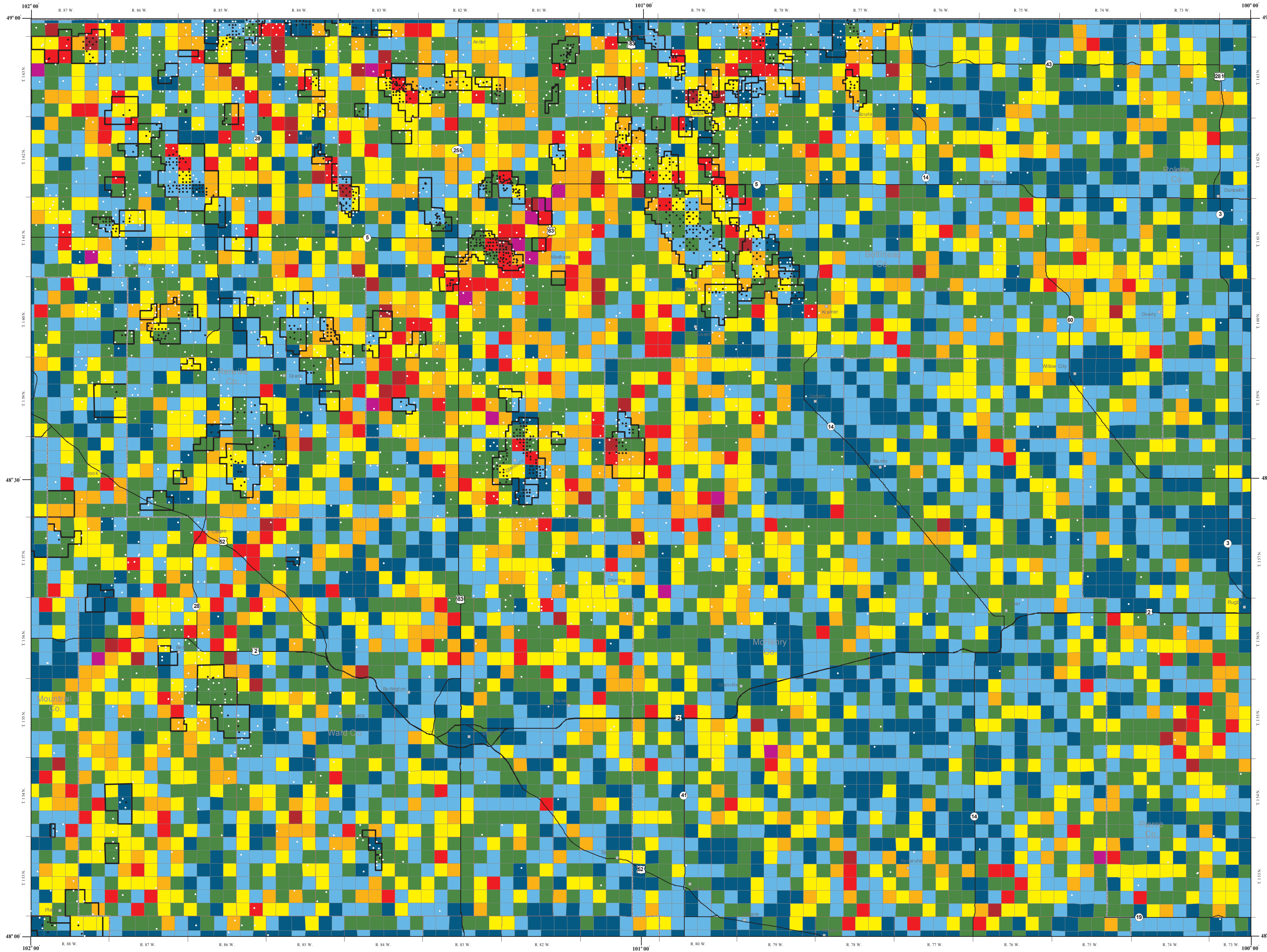
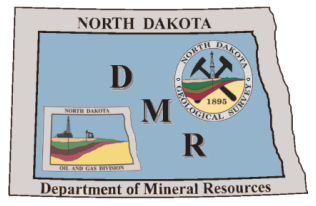
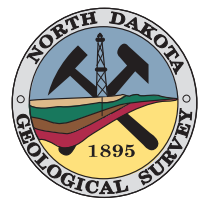


LINEAMENT DENSITY AND GENERALIZED WELL PRODUCTION IN THE MINOT 250K SHEET, NORTH DAKOTA

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2012



EXPLANATION

This map presents the results of an evaluation of the relationship between lineament density (Anderson, 2011) and overall generalized well production and success for oil and gas wells found in the Minot 1:250k sheet. The Minot area is located in the northeastern portion of the Williston Basin in north-central North Dakota. Lineament density was calculated across the map area by automated analysis of the sum of all mapped lineament lengths found to occur within a 1 mile x 1 mile grid cell coincident with actual Public Land Survey System (PLSS) sections. Cellular lineament density values (i.e. total lineament line length per unit cell) were assigned to each grid cell. Lineament density classes are depicted on this map as ranging from areas of lower lineament density, shown as cooler colors, to areas of higher lineament density, shown as warmer colors. This map shows areas of higher lineament density in the north-central and western map area. Areas of lower lineament density are found in the eastern portion of the map. Overall, lineament density appears greatest in areas where producing oil and gas wells (Figure 1) are commonly located, and lower where non-producing wells have been drilled. This suggests a relationship between productive areas and relatively higher lineament density. The distribution of wells found within individual lineament density classes suggest that more dry (oil and gas) wells have been drilled in areas of lower lineament density. Averaged production data suggest that wells located in areas of greater lineament density have generally higher overall average production. In terms of exploration success (i.e. near or greater than 50%), wells drilled in areas of higher lineament density have also generally been more successful. Well data considered here, includes information only from wells drilled before January 30, 2011. It is interesting to note that well completions here are dominantly vertical with the majority of pool production from the Madison.

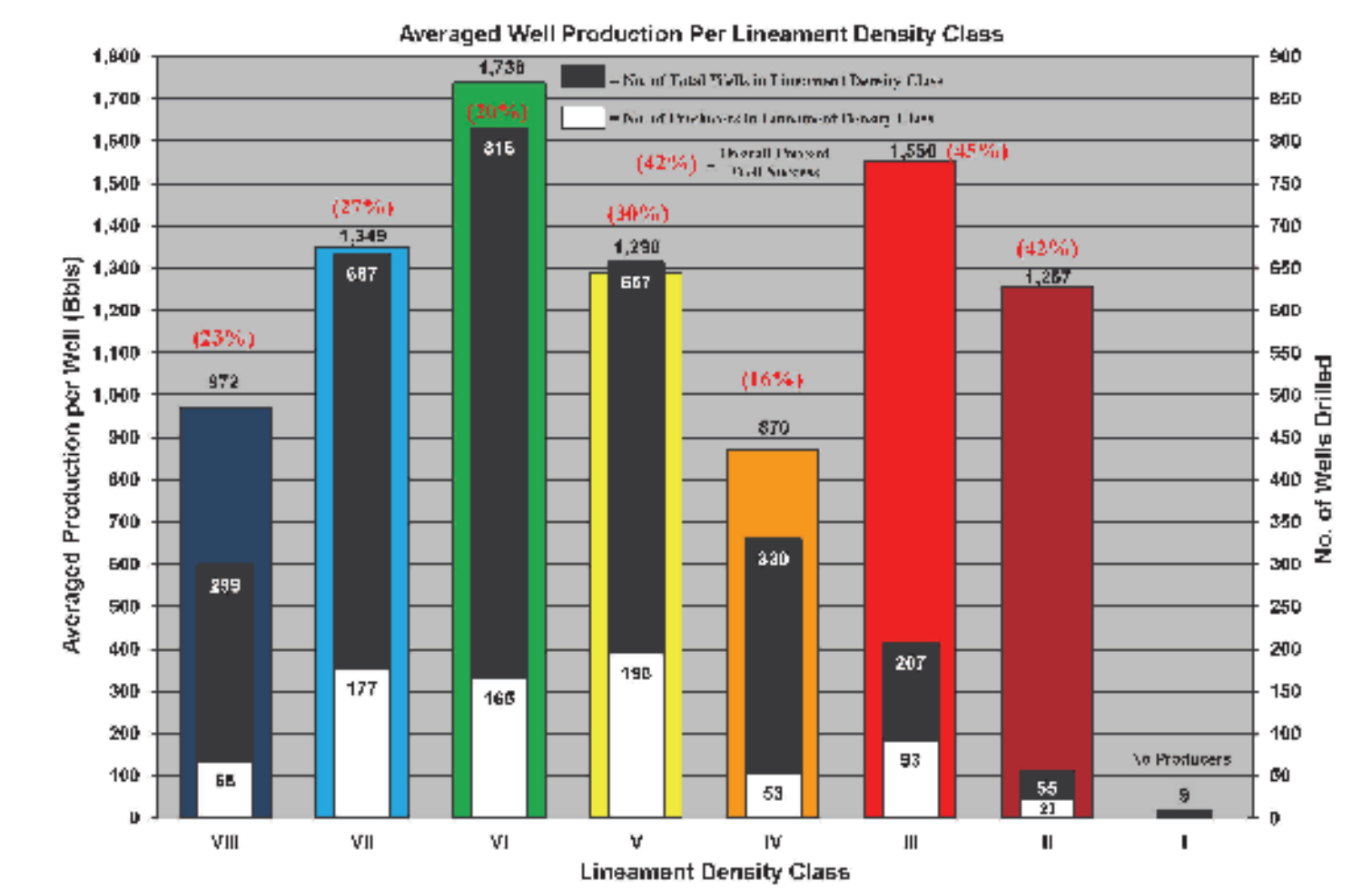
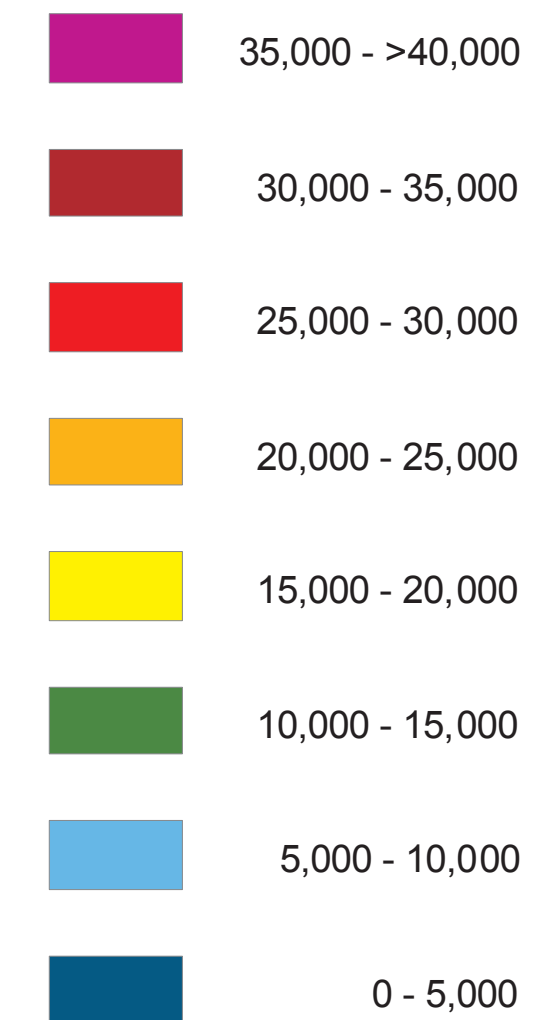


Figure 1. Averaged well production, for oil and gas wells, per lineament density class (colored bars) on the primary y-axis shown with the total number of wells occurring within each lineament density class (i.e., producing and non-producing wells) shown on the secondary y-axis. Average production is calculated as the average (bbls) produced, over the first 12 months of production, divided by the number of producing wells drilled per lineament density class. The overall percent success rate is highlighted in red above each respective lineament class and is defined as the number of producing wells divided by the total number of wells drilled within each lineament density class. The distribution of wells drilled has been into areas of lesser overall lineament development. Wells drilled into areas of higher lineament density tend to have higher production on average.

Lineament Density (ft/mi²)



EXPLANATION

Geologic Features

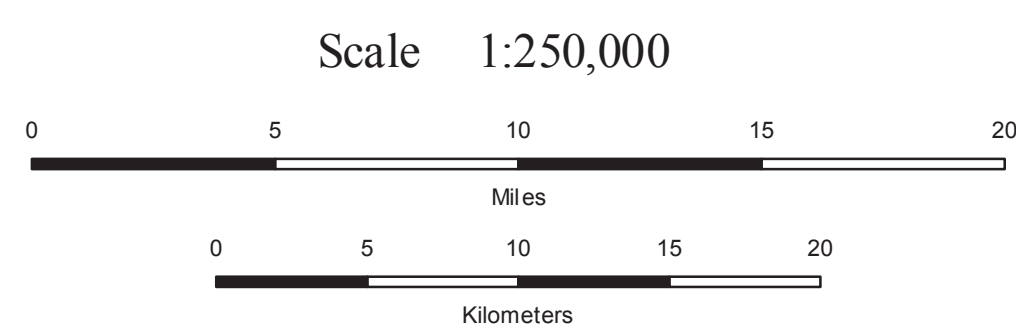
- Drill Hole
- Oil & Gas Fields

Other Features

- Towns
- Township Boundaries
- County Boundaries
- State and US Highways



Minot 250K Sheet, North Dakota



Mercator Projection
Standard parallel 48°00'00"
1927 North American Datum
Central meridian 101°00'00"

