

Copies of this map may be obtained from the Geological Survey of Canada, 601 Booth Street, Ottawa, K1A 0E8

Published 1998



LOCATION MAP

Geology by J.E. Campbell, M. Millard, and I. McMartin, 1992-1995

Co-ordinated by I. McMartin through the auspices of the NATMAP Shield Margin Project

Digital cartography by L.P. Renaud, Geoscience Information Division

Electrostatic plot produced by the Geoscience Information Division

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

OPEN FILE 3565  
SURFICIAL GEOLOGY  
**ATTITTI LAKE AREA**  
SASKATCHEWAN

Scale 1:100 000 - Échelle 1/100 000



Universal Transverse Mercator Projection / Projection transverse universelle de Mercator  
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Digital base map from data compiled by Geomatics Canada, modified by the Geoscience Information Division

Copies of the topographic maps of this area may be obtained from the Canada Map Office, Natural Resources Canada, Ottawa, Ontario, K1A 0E9

Mean magnetic declination 1998, 11°09'E, increasing 8.4" annually. Readings vary from 11°41'E, in the NW corner to 10°36'E, in the SE corner of the map

Elevations in feet above mean sea level

63 M2 OF 3666	63 M1	63 N4	63 N3	63 N2	63 N1	63-Q4 OF 3324	63-Q3
63 L15	63 L16	63 K13	63 K14	63 K15	63 K16	63 J13	63 J14
63 L10 OF 3486	63 L9	63 K12	63 K11	63 K10	63 K9	63 J12 OF 2935	63 J11
63 L7	63 L8	63 K5	63 K6	63 K7	63 K8	63 J5	63 J6
63 L2 OF 3100	63 L1	63 K4	63 K3	63 K2	63 K1	63 J4	63 J3

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO GEOLOGICAL SURVEY OF CANADA MAPS

LEGEND

Coloured legend blocks indicate map units that appear on this map

QUATERNARY - SURFICIAL DEPOSITS

NONGLACIAL ENVIRONMENT

**ORGANIC DEPOSITS:** peat, muck: 1 to 5 m thick; commonly underlain by fine glacial lake deposits; mantles extensive areas on the Paleozoic terrain or occurs in more confined low-lying poorly drained parts of the Shield

- 7b Fen peat: wet sedge, and moss peat; includes string fen, floodplain and riverine marshes; occurs as flat grassy surfaces with few trees, and commonly visible surface waters; derived from sedge and moss vegetation; permafrost present in isolated palsas or peat plateau which occur within the fen bog
- 7a Bog peat: moss and woody peat; occurs as raised irregular surfaces with an open to closed tree cover; derived from spruce forest vegetation; thermokarst depressions and ponds, wooded palsas and forested peat plateaus are common; contains some areas of collapse scar fens
- 6 ALLUVIAL DEPOSITS: silt, sand, and gravel, up to 30 m thick; deposited by running water in both modern and old streams; occurs mostly in the drainage way of Saskatchewan River, as floodplains, terraces, point bars, channel-fills, and deltas

PROGLACIAL ENVIRONMENT

**GLACIAL LAKE DEPOSITS:** massive to stratified clay, silt, sand, and gravel; thickness ranges from a thin veneer to tens of metres; sediments reworked by the wave action of glacial Lake Agassiz, or carried to the basin in large part by glacial meltwater and deposited in offshore and deep water of Lake Agassiz

- 5c Nearshore and littoral sediments: sand, gravel, or rock rubble, moderately well sorted and commonly horizontally bedded; occurs either as a blanket of sand, commonly less than 2 m thick, grading basinward into finer sediments, or as isolated or series of ridges, 1 to 3 m in height, including beaches, bars, and spits, commonly well developed on glaciofluvial deposits; flights of rubble beach deposits occur along carbonate bedrock escarpments in the southeast part of the NATMAP Shield Margin Project area
- 5b Offshore sediment blanket: clay, silt and silty sand, minor sand, gravel and diamicton; fine grained sediments are commonly massive and brownish near surface, or laminated, greyish, and weakly calcareous at depth; 2 to 25 m thick, up to 45 m thick in the Grass River Basin; forms flat plains in low relief areas, mantled with peat; deposited in deep water environment; surfaces locally inscribed by iceberg scours
- 5a Offshore sediment veneer: clay, silt and silty sand; less than 2 m thick; forms a discontinuous blanket mimicking underlying glacial and bedrock topography; includes undifferentiated glacioacustrine sediments deposited in deep water beyond or near the ice margin; surfaces locally inscribed by iceberg scours

GLACIAL ENVIRONMENT

**GLACIOFLUVIAL DEPOSITS:** stratified sand and gravel, minor diamicton; sorted coarse grained sediment deposited by flowing glacial meltwater in contact with or near the glacier

- 4 Subaqueous outwash sediments: well sorted fine sand; commonly rippled and/or crossbedded; interbedded with clay, gravel and diamicton units of variable thicknesses; 1 to 20 m thick; deformation and faulting commonly evident; deposits occur as fans or elongated terraces and ridges; sediments deposited in glacial Lake Agassiz at or near the retreating ice front by meltwater turbidity currents
- 3 Proximal glaciofluvial sediments: well rounded interstratified sand and gravel, minor diamicton; 3 to 25 m thick; forming eskers, kames, crevasse fillings, and lee-side deposits; includes undifferentiated ice contact sediments; deposited by sub- or englacial meltwater streams in contact with glacier ice

**GLACIAL DEPOSITS:** unsorted to poorly sorted diamictons deposited as till at the ice margin or beneath the glacier. The area has been glaciated by ice from two lobes, the Keewatin lobe of northern provenance (Keewatin Sector) and the Hudson lobe of eastern provenance (Labradorian Glacial deposits have been subdivided into 4 units as follows based on provenance, underlying bedrock, and surface morphology: a) those of northern provenance overlying Precambrian rocks are generally sandy, permeable, non to slightly calcareous, and contain almost exclusively debris derived from Shield terrane; b) glacial deposits of eastern provenance are generally silty sandy, weakly permeable, moderately to strongly calcareous, and contain fewer Shield clasts; c) those of northern provenance but underlain by Paleozoic bedrock are sandy silty or sandy clayey, weakly to strongly calcareous, and locally derived; d) hummocky till deposited by stagnant Keewatin ice south of Reed Lake is highly calcareous, sandy bouldery, may include pebbly gravel layers, and forms an east-west ice contact trending belt

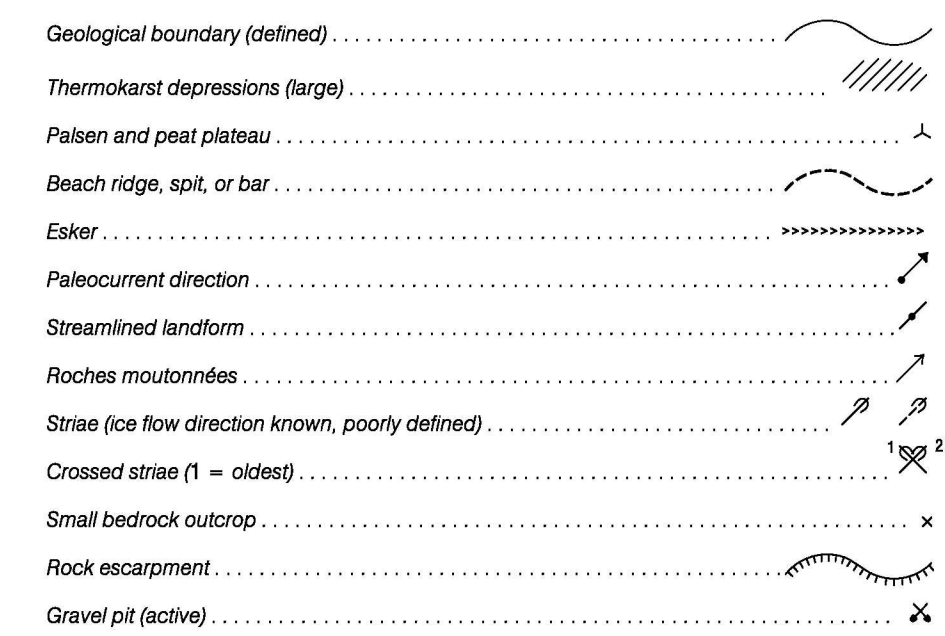
- 2a Till blanket: forms a continuous cover, 2 to several metres thick, locally up to 50 m thick, masking underlying bedrock topography; deposits form till plain, flutings, and moraines; surface may be covered by a discontinuous blanket of Lake Agassiz clay or littoral sand and gravel; 2a - till of northern provenance underlain by Precambrian rocks; 2b - till of eastern provenance; 2c - till of northern provenance underlain by Paleozoic rocks; 2d - hummocky till in ice contact belt
- 2b
- 2c
- 2d

- 1a Till veneer: forms a discontinuous cover, ranging from 1 to 2 m thick; commonly occurs on the lee side of bedrock outcrops or forms a thin veneer over the Paleozoic bedrock; interspersed with isolated areas of thicker till in bedrock depressions; surface morphology reflects underlying bedrock structure; 1a - till of northern provenance underlain by Precambrian rocks; 1b - till of eastern provenance; 1c - till of northern provenance underlain by Paleozoic rocks; 1d - hummocky till in ice contact belt
- 1b
- 1c
- 1d

PRE-QUATERNARY - BEDROCK

**R2 Paleozoic sedimentary rocks:** primarily dolomite and dolomitic limestone, minor sandstone and shale; surfaces are commonly pitted and frost shattered, but glacially polished and striated surfaces are preserved locally; occurs as flat-lying outcrops with patches of thin drift

**R1 Precambrian rocks:** metavolcanic and metasedimentary rocks, associated intrusive bodies; glacially scoured outcrops forming abundant roches moutonnées and striated or grooved surfaces; gently rolling topography with thin patchy drift cover



REFERENCES

Campbell, J.E. and Henderson, P.J. 1996: Surficial geology of the Amisk Lake area (NTS 63L/9 and parts of 63K/12); Geological Survey of Canada, Open File 3314, scale 1:100 000

Campbell, J.E., McMartin, I., and Millard, M. 1997: Surficial geology, Sturgeon-Wear River area, Saskatchewan (NTS 63L/10 and L/15); Geological Survey of Canada, Open File 3485, scale 1:100 000

McMartin, I. and Campbell, J.E. 1994: Highlights of Quaternary geology investigations in the Sturgeon-River area near Fin Flon; in Summary of Investigations 1994, Saskatchewan Geological Survey, Sask. Energy and Mines, Misc. Rep. 92-4, p. 137-140

McMartin, I., Henderson, P.J., Nielsen, E., and Campbell, J.E. 1996: Surficial Geology, Till and Humus Composition Across the Shield Margin, North-Central Manitoba and Saskatchewan: Geospatial Analysis of a Glaciated Environment, GSC Open File Report 9277

Schreiner, B.T. 1984: Quaternary geology of the Precambrian Shield, Saskatchewan; Saskatchewan Energy and Mines, Report 221, 106 p.

1984: Quaternary geology of Amisk Area (63-L-K) Saskatchewan; Saskatchewan Geological Survey, Open File Report 84-2, scale 1:250 000

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