

# Surface Geology

## Inkster Quadrangle, North Dakota

Lorraine A. Manz  
Kenneth L. Harris

2017

### EXPLANATION

**Gp** Gravel Pit (Abandoned and/or reclaimed)

### QUATERNARY

#### HOLOCENE

##### OAHE FORMATION

Sand, silt, clay, gravel, and organic debris; all postglacial sediment deposited on the landscape; includes river sediment, windblown sediment, lake sediment, and slopewash.

**Hor** Alluvium And Overbank Sediment

Sand, silt, clay and disseminated organic debris; obscurely bedded; dark colored; in many places associated with sand and gravel of older river-channel sediment; commonly more than three feet (1 meter) thick.

**Hop** Pond and slough sediment

Organic debris, clay, and silt; obscurely bedded; dark colored; generally more than three feet (1 meter) thick; deposited in poorly drained depressions in the landscape.

##### SHERACK FORMATION

Clay, silty clay, silt, and sand; thinly laminated; clayey in the central part of the lake plain and silty toward the margins; light gray where unoxidized and yellowish gray to olive-brown where oxidized; wood fragments common at the base; offshore, nearshore, shoreline and deltaic sediment deposited south of ice that occupied the Red River lowland during the Emerson Phase of Glacial Lake Agassiz.

**Hso** Offshore Lake Sediment

Laminated clay, clayey silt, silty clay, silt, and sand; clayey in the central part of the Red River Valley and siltier towards the margins; laminations are generally only a few millimeters thick but some of the silty beds are locally several centimeters thick; bedding deformed in places into folds a few feet high and several feet across; light gray when unoxidized and yellowish gray to olive brown when oxidized; wood fragments common in the lower few feet of the formation; as much as 100 feet (33 meters) thick.

**Hsn** Nearshore Sediment

Moderately well sorted; flat bedded to cross-bedded; light gray when unoxidized and yellowish gray to olive brown when oxidized; as much as 15 feet (5 meters) thick; deposited in shallow water.

**Hss** Shoreline Sediment

Silt, sand, and gravel; moderately to well-sorted; plane-bedded; to cross-bedded; as much as 18 feet (6 meters) thick; deposited along the shoreline of Lake Agassiz, commonly on eroded till; gravel occurs in beach ridges that are flanked by low-relief, lakeward-sloping areas of silt, sand, and wave-eroded till; beach ridges, spits, and offshore sand bars are shown as line symbols.

**Hsd** Deltaic sediment - sand and gravel

Moderately well-sorted; low-angle flat-bedded to high-angle cross-bedded grayish brown and yellowish red silt, sand, and gravel deposited in fluvial channels by meltwater streams flowing onto the Elk Valley delta; flat to gently undulating surface commonly with braided channel scars, oxbows, and other relict markings; up to 70 feet (21 meters) thick.

#### POPLAR RIVER FORMATION

Fluvial, channel and overbank sediment deposited in the Lake Agassiz basin during a desiccation period (the Moorhead phase); the West Fargo Member consists of fluvial channel sediment; the Harwood Member consists of fluvial overbank sediment; only the location of the West Fargo Member is mapped on the surface of the Sherack Formation as compaction ridges.

##### West Fargo Member

Sand, fine to coarse-grained, and associated silt and clay; cross-bedded; significant thicknesses of gravel are present in some areas; deposited on early Lake Agassiz offshore sediment during the Moorhead Phase and buried by younger offshore sediment when Lake Agassiz re-flooded during the Emerson Phase; differential compaction between the lake clay and river sediment is expressed at the surface as compaction ridges, depicted on the map by a blue line-symbol.

#### HOLOCENE AND OLDER

**Qs** Sediment eroded by slope processes

Sand, silt and clay; unsorted, unbedded; often pebbly; steeply sloping and eroded by mass movement and slope wash; lithology reflects the upslope material; colluvium commonly present at the base of steep slopes.

#### PLEISTOCENE

##### COLEHARBOR GROUP

The Coleharbor Group includes all sediments in North Dakota associated with deposition by Pleistocene glaciers.

##### GOOSE RIVER FORMATION (UNDIFFERENTIATED)

Sediment deposited by a glacier as a result of a readvance from the northwest (Riding Mountain provenance) of the generally retreating Late Wisconsinan ice sheet into the Red River lowland.

**Qgrm** Clay-loam, pebbly

Unsorted; unbedded; contains cobbles and boulders; shale pebbles abundant; as much as 80 feet (24 meters) thick; deposited by glacial ice on an ice-cored glacial landscape; collapsed glacial sediment with less than 30 feet (10 meters) of relief.

**Qgrh** Clay-loam, pebbly

Unsorted; unbedded; contains cobbles and boulders; shale pebbles abundant; as much as 80 feet (24 meters) thick; deposited by glacial ice on an ice-cored glacial landscape; collapsed glacial sediment with more than 30 feet (10 meters) of relief.

**Qgrr** Clay-loam, pebbly

Unsorted; unbedded; contains cobbles and boulders; shale pebbles abundant; as much as 80 feet (24 meters) thick; deposited by glacial ice on an ice-cored glacial landscape; eroded by running water.

**Qgrw** Clay-loam, pebbly

Unsorted; unbedded; as much as 80 feet (24 meters) thick; flat to gently undulating surface, very bouldery in places; a thin veneer of shoreline, nearshore, or offshore sediment is commonly present; glacial sediment eroded (washed) by lake waves.

**Qgrf** Sand and gravel, shaly

Moderately well-sorted, light to dark grayish brown, low-angle flat-bedded to high-angle cross-bedded silt, sand, and gravel deposited as outwash by the ancestral Park River and other meltwater streams flowing off the Pembina Escarpment onto the Elk Valley delta; flat to gently undulating surface commonly with braided channel scars, oxbows, and other relict markings; up to 70 feet (21 meters) thick.

#### Geologic Symbols

— Known contact between two geologic units

- - - Approximate contact between two geologic units

Other lineations

Established from aerial photographs; line marks the dimension of the feature; located in glacial sediment and thinly veneered glacial sediment; interpreted as disintegration trenches, streamlined bedforms associated with the movement of glacial ice, or lineations of unknown origin; generally difficult to discern on topographic maps and on the ground.

Established from aerial photographs; line marks the crest of the ridge located in the Lake Agassiz basin; interpreted as indicators of stream sediment buried by lake sediment or thin glacial sediment; generally difficult to discern on topographic maps and on the ground.

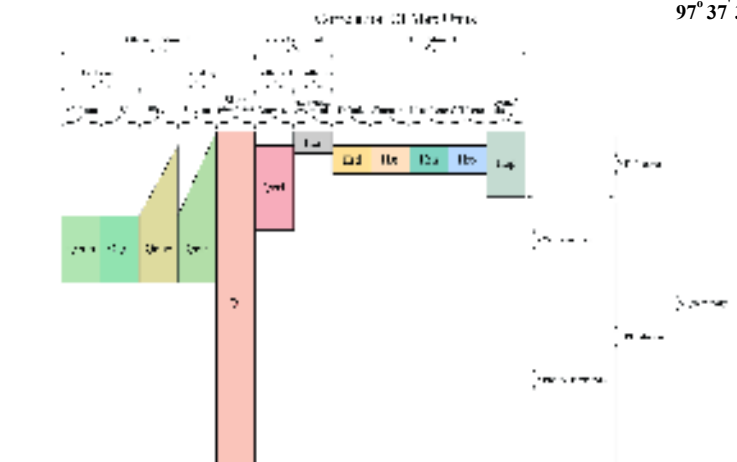
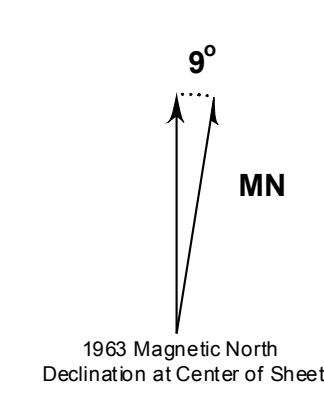
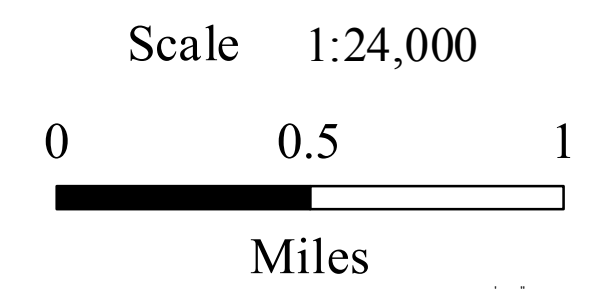
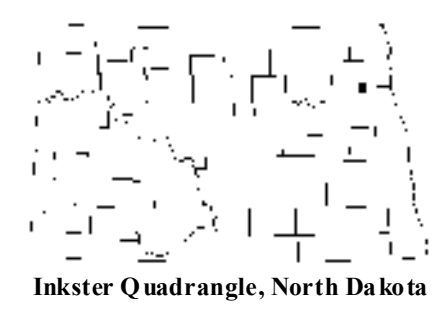
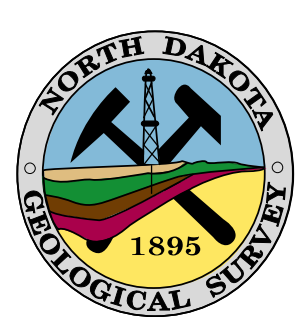
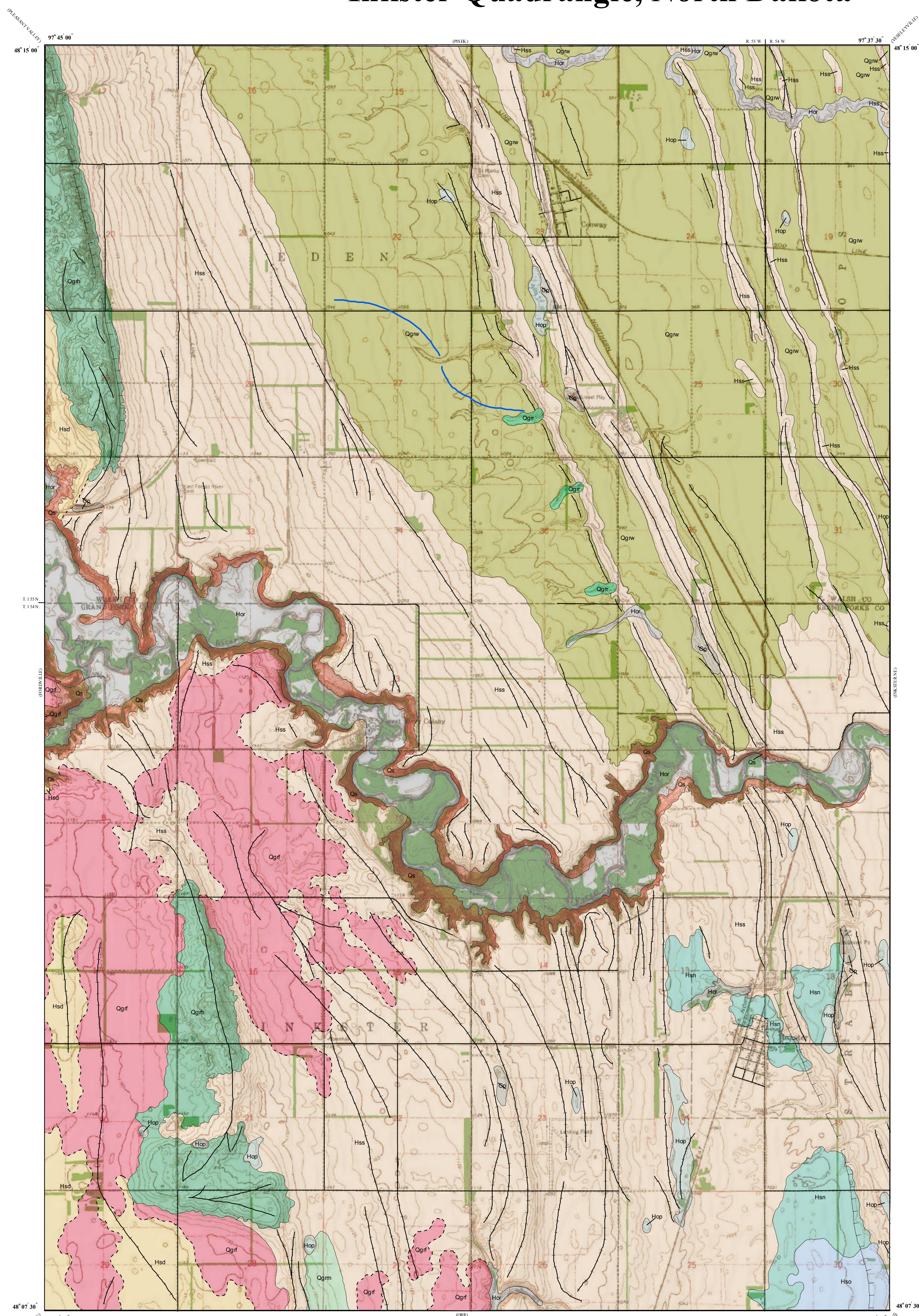
Established from aerial photographs; line indicates the crest of the ridge; interpreted as beach ridges or offshore bars deposited along the margin of Lake Agassiz; discernible on topographic maps and on the ground.

Established from aerial photographs and LiDAR; line indicates the crest of the scarp and the hachures point downslope; easily discernible on topographic maps and on the ground.

#### Other Features

— Paved Road

— Unpaved Road



Lambert Conformal Conic Projection Standard Parallels 48° 07' 30" and 48° 15' 00"  
1927 North American Datum NGVD 1929  
USGS 7.5 Minute Topographic Map Contour Interval 5 Feet