

# Surface Geology

## Lookout Butte SE Quadrangle, North Dakota

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2007

### UNIT DESCRIPTIONS

#### QUATERNARY SYSTEM

##### RECENT

##### OAHE FORMATION

**Qal Alluvium**  
Sand, silt, clay, and occasionally gravel deposited under fluvial conditions (by a river or creek). Organic content is variable but often contain paleosols (ancient soil horizons). Bedding typically ranges from small scale cross-bedding to planar to obscurely bedded.

##### HOLOCENE/PLEISTOCENE

**Qat Alluvial Terrace Deposits**  
Silt, sand, and occasionally thin beds of gravel up to 80 feet thick preserved in terraces of variable thickness within the Valley of Cedar Creek, Cannonball, and associated tributaries.

#### TERTIARY SYSTEM

##### PALEOCENE

**Tc CANNONBALL FORMATION**  
Marine, gray to black interbedded to shaly mudstone and fine grained, well sorted sandstone. The sandstone is typically poorly cemented but does contain several thin (less than 3 feet thick) well-cemented, lenticular lenses.

**Tl LUDLOW FORMATION**  
Nonmarine, yellowish brown to grayish brown alternating beds of sandstone, siltstone, mudstone, claystone, and lignite.

#### CRETACEOUS SYSTEM

**Kh HELL CREEK FORMATION**  
Nonmarine, gray to grayish brown colored beds of sandstone, siltstone, mudstone, and swelling claystone.

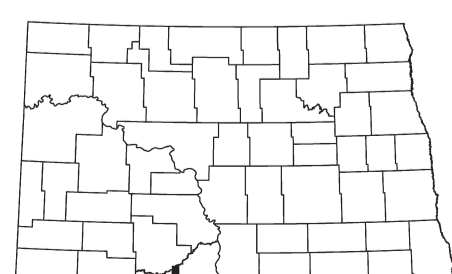
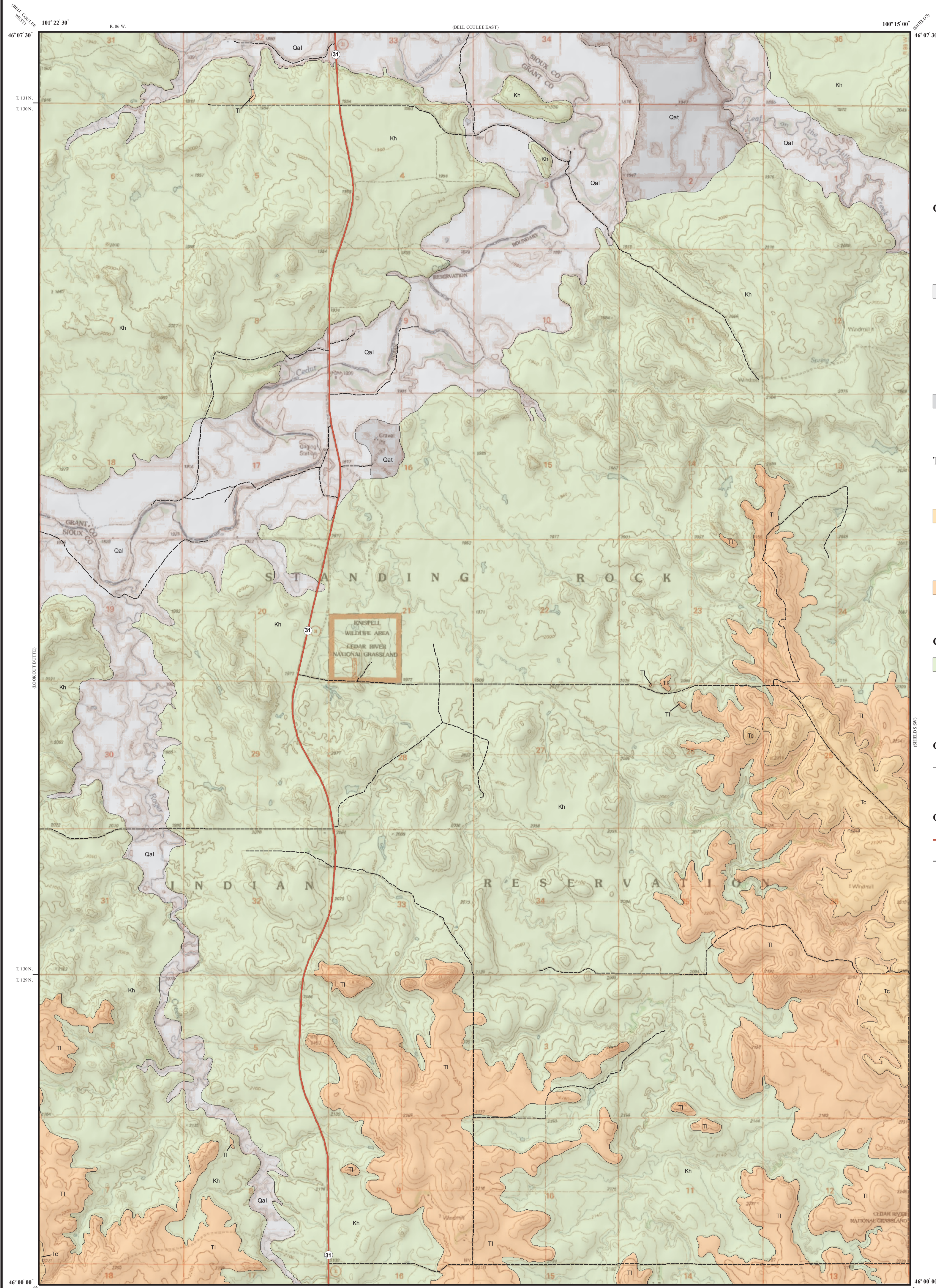
#### Geologic Symbols

— Known contact between two geologic units

#### Other Features

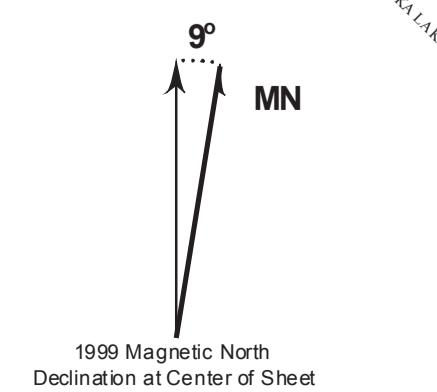
— State Highway

--- Unpaved Road



Lookout Butte SE Quadrangle, North Dakota

Scale 1:24,000  
0 0.5 1  
Miles  
Lambert Conformal Conic Projection Standard Parallels 46° 00' 00" and 46° 07' 30"  
1927 North American Datum NGVD 1929  
USGS 7.5 Minute Topographic Map Contour Interval 20 Feet  
Road Layer Recified to 2003 NAIP Digital Orthophoto



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

Cartographic Compilation: Elroy L. Kadmas