COMMISSION GÉOLOGIQUE DU CANADA GEOLOGICAL SURVEY OF CANADA
MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES
DEPARTMENT OF ENERGY, MINES AND RESOURCES

LEGEND

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

SURFICIAL DEPOSITS
QUATERNARY

NOTES

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 which 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

AM R/AM — Alluvium and marine sand or silt, undifferentiated: occurs as 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 R/AM, deposit veneers bedrock or surface comprises 20 to 80% bedrock outcrop — *Notes:* 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 R/AG — Alluvium and outwash gravel, undifferentiated: occurs as flat areas in stream valleys or abandoned channels above marine limit R/AG, deposit veneers bedrock or surface comprises 20 to 80% bedrock outcrop — *Notes:* 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 thick. Surface characterized by frost polygons and thaw ponds related to vertical ice wedges extending to a depth of 2 to 3 m

LACUSTRINE DEPOSITS: materials deposited in glacial lakes ponded on the western side of the Keewatin Ice Divide, and glacial deposits modified by lacustrine processes

Ln — Nearshore sediments: generally well sorted sand, gravel, cobbles, or boulders deposited as beaches, bars, spits, and ice-pushed ridges — *Notes:* Surface characterized by sparse vegetation and orthogonal frost cracks

MARINE DEPOSITS: materials deposited in the Tyrrell Sea and glacial deposits modified by marine processes

Md — Deltaic sediments: sand, pebbly sand, and gravel deposited in the Tyrrell Sea by glacial or nonglacial streams — *Notes:* Surface characterized by sparse vegetation and polygonal frost cracks

Mn R/Mn — Nearshore sediments: generally well sorted sand, gravel, cobbles, or boulders deposited as beaches, bars, spits, and ice-pushed ridges R/Mn, deposit veneers bedrock or surface comprises 20 to 80% bedrock outcrop — *Notes:* Surface characterized by sparse vegetation and orthogonal frost cracks

Mw — Offlap sediments: thin sheet of sand deposited by a migrating shoreline; probably a lag developed by wave reworking of marine clayey sand or silty sand or glacial till — *Notes:* Characterized in places by a mottled pattern resulting from periglacial processes or gullying by streams or tidal currents

Mq R/Mq Ms Mm — 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 occur in major river valleys or valleys with major eskers R/Mq, deposit veneers bedrock or surface comprises 20 to 80% bedrock outcrop. Ms, prominent striped pattern on airphotos Mm, mottled pattern on airphotos — *Notes:* Difficult to differentiate on airphotos from units Tp and Ts. 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 light coloured grass-sedge vegetation; likely has high ground ice content

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 — *Notes:* 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 Gq — Outwash: sand, gravel, and silt with terraced, hummocky, and kettled surfaces
Go, sand and gravel deposited by subaerial meltwater streams in areas above local sea level or level of proglacial lakes; includes 1) sediment deposited between the esker ridge and valleysides, commonly over stagnant ice that forms temporary floor; 2) outwash fans; 3) outwash plains; and 4) materials on the floor or at the mouth of meltwater channels — *Notes:* Sparsely vegetated
Gq, silt, sand, and fine gravel; distal fine sediment debouching from the subaqueous mouth of an ice tunnel; material settled preferentially in depressions between the esker ridge and valleysides — *Notes:* 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, probably deposited in holes and crevasses in stagnant ice; ridge orientation may form a reticulate pattern — *Notes:* 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, noncalcareous grey till with <25% clay sized particles; includes areas of clay-rich red till
Ts, prominent striped pattern on airphotos — *Notes:* Till has liquid limits of 8 to 18% and plasticity indices of 0 to 8%. 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. Shrubs, mosses, and grasses grow 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 R/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 and form trains parallel to direction of ice flow
R/Tr, deposit veneers bedrock or surface comprises 20 to 80% bedrock outcrop — *Notes:* 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, and are 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 — *Notes:* 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)

TM — Till and marine silt, undifferentiated: till-cored landforms blanketed by marine sediments or marine deposits in depressions among till landforms — *Notes:* Based solely on airphoto interpretation

ROCK
PRE-QUATERNARY

Precambrian intrusive igneous and metamorphic rocks, red volcanic rocks, and unmetamorphosed sediments

R Rf — Surface comprises more than 80% outcrop
Rf, surface completely covered by felsenmeer — *Notes:* Vegetation sparse, surface may be glacially rounded or covered by felsenmeer

R/T R/TM — Surface comprises 20 to 80% outcrop, or bedrock is mantled with an average of less than 1 m of the surficial deposit indicated

Geological boundary
Small bedrock outcrop
Drumlin or fluting (direction of ice flow known, unknown)
Crag and tail (direction of ice flow known)
Glacial striae (direction of ice movement known, unknown) location of measurement at centre of staff; older striation drawn with broken staff
Linear feature related to ice flow but obscured by solifluction processes, water-laid deposits, wave reworking, or trees
Trend of ribbed or minor moraine ridges
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
Hummocky moraine
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
Limit of marine submergence
Trend of nearshore ridges originating as beaches, bars, megaripples, and ice-shoved ridges
Escarpment; generally in unconsolidated sediments
Area of ridges formed by pack-ice shove
Permanently drained postglacial lake basin; may include deposits of silty sediment with up to 15% 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
Eolian deposits; commonly formed where ice shove or bank failures have disrupted the vegetation mat over alluvial sand
Radiocarbon date (Date | Material / Lab No | Elevation)

Geology by J.M. Aylsworth, C.M. Cunningham, I.M. Kettles, and W.W. Shilts, based on airphoto interpretation with field observations and sampling, 1975 and 1977

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Colour separation by camera of hand coloured manuscript

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 Mapping and Charting Establishment, Department of National Defence in 1965

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Mean magnetic declination 1985, 4°56' East, decreasing 20' annually. Readings vary from 7°27' in the SW corner to 2°31' in the NE corner of the map area

Elevations in feet above mean sea level

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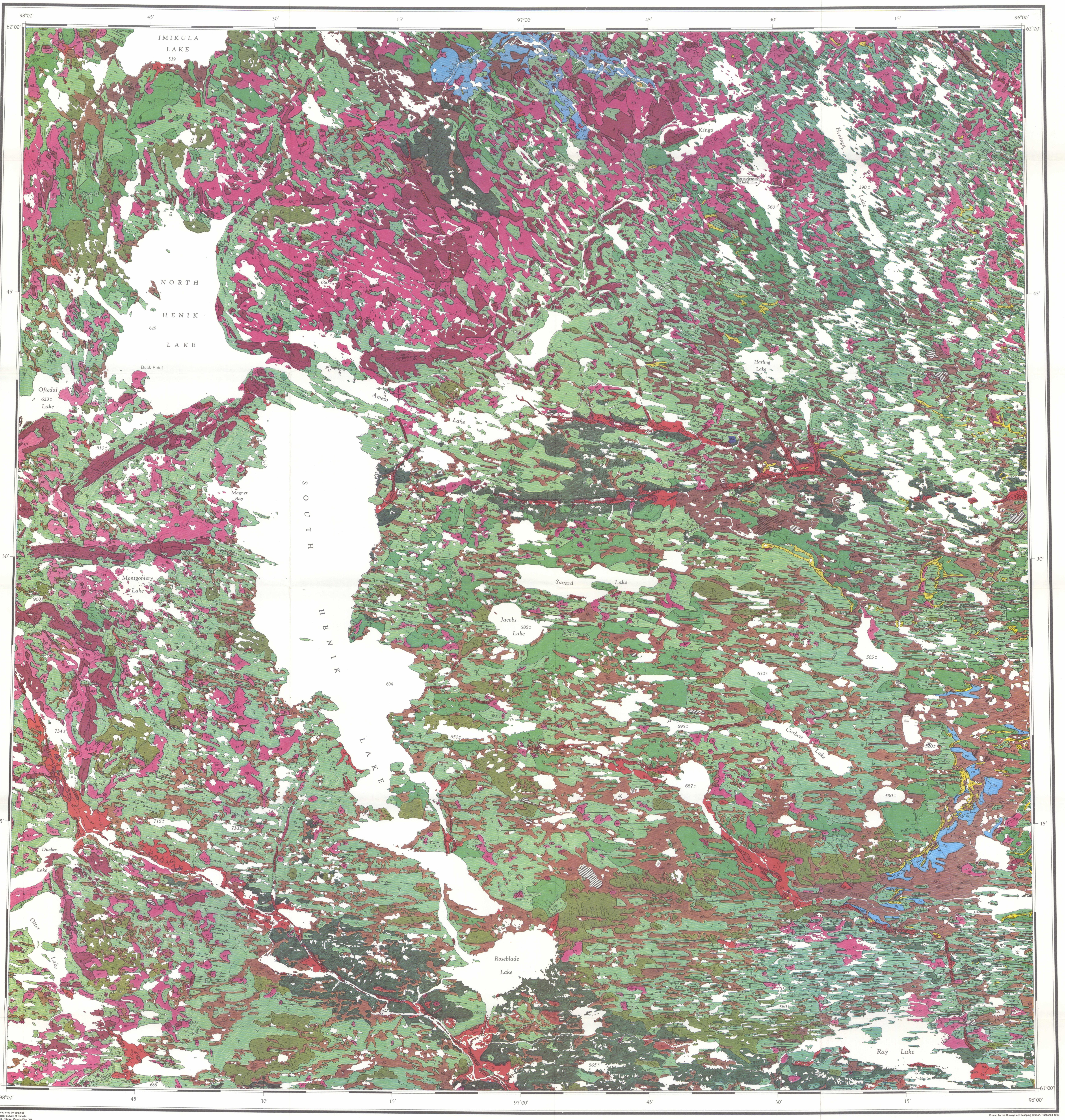

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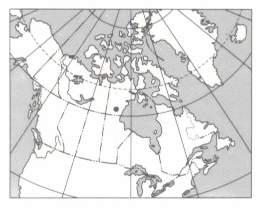

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SURFICIAL GEOLOGY
HENIK LAKES
DISTRICT OF KEEWATIN
NORTHWEST TERRITORIES

Scale 1:125 000

Kilometres 2 0 2 4 6 8 10 Kilometres

Universal Transverse Mercator Projection

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MAP 2-1985
HENIK LAKES
DISTRICT OF KEEWATIN
NORTHWEST TERRITORIES

Canada

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