

EXPLANATION

Alluvium

Boulders, cobbles, gravel, sand, silt, and clay along

principal streams

Terrace deposits Gravel, sand, and silt occurring as terrace remnants

UNCONFORMITY

Tongue River Member of the Fort Union Formation Massive light-yellow to yellowish-red sandstone, siltstone, claystone, carbonaceous shale, and lignite. Thin lenses

of ironstone concretions in the claystone

· Glacial erratics Concentration of granitic cobbles and boulders from the Iowan(?) drift sheet of Pleistocene age. A northwestsoutheast-trending concentration of erratics seemingly occurs in the quadrangle. This trend corresponds closely with the outer limit of the advance of the drift sheet as shown by Colton, Lemke, and Lindvall (1963)

Contact

Dashed where approximately located 8.0

Lignite bed

Dashed where approximately located; closed triangle and number indicate measured thickness of lignite bed in feet; open triangle indicates burned lignite bed; letter designates name of bed as identified in columnar section. Line

drawn at base of lignite bed

Structure contour drawn on base of Kaleber lignite bed (D). Long dashed where approximately located; short dashed where inferred. Contour interval 10 feet. Datum is mean

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Kaleber mine Lignite strip mine

Abandoned strip mine

Abandoned shaft mine

Abandoned adit mine

Mine dump 01.5

Core hole

Number indicates thickness, in feet, of lignite penetrated

## ECONOMIC GEOLOGY

Lignite is the principal mineral deposit of economic value in the New Salem quadrangle. Beds of lignite 0.2 to 8.5 feet thick are exposed along outcrops and in strip pits in the Tongue River Member of the Fort Union Formation. One of the first large-scale mines in North Dakota was opened at Sims by the Northern Pacific Railway in 1884. Mining continued at Sims and New Salem until the 1920's. Most of the early mining was by sinking shafts or drifting into the hillsides. In recent years lignite has been mined by stripping methods. In 1965 only one strip mine, the Kaleber mine, about 4 miles south of New Salem, was operating. The bed mined is 8.5 feet thick and is overlain by sandstone and siltstone 30 to 50 feet thick. An analysis indicated that the lignite had a heat value of 9,840 Btu (air-dried) and contained 8.1 percent ash and 1.0 percent sulfur. The lignite is sold locally for domestic fuel.

No oil and gas tests have been made in the area and the potential for oil and gas in rocks in the subsurface is not known. Terrace gravels in sec. 22, T. 139 N., R. 85 W., provide a source of road metal.

## SELECTED REFERENCES

Colton, R. B., Lemke, R. W., and Lindvall, R. M., 1963, Preliminary glacial map of North Dakota: U.S. Geol. Survey Misc. Geol. Inv. Map I-331.

Hancock, E. T., 1921, The New Salem lignite field, Morton County, North Dakota: U.S. Geol. Survey Bull. 726-A, p. 1-39.

Leonard, A. G., 1912, The geology of south-central North Dakota: North Dakota Geol. Survey Sixth Biennial Report, p. 21-99.



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