

Surface Geology

Manfred NW Quadrangle, North Dakota

John P. Bluemle
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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.

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 relief markings; relief of 1 to 10 feet. Mainly along minor valleys.

Qcrf1 Uncollapsed Flat Fluvial Plains (lower)

A lower level of Qcrf; the lower level was formed after the upper level.

Qcrfu Uncollapsed Flat Fluvial Plains (upper)

An upper level of Qcrf. This upper level formed before the lower level.

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.

Qcgg Collapsed Glacial Sediment

Spurglacial sediment with hummocky topography; areas of linear topography and ice-thrust topography interspersed; gently undulating with 1 to 2 degree maximum slopes.

Qccl Hilly surface with numerous kettles

Ice-disintegration features, and poorly integrated drainage; has both overall and internal linearity; moderately thick layer of till, relief of 30 to 75 feet locally; ice marginal topography; ("Pony Gulch moraine").

Qcet Ice-Thrust Masses

Glacial sediment 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.

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 broad areas of till that have been washed by running water; overlain by a thin layer of fluvial sediment of the Coleharbor Group or Oahe Formations in places.

Qcei Deeply Eroded River Valley

Deeply eroded sides of the Sheyenne River Valley. Mainly glacial till, but also some gravel and sand and a few exposures of Cretaceous bedrock (Hell Creek Formation).

Geologic Symbols

— Known contact between two geologic units

Other Features

Water

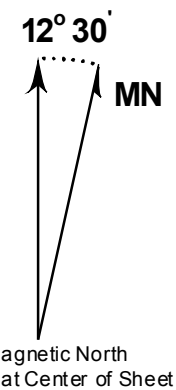
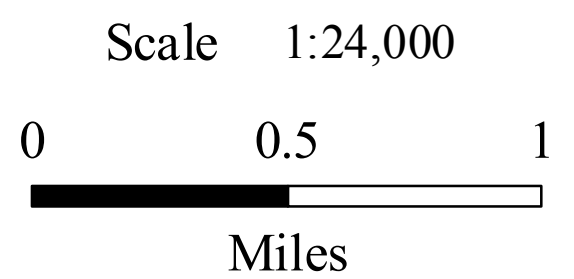
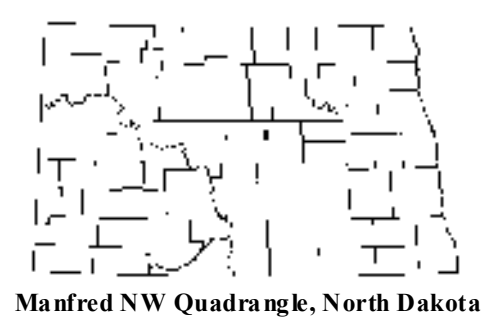
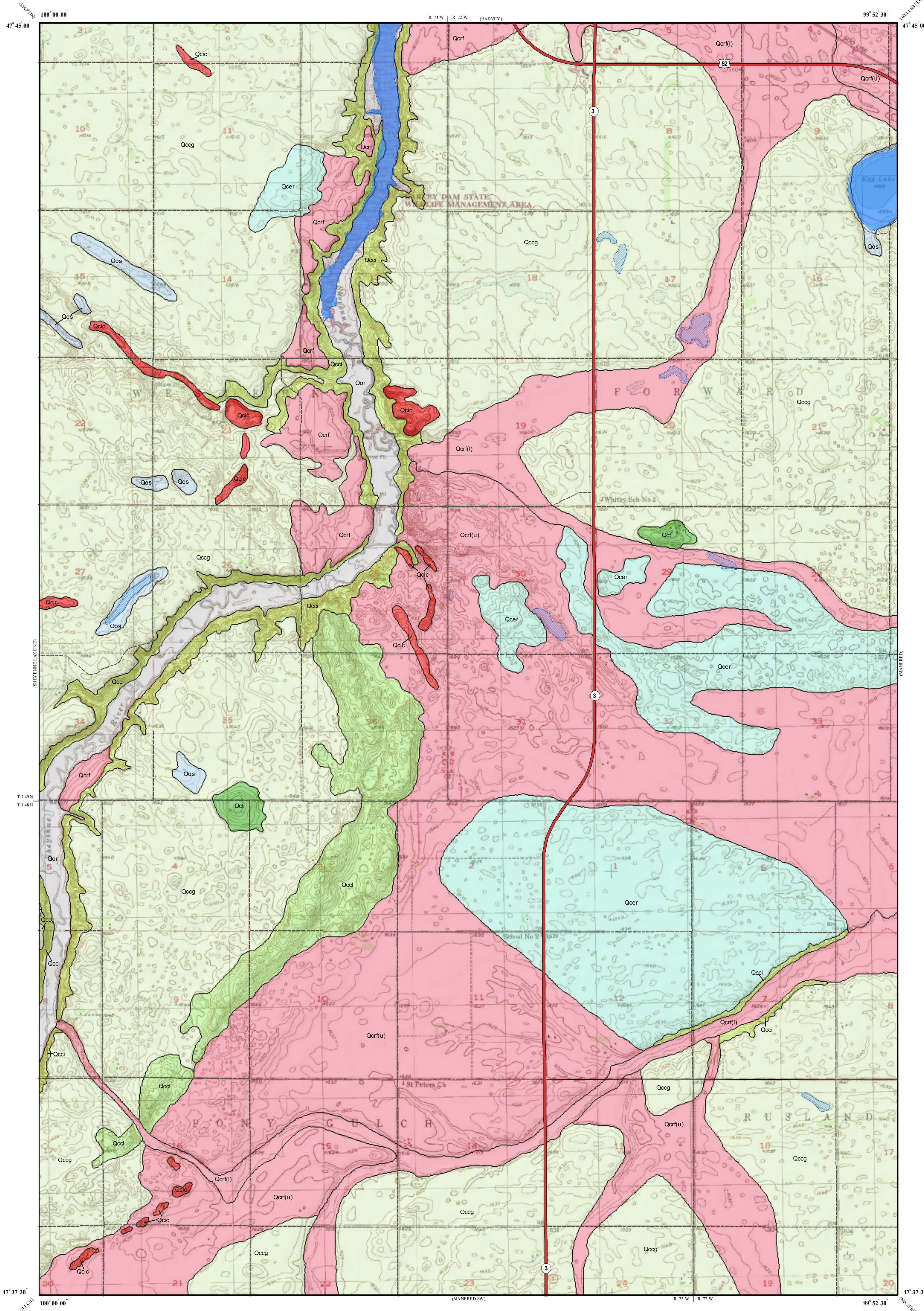
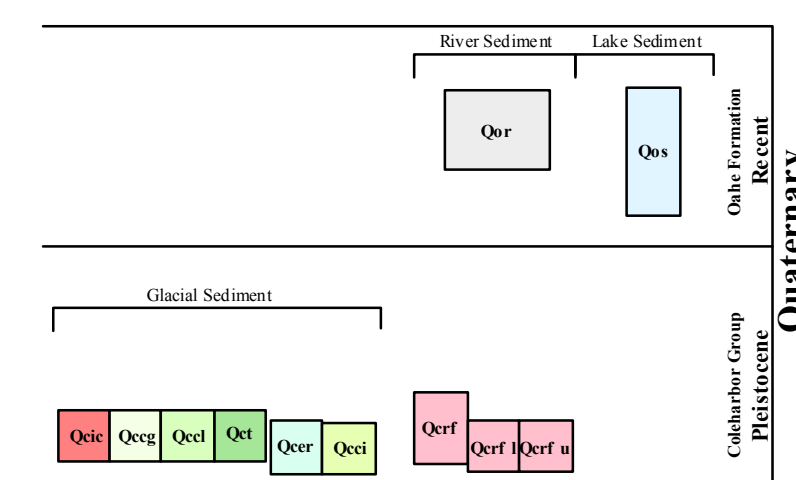
Water - Intermittent

US Highway

State Highway

Paved Road

Unpaved Road



Lambert Conformal Conic Projection Standard Parallels 47° 37' 30" and 47° 45' 00"
1927 North American Datum NGVD 1929
USGS 7.5 Minute Topographic Map Contour Interval 5 Feet
Road and Hydrologic Layers Rectified to 2003 NAIP Digital Orthophoto