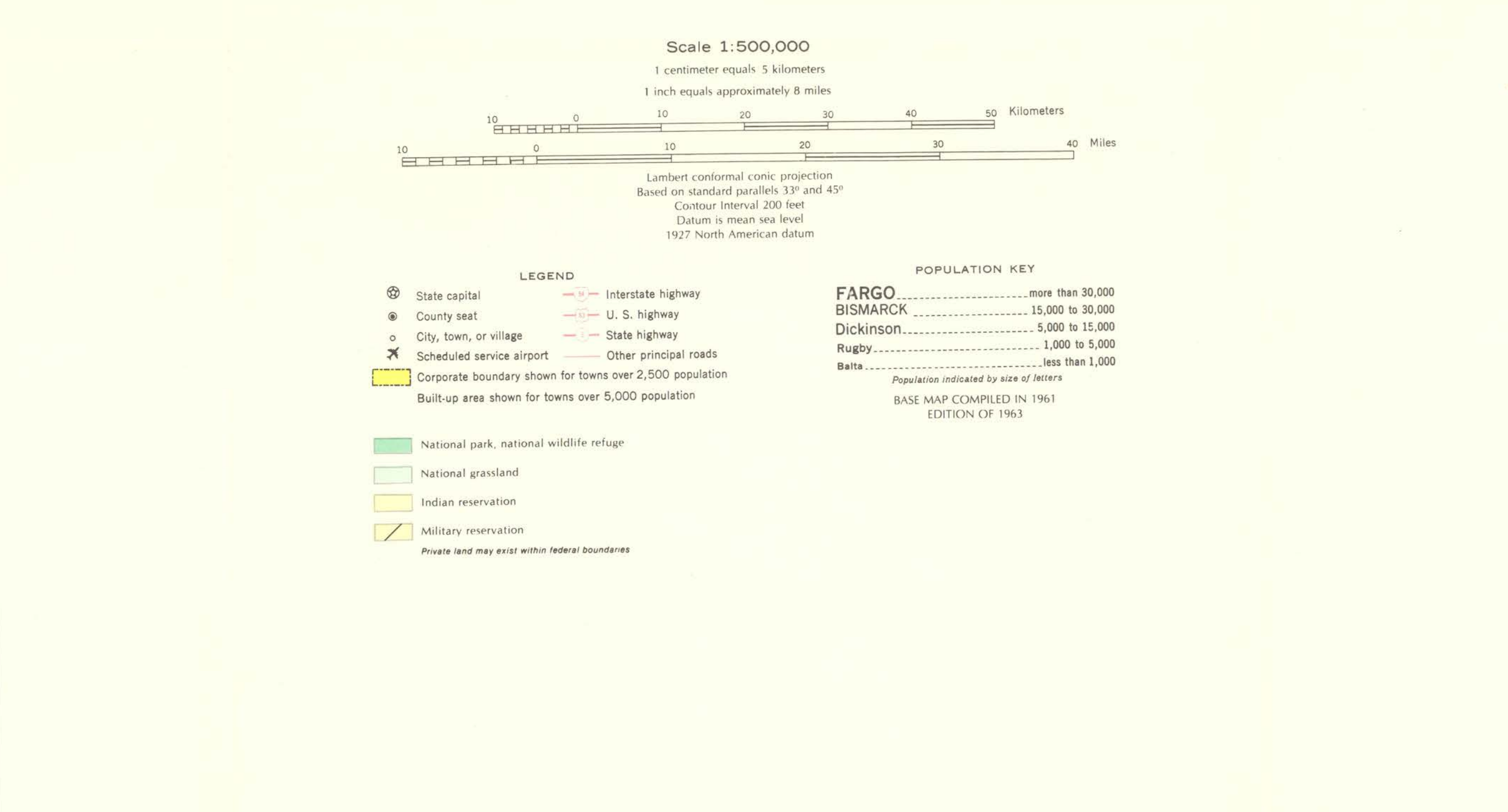
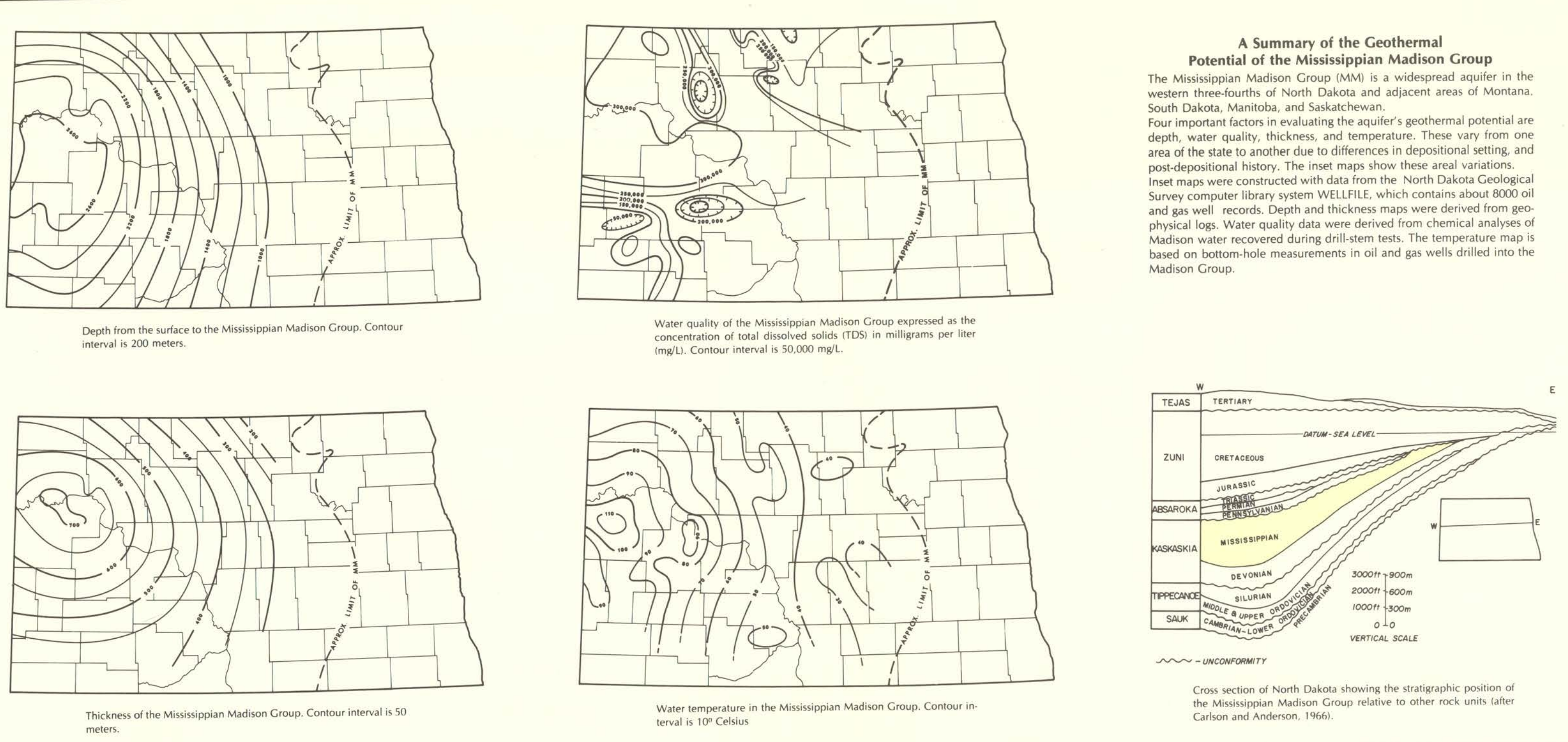
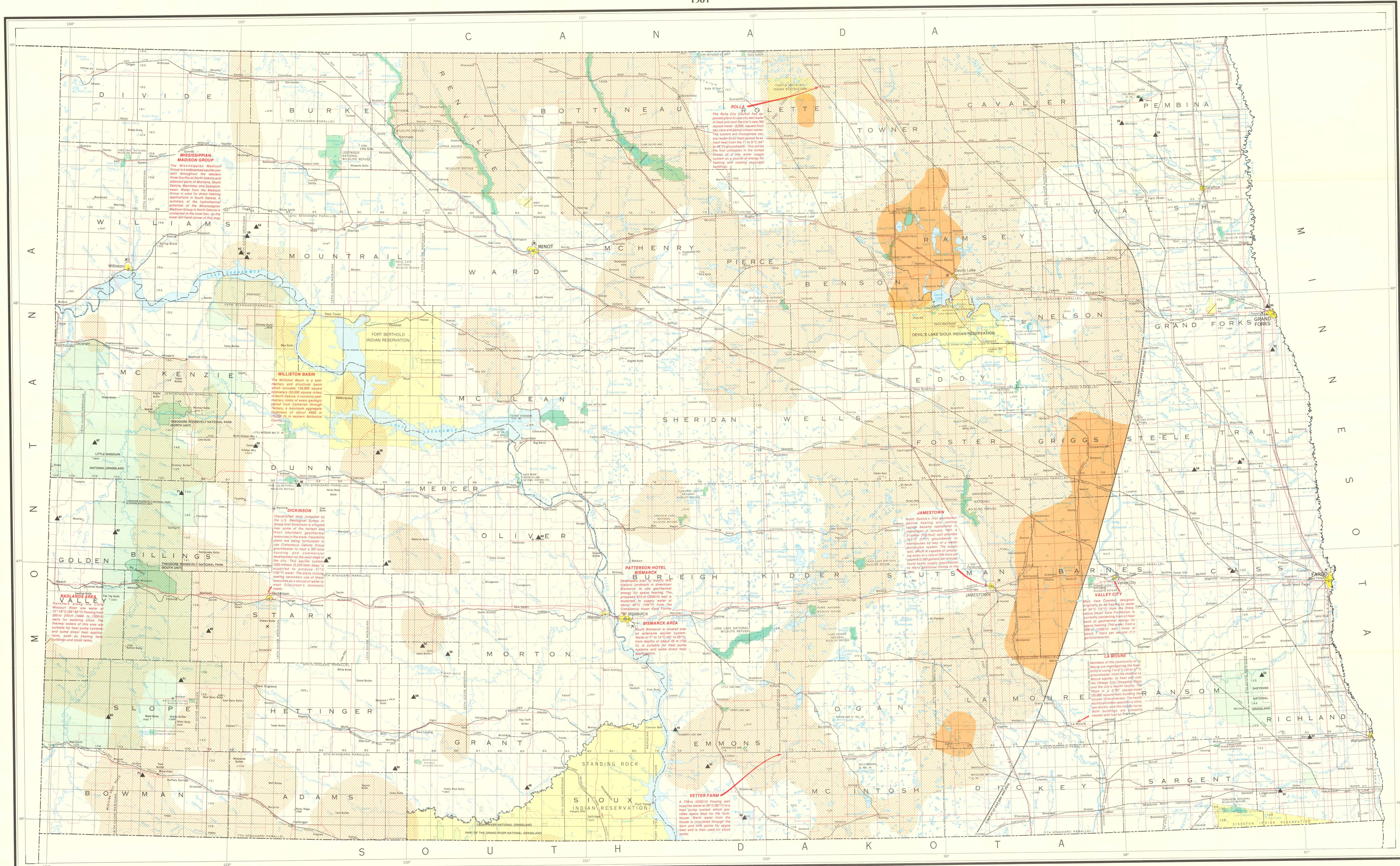


Geothermal Resources of North Dakota

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Low-Temperature Geothermal Waters

Dotted orange areas indicate regions with geothermal gradients of 20° to 40°C/m. Solid orange areas indicate regions with geothermal gradients of 40°C/m or greater. The solid and dotted orange areas are favorable for the discovery of low-temperature geothermal water, less than 100°C (212°F) at depths less than 1 km (3281 ft). Geothermal gradients are calculated from bottom-hole temperatures and total depths of oil and gas wells using a mean annual surface temperature of 4.4°C (39°F). Existing knowledge does not permit the inference that water may be found in a useful temperature range or economic depth everywhere in the shaded areas, and boundaries are only approximate.

Heat Flow

▲ Heat flow values in milliwatts/cm² at 1-m depth = 1000 = One heat flow unit (HFU)

References

- Carlson, C.C., and Anderson, S.B.: 1966, Sediments and tectonic history of North Dakota and the Williston Basin. North Dakota Geological Survey Miscellaneous Series Number 28, p. 193-246.
- Scantlin, R.S.: 1978, Heat flow and heat transfer studies in North Dakota. Grand Forks, University of North Dakota unpublished Ph.D. dissertation, 244 p.
- Zabell, D.A.: 1979, Determination of potential heat flow in northwestern North Dakota. Grand Forks, University of North Dakota unpublished M.S. thesis, 30 p.

Geothermal data compiled under the direction of Kenneth L. Harris of the North Dakota Geological Survey with assistance of Sidney B. Anderson and Howard R. Limphay of the North Dakota Geological Survey, Francis L. Howell and Aram A. Winczowski of the University of North Dakota, and Bruce A. Gauder of the National Resources Council.

Map available free of charge from North Dakota Geological Survey, University Station, Grand Forks, North Dakota 58202.

Map produced by the National Geophysical and Solar-Terrestrial Data Center National Oceanic and Atmospheric Administration for the Division of Geothermal Energy United States Department of Energy

Metric Conversion Factors

- 1 kilometer = 0.6214 mile
- 1 meter = 3.281 feet
- 1 liter = 0.264 gallon
- 1 milligram/liter = 1 part per million
- *Gal = 3.785 liters = 3.22 gallons
- *Barrel = 9.46 liters = 8.08 gallons

