

Surface Geology

Richardton Quadrangle, North Dakota

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EXPLANATION

QUATERNARY SYSTEM

RECENT

Manmade Features or Deposits

g Gravel Pit

u Lignite Mine - Underground

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.

Qat Terrace Deposits

Five- to 10-foot-thick layers of sand and gravel (consisting primarily of siltcrete, chert, flint, agate, petrified wood, and siltstone) found beneath flat to gently undulating slopes adjacent to creeks in this area.

RECENT/PLEISTOCENE

Qls Landslide Deposits

Variable mixture of strata and deposits that have slid to the base of steep slopes. Typically rotational slump blocks.

PLEISTOCENE

COLEHARBOR GROUP

Qac Proglacial Channels

These channels 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.

Tsb/sw Stream Washed

The surface of the Sentinel Butte Formation has been modified by high water or flood deposits flowing through the proglacial channels. While difficult to discern from the ground, this eroded surface is readily apparent on aerial photographs. The surface is occasionally littered with erratics or covered by thin sand and gravel units.

TERTIARY SYSTEM

PALEOCENE

FORT UNION GROUP

Tsb SENTINEL BUTTE FORMATION

Alternating beds of grayish brown to gray sandstone, siltstone, mudstone, claystone, and lignite. The sandstones are fine to very fine grained, moderately to poorly cemented, and contain cross-stratification.

Geologic Symbols

— Known contact between two geologic units

- - - Approximate contact between two geologic units

* Control point; typically an outcrop, drill hole, or excavation.

3° Strike and Dip
The strike is the compass bearing of the line formed by the intersection of an inclined layer of rock and a horizontal plane and the dip is the angle of inclination of a rock layer. The dip is always perpendicular to strike.

Other Features

Water

94 Interstate Highway

8 State Highway

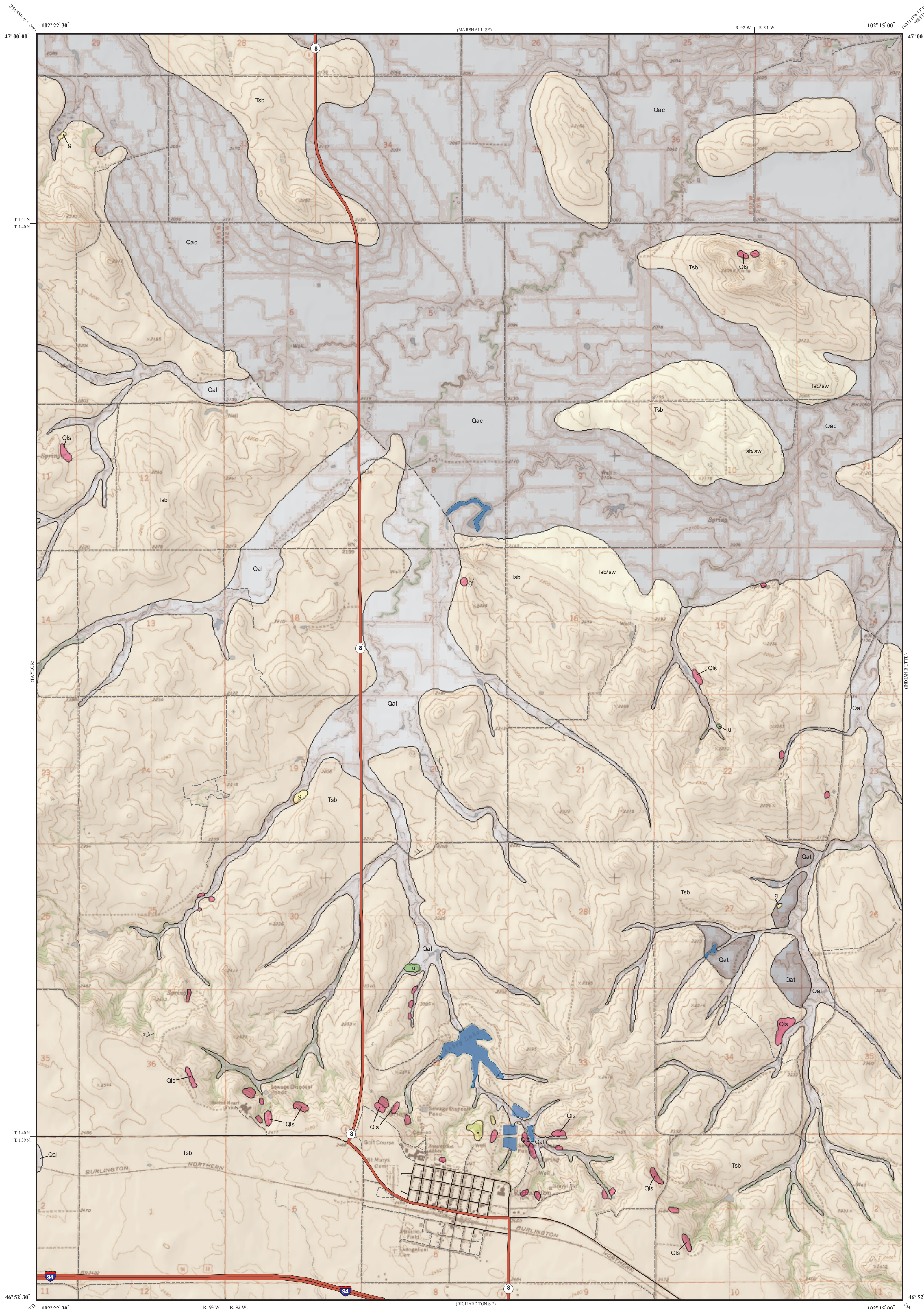
Paved Road

Unpaved Road

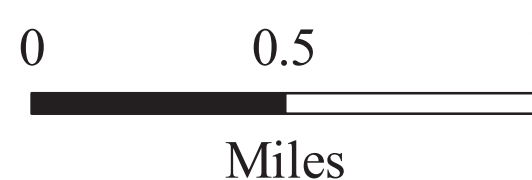
Correlation of Map Units

Recent	Qal	Qat	Qls	u	g
Pleistocene	Qac	Tsb/sw			
Paleocene	Tsb				

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



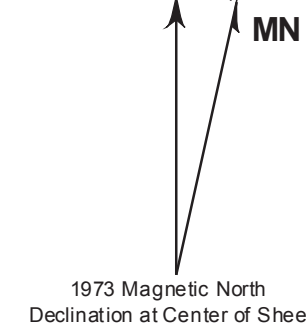
Scale 1:24,000



Miles

Lambert Conformal Conic Projection 1927 North American Datum
Standard Parallels 46° 52' 30" and 47° 00' 00" NGVD 1929
USGS 7.5 Minute Topographic Map Contour Interval 20 Feet

12° 30'



1973 Magnetic North Declination at Center of Sheet



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