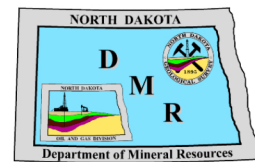




Offshore Glaciolacustrine Deposits of Glacial Lake Agassiz: The Brenna Formation in Cass County, North Dakota



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2023

LOCATIONS OF DRILLHOLES

This map displays the locations of drillholes in Cass County consisting of test holes, water wells, and deep foundation borings, used to map the geologic extent of the Brenna Formation in the shallow subsurface. The Brenna Formation consists of smectitic clay that was deposited as offshore deep-water sediment into glacial Lake Agassiz during latest Wisconsinan time. Lithologically, the Brenna Formation in Cass County contains, on average, 85% clay, 15% silt, with minor (0.1%) amounts of sand (Figure 1). It was only deposited in the eastern part of the county and covers an area of 839 mi² (2,173 km²). It is more laterally extensive southwest of Fargo and less extensive to the northwest of the city. The smectitic clay mineralogy of the Brenna Formation results in a soft and expansive clay that is problematic for surface engineered works as it has low, load-bearing properties.

Drillhole Locations

- Test Hole
- Observation Wells
- NDDOT Geotechnical Borings
- Private Well
- Water Supply Well
- Brenna Extent

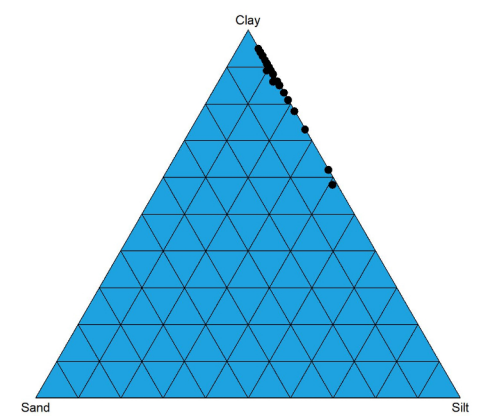
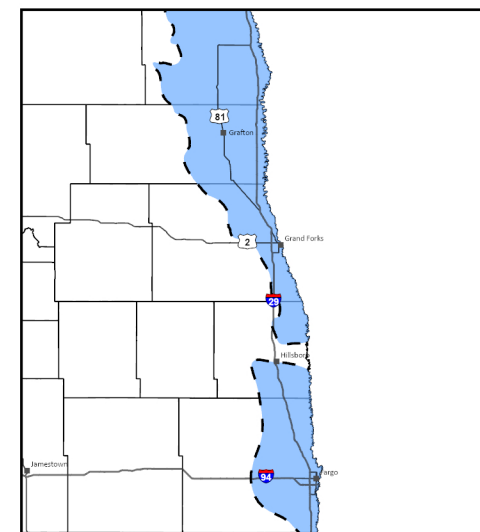
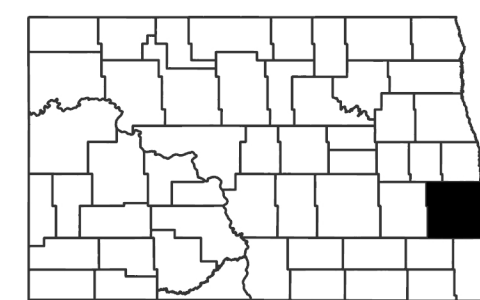


Figure 1. Ternary diagram of Brenna Formation lithology in Cass County.



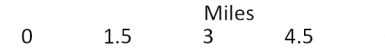
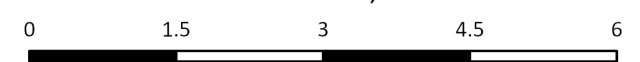
Location and extent of the offshore lake clays of the Brenna Formation in the Red River Valley of North Dakota.



Cass County, North Dakota



Scale 1:125,000



Mercator Projection
Standard Parallel 46°37'30"N
North American 1983 Datum
Central Meridian 97°11'15"W

