North Dakota Geological Survey
24K: Vlva - sg

Surface Geology

Velva Quadrangle, North Dakota

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

John P. Bluemle
2006

EXPLANATION

QUATERNARY SYSTEM

RECENT

OAHE FORMATION

Qor **Alluvium**

River and stream sediment. Dark obscurely bedded clay and silt (mainly overbank sediment); generally overlying cross-bedded sand (channel sediment); on plains of modern streams.

Qos **Pond and Slough Sediment**

Dark, obscurely bedded clay and silt; in modern ephemeral ponds.

RECENT/ PLEISTOCENE

Ql **Landslide Deposits**

Variable mixture of strata and deposits that have slid to the bases of slopes.

PLEISTOCENE

COLEHARBOR GROUP

Silt Facies

(Insignificant amounts of this facies on this quadrangle)

Sand and Gravel Facies

River sediment. Moderately well-sorted, cross bedded sand and plane-bedded gravel, including sediment of meltwater rivers.

Qcrf **Uncollapsed Flat Fluvial Plains**

Flat-bedded sediment of nearly level plains and river terraces, commonly with braided channel scars, oxbows, and other relict markings; relief of 1 to 10 feet. Mainly along the Souris River with minor occurrences in tributary valleys.

Qcrt **River terrace sediment**

Mainly gravel and sand along the edges of the Souris River Valley.

Qcic **Ice-Contact Deposits**

Mainly gravel and sand with cobbles and boulders common; inclusions of glacial sediment common; local relief up to 50 feet; eskers and kames.

Till Facies

Glacial sediment. Unsorted, unbedded mixture of angular, subangular, and rounded blocks of rock, gravel, and sand, generally in a stiff matrix of silt and clay; yellowish-brown to olive-gray in exposures depending on weathering intensity; contains discontinuous lenses of gravel and sand.

Qcdg **Thin Layer of Till**

Veneer of till draped over and only slightly modifying the pre-existing topography (pre-glacial bedrock, older till, or gravel surface); relief up to 75 feet locally; some ice-thrust hills (Qct) that have been subsequently overridden by ice have a thin layer of till on top and are identified as Qcdg (hard to distinguish from Qct).

Qcer **River-Eroded Glacial Sediment**

Glacial sediment with flat to undulating topography resulting from stream erosion in the bottom of large meltwater trenches or over board areas of till that have been washed by running water; overlain by a thin layer of fluvial sediment of the Coleharbor group or Oahe Formation in places.

Qccr **Collapsed Glacial Sediment-Rolling**

Rolling surface with kettles, partially to nonintegrated drainage, and numerous ice-disintegration features; slopes mainly to the southwest (toward the Missouri Coteau Escarpment).

Qct **Ice-Thrust Masses**

Glacial sediment that has been draped over glacial or preglacial sediment or rock that has been sheared up into thrust slabs or folds near the ice margin; hilly areas with intense internal linearity; local concentrations of gravel and boulders; local relief may exceed 150 feet.

Geologic Symbols

Known contact between two geologic units

Transverse Ridge

Beach - Scarp

Other Features

Water

State Highway

US Highway

Paved Road

Unpaved Road

Velva Quadrangle, North Dakota

Scale 1:24,000

0 0.5 1

Miles

Lambert Conformal Conic Projection Standard Parallels 48° 00' 00" and 48° 07' 30"
1927 North American Datum NGVD 1929
USGS 7.5 Minute Topographic Map Contour Interval 5 Feet
Roads and Hydrologic Layers Rectified to 2003 NAIP Digital Orthophoto

1948 Magnetic North
Declination at Center of Sheet

Cartographic Compilation: E.L.Kadrmas & S.S.Kranich

This geologic map was funded in part, by the USGS National Cooperative Geologic Mapping Program.