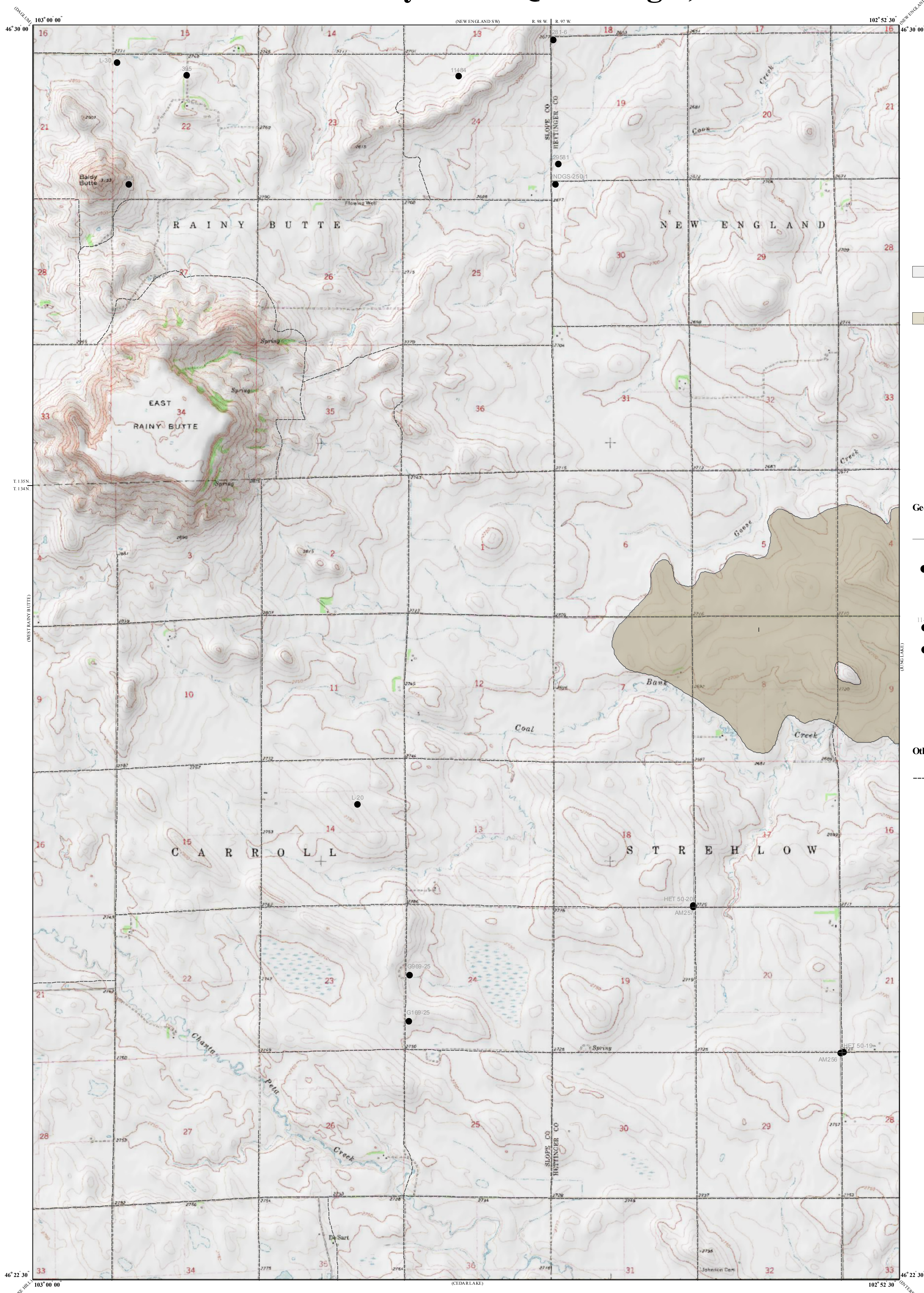


# Lignite Reserves

## East Rainy Butte Quadrangle, North Dakota

**Edward C. Murphy**  
**2009**



### UNIT DESCRIPTIONS

Geology Undifferentiated

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 drill holes, and NDSWC drill holes.

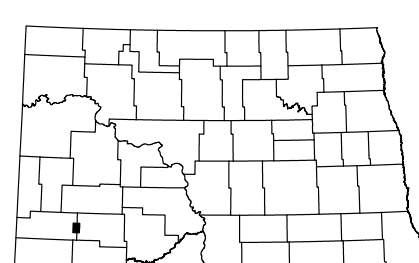
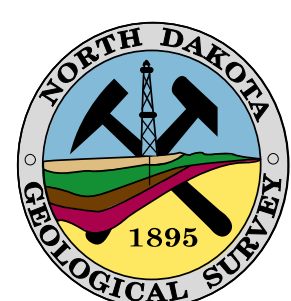
Drill Hole Numbers

Thickness (in feet) of Mineable Lignite

Coal thicknesses were determined by interpretation of electric logs from individual drill holes. Gamma and density logs were typically available for coal exploration holes but, oil wells were often limited to a gamma log run through surface casing.

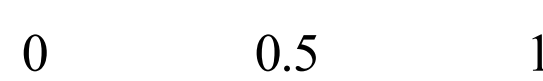
### Other Features

Unpaved Road



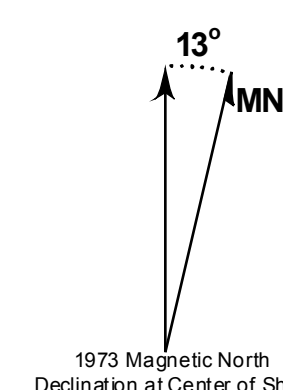
East Rainy Butte Quadrangle, North Dakota

Scale 1:24,000



Miles

Lambert Conformal Conic Projection Standard Parallels 46° 22' 30" and 46° 30' 00"  
1927 North American Datum NGVD 1929  
USGS 7.5 Minute Topographic Map Contour Interval 10 Feet  
Road Layer Rectified to 2003 NAIP Digital Orthophoto



1973 Magnetic North  
Declination at Center of Sheet

This project supported, in part by the U.S Geological Survey, Department of Interior, under assistance awards 02ERAG0016 and 05ERAG0053.