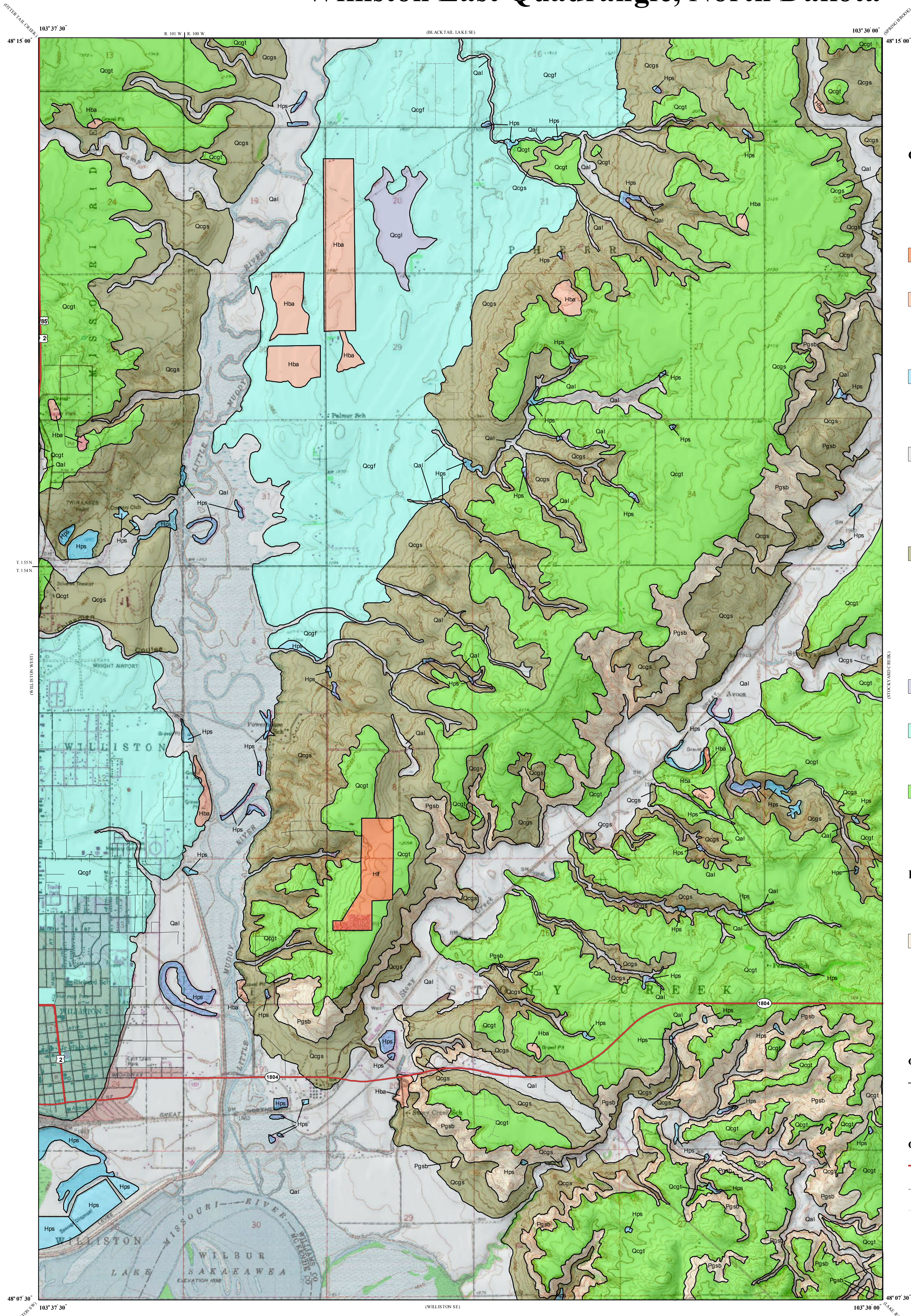


Surface Geology

Williston East Quadrangle, North Dakota

Mark R. McDonald

2014



QUATERNARY

HOLOCENE

ANTHROPOGENIC DEPOSITS

- Hlf** Landfill Deposits
Anthropogenic deposits, landfill debris and solid waste placed as fill.
- Hba** Borrow Area
Sand and gravel pits. Includes active and abandoned or reclaimed.

QAHE FORMATION

- Hps** Modern Pond, Slough, and Oxbow Sediments
Typically consist of silt and clay with high concentration of organics.

HOLOCENE/PLEISTOCENE

- Qa1** Alluvium
Sand, silt, clay and pebbles with occasional cobbles and boulders deposited under fluvial conditions (by rivers and creeks). Organic content is variable but often contain paleosols (soil horizons). Bedding typically ranges from small scale cross-bedding to planar to obscurely bedded. These deposits are found with the flood plains of the Missouri and Little Muddy Rivers and associated tributaries and drainages.
- Qcgs** Slope Washed Deposits
Colluvium consisting principally of clay with silt. Massive at outcrop with clay matrix diamiction with pebbles, cobbles and boulders.

PLEISTOCENE

COLEHARBOR GROUP

- Qcgl** Glaciolacustrine Deposits
Sand, silt and clay deposited in glacial lakes.
- Qcgt** Glaciofluvial Deposits
Sand, silt and clay with occasional cobbles and boulders deposited by outwash from glacial meltwater. In this area flow is presumed to have followed the ancestral channel of the Yellowstone River.
- Qcgl** Glacial Till
Poorly sorted mixture of clay, silt, sand, pebbles, cobbles and boulders transported and deposited primarily as subglacial deposits. Generally massive silt and clay matrix supporting diamiction although occasional lenses of sand and gravel may occur. Present in areas of low to moderate relief with undulating topography.

PALEOGENE

PALEOCENE

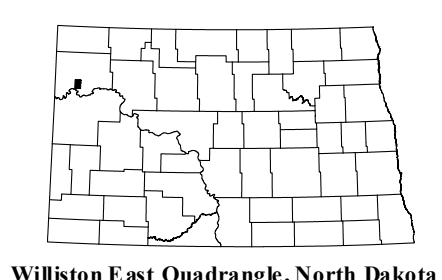
- Pgsb** SENTINEL BUTTE FORMATION
Sandstone, siltstone, claystone, mudstone, clinker and lignite; generally somber colored gray, blue, and brown; poorly-cemented to well-cemented sandstones; swelling bentonite and nonswelling claystones, limestone and iron oxide nodules and concretions; abundant petrified wood; tuffaceous bed(s); forms steep rilled slopes. River, lake and swamp deposits.

GEOLOGIC SYMBOLS

— Known Geologic Contact

OTHER SYMBOLS

- US and State Highways
- Paved Road
- Unpaved Road



Williston East Quadrangle, North Dakota

