

- Coloured legend blocks indicate map units that appear on this map
- QUATERNARY - SURFICIAL DEPOSITS**
- NONGLACIAL ENVIRONMENT**
- 7b** **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
  - 7a** **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** **Box 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 grass of collapse size 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 of Saskatchewan River, as floodplains, terraces, point bars, channel-fills, and deltas
- PROGLACIAL ENVIRONMENT**
- 5c** **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, and 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 fine 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 diamict; 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 glaciofluvial sediments deposited in deep water beyond or near the ice margin; surfaces locally inscribed by iceberg scours
- GLACIAL ENVIRONMENT**
- 4** **GLACIOFLUVIAL DEPOSITS:** stratified sand and gravel, minor diamict; 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 diamictic 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 intrastriated sand and gravel, minor diamict; 3 to 25 m thick; forming eskers, kames, crasseuse 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 diamictics deposited as till at the ice margin or beneath the glacier. The area has been glaciated by ice from two lobes, the Keweenaw lobe of northern provenance (Keweenaw Sector) and the Hudson lobe of eastern provenance (Labradorian Sector). 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 Keweenaw ice south of Reed Lake is highly calcareous, 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**

**LEGEND**

- 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**

Note: Till units labelled 1a-b or 1a-c have undetermined composition

**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 rocks moutainous and striated or grooved surfaces; gently rolling topography with thin patchy drift cover

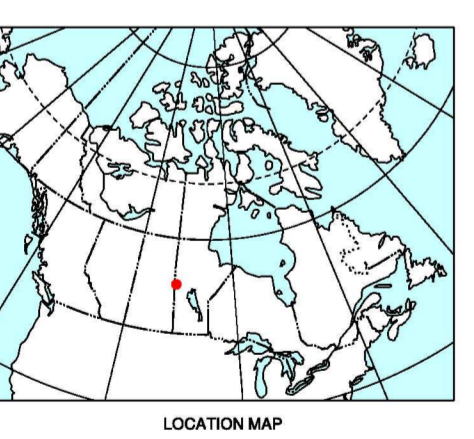
**Geological boundary (defined)** .....  
**Thermokarst depressions (small, large)** .....  
**Palsas and peat plateau** .....  
**Abandoned river channel** .....  
**Beach ridge, spit, or bar** .....  
**Iceberg scour** .....  
**Esker** .....  
**Paleocurrent** .....  
**Streamlined landform** .....  
**Crug and tail landform** .....  
**Roches moutonnées** .....  
**Striae (ice flow direction known, unknown, poorly defined, unknown and poorly defined)** .....  
**Crossed striae (1 = oldest)** .....  
**Small bedrock outcrop** .....  
**Rock escarpment** .....  
**Quarry or mine (active, abandoned)** .....  
**Gravel pit (active, abandoned)** .....

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



Geology by I. McMartin, 1992-1995  
 Digital cartography by M.M. Proulx, Geoscience Information Division  
 Co-ordinated by I. McMartin through the auspices of the NATMAP Shield Margin Project  
 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 3526**  
**SURFICIAL GEOLOGY**  
**ATHAPAPUSKOW LAKE AREA**  
**MANITOBA**

Scale 1:100 000 - Echelle 1/100 000  
 Kilometres 2 4 6 8 Kilometres

Transverse Mercator Projection  
 UTM 101°E, Scale Factor 1.0  
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Projection transverse de Mercator  
 M.C. 101°E, facteur d'échelle 1.0  
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 Copies of the topographical editions covering this map area may be obtained from the Canada Map Office, Natural Resources Canada, Ottawa, Ontario, K1A 0E9  
 Mean magnetic declination 1987, 10°09'E, decreasing 8.0' annually.  
 Readings vary from 9°36'E in the SE corner to 10°42'E in the NW corner of the map.  
 Elevations in feet above mean sea level

63 M2	63 M1	63 N4	63 N3	63 N2	63 N1	63 O4	63 O3
63 L15	63 L16	63 K13	63 K14	63 K15	63 K16	63 J13	63 J14
OF 3485	63 L10	63 K12	63 K11	63 K10	63 K9	63 J12	63 J11
	OF 3314	OF 3526		OF 3406		OF 2885	
63 L7	63 L8	63 K5	63 K6	63 K7	63 K8	63 J5	63 J6
	OF 3100	OF 3342		OF 3060		OF 2744	
63 L2	63 L1	63 K4	63 K3	63 K2	63 K1	63 J4	63 J3

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