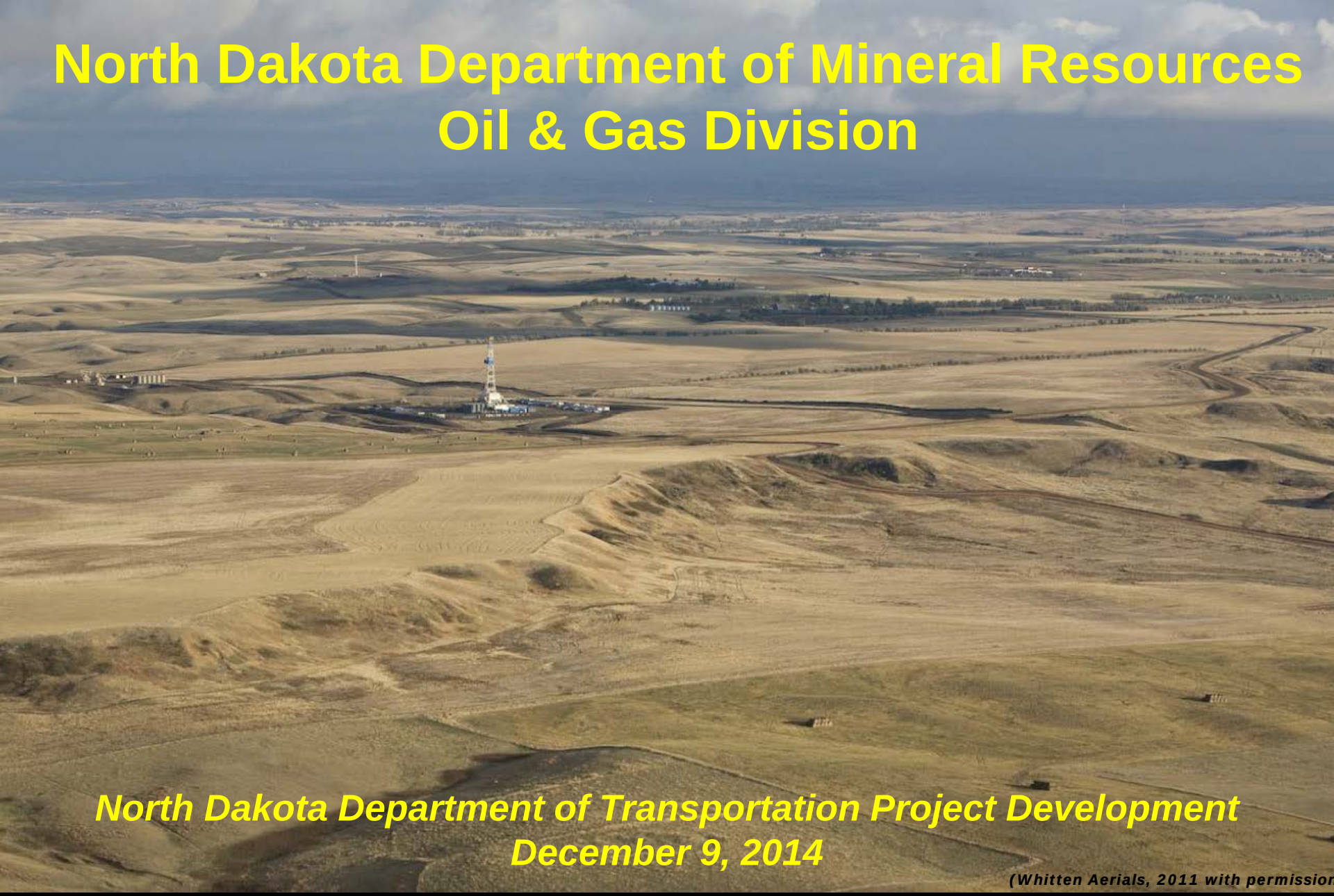
North Dakota Department of Mineral Resources
Oil & Gas Division



North Dakota Department of Transportation Project Development
December 9, 2014

(Whitten Aerials, 2011 with permissio

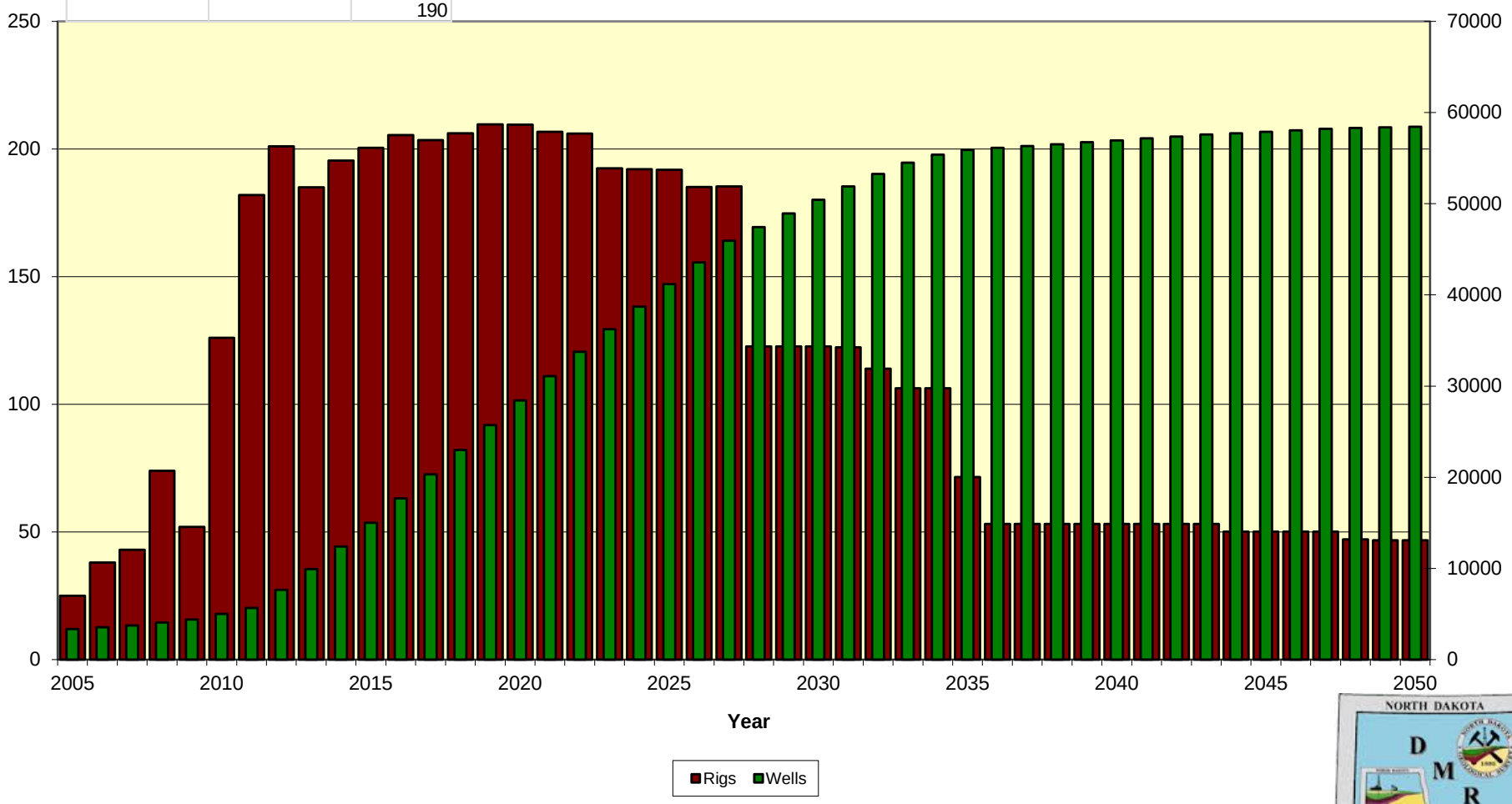
What's Ahead?


INTERSTATE
11
WRONG WAY
DO NOT ENTER
NEW YORK
ROAD WORK AHEAD
ROAD CLOSED
CAUTION
PHOTO ENFORCED
RAILROAD CROSSING
60
JCT
JCT
PEORIA
NOTICE
THIS PROPERTY IS PROTECTED BY VIDEO SURVEILLANCE
OVERSIZE LOAD
EMERGENCY SCENE AHEAD
MEN WORKING
R
R
SPEED LIMIT 20
WHOA
MACON 1 COUNTY
STOP HERE FOR
STOP
SLOW
20 M.P.H.
SCHOOL
STOP
SLOW
ADULTS AT PLAY
N MAIN ST
DETOUR
SCHOOL SPEED LIMIT 20 WHEN FLASHING
NO SMOKING
NEIGHBORHOOD CRIME WATCH
WE IMMEDIATELY REPORT ALL SUSPICIOUS ACTIVITIES TO OUR POLICE DEPARTMENT
RESTRICTED AREA KEEP OUT
PRIVATE ROAD NO THRU TRAFFIC
WE OUR CHILDREN Please DRIVE CAREFULLY
NORTH DAKOTA
D
M
R
Department of Mineral Resources

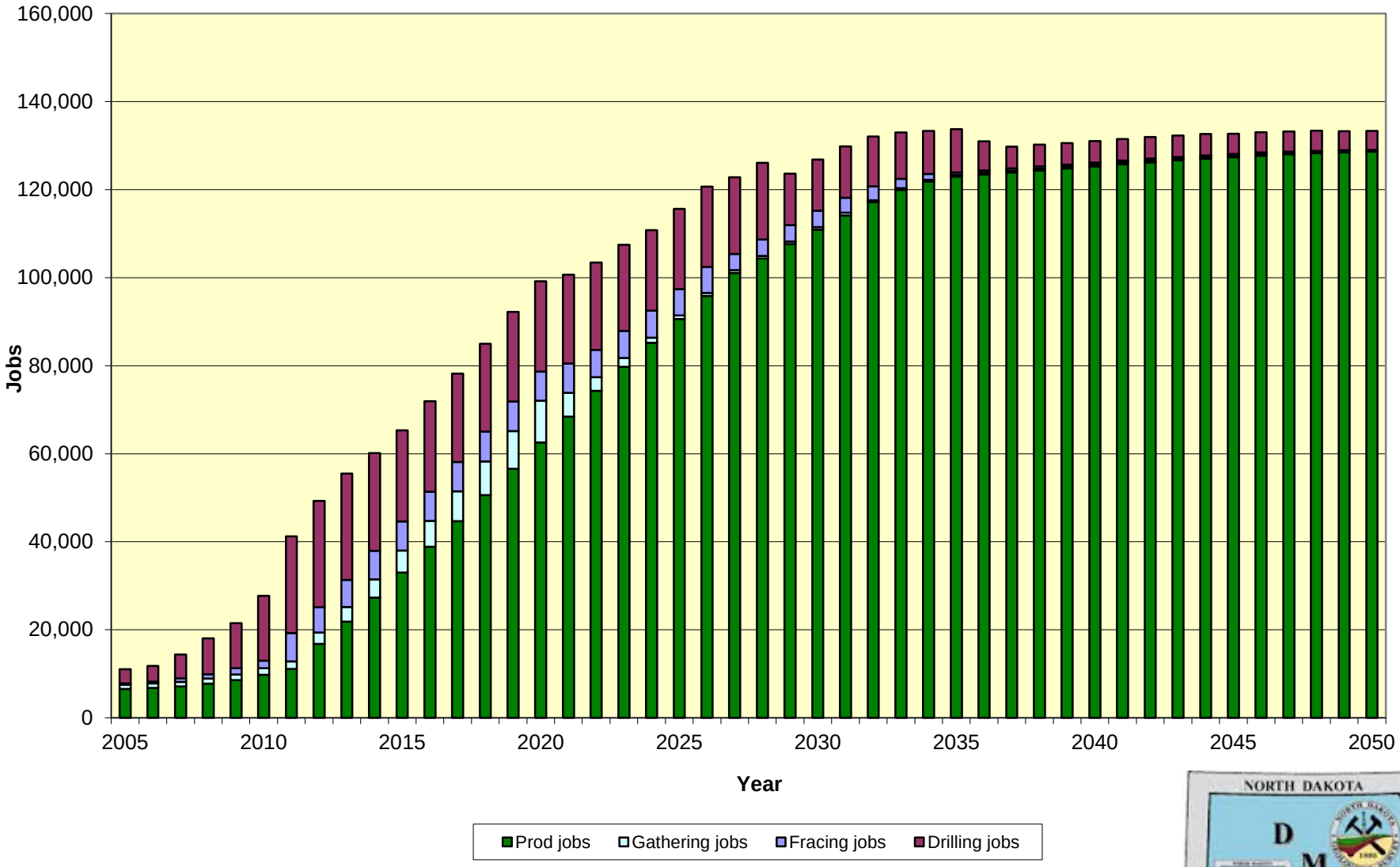
North Dakota Update

- Spotlight on the Bakken: Media Coverage
  - News: National Geographic, The New York Times, The LA Times, The Wall Street Journal, Global and Mail (Canada), BBC, The Associated Press, Reuters, Bloomberg.
  - Websites: Al-Jezeera America, Center for Public Integrity, Inside Climate News, Earth Island Journal.
  - Daily: California, Florida, New York, Washington, D.C., Colorado, Alaska.
  - Inquiries from Australia, France, Germany, Japan, United Kingdom, Poland, Austria, Norway.

		12/8/2014
	Breakeven	Rigs
Billings	$56	3
BOT-REN	$61	5
BOW-SLP	$75	2
Burke	$87	3
Divide	$104	4
Dunn	$29	29
Golden Valley	$87	0
McKenzie	$30	67
McClean	$73	1
Mountrail	$45	33
Stark	$38	0
Williams	$39	43
		190



North Dakota Oil Industry Jobs



NORTH DAKOTA
D M R
Department of Mineral Resources

What's Ahead

- Harvest phase well density
  - Drilling waste management
- Flaring reduction
- Crude Oil Movement

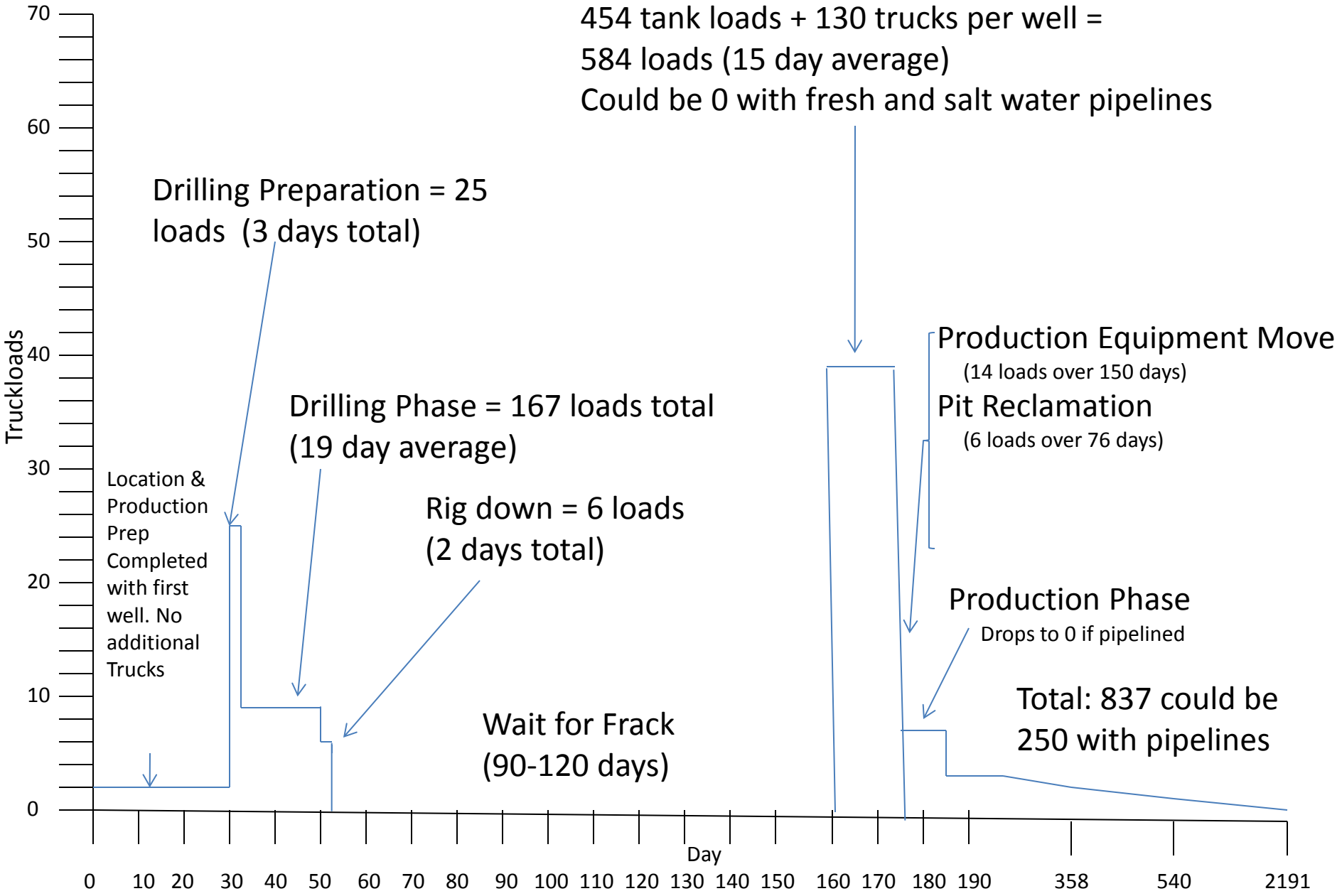
NORTH DAKOTA
D M R
Department of Mineral Resources

Phase 3 “Harvest” 6 – 28 or more wells per spacing unit

Vern Whitten Photography

6 wells producing - drilling 7-12 - and 13-18 coming soon

Bakken Wells 2-18 – Truckload Timeline



Western North Dakota

- 2012 – present
  - 6,388 wells drilled
  - 2,129 lined cuttings pits
  - 98% drilled with oil based mud
  - Cuttings stabilized, encapsulated, and buried

- New Mexico Experience

ORDER OF THE COMMISSION AND STATEMENT OF REASONS FOR

AMENDING NMAC TITLE 19, CHAPTER 15, PART 17

- THIS MATTER comes before the Oil Conservation Commission ("Commission") on the Application ("NMOGA Application") of the New Mexico Oil And Gas Association ("NMOGA") for Amendment of Certain Provisions of Title 19, Chapter 15 of the New Mexico Administrative Code Concerning Pits, Closed-Loop Systems, Below Grade Tanks and Sumps, and Other Alternative Methods Related to the Foregoing Matters, Statewide, assigned Case No. 14784, and on the Application ("Application Filed By IPANM") of the Independent Petroleum Association of New Mexico ("IPANM") for the Amendment of Certain Provisions of Title 19, Chapter 15 of the New Mexico Administrative Code Concerning Pits, Closed-Loop Systems, Below Grade Tanks and Sumps, and Amending Other Special Rules Related to the Foregoing Matters, Statewide, assigned Case No. 14785. Together, the NMOGA Application and the Application Filed By IPANM may be referred to herein as the "Filed Applications." The Filed Applications seek to amend NMAC Title 19, Chapter 15, Part 17, as promulgated in June, 2008 and amended in July, 2009 (the 2008 regulation, as amended in 2009, may sometimes be referred to herein as the "2009 Pit Rule"). The Commission, after hearing testimony, argument and public comment and deliberating, and having carefully considered the evidence, pleadings, comments and other materials submitted related to the Filed Applications now enters this Order. . . . . .
- NOW THEREFORE, Title 19, Chapter 15 Part 17 NMAC, as adopted on June 16, 2008 and as amended from time to time is hereby **REPEALED** and **REPLACED** by Title 19, Chapter 15 Part 17 NMAC that is Attachment A and Title 19, Chapter 15 Part 17 NMAC that is Attachment A is hereby **ADOPTED**. Division staff is instructed to secure prompt publication of the referenced rule changes in the New Mexico Register. The Commission retains jurisdiction of this matter for entry of such further orders as may be necessary. **IT IS SO ORDERED**.

DONE in Santa Fe, New Mexico, this 6th day of June, 2013.

STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

ROBERT BALCH, Member

GREGORY BLOOM, Member

JAMI BAILEY, Chair

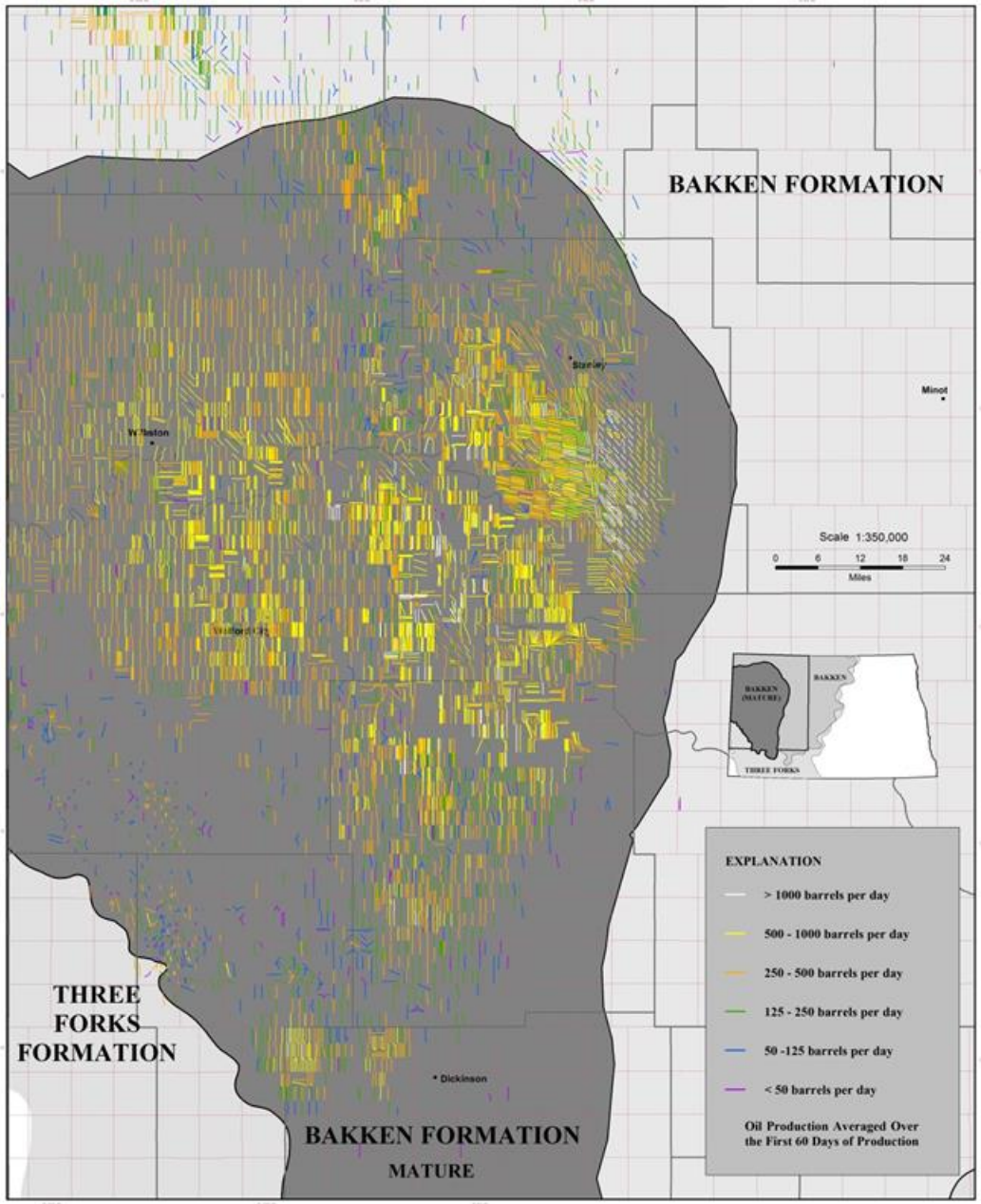
S E A L

Western North Dakota

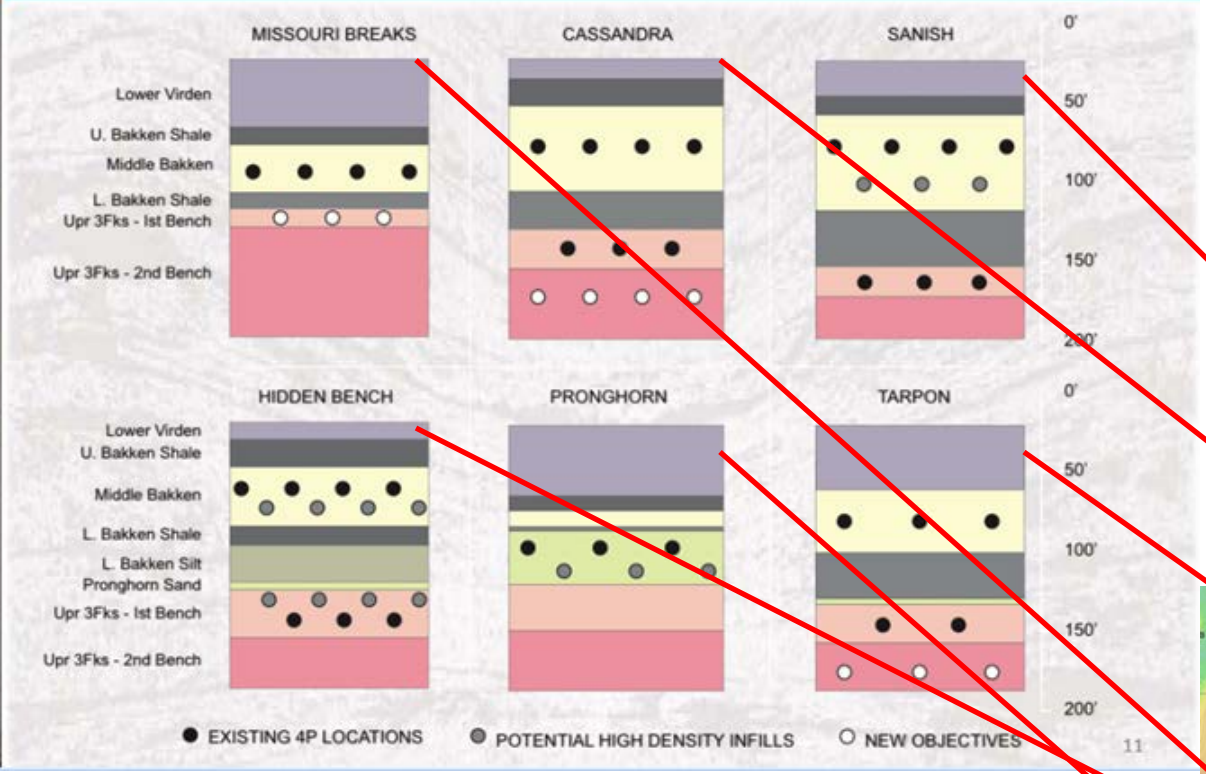
- 1,500 to 2,500 wells/year = 2,000 expected
- The New Mexico Model would do the following:
  - 25 to 30 semi loads of drill cuttings per well
  - 50,000 to 60,000 additional semi loads per year hauled 50 to 100 miles
  - Overwhelm special waste landfill capacity with high volume low toxicity material

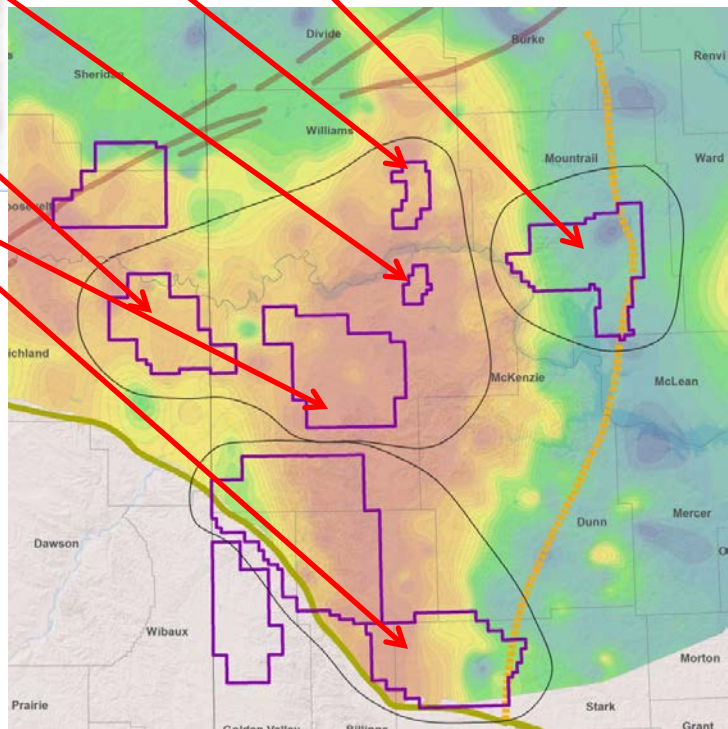
First 60 Day Average Bakken Horizontal Production by Well

October 2014



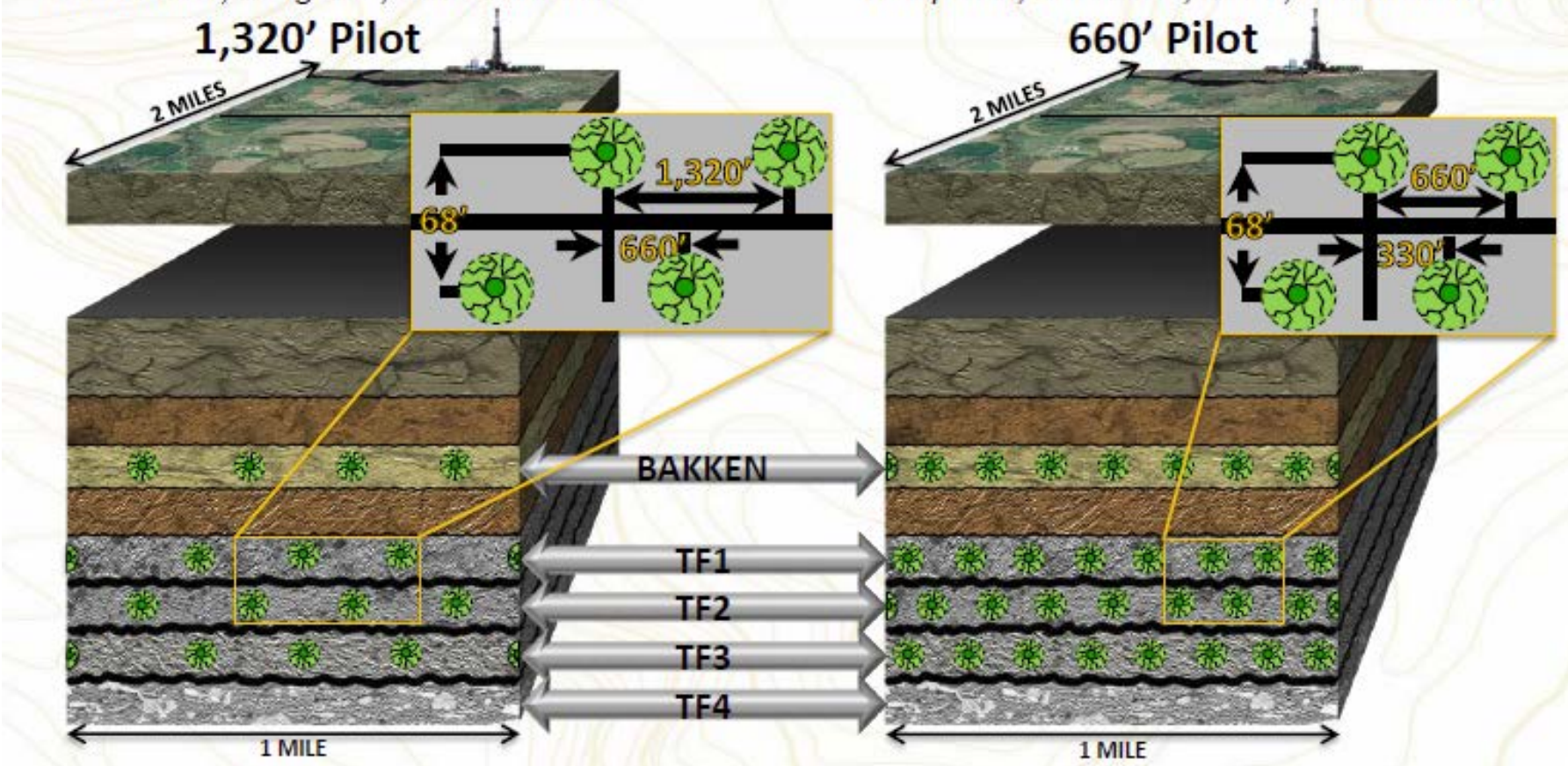
Williston Basin Primary and Prospective Drilling Plan by Area





Well density is the big question

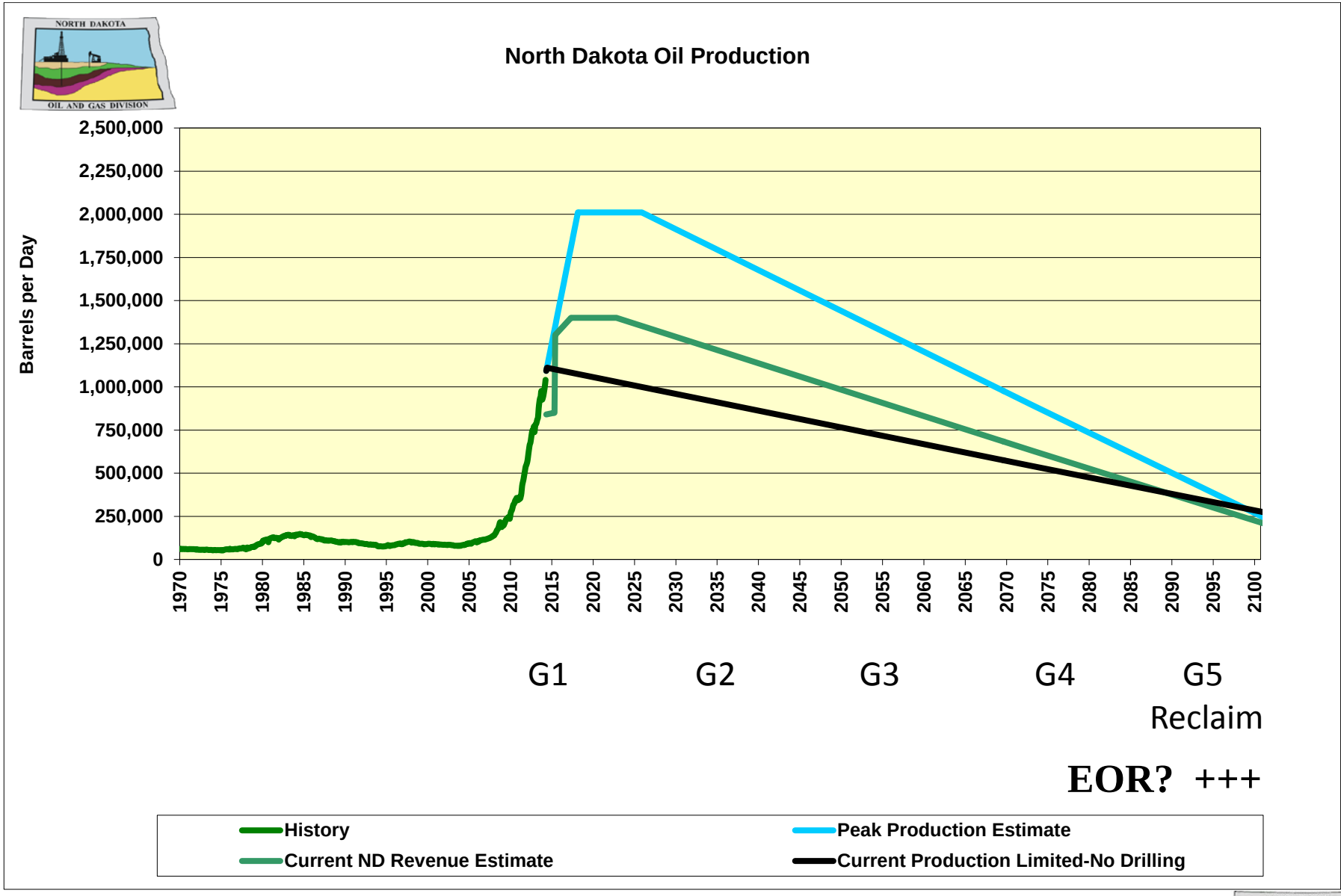
1,320’ & 660’ Pilot Density Projects: 2013-14

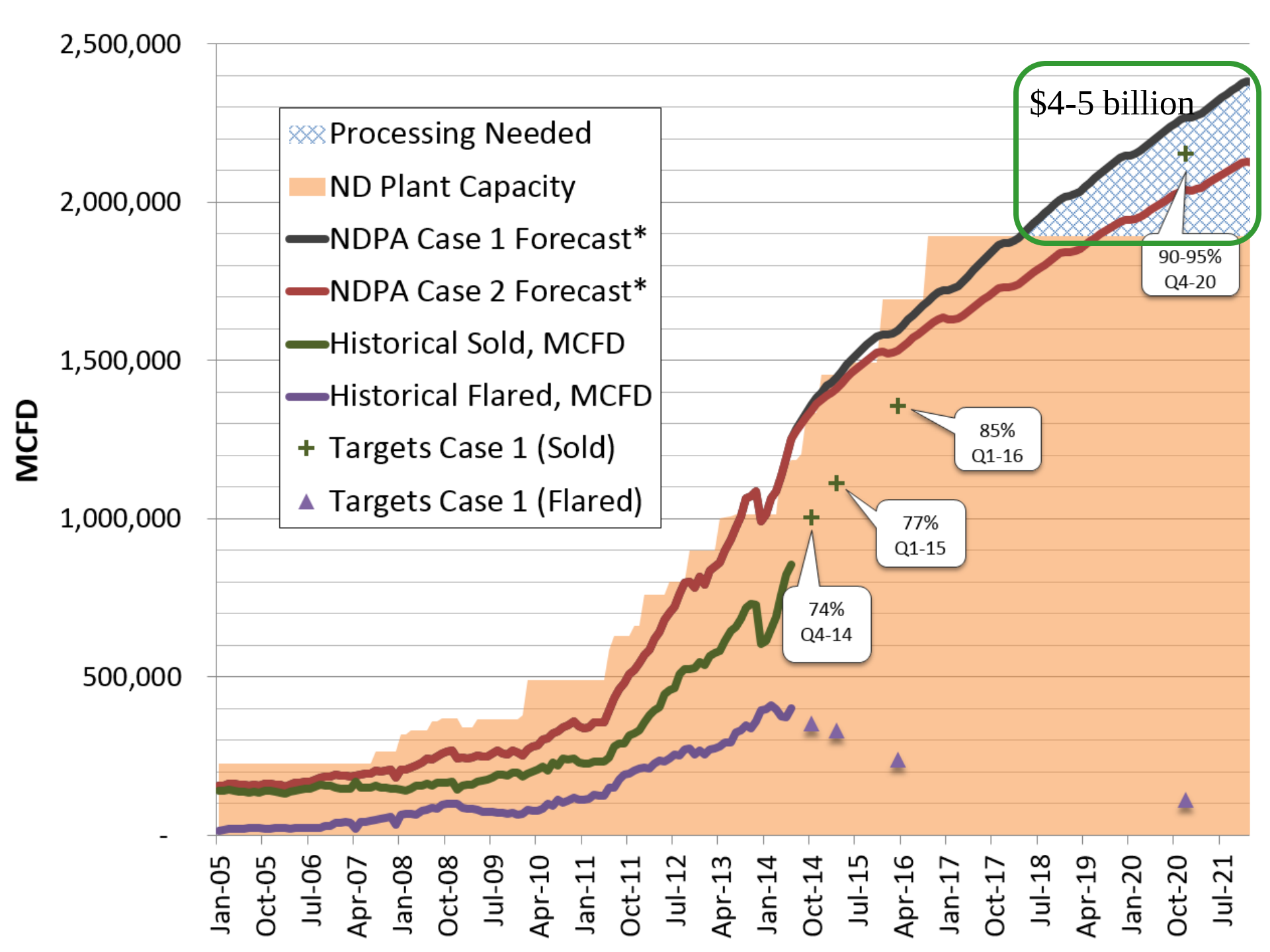


- 3 project areas
- 1,320 ft. same-zone spacing
- 34 new wells (gross)

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

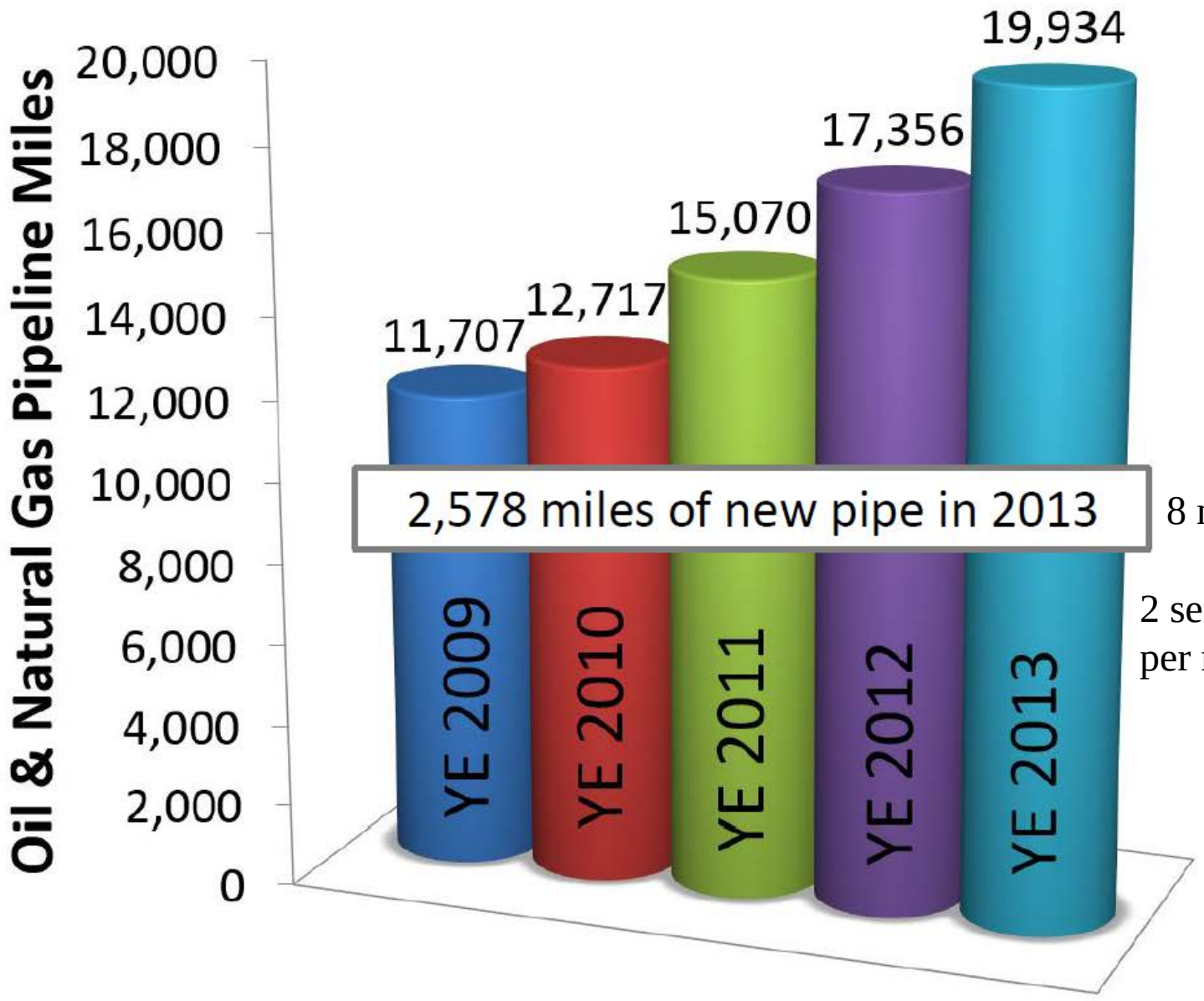
Source: Continental Resources


North Dakota Oil Production
Barrels per Day
2,500,000
2,250,000
2,000,000
1,750,000
1,500,000
1,250,000
1,000,000
750,000
500,000
250,000
0
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
2065
2070
2075
2080
2085
2090
2095
2100
G1
G2
G3
G4
G5
Reclaim
EOR? +++
History
Peak Production Estimate
Current ND Revenue Estimate
Current Production Limited-No Drilling


2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
MCFD
Processing Needed
ND Plant Capacity
NDPA Case 1 Forecast*
NDPA Case 2 Forecast*
Historical Sold, MCFD
Historical Flared, MCFD
Targets Case 1 (Sold)
Targets Case 1 (Flared)
$4-5 billion
90-95%
Q4-20
85%
Q1-16
77%
Q1-15
74%
Q4-14
Jan-05
Oct-05
Jul-06
Apr-07
Jan-08
Oct-08
Jul-09
Apr-10
Jan-11
Oct-11
Jul-12
Apr-13
Jan-14
Oct-14
Jul-15
Apr-16
Jan-17
Oct-17
Jul-18
Apr-19
Jan-20
Oct-20
Jul-21

North Dakota Pipeline Miles

2014
crude oil
50%
trucked
50%
pipelined



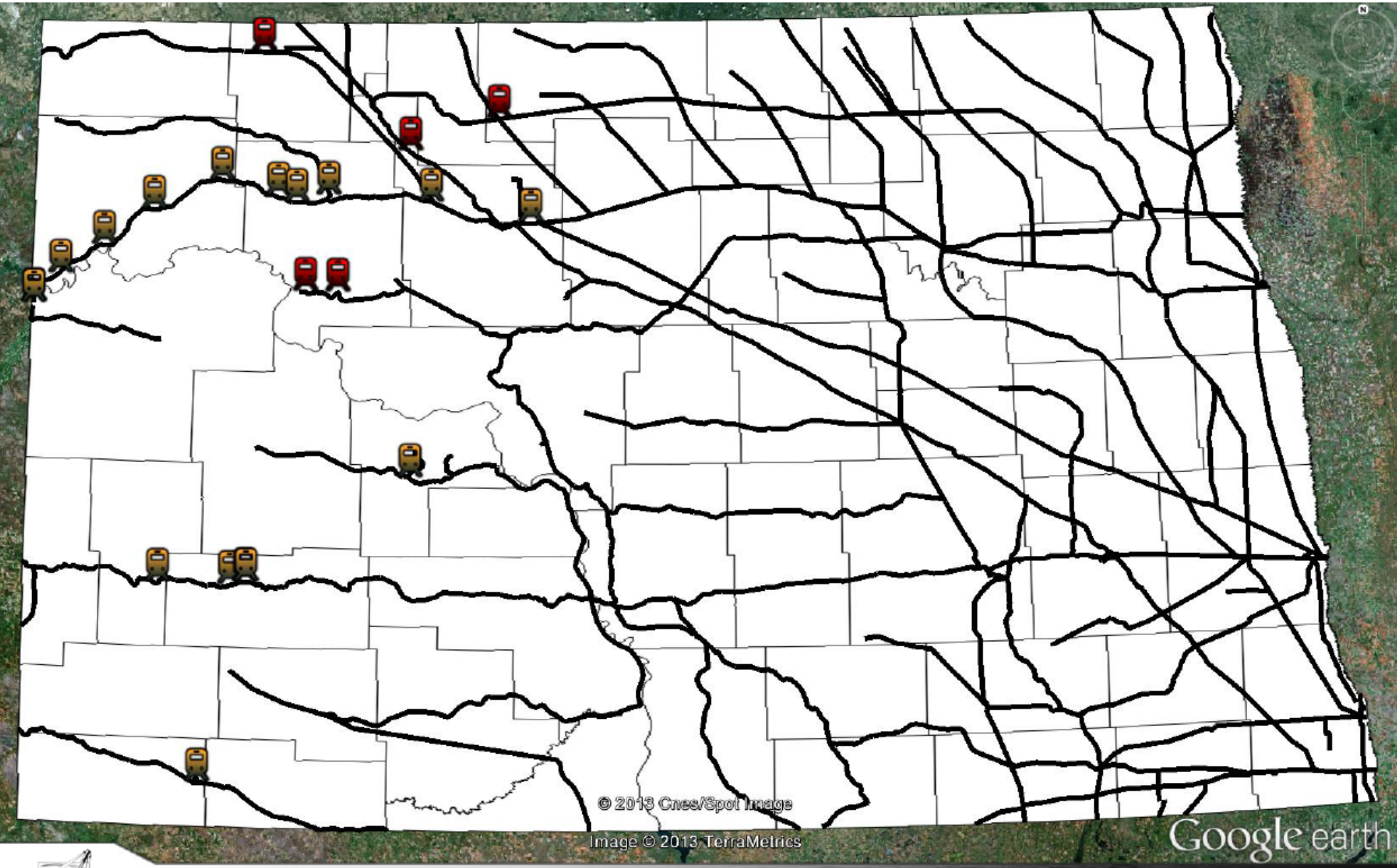
2,578 miles of new pipe in 2013

8 more years

2 semi-loads per mile

60%

Oil Loading Rail Facilities



33% North Dakota Crude Oil Pipelines