

Descriptive Notes

An abundance of glacially streamlined landforms and hummocky till with numerous minor moraines and larger ridges dominates the Lac La Martre landscape. Channels and drumlins, up to 1 km long or more, are most prevalent in the northwest and central regions, whereas they are interspersed between zones of undifferentiated till and ridged and hummocky till elsewhere. The general direction of streamlined landforms varies from northwesterly to southwesterly trending. A series of small moraines west of Lac La Martre form ridges parallel to fluted landforms, and some are dissected by meltwater corridors. Flutes are oriented southwesterly, except for a few smaller segments trending northwest in the northwest map area. Five-grained glaciolacustrine sediments, associated with glacial Lake McConnell, were deposited in various local, poorly drained low-lying areas of the southernmost map area, traced from the western shores of Lac La Martre and Bartlett Lake. Some glaciolacustrine sediments and shelled bedrock ridges were reworked into glaciolacustrine beaches. Beaches occur between 270 and 300 m a.s.l. and mark the decreasing elevation of the short-lived glacial lake. Glaciolacustrine sediments and till in the southern regions are commonly overlain by extensive organic soil and thermokarst activity. Ice flow in the northern and central regions was dominantly to the northwest, but is overprinted by a younger and weaker westward flow. A southwesterly and westward ice flow is recorded in the eastern and southern regions. The larger moraines near the intersection of these flows may mark the retreat of ice margins or stagnating lobes during deglaciation about 11–15 ka BP.

References and additional outcrop sources

Cooking, R.B., DeBorja, C., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Hurdley, D.H., Inghs, E., Lavikette, A., Parent, M., Pivoua, A., Robertson, L., Smith, J.R., and Weatherston, A., 2016. Surface Data Model, version 2.2.0. Revision to the surface language of the Integrated Geological Survey of Canada data model for surficial geology. Geological Survey of Canada, Open File 8041, 45 p. <https://doi.org/10.4095/8041>

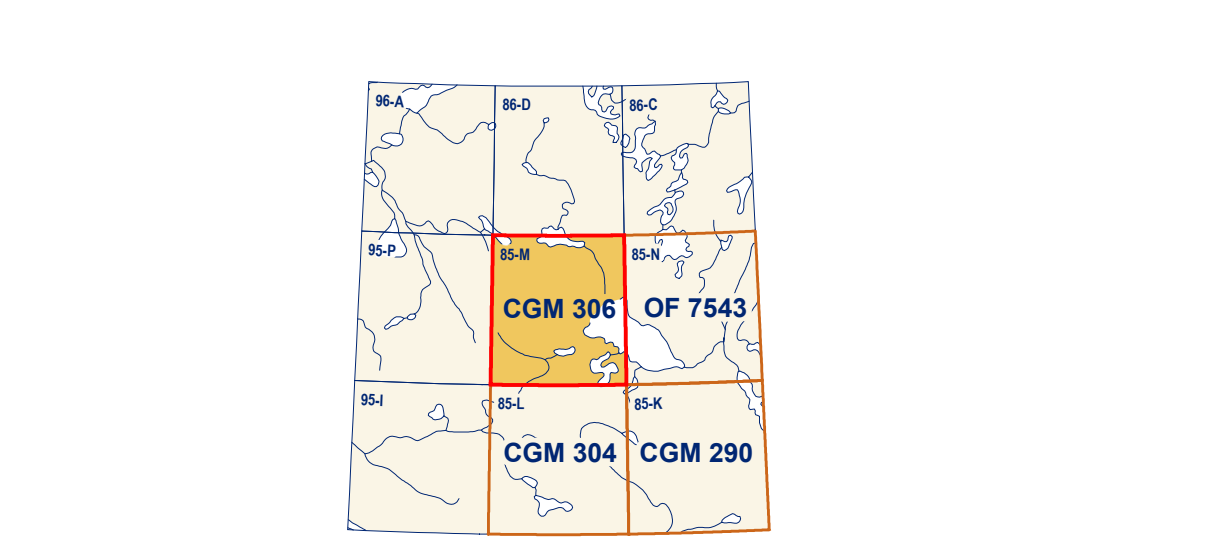
Douglas, R.J.W., Harris, A.W., and Harris, D.K., 1960. Geology. In: *Report of the Geological Survey of Canada, Northwest Territories*. Geological Survey of Canada, Preliminary Map 48-1959, scale 1:500 000. <https://doi.org/10.4095/10838>

Abstract

Streamlined landforms are prevalent in the northwest and central regions, interspersed between zones of till and ridged and hummocky till elsewhere. Small moraines west of Lac La Martre form ridges parallel to fluted landforms, and some are dissected by meltwater corridors. Flutes are oriented southwesterly, with a few exceptions. Glaciolacustrine sediments, associated with glacial Lake McConnell, occupy poorly drained low-lying areas of the southernmost map area, traced from the western shores of Lac La Martre and Bartlett Lake. Some glaciolacustrine sediments and bedrock ridges were reworked into glaciolacustrine beaches between 270 and 300 m a.s.l. In southern regions, extensive organic soil and thermokarst activity is common. A northwesterly ice flow in northern and central regions is overprinted by a younger and weaker westward flow. Southwesterly and westward ice flow is recorded in eastern and southern regions. Larger moraines near the intersection of these flows may mark the retreat of ice margins or stagnating lobes.

Résumé

Des reliefs fuselés sont répandus dans les régions du nord-ouest et du centre. Elsewhere, ils sont dispersés entre des zones de till non différencié, de till à côtes microscopiques et de till bosselé. Une série de petites moraines à l'ouest de Lac La Martre forment des reliefs parallèles à des reliefs profilés et certaines d'entre elles sont dissectées par des corridors d'eau de fonte. Les reliefs sont dirigés vers le sud-ouest, sauf quelques exceptions. Les sédiments glaciolacustres, associés au Lac glaciaire McConnell, occupent les basses terres mal drainées à l'extrémité sud de la région cartographique. À l'ouest des lacs La Martre et Bartlett, des sédiments glaciolacustres ont été remaniés sous la forme de plages glaciolacustres, entre 270 et 300 m d'altitude au-dessus du niveau de la mer. Dans les régions du sud, on observe de vastes dépôts de sols organiques présentant des reliefs thermokarstiques. Dans les régions du nord et du centre, aux traces d'un recouvrement glaciaire drapé vers le nord-ouest se superposent celles d'un recouvrement plus récent et de plus faible intensité dirigé vers l'ouest. Dans les régions du sud et du centre, on relève des signes d'instabilité glaciaire vers le sud-ouest et l'ouest. Des moraines de plus grande taille sont présentes à proximité de la rencontre de ces deux courants glaciaires. Des moraines plus grandes sont présentes à proximité de la rencontre de ces deux courants glaciaires. Des moraines plus grandes sont présentes à proximité de la rencontre de ces deux courants glaciaires. Des moraines plus grandes sont présentes à proximité de la rencontre de ces deux courants glaciaires.

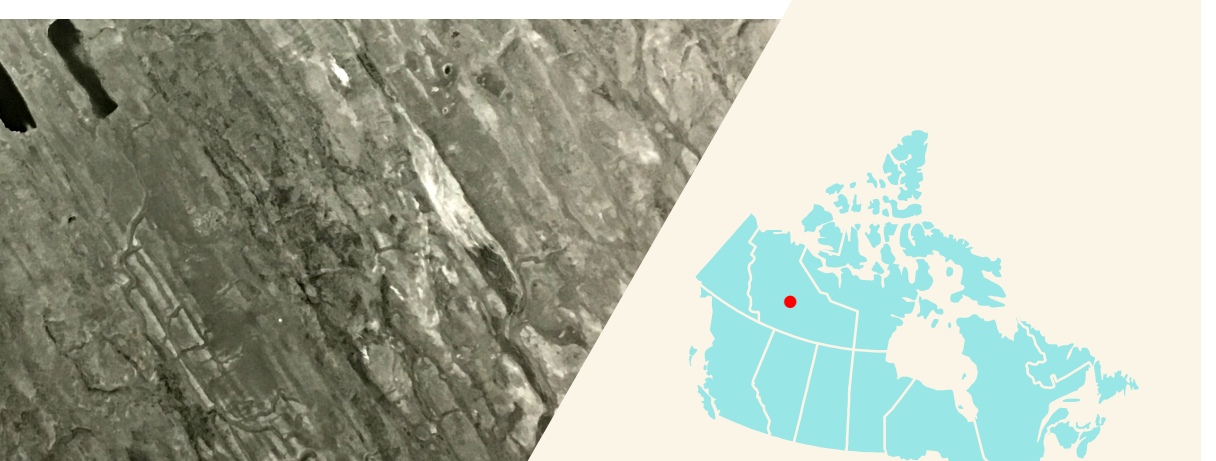


Catalogue No. M183-1/06-2017E-PDF
ISBN 978-0-606-04282-4
<https://doi.org/10.4095/04282>

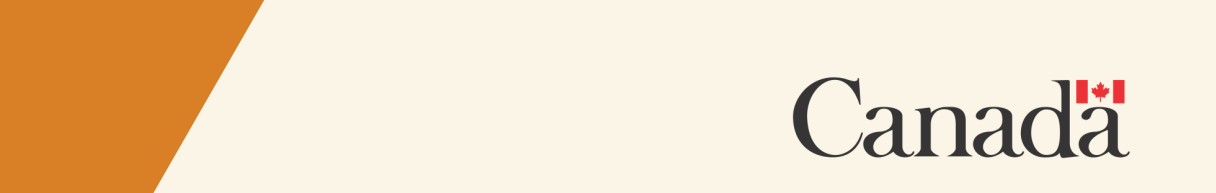
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CANADIAN GEOSCIENCE MAP 306
RECONNAISSANCE SURFICIALE GÉOLOGIQUE
LAC LA MARTRE
Northwest Territories
NTS 85-M
1:125 000



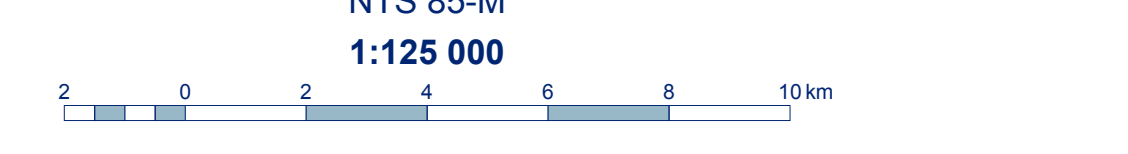
Preliminary
Geological Survey of Canada
Canadian Geoscience Maps



Preliminary
Authors: D.E. Kerr, P.D. Morse, and S.A. Wolfe
Compiled by D.E. Kerr, 2016 by archive interpretation of 1:70 000 scale aerophoto taken in 1953.
Geology conform to Surface Data Model v. 2.2
Compiled by L. Robertson
Cartography by D. Viner and E. Everett

Preliminary
Initiative of the Geological Survey of Canada, conducted under the auspices of the Macdonald-Stewart Project as part of Natural Resources Canada's Geoscience for Energy and Minerals (GEM) program
Map projection Universal Transverse Mercator, zone 11, North American Datum 1983
Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.
Elevations in metres above mean sea level

CANADIAN GEOSCIENCE MAP 306
RECONNAISSANCE SURFICIALE GÉOLOGIQUE
LAC LA MARTRE
Northwest Territories
NTS 85-M
1:125 000



Preliminary
Mean magnetic declination 2017, 19°07'E, decreasing 23.7° annually. Readings vary from 18°39'E in the SE corner to 19°35'E in the NW corner of the map.
This map is not to be used for navigational purposes.
The photograph: Flurins dissected by meltwater channels. NAPL A14396-06

Preliminary
The Geological Survey of Canada welcomes corrections or additional information from users.
Data may include additional observations not portrayed on this map. See map info document accompanying the downloaded data for more information about this publication.
This publication is available for free download through GEOSCAN (<http://geoscan.nrcan.gc.ca/>)

Preliminary
2nd EDITION

CANADIAN GEOSCIENCE MAP 306
RECONNAISSANCE SURFICIALE GÉOLOGIQUE
LAC LA MARTRE
Northwest Territories
NTS 85-M

- QUATERNARY**
- Quf** Fine deposits, marsh vegetation in shallow water: less than 1 m thick; associated with small graded lakes in the northeast map area.
 - Qub** Bog deposits: organic vegetation; may include fine-grained mineral matter generally less than 2 m thick; raised deposits bearing lake margins; may include small ponds and thermokarst depressions.
 - Qo** Organic deposits, undifferentiated: fine, bog, mucky and floating aquatic vegetation in bays and ponds; 0.5 to 2 m thick or more; poor surface drainage; widespread and commonly overlies glaciolacustrine sediments and till through the entire map area.
 - Qe** Eolian sediments, undifferentiated: fine to medium sand; variable thickness; deposited by dunes; forming bars by inactive coast-glacial and derived primarily from glaciolacustrine sediments and fine-grained till.
 - Qc** Colluvial deposits, undifferentiated: sand and gravel; variable thickness; deposited by gravity-induced movement; forming scree and talus slope deposits along benches and overhanging escarpments, as well as along steeper slopes; may include talus slope deposits; may include small areas of bedrock.
 - Qf** Alluvial fan sediments: silt, sand and gravel; variable thickness; deposited by streams; forming fans by inactive coast-glacial and active intermittent streams draining the Cartridge Plateau; may be vegetated.
 - Qa** Alluvial sediments, undifferentiated: silt, sand and gravel; variable thickness; deposited by streams; includes inactive and seasonally flooded terraces and fans; may include small meandering streams and rivers; may be overlain by organics.
- PROGLACIAL AND GLACIAL ENVIRONMENT**
- GLr** Glaciolacustrine beach sediments: sandy gravel; may contain cobbles and boulders; variable thickness; derived mainly from reworked glaciolacustrine sediments; forming raised terraces associated with ancient glacial Lake McConnell; as a result of isostatic uplift; may also include string boulders derived from exposed bedrock outcrops.
 - GLn** Glaciolacustrine nearshore sediments: fine sand to silty clay; variable thickness; generally greater than 2 m; associated with glacial Lake McConnell in the southern-most regions; commonly draped over till; may include meltwater channels and organic-rich sediments; may contain thermokarst features.
 - GL** Glaciolacustrine sediments, undifferentiated: fine sand to silty clay; variable thickness; associated with ponds of meltwater; may be glacially dammed lakes during ice retreat.
 - GLp** Glaciolacustrine plain sediments: sand and gravel; variable thickness; generally flat topped; occur as a plain; may include hummocks and ice-contact features.
 - GFl** Glaciolacustrine outwash fan sediments: sand and gravel; variable thickness; forming proglacial outwash fan possibly grading into glacial Lake McConnell and derived from proglacial meltwater channels.
 - GFc** Glaciolacustrine ice-contact sediments: sand and gravel; variable thickness; may contain ledges, eskers and hummocks.
 - GFr** Glaciolacustrine esker sediments: sand and gravel; cobbles; variable thickness; deposited by glacial meltwater; forming ridges, flowlines, tunnels, channels or openings in glacier; may contain kettles and hummocks.
- GLACIAL ENVIRONMENT**
- Th** Hummocky till: diameter, variable thickness; deposited directly by glacier; forms small, low, isolated hummocks in shallow depressions; poorly defined meltwater corridors, eskers and kettle lakes.
 - Ti** Rugged till: diameter, variable thickness; includes areas of minor meltwater ridges with variable orientations; may include silted till, poorly defined meltwater corridors, eskers and kettle lakes.
 - Ts** Streamlined till: diameter, variable thickness; strongly fluted till defined by drumlins, crag and tail and drumlins; with smaller streamlining landforms superimposed on larger forms; locally heavily dissected by meltwater flows.
 - Tv** Till veneer: diameter, less than 2 m; thin to thick; may be thicker locally; may be fluted and modified by glaciolacustrine processes locally; contain small bedrock outcrops and glaciolacustrine veneer.
 - T** Till, undifferentiated: diameter, mostly coarse; variable thickness but generally greater than 1 m; locally contains flutings and minor and major moraine ridges; locally modified by glaciolacustrine, glaciolacustrine and fluvial processes during isostatic uplift; surface may be covered by organics with thermokarst and continental areas of glaciolacustrine veneer below 290–300 m elevation.
- Thermokarst depression**
- Patterned ground
 - Dune crest, paleoland unsimplified
 - Kettle
 - Geological contact, defined
 - Terrace, meltwater channel scarp
 - Basal crest, depositional and erosional
 - Meltwater channel
 - Minor, direction unknown
 - Minor, direction known
 - Moraine ridge
 - Minor, unsimplified
 - Esker
 - Minor, unsimplified
 - Direction unknown
 - Direction known
 - Drumlinoid ridge
 - Buried, length to scale, 1 = oldest, 2 = youngest
 - Large, length to scale, 1 = oldest, 2 = youngest
 - Drumlin
 - Buried, length to scale
 - Large, length to scale, 1 = oldest, 2 = youngest
 - Crag and tail, length to scale
 - Fluted bedrock
 - Direction unsimplified, length to scale
 - Direction known, length to scale
 - Small outcrop, from airphoto interpretation and Douglas et al., 1960