North Dakota Geological Survey
100K Series: GlnU - c

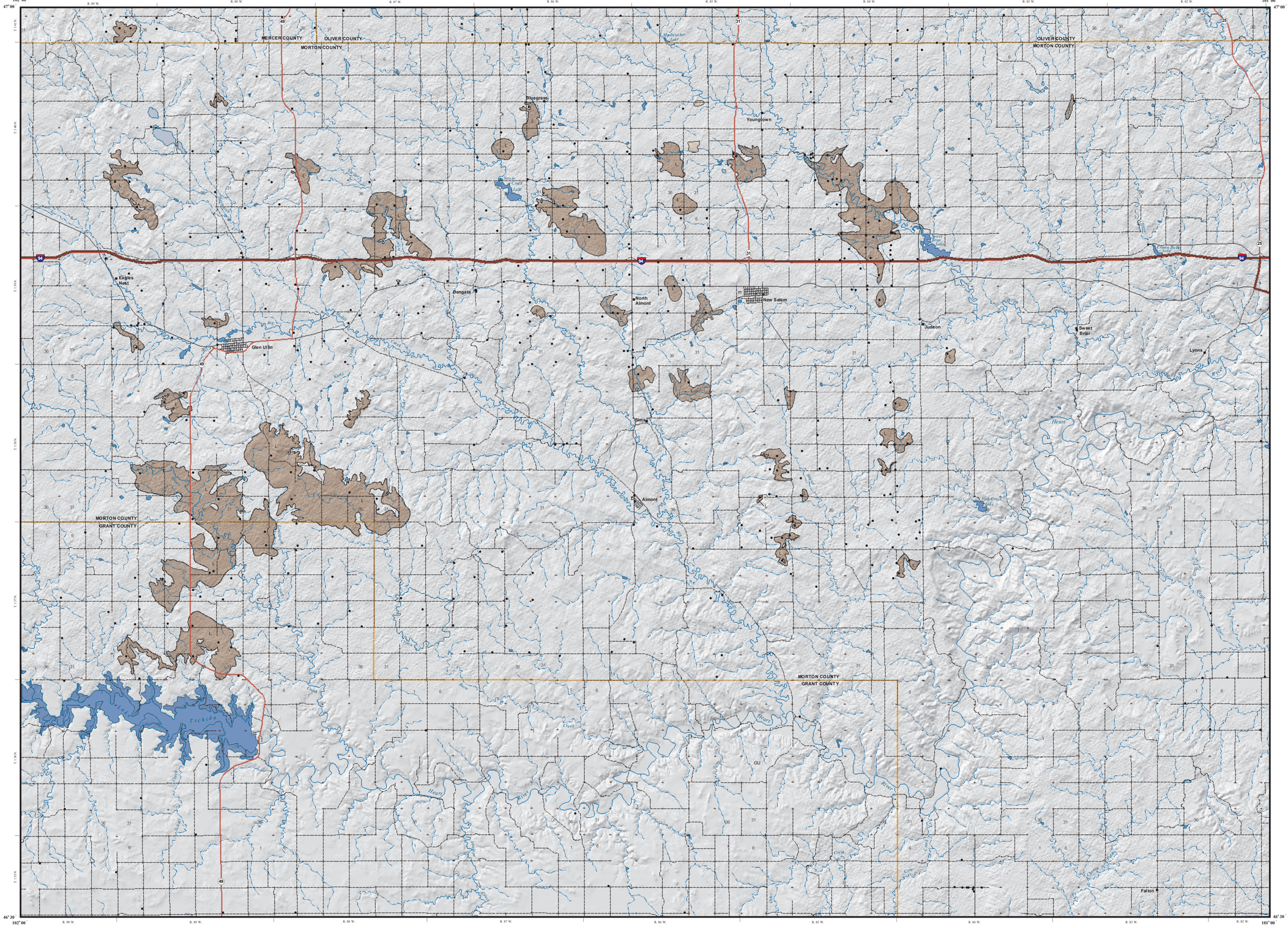
Lignite Reserves
Glen Ullin 100K Sheet, North Dakota

Killdeer	Hazen	Mc Clusky
Dickinson		Bismarck
Mott	Elgin	Linton

Adjoining 100K Maps

11° 30'
1980 Magnetic North
Declination at Center of Sheet

Edward C. Murphy, State Geologist
Lynn D. Helms, Director Dept. of Mineral Resources



Edward C. Murphy

2006

The Glen Ullin 100k sheet contains approximately 726 million tons of economically mineable lignite. The Heart Butte Creek (T137N, Rs 88 & 89W in Grant County) and Heart Butte Creek North (T138N, Rs 88 & 89W in Morton County) deposits account for approximately one-third of the mineable coal (275 million tons) in this map sheet. The Sweet Briar deposit, west-northwest of Sweet Briar Lake, contains about 90 million tons and is the second largest deposit in this area. The Twin Buttes deposit, three miles northwest of Dengate, is the only other deposit in the Glen Ullin sheet that exceeds 50 million tons (59 million). The thickest known coal within this sheet is twelve feet.

The Sentinel Butte and Bullion Creek Formations are the dominant rock units at the surface throughout this map sheet. According to the records of the North Dakota Public Service Commission, approximately 75 coal mines operated at one time or another in this area. Many of the mines operated for a short period of time and produced less than 100 tons of coal per year. The earliest coal mine in North Dakota was opened near Sims in 1873. The McCormick Coal Company, later the Deep Mine Coal Company, mined a nine-foot-thick coal at a depth of 200 feet by underground methods along the western outskirts of the town of New Salem. The mine operated from 1922 to 1951. Coal mining ceased within the Glen Ullin sheet in the 1960s when the Richter Mine (T139N, R88W, Section 13) and Carbon Mine near Almont closed.

References
Murphy, E.C., 2006. The Lignite Reserves of North Dakota: North Dakota Geological Survey Report of Investigation No. 104.

UNIT DESCRIPTIONS

Geology Undifferentiated

Geology Undifferentiated

L **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-typicallyoccuring in less than two beds, a minimum individual bed thickness of at least 2.5 feet, a ratio of overburden to coalthickness 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.

Other Features

- Water
- Water - Intermittent
- Water - Inundated
- River/Stream - Perennial
- River/Stream - Intermittent
- Section Corners
- County Boundary
- Interstate Highway
- State Highway
- Paved Road
- Unpaved Road

Scale 1:100,000

0 1 2 3 4

Miles

Mercator Projection 1927 North American Datum
Standard parallel 46° 30' Central meridian 101° 30'
USGS NED Shaded Relief - Vertical Exaggeration 9x

The North Dakota Geological Survey can publish on demand 1:24,000 scale quadrangle maps (24k - c series) of the mineable coal deposits in the Glen Ullin 100k sheet. These maps would include information on mineable coal thicknesses.

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Cartographic Compilation: Elroy L. Kadrmas