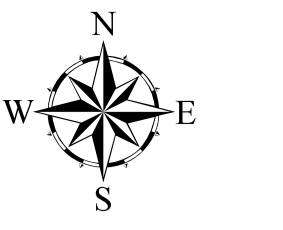


Surface Geology Kildeer 100K Sheet, North Dakota



by
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2003

UNIT DESCRIPTIONS

QUATERNARY SYSTEM

RECENT OAHIE FORMATION

Qal Alluvium
Brownish gray to black sand, silt, clay, and lenses of gravel; floodplain deposits (typically less than 30 feet thick) along recent drainages. Not differentiated where it overlies Qc.

Qsl Landslide Deposits
Variable mixture of strata and deposits that have slid to the base of steep slopes.

Qml Abandoned Mine Lands
Surface underlain by voids created by the underground mining of lignite. Collapse of the mine voids often creates sinkholes or depressions at the surface.

Qgl Pleistocene
Qc Cole Harbor Group
Qca Glacial Deposits
Grayish brown, sandy, silty, blocky clay with lenses of sand and gravel (glacial till). May occasionally include thick deposits of glacial outwash. Generally preserved as a veneer in the uplands.

Qch Hummocky Glacial Deposits
Glacial deposits which have an irregular surface that contains numerous, small undrained depressions (hummocks). The hummocks are easily identified on aerial photographs.

Qcc Proglacial Channels
Generally contain 50 to 200 feet of sand and gravel, silt, clay, and till (meltwater-channel fill). Overlain by Recent alluvium (Qal) of variable thickness. This map unit was created to distinguish between these very thick channel deposits and the moderate to thin deposits mapped as Qal. Some modern rivers and creeks, such as Branch Knife River and the eastern segments of Deep Creek and Knife River, flow entirely within the course of these proglacial channels. Others, such as the Knife River (in T. 142N., R. 94W.) and Deep Creek (in T. 142N., R. 94&95W.) intersect them at right angles, carving more recent channels. Both the Branch Knife River and Deep Creek flow north within proglacial channels that were originally carved by south-flowing water.

Qct Proglacial Terrace Deposits
An isolated proglacial channel where the upper surface has remained relatively intact because modern streams cut across it but do not flow lengthwise through the old channel. As a result, the top of these deposits lies 20 to 30 feet above the surrounding Qc deposits. In most of the proglacial channels in the area, the original upper surface is preserved only in isolated terrace deposits (Qct).

Qcn Glacial Channels
Generally contain less than 50 feet of channel fill deposits (sand and gravel, silt, and clay) typically much narrower than the proglacial channels. Overlain by Recent alluvium of variable thickness.

Qat Terrace Deposits
Five- to 20-foot-thick layers of sand and gravel (consisting primarily of siltstone, chert, flint, agate, petrified wood, silstone and, along the Green River, quartzite and porphyries) found beneath flat to gently undulating slopes adjacent to many of the major creeks and rivers.

Qs Sand and Gravel Deposits
Layers of sand and gravel found in two primary deposits: as glacial outwash draping over pre-existing topography or as sand and gravel derived primarily from Arkaree and Golden Valley strata, capping narrow, sinuous ridges.

Qp Pediment Deposits
Slopes inclined away from the Kildeer Mountains, capped with layers of gravel consisting primarily of carbonate and chert cobbles and gravel.

TERTIARY SYSTEM

MIOCENE-OLIGOCENE

Ta Arkaree Formation
Buff-colored tuffaceous sandstone, siltstone, and fresh water carbonate.

Te Eocene
Tc Chadron Formation
Sandy and pebbly mudstone and clayey sandstone.

Tcp Eocene-Paleocene
Tpv Golden Valley Formation
Camels Butte Member:
Alternating beds of yellowish brown to brown, micaceous sandstone, siltstone, mudstone, claystone, and lignite.
Bear Den Member:
Brightly colored, kaolinitic claystone, mudstone, and sandstone typically overlain by a thin siliceous bed (silence) or lignite.

Tsb Sentinel Butte Formation
Alternating beds of grayish brown to gray sandstone, siltstone, mudstone, claystone, and lignite.

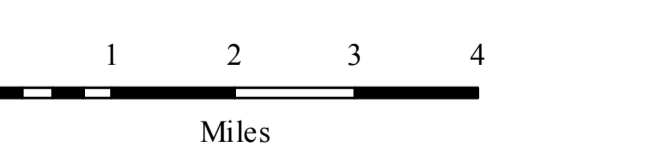
The unit description colors on the map will vary when compared to the colors in the legend. This is due to the shaded relief component of the map and the transparency of the geology layer overlying the shaded relief.

Other Features
Water
Water - Intermittent
River/Stream
Stream - Intermittent
Section Corner
County Boundary
State Highway
Paved Road
Unpaved Road

Geologic Symbols
Known contact between two geologic units
Approximate contact between two geologic units
Inferred (unknown) contact between two geologic units

The North Dakota Geological Survey compiled this map according to conventional cartographic standards, using what is thought to be the most reliable information available. The North Dakota Geological Survey does not guarantee freedom from errors or inaccuracies and disclaims any legal responsibility or liability for interpretations made from the map, or decisions based thereon. This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program.

Scale 1:100,000



Lambert Conformal Conic Projection Standard parallels 47° 00' and 47° 30'
Shaded Relief - Vertical Exaggeration 9X 1927 North American Datum

