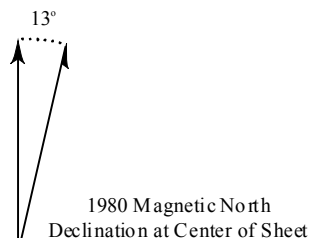


Lignite Reserves

Belfield 100K Sheet, North Dakota

Glendive	Grassy Butte	Killdeer
Wibaux		Dickinson
Baker	Bowman	Mott

Adjoining 100K Maps



Edward C. Murphy 2005

There are more than 6.6 billion tons of economically mineable lignite within the Belfield 100K Sheet (Murphy et al., in press). The Belfield deposit (Ts.137-140N., Rs.98-100W.) contains about 2.9 billion tons of coal and the Beach deposit (Ts.138-141N., R.106W.) contains almost 900 million tons (Murphy et al., in press). These are the two most likely candidates for mining, within this map sheet, because most other deposits fall within the rough topography of the Little Missouri River Badlands. The Belfield deposit consists of one or two beds (the Lehigh and another coal) with cumulative thicknesses of 13 to 19 feet. The Beach deposit consists primarily of the Harmon bed which is 31 feet thick in the vicinity of the town of Beach (Murphy et al., 2000).

In the 1970s and early 1980s, the Tenneco Coal Company investigated the feasibility of establishing a coal gasification plant at Beach. The company abandoned plans when gas prices did not rise to the levels that had been projected in the early 1970s and because of concerns for an adequate source of cooling water. Great Northern Properties is currently investigating the feasibility of establishing a mine and 500 megawatt power plant within the Belfield deposit. The mine and plant would be located southwest of the town of South Heart, along the eastern edge of this map sheet.

References
Murphy, E.C., Kruger, N.W. and Goven, G.E., 2000, The major coals in Billings, Golden Valley, and Stark counties, North Dakota: North Dakota Geological Survey Open-File Report 00-1, 42 p.
Murphy, E.C., 2006, in press, The Lignite Reserves of North Dakota: North Dakota Geological Survey Report of Investigation No. 104.

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 over-burden 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

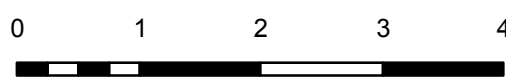
Extent of Local Lignite Reserves

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

Other Features

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

Scale 1:100,000



Miles
Mercator Projection 1927 North American Datum
Standard parallel 46° 30' Central meridian 103° 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 Belfield 100k sheet. These maps would include information on mineable coal thicknesses.

Note: This map was expanded beyond the normal Belfield 100K Sheet to include an additional width of two miles to the Montana border.

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