

# Surface Geology

## Mandaree SW Quadrangle, North Dakota

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2007

### EXPLANATION

#### QUATERNARY SYSTEM

##### RECENT

##### OAHE FORMATION

**Qal** Alluvium

Brownish gray to black sand, silt, clay, and lenses of gravel; flood-plain deposits along recent drainages. Includes lower terrace deposits. Typically less than 50 feet thick.

**Qc** Colluvium

Poorly sorted mixture of sand, silt, clay, and gravel forming aprons at the base of steep slopes.

##### RECENT/PLEISTOCENE

**Qls** Landslide Deposits

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

##### PLEISTOCENE

##### COLEHARBOR GROUP

**Qcg** Glacial Deposits

Grayish brown, sandy, silty, bouldery clay with lenses of sand and gravel (glacial till). May occasionally include thick deposits of glacial outwash.

#### TERTIARY SYSTEM

##### EOCENE/PALEOCENE

**Tgv** 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 (silerete) or lignite.

##### PALEOCENE




**Tsb** SENTINEL BUTTE FORMATION

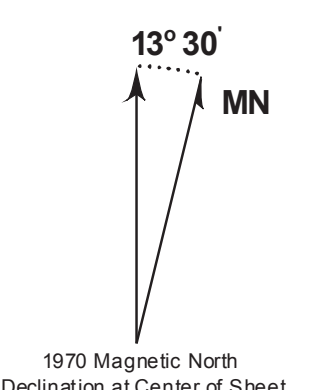
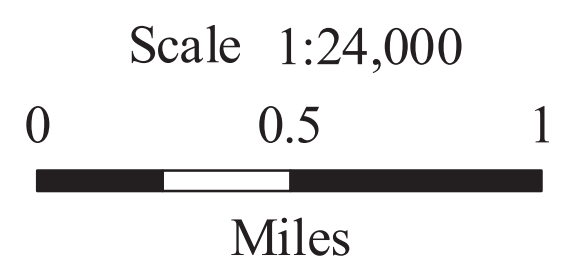
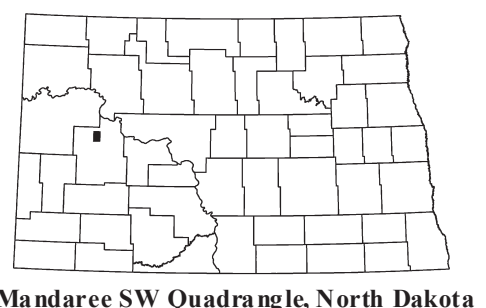
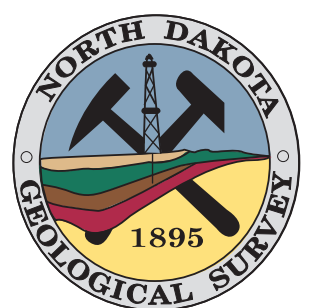
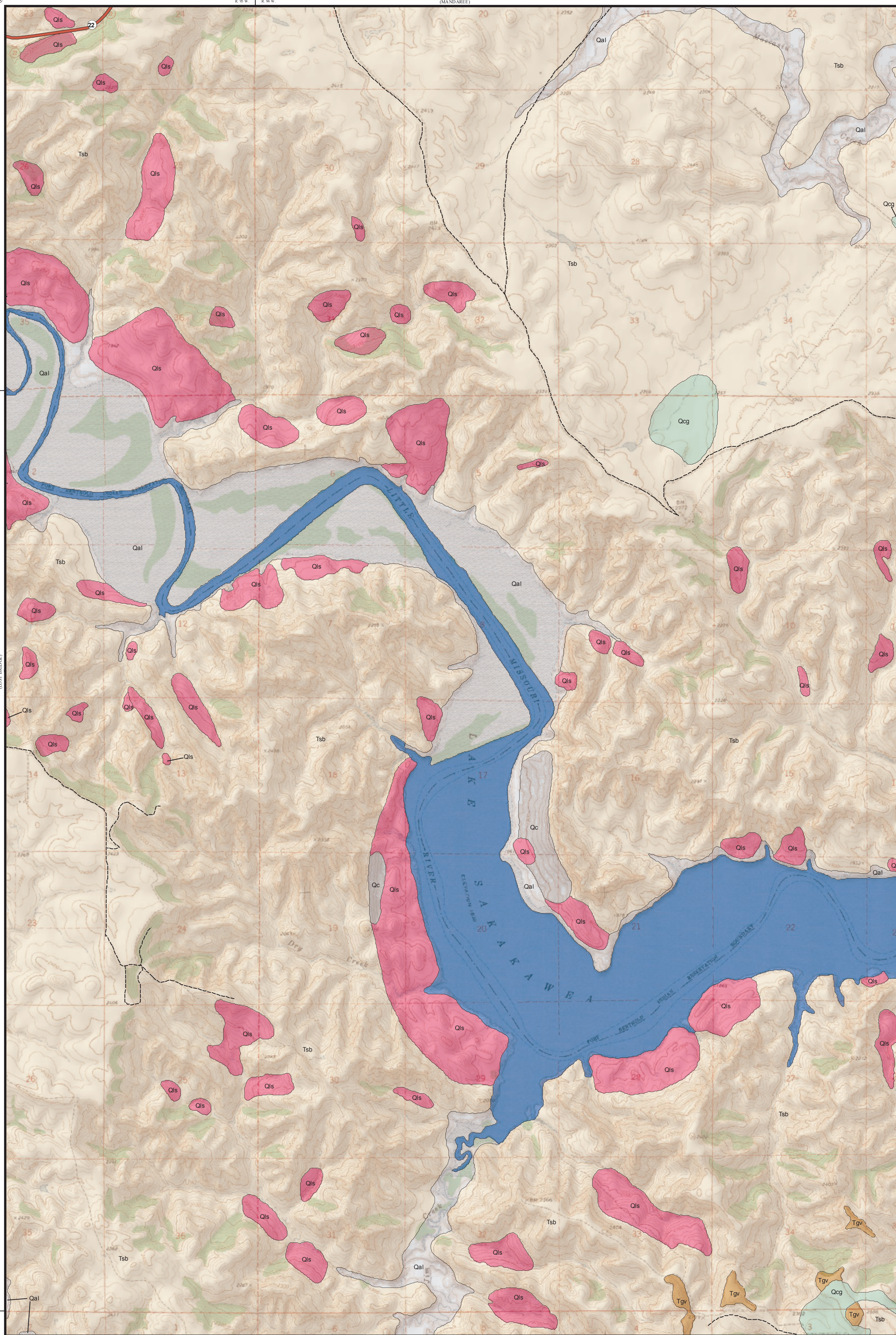
Alternating beds of grayish brown to gray sandstone, siltstone, mudstone, claystone, and lignite.

#### Geologic Symbols

- Known contact between two geologic units.
- - - Approximate contact between two geologic units.

#### Other Features

-  Water
-  State Highway
-  Unpaved Road



Lambert Conformal Conic Projection Standard Parallels 47° 30' 00" and 47° 37' 30"  
1927 North American Datum NGVD 1929  
USGS 7.5 Minute Topographic Map Contour Interval 20 Feet  
Road Layer Recultured to 2003 NAIP Digital Orthophoto