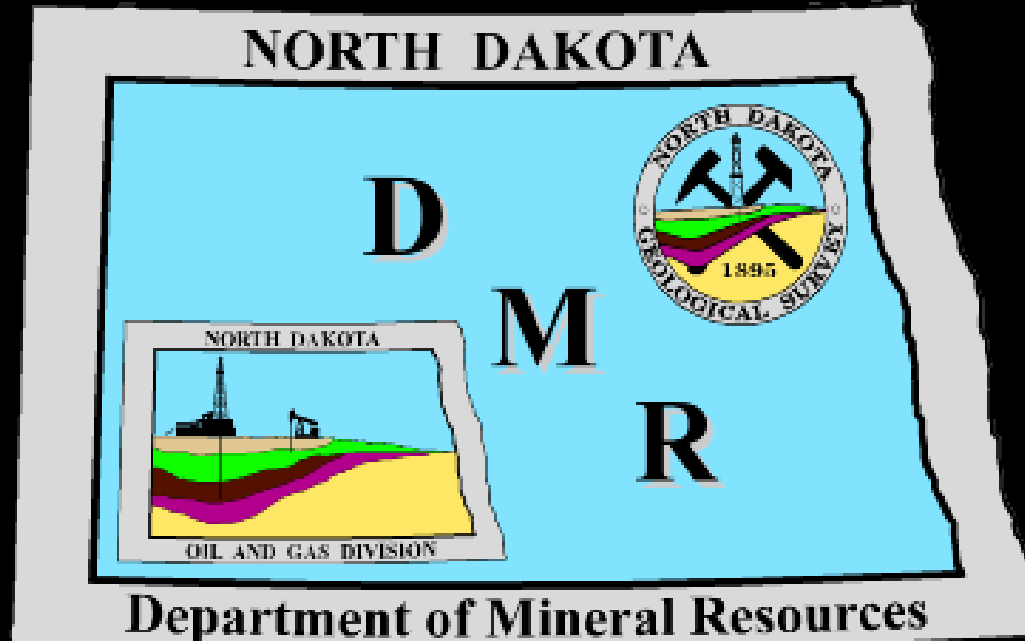


# North Dakota Department of Mineral Resources



*<http://www.oilgas.nd.gov>*

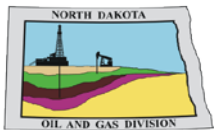
*<http://www.state.nd.us/ndgs>*

*600 East Boulevard Ave. - Dept 405*

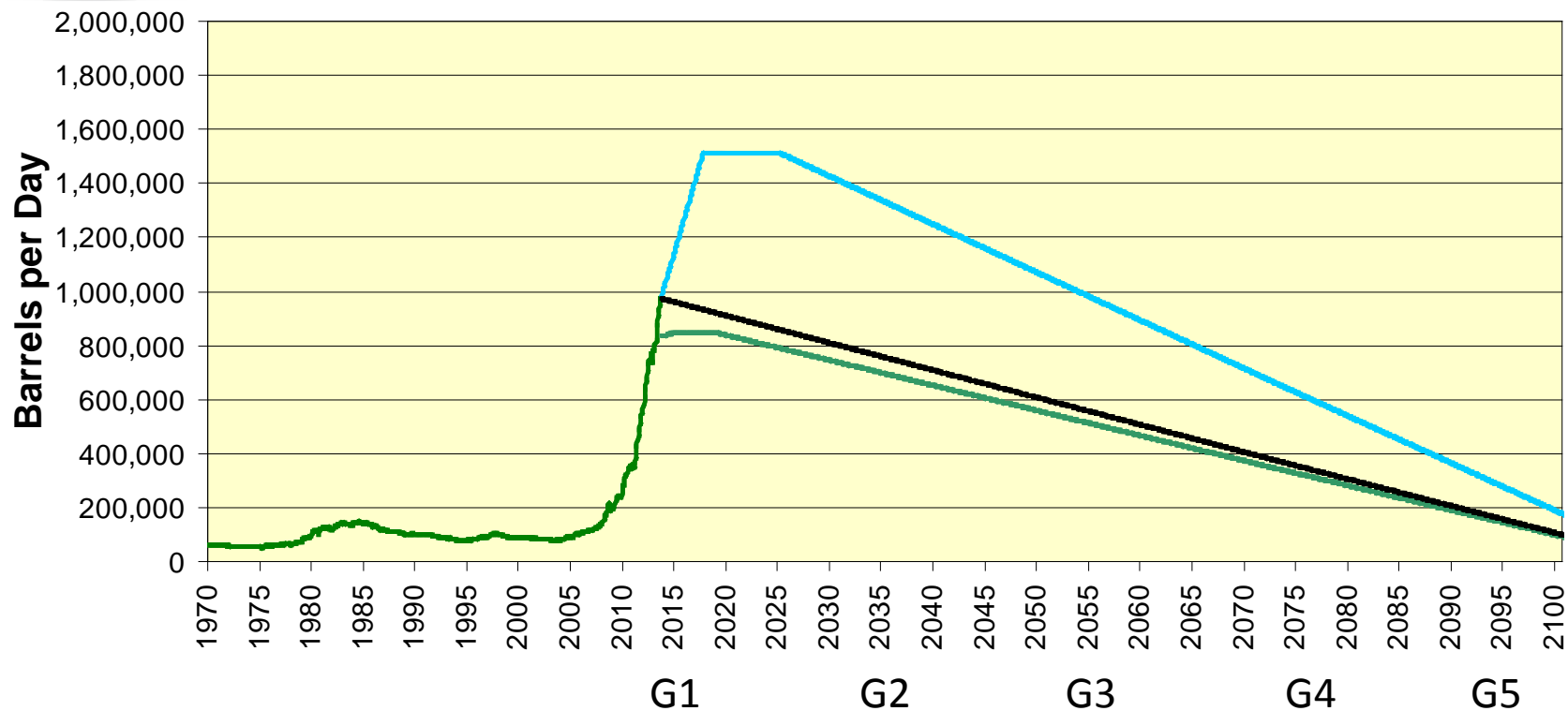
*Bismarck, ND 58505-0840*

*(701) 328-8020      (701) 328-8000*

[illegible]



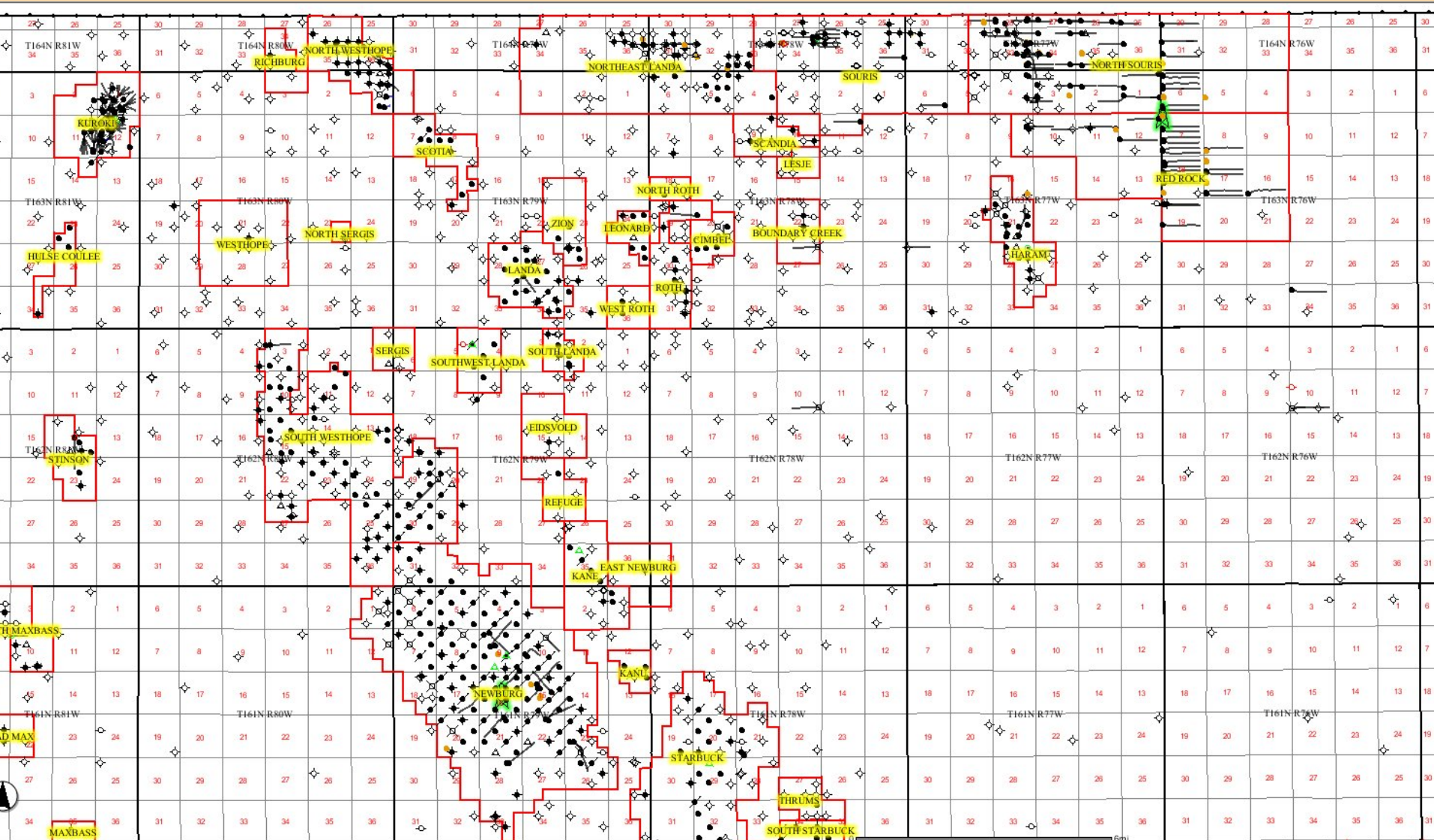
## North Dakota Oil Production



History Peak Production Estimate Current ND Revenue Estimate Current Production Limited-No Drilling

# What's Ahead?

- >Spearfish play is entering “Homestead” phase
- Tyler play has entered “Discovery” phase
- Bakken-Three forks optimization
  - Harvest phase
  - Inter-well distance
  - Completion technology
  - Gas capture – facility optimization – waste reduction/reuse
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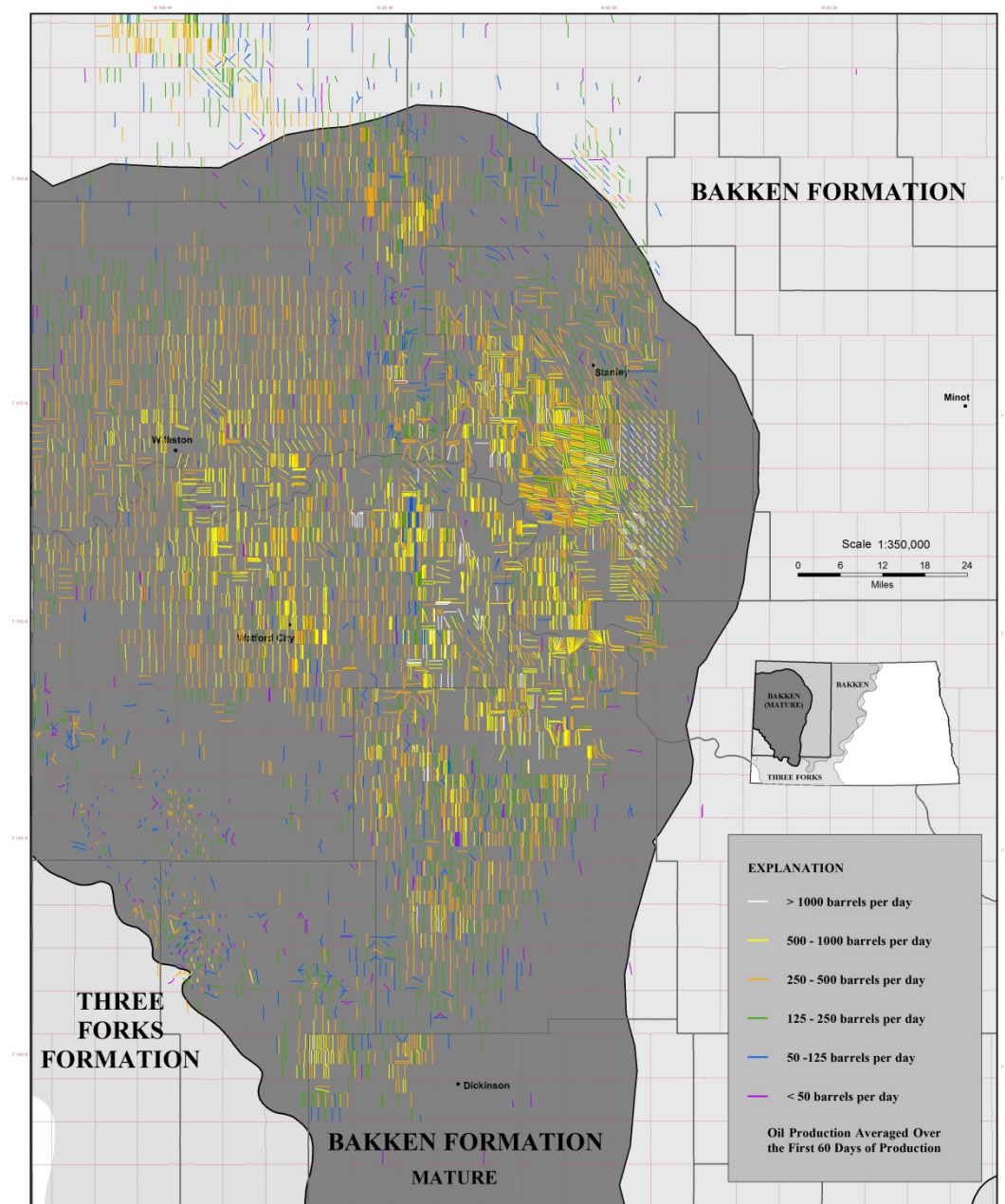
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# First 60 Day Average Bakken Horizontal Production by Well

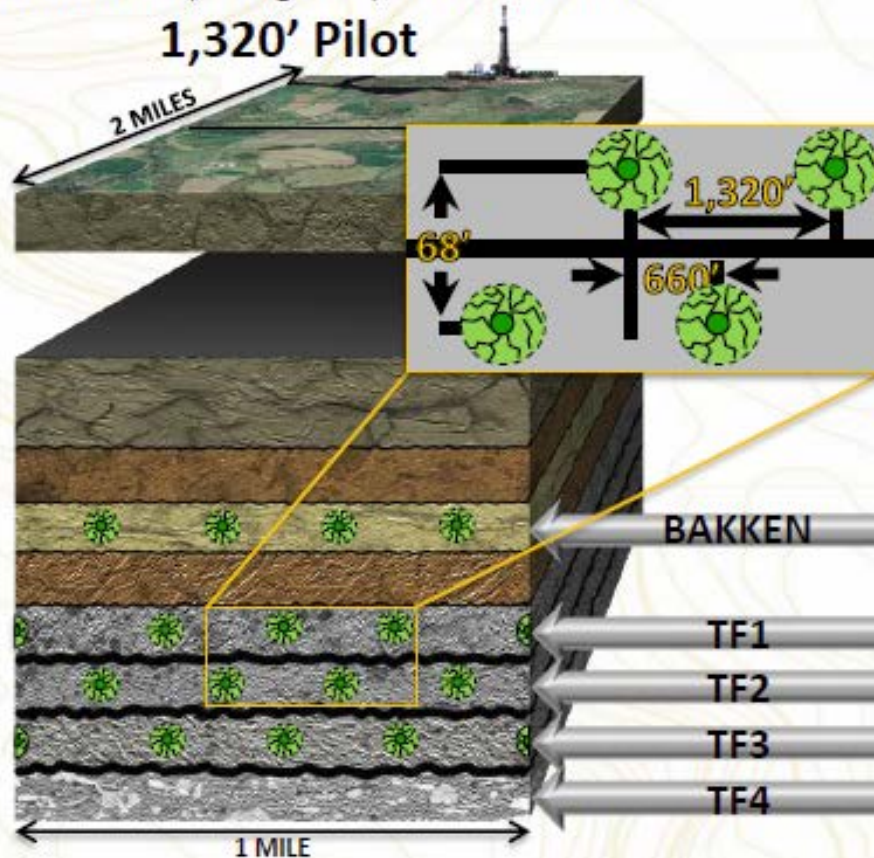
January 2014



# Well density is the big question

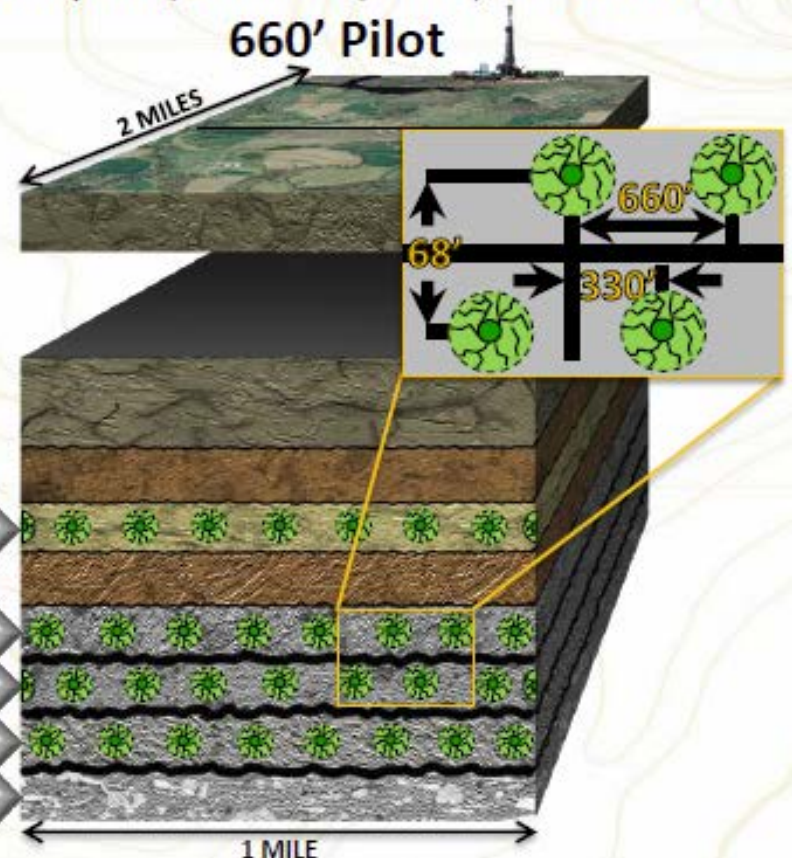
## 1,320' & 660' Pilot Density Projects: 2013-14

*Hawkinson, Tangsrud, and Rollefstad*



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

*Wahpeton, Lawrence, Mack, and Hartman*

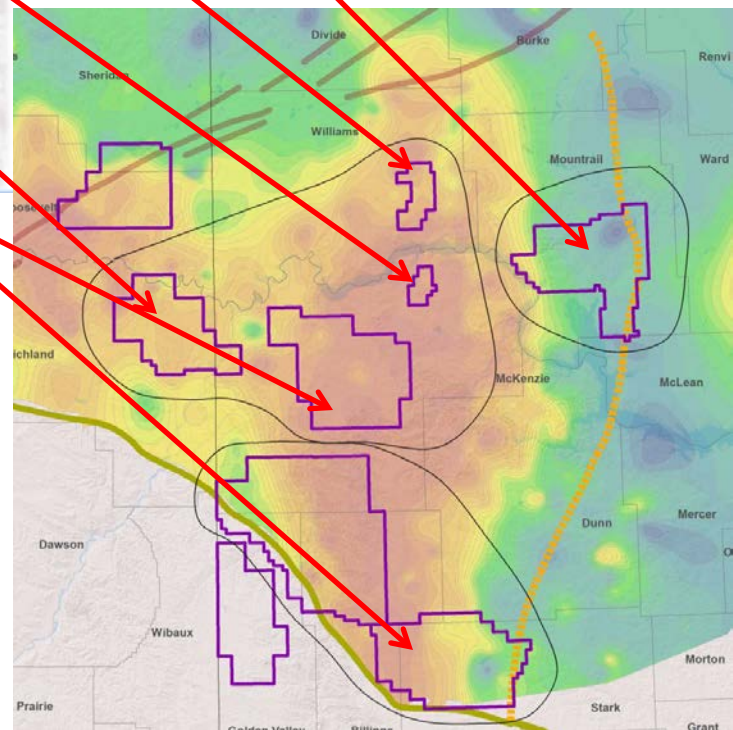
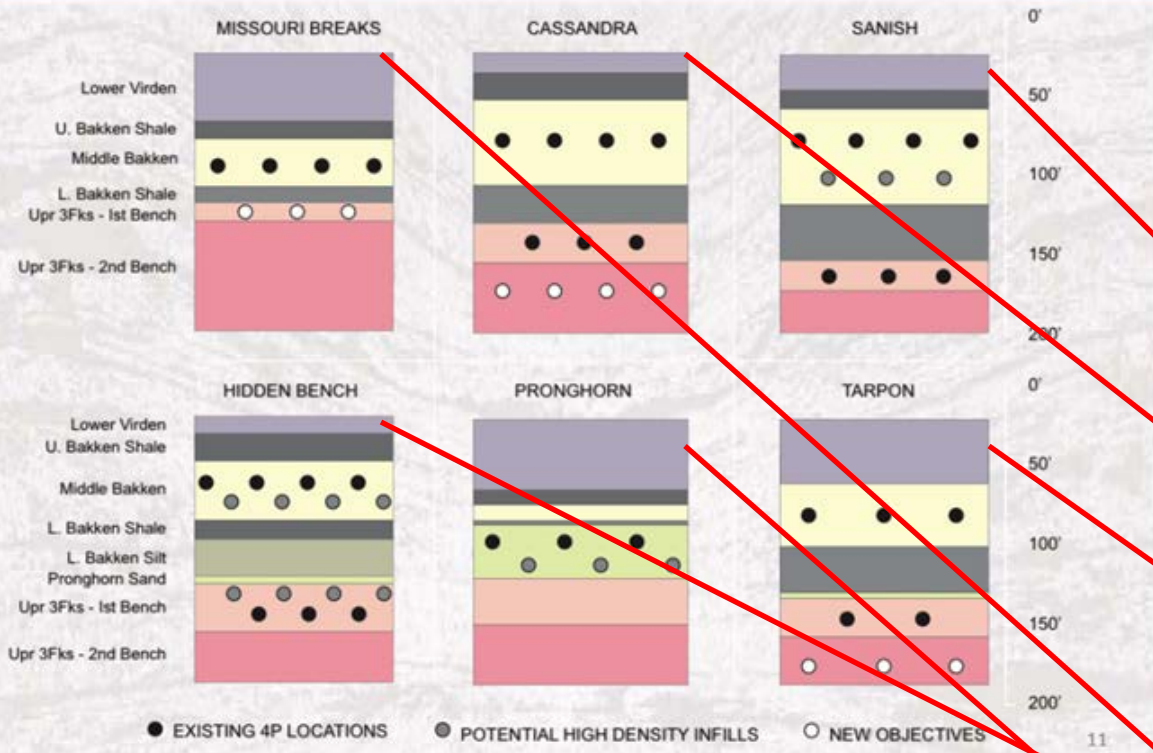


- 4 project areas
- 660 ft. same-zone spacing
- 31 new wells (gross)

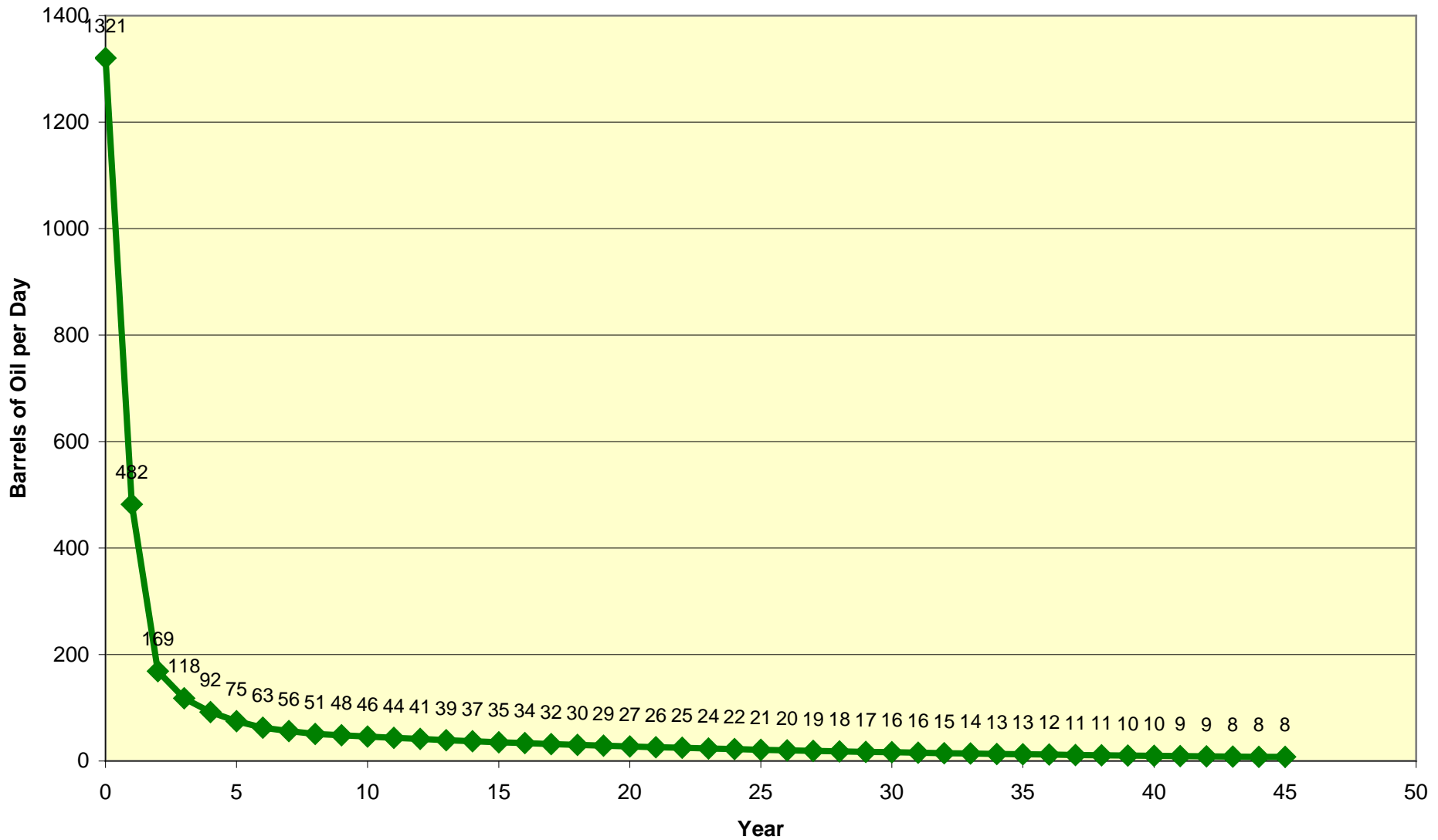
Source: Continental Resources

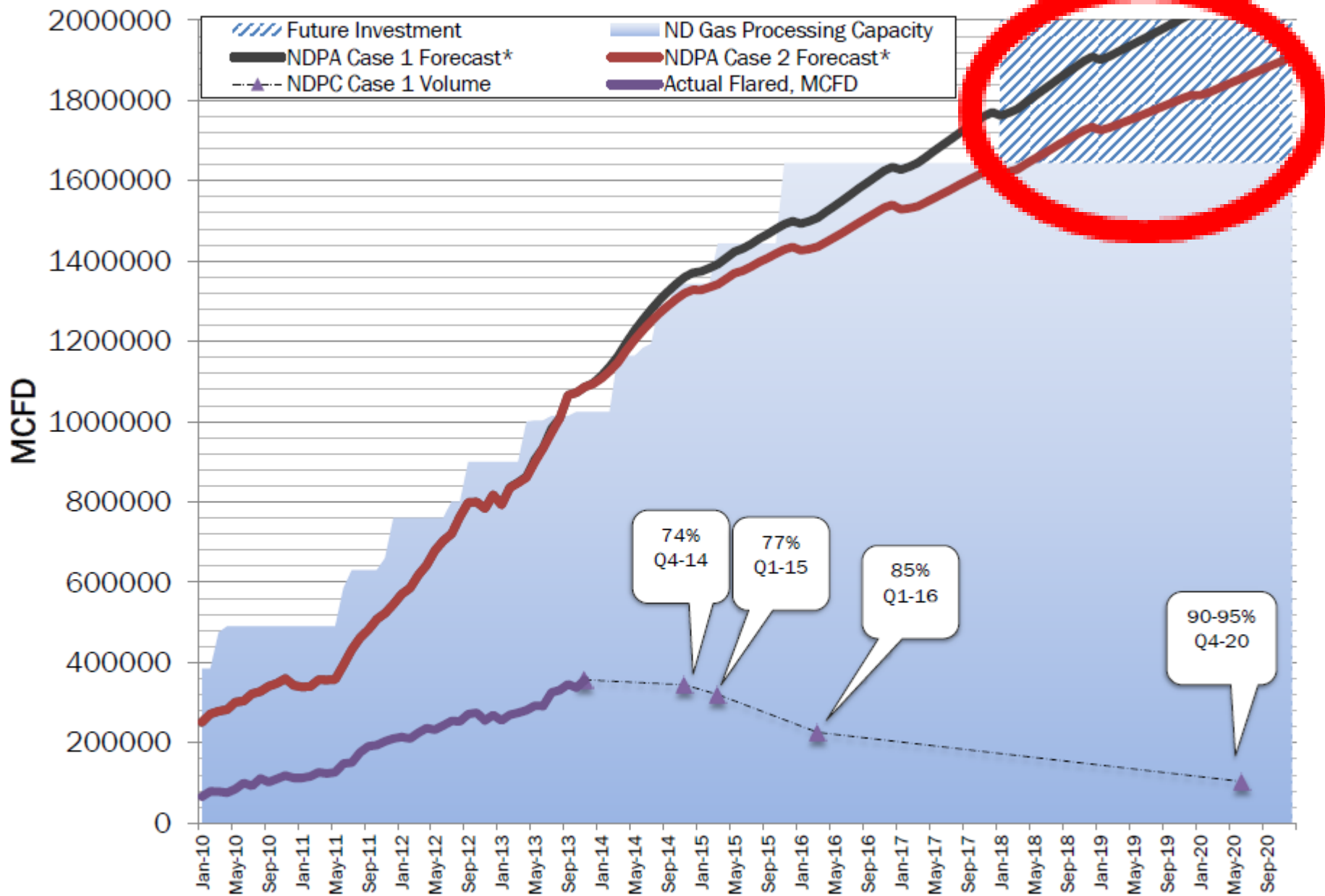


# Williston Basin Primary and Prospective Drilling Plan by Area



# Typical Bakken Well Production





*\* NDPA Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning*

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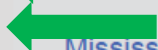
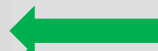
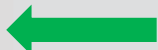
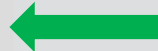
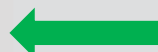
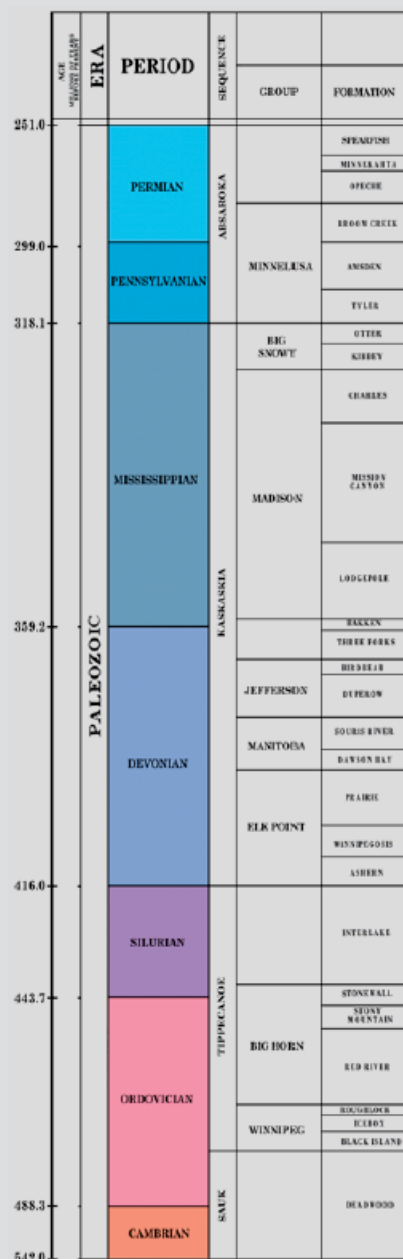
## North Dakota Geological Survey



### Paleozoic Era

Age: 542 to 251 million years before present.

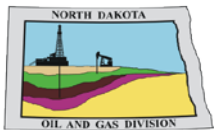
The Paleozoic contains the record of geologic processes that fall between the first rapid and dramatic appearance of fossils produced by multi-celled animals and the largest mass extinction in Earth's history in which approximately 90% of all marine animal species became extinct.



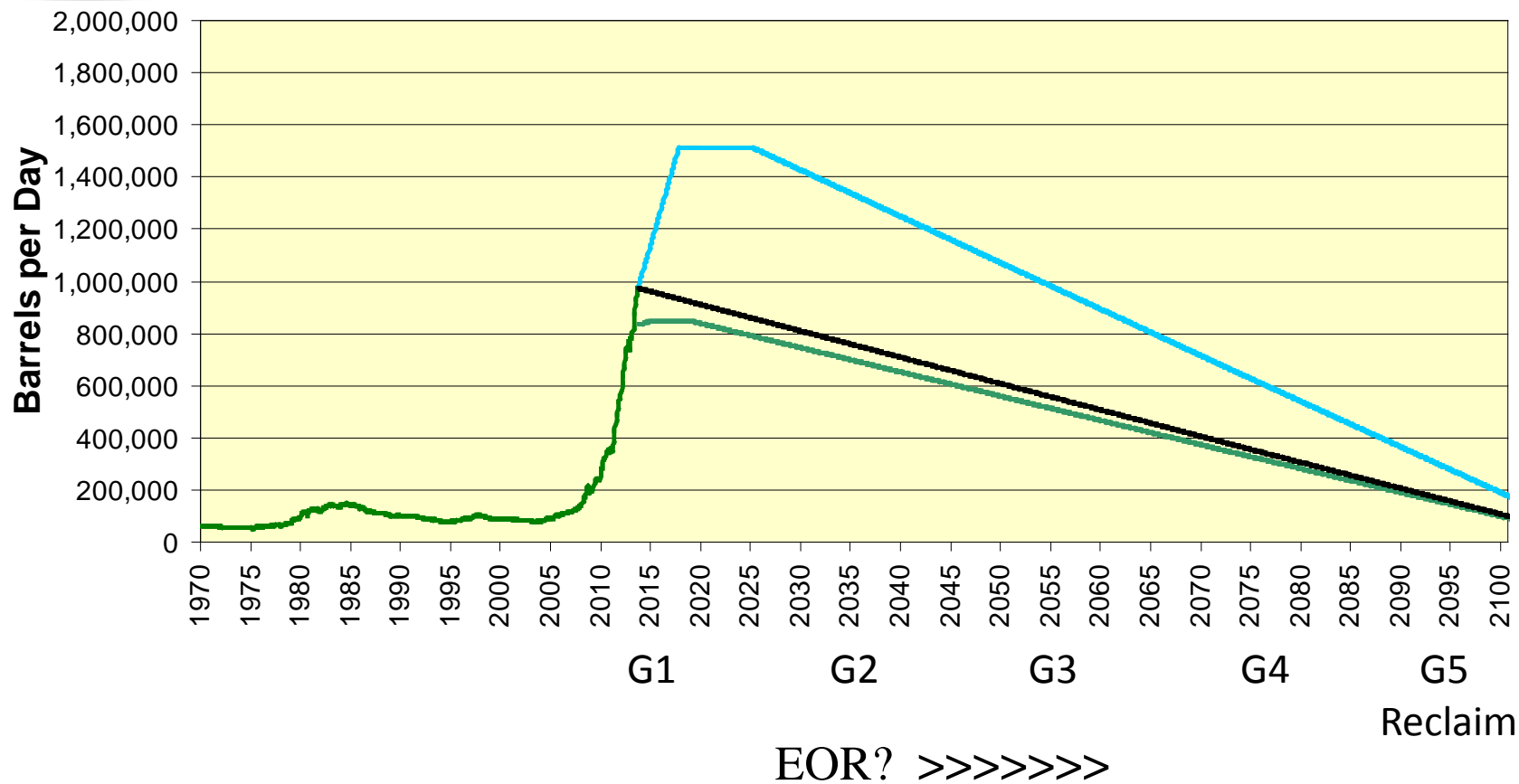
Mississippian Period   Devonian Period

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