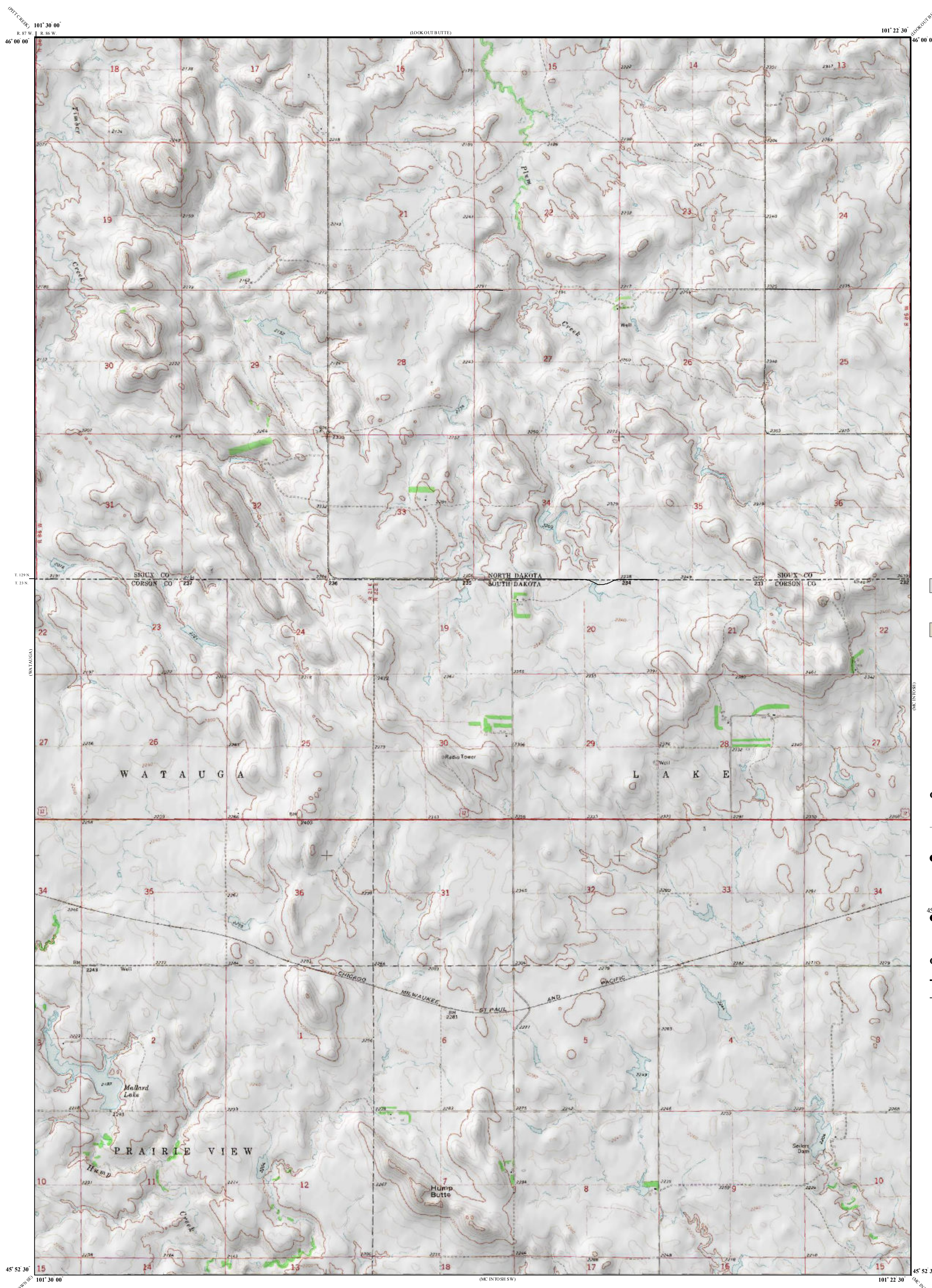


Lignite Reserves

Hump Butte Quadrangle, North Dakota

Edward C. Murphy
2019



UNIT DESCRIPTIONS

GU Geology Undifferentiated

I Economic Coal Deposits

Economic coal deposits are those that meet the minimum criteria established by coal companies operating surface mines in North Dakota. These economic criteria include a minimum cumulative coal thickness of ten feet-typically occurring in less than two beds, a minimum individual bed thickness of at least 2.5 feet, a ratio of overburden to coal thickness of not more than 10:1, a minimum of 25 feet of overburden, and a maximum depth to coal of approximately 150 feet.

Geologic Symbols

— Extent of Local Lignite Reserves

● Data Points
Includes coal exploration NDGS/USGS drill holes, sub-surface mineral drill holes, oil & gas wells, and NDSWC drill holes.

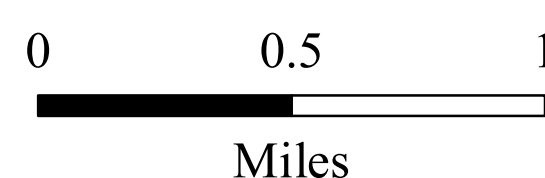
● 4522 Drill Hole Numbers

Other Features

— Paved Road

- - - Unpaved Road

Scale 1:24,000



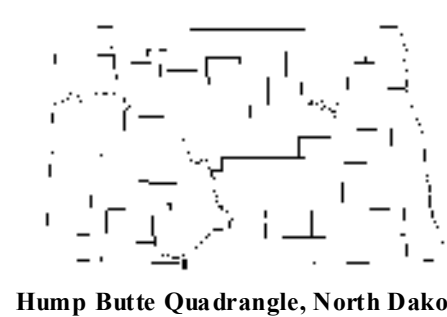
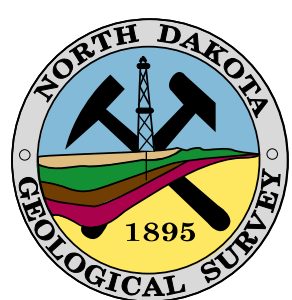
Miles

Lambert Conformal Conic Projection Standard Parallels 45° 52' 30" and 46° 00' 00"
1927 North American Datum NGVD 1929
USGS 7.5 Minute Topographic Map - Contour Interval 20 Feet

12° 00'

MN

1972 Magnetic North
Declination at Center of Sheet



Hump Butte Quadrangle, North Dakota