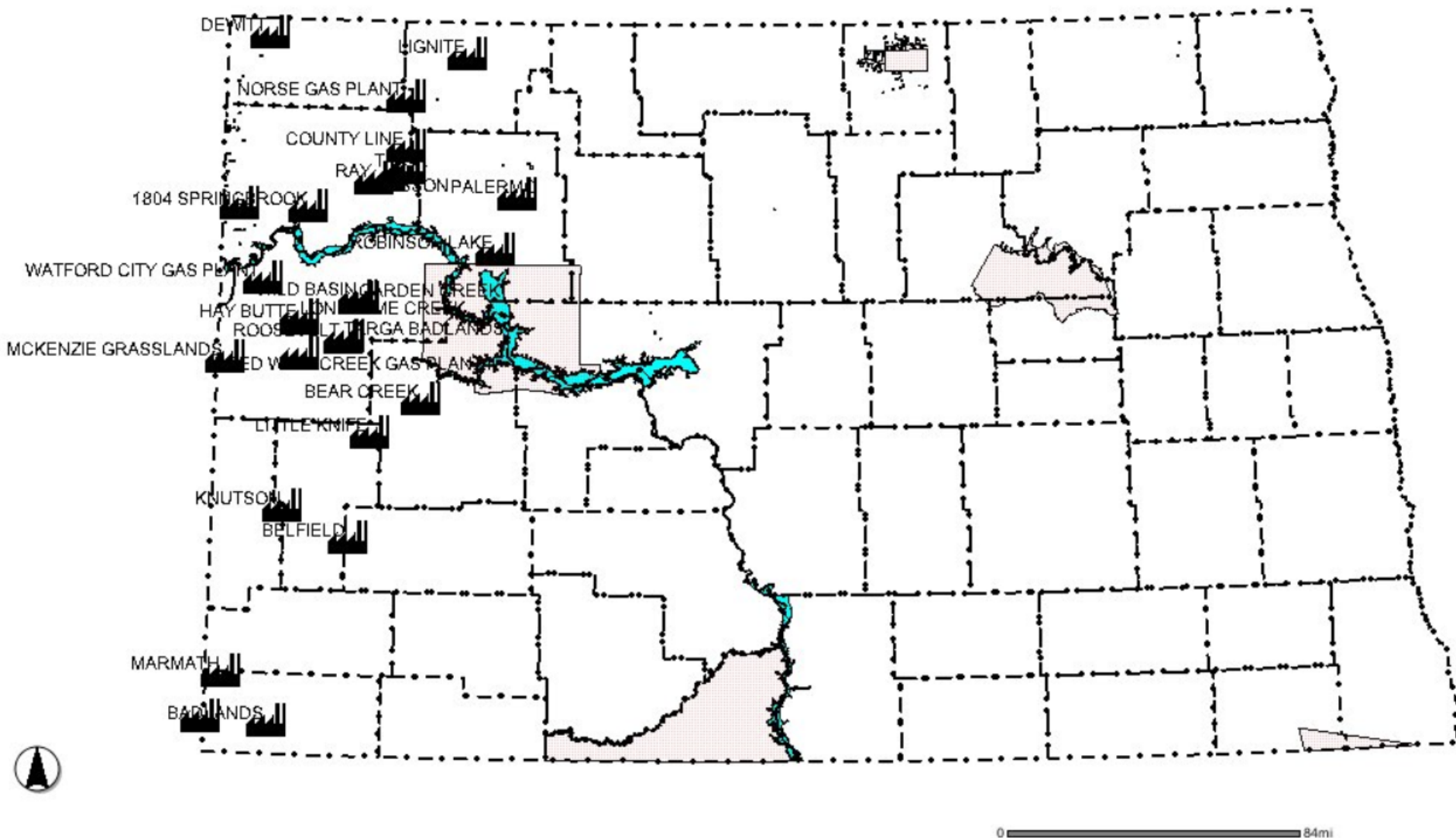
80%  
April 2016-  
Oct 2016

85%  
Nov 2016-  
Oct 2018

88%  
Nov 2018-  
Oct 2020

91%  
Nov 2020

# Gas Processing Plants



PRODUCTION

GAS CAPTURE

**SPILL REPORTING**

ROYALTY STATEMENTS

ORDINARY HIGH WATER MARK SURVEY

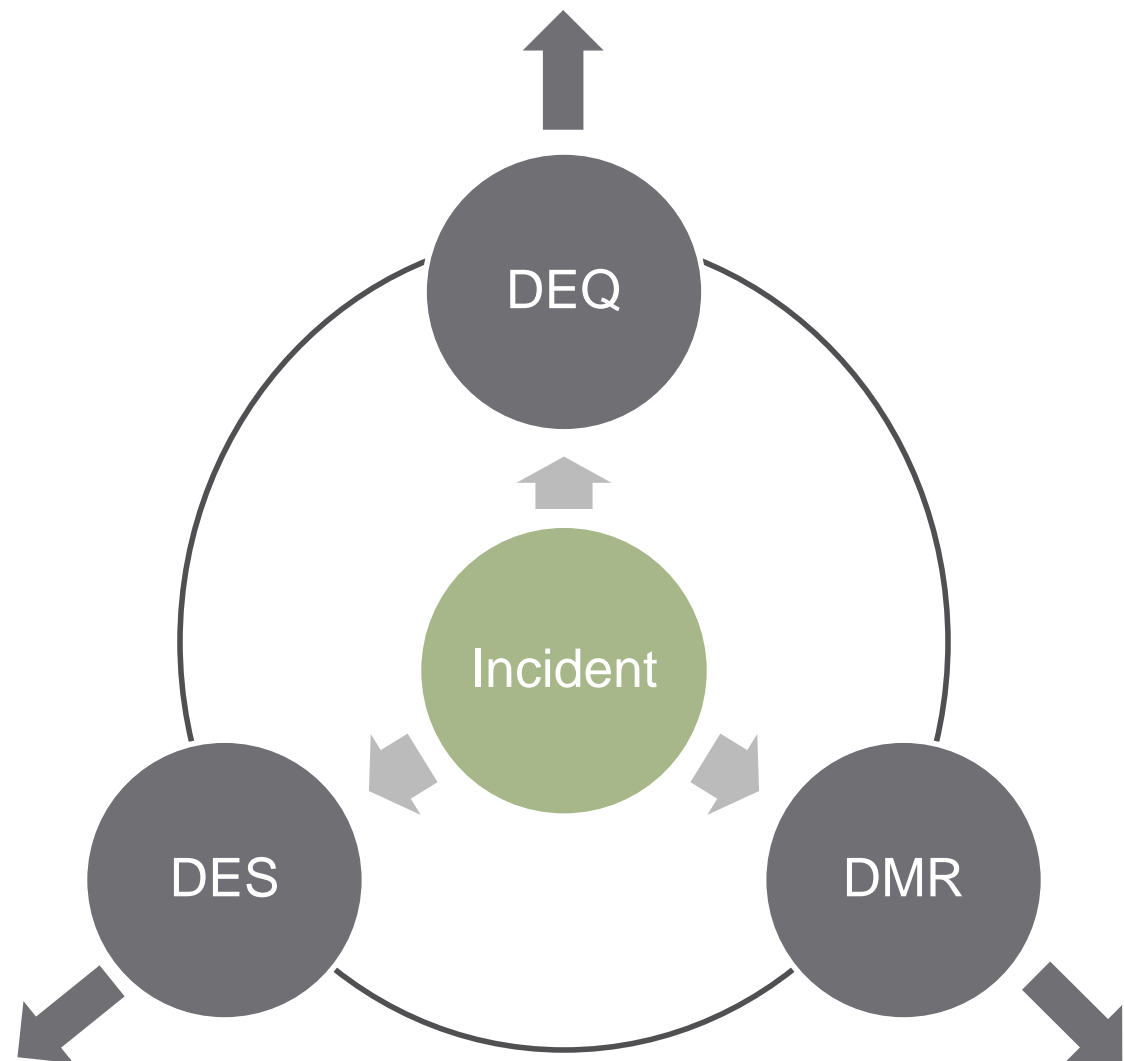
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Raising the bar in 2018

# Unified Spill Reporting

## Current Process

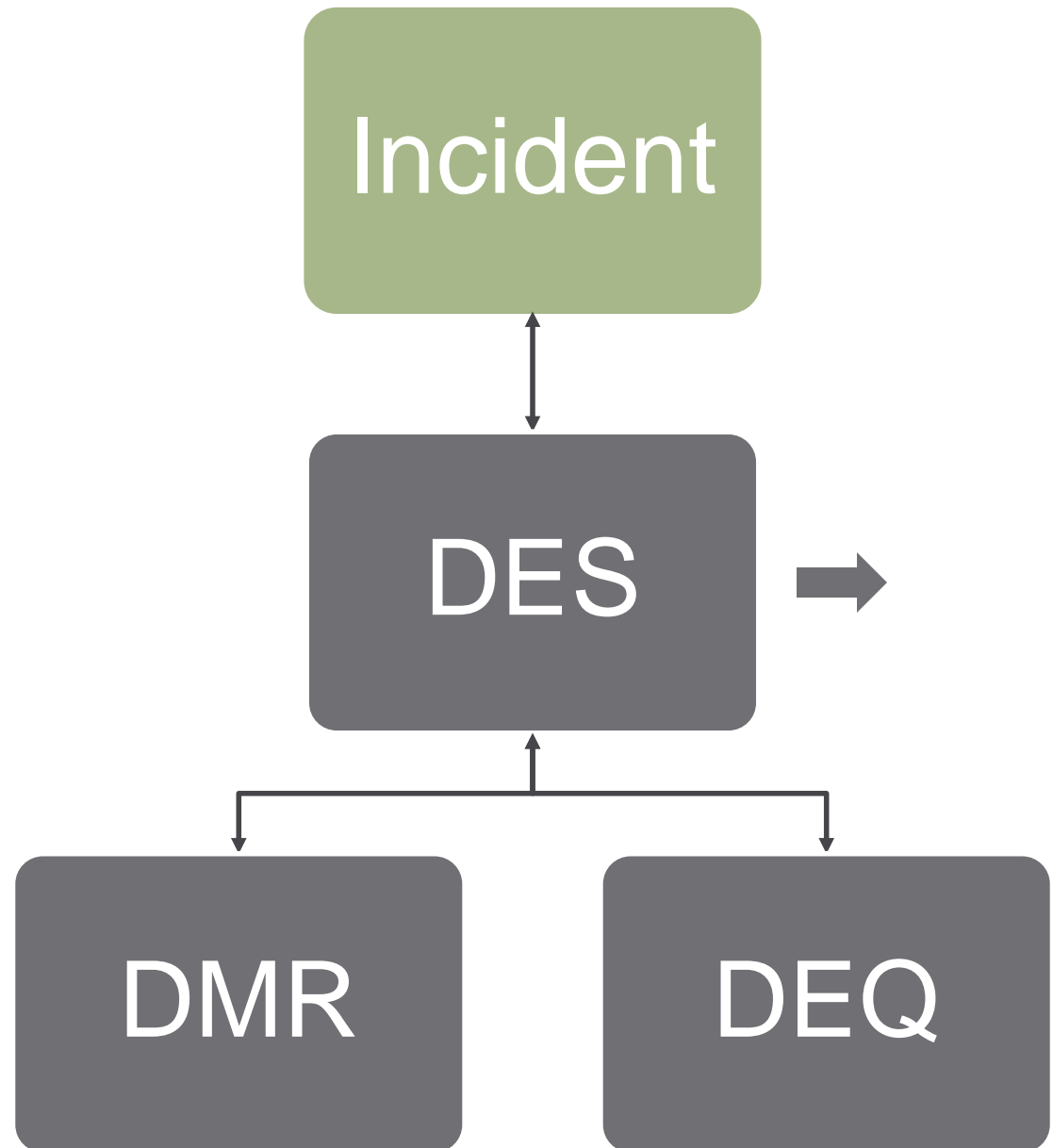
- Multiple places to submit forms
- Confusion among operators and public



# Unified Spill Reporting

## Improvement Goals

- One stop location for reporting
- Information sharing between agencies & databases



PRODUCTION  
GAS CAPTURE  
SPILL REPORTING  
**ROYALTY STATEMENTS**  
ORDINARY HIGH WATER MARK SURVEY

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Raising the bar in 2018

# Royalty Statements

**North Dakota Administrative Code: 43-02-06-01**  
**Royalty Owner Information Statement**

**Changes  
effective:**

**July 1, 2019**

- *DMR completing compliance reviews – at this time none meeting impending requirement.*

- 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:



# Royalty Statements

**North Dakota Administrative Code: 43-02-06-01.1**  
**Ownership Interest Information Statement**

**Changes  
effective:  
July 1, 2019**

- 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.



PRODUCTION  
GAS CAPTURE  
SPILL REPORTING  
ROYALTY STATEMENTS  
**ORDINARY HIGH WATER MARK SURVEY**

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Raising the bar in 2018

# OHWM Survey | Timeline

April 21, 2017

- Legislature passes & Governor signs Senate Bill 2134

April 17, 2017

- Wenck study Ordinary High Water Mark of the Missouri River Bed Review released

June 20, 2018

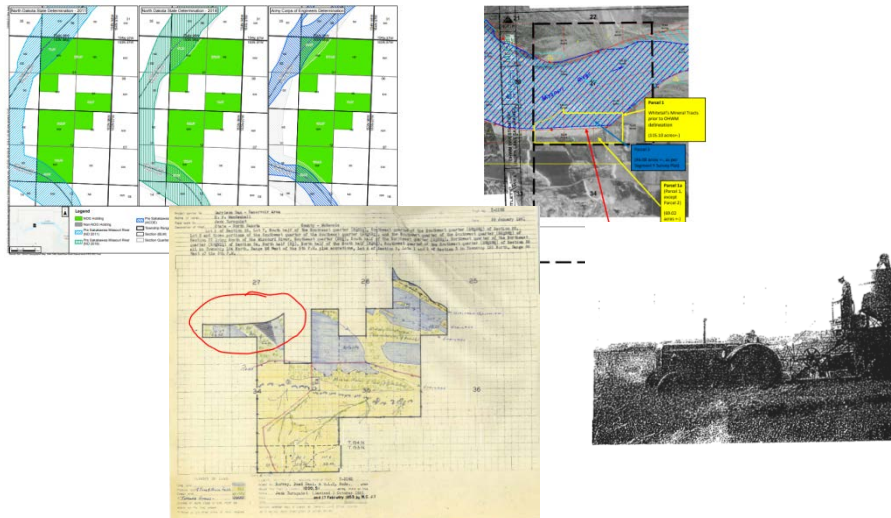
- Written public comment period closed

June 26, 2018

- Public hearing

# OHWM Survey | Public Input

- 1,435 pages of written comments submitted by 26 entities.
- 11 representatives commented during the public hearing.



- ...recommendation for calculating the acreages that are above and below the ordinary high water mark.
- ...clarification of ownership of islands formed on the bed of the Missouri River after statehood.
- ...redefining land labeled “flooded land” which was once used for ranching operations

# OHWM Survey | Next Steps

Department of Mineral Resources and Wenck review comments and develop final recommendation to Industrial Commission.

Industrial Commission to adopt or modify recommendations.

Industrial Commission's findings to determine the delineation of the ordinary high water mark for the segment of river addressed.

**NORTH DAKOTA  
DEPARTMENT OF MINERAL RESOURCES**

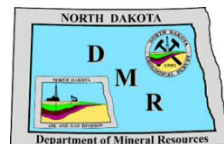
# CONTACT US

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Bismarck, ND 58505**

**Phone: 701.328.8020**

**Email: [oilandgasinfo@nd.gov](mailto:oilandgasinfo@nd.gov)**



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