GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA

DEPARTMENT OF ENERGY, MINES AND RESOURCES
MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES

LEGEND

Note: Some map units and symbols shown in the legend may not appear on this map

SURFICIAL DEPOSITS		NOTES
	NONGLACIAL ENVIRONMENT	
	ALLUVIAL DEPOSITS: stream-deposited material within modern active drainage systems; "modern" is defined as the period since retreat of the sea, proglacial lakes, or glacial ice.	
Ac	Alluvium: silt, sand, and gravel deposited in channels and on floodplains; may include alluvium in terraces formed as streams cut to present level in glacial and marine sedimentary fill.	
Ad	Deltaic sediments: sand, gravel, and boulders deposited where modern streams enter lakes or Hudson Bay.	
	NONGLACIAL AND GLACIAL ENVIRONMENT	
	MARINE DEPOSITS: materials deposited in the Tyrrell Sea and glacial deposits modified by marine processes.	
Mp	Coastal plain-tidal flat sediments: complex of poorly sorted stony silt and sand with pockets of sorted nearshore sand and gravel, wind-blown sand, and marine clayey silt; probably a till plain levelled by filling of depressions and planation by wave action during emergence.	Forms a flat plain extending as far as 20 km inland. A generally complete organic cover and a high density of shallow (less than 3 m deep) lakes make determining the nature of the highly variable underlying sediments difficult. Periglacial features vary from mudboils on muddy substrate to frost cracks or polygons on organic, gravelly, or sandy deposits.
Mw	Offlap sediments: thin sheet of sand deposited by a migrating shoreline; thought to be a lag developed by wave reworking of marine clayey sand or silty sand; generally associated with Mp.	Characterized on some airphotos by a mottled pattern resulting from periglacial processes or gullying by streams or tidal currents.
Md	Deltaic sediments: sand, pebbly sand, and gravel deposited in the Tyrrell Sea by glacial or nonglacial streams.	Surfaces are characterized by sparse vegetation and polygonal frost cracks.
Mn	Nearshore sediments: generally well sorted sand, gravel, cobbles, or boulders deposited as beaches, bars, spits, and ice-pushed ridges.	Surfaces are characterized by sparse vegetation and orthogonal frost cracks.
Mq	Offshore sediments: clay-silt and silty sand deposited in a deep water environment; may occur anywhere below marine limit but distribution is patchy above 60 m a.s.l.; thickest deposits generally are found in major river valleys or valleys with major eskers; Ms: prominent striped pattern on airphotos; Mm: mottled pattern on airphotos.	Difficult to differentiate from units Tp and Ts on airphotos. Surface vegetation is dominantly shrubs in turf circles around mudboils. Striped pattern (Ms) consists of dark and light stripes, 10 to 20 m wide, running downslope and reflects vegetation differences. Mottled pattern (Mm) due to shrub- and mudboil-covered mounds 5 to 10 m in diameter and less than 0.5 m high surrounded by lightcoloured grass-sedge vegetation; thought to have high ground-ice content.
Ms Mm		
AM	Alluvium and marine sand or silt, undifferentiated: flat areas consisting of modern alluvium mixed with silt and sand that was washed from slopes by wave action or deposited in the sea by meltwater streams.	Surface generally covered by 40 cm to more than 1 m of fibrous peat on which mosses, sedges, and grasses grow. Maximum active layer 15 to 50 cm deep. Surface characterized by frost polygons and thaw ponds related to vertical ice wedges extending to a depth of 2 to 3 m.
AG	Alluvium and outwash gravel, undifferentiated: flat areas occurring in stream valleys or abandoned channels above marine limit.	Surface generally covered by 40 cm to more than 1 m of fibrous peat on which mosses, sedges, and grasses grow. Maximum active layer 15 to 50 cm deep. Surface characterized by frost polygons and thaw ponds related to vertical ice wedges extending to a depth of 2 to 3 m.
TM	Till and marine silt, undifferentiated: till-cored landforms blanketed by marine sediments.	Based solely on airphoto interpretation.
	GLACIAL ENVIRONMENT	
	GLACIOFLUVIAL DEPOSITS: water-sorted sediments deposited in, around, or near a glacier, largely as a result of meltwater stream flow.	
Gk	Ice-contact stratified drift: sand and gravel deposited near ice margins in, over, or around ice or in ice tunnels, commonly as eskers but includes isolated hummocky deposits of uncertain origin.	Many eskers are beaded or interrupted at irregular intervals by major bulges marking positions where deltaic or subaqueous fan deposition took place during periods of slowed ice retreat.
Go	Esker pad outwash: sand, gravel, and silt with terraced, hummocky, and kettled surfaces.	
Gq	Go: sand and gravel deposited by subaerial meltwater streams exiting from an esker tunnel and flowing between the esker ridge and valleysides in areas above marine limit; includes outwash fans and materials on the floor or at the mouth of meltwater channels. Gq: silt, sand, and fine gravel; same origin as unit Go but represents distal fine sediment debouching from an esker tunnel into the sea.	Sparsely vegetated. Vegetation is commonly sedge, grass, and moss growing on thin, fibrous peat. Surface characterized by thaw ponds and tundra polygons. Difficult to differentiate from unit AM.
Gh	Disintegration moraine: till, sand, and gravel, undifferentiated; occurs as short ridges or hummocks, thought to be deposited in holes and crevasses in stagnant ice; ridge orientation may form a reticulate pattern.	Sparsely vegetated periglacial features vary from mudboils in till to frost cracks in sorted sediments.
	TILL DEPOSITS: poorly sorted sediments with distinctive forms deposited directly by glacial ice.	
Tp Ts	Till plain: generally sandy, silty, non-calcareous grey till with <25 per cent clay sized particles; includes areas of clay rich red till; Ts, prominent striped pattern on airphotos.	Till has liquid limits of 8 to 18 per cent and plasticity indices of 0 to 8 per cent. Susceptible to liquefaction under loading or during periods of increased moisture (heavy rains, spring thaw). At lake margins characterized by cobble-covered, 2 m wide ribs separated by 2 m wide boulder-filled troughs, generally trending downslope to a water depth of about 2 m. Surface vegetated by shrubs, mosses, and grasses growing in elevated peaty rings around 1 to 2 m diameter patches of bare or lichen-covered mud (mudboils). Striped pattern (Ts) prominent on clay rich red till. Vegetation and minor periglacial features similar to those on till plains and marine muds.
Tr	Ribbed (Rogen) moraine: generally bouldery till, in places sand and gravel, forming hummocks and straight to sinuous ridges, generally less than 1 km long and 2 to 10 m high; ridges generally oriented at right angles to and form trains parallel to direction of ice flow.	Individual ribs may be asymmetric in cross-section with steep side facing down-ice; trains of ribs pass laterally into drumlin fields and are commonly drumlinized in the transition zone. Surfaces have sparse vegetation and generally a heavy cover of large boulders and mudboils where composed of till; marked by frost cracks where composed of gravel.
Th	Hummocky till: till without significant boulder cover occurring as hummocks; includes ridges of till that are minor end moraines or erosion remnants between subparallel meltwater channels.	Extensive areas are present in the region of the Keewatin Ice Divide and in some places adjacent to areas of ribbed moraine (Tr). Exact origin unknown; may have formed in association with stagnant ice and in some places from erosion of till surfaces by streams in anastomosing meltwater channels. Vegetation and periglacial features similar to those on till plain (Tp).
ROCK		
	Precambrian intrusive igneous and metamorphic rocks, red volcanic rocks, and unmetamorphosed sediments.	
R	Surface comprises more than 80 per cent outcrop.	Vegetation sparse, surface may be glacially rounded or covered by felsenmeer.
R/T R/Tr R/AM R/AG R/Mn R/TM R/Mq	Surface comprises 20 to 80 per cent outcrop or bedrock is mantled with an average of less than 1 m of the surficial deposit indicated.	

Symbols

- Small bedrock outcrop
- Drumlin or fluting (direction of ice flow known, unknown)
- Crag and tail (direction of ice flow known)
- Linear feature related to ice flow but obscured by solifluction processes, water-laid deposits, wave reworking, or trees
- Glacial striae (direction of ice movement known, unknown); location of measurement at centre of staff; older striae drawn with broken staff
- Trend of ribbed or minor moraine ridges
- Hummocky moraine
- DeGeer moraines; straight, approximately 2 m-high end moraine ridges built parallel to an ice front; possibly deposited annually by flowing ice submerged in a sea or lake
- Area of ridges formed by pack-ice shove
- Trend of nearshore marine ridges originating as beaches, bars, megaripples, and ice-shoved ridges
- Esker (direction of flow known, unknown); may be confused with or obscured by nearshore features; projected beneath water surfaces where known or inferred
- Meltwater channel; steep-sided channel commonly cut in bedrock or till
- Permanently drained postglacial lake basin; may include deposits of silty sediment with up to 15 per cent organic carbon
- Turbid lake; contains continual load of suspended sediment during ice-free periods; rarely occurs above marine limit and indicates instability or alteration of the active layer due to wave washing or solifluction processes
- Limit of marine submergence
- Escarpment; generally in unconsolidated sediments
- Palsa-like feature
- Eolian deposits; commonly formed where ice shove or bank failures have disrupted the vegetation mat over alluvial sand
- Geological boundary
- Radiocarbon date (Gsc = Geological Survey of Canada; GSC = Geological Survey of Canada)

Geology by J.M. Aylsworth, C.M. Cunningham, and W.W. Shilts, based mainly on airphoto interpretation with ground checking, 1977-78

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

Base map, enlarged from 1:250,000 scale, published by the Army Survey Establishment, R.C.E. in 1966

Copies of the topographic edition of this map may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, K1A 0E9

Mean magnetic declination 1981, 6°15.4' East, decreasing 20.6' annually. Readings vary from 3°47.9' in the SE corner to 8°42.9' in the NW corner of the map area

Elevations in feet above mean sea level

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MAP 2-1979
SURFICIAL GEOLOGY
FERGUSON LAKE
DISTRICT OF KEEWATIN

Scale 1:125,000 Échelle

Kilometres 3 0 3 6 9 Kilomètres
Miles 2 0 2 4 Miles

Universal Transverse Mercator Projection
Projection transverse universelle de Mercator

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PROJECT AREA

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MAP 2-1979
FERGUSON LAKE
DISTRICT OF KEEWATIN

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