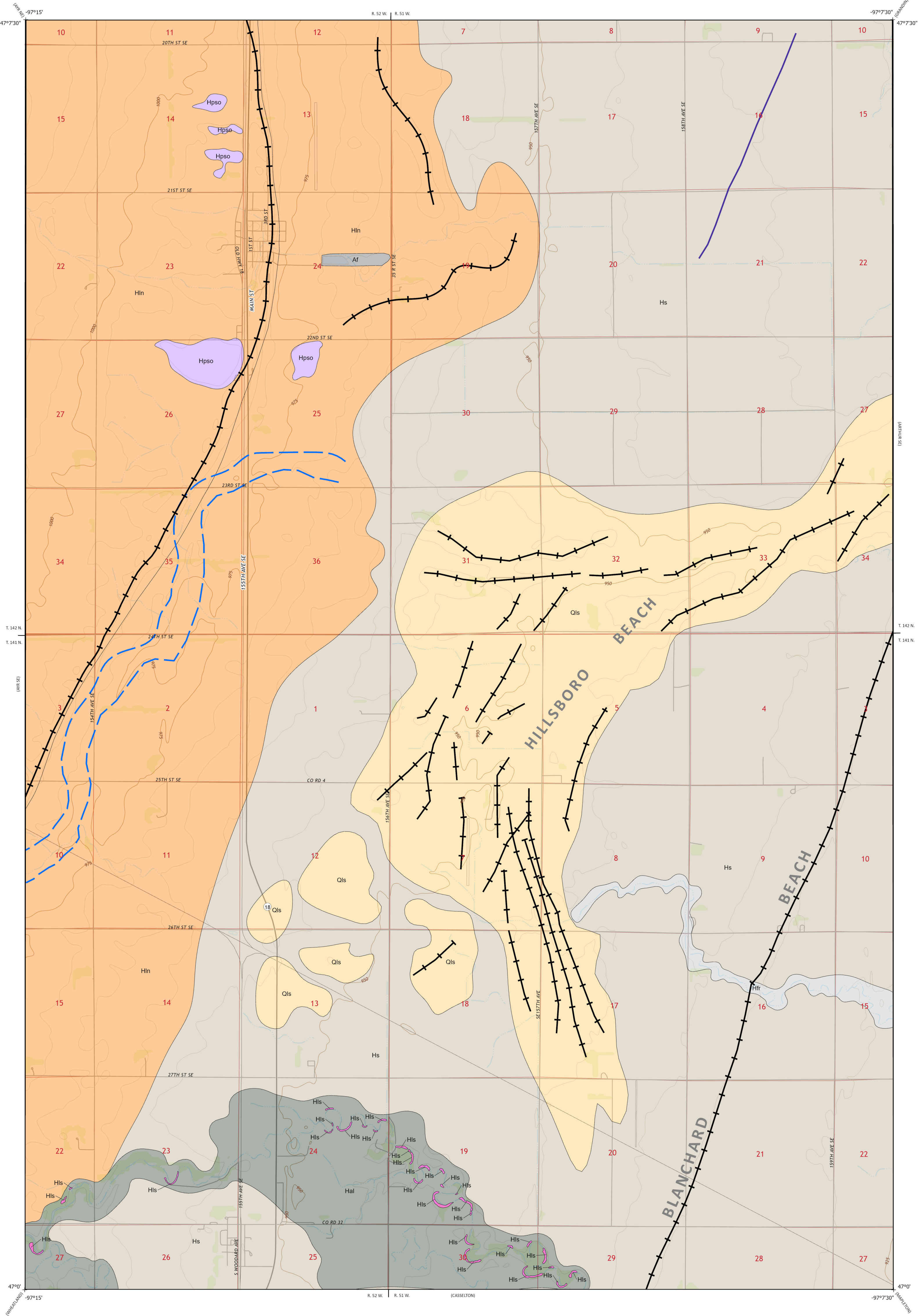


Surface Geology

Arthur Quadrangle, North Dakota



Fred J. Anderson

2024

EXPLANATION

QUATERNARY SYSTEM

AF FILL DEPOSITS
Cut and fill materials consisting dominantly of silts, clays, and sands from adjacent nearsurface formations placed by artificial means. Used in construction of highway crossover ramps, wastewater ponds and drainage improvement embankments.

QUATERNARY SYSTEM

HOLOCENE EPOCH

Hls LANDSLIDE DEPOSITS
A mass of material that has moved downslope. Includes earth flows, slumps, and areas of soil creep. Primarily swamps along meanders of the Rush River.

OAHE FORMATION

Hps POND AND SLOUGH SEDIMENTS
Dark brown to black obscurely bedded clay, silt, sand, and organic debris generally one to three feet in thickness. Modern pond and slough sediments.

Hfr FLUVIAL SEDIMENT (RECENT)
Black-brown, clay, silt and sand with organics common. Commonly less than three feet in depth. Deposited in recent drainages.

Hal ALLUVIUM
Clay, silt, sand, and disseminated organic debris, obscurely bedded, black to brown-gray, associated with sand and gravel of older river channel sediment. Glaciofluvial and modern fluvial deposits of the Sheyenne River.

Hln NEARSHORE DEPOSITS
Glaciolacustrine, moderately to well sorted, flat to crossbedded, as much as 15 feet (5m) thick. Nearshore sediment deposited in shallow water along the shoreline of glacial Lake Agassiz. Beach ridges shown as line symbols.

Hs SHERACK FORMATION
Glaciolacustrine, yellow gray, thinly laminated silt, clay, and silty clay. Deposited as offshore sediments of glacial Lake Agassiz.

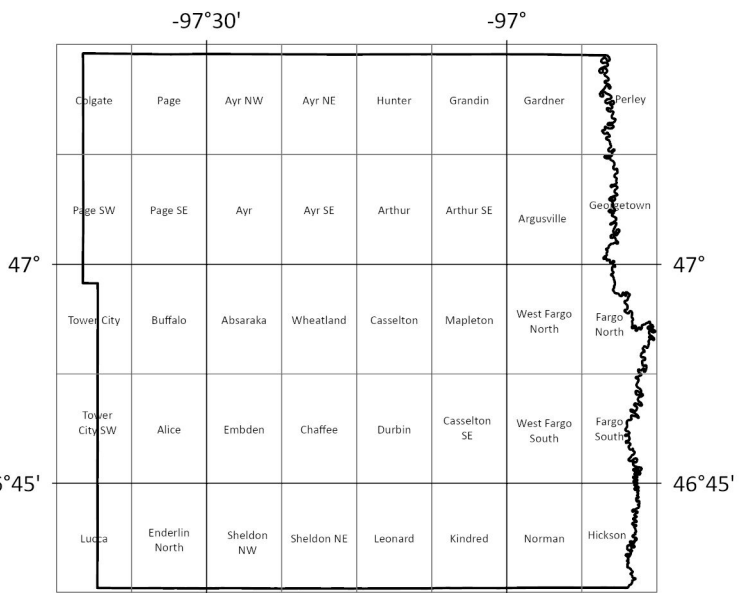
PLEISTOCENE EPOCH

COLEHARBOR GROUP

RIDGES
A mass of material that has moved downslope. Includes earth flows, slumps, and areas of soil creep. Primarily swamps along meanders of the Rush River.

PALIMPSEST CHANNEL
Established from LiDAR. Lines indicate the tops of slopes. Interpreted to be a meltwater channel which may contain thin sand and gravel deposits over washed or scoured till.

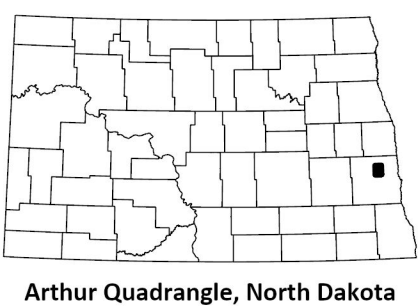
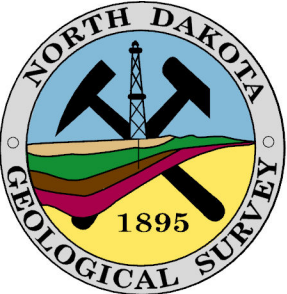
ICE DRAG MARKINGS Established from LiDAR and aerial imagery; line marks the trough of a subtle lineation on the glacial Lake Agassiz plain. Interpreted as iceberg drag marks preserved on the lakebed. Difficult to discern on topographic maps and on the ground.



Index to 1:24,000 Quadrangles, Cass County

CORRELATION OF MAP UNITS

Fluvial		Glaciolacustrine		Lacustrine		Anthropogenic		Geochronology	
Channel & Overbank	Washed Channel	Offshore	Nearshore	Pond & Slough	Fill	Epoch	Period	Era	
Hal	Hfr			Hps	AF	Holocene	Quaternary	Cenozoic	
		Hs	Qln						



Arthur Quadrangle, North Dakota

