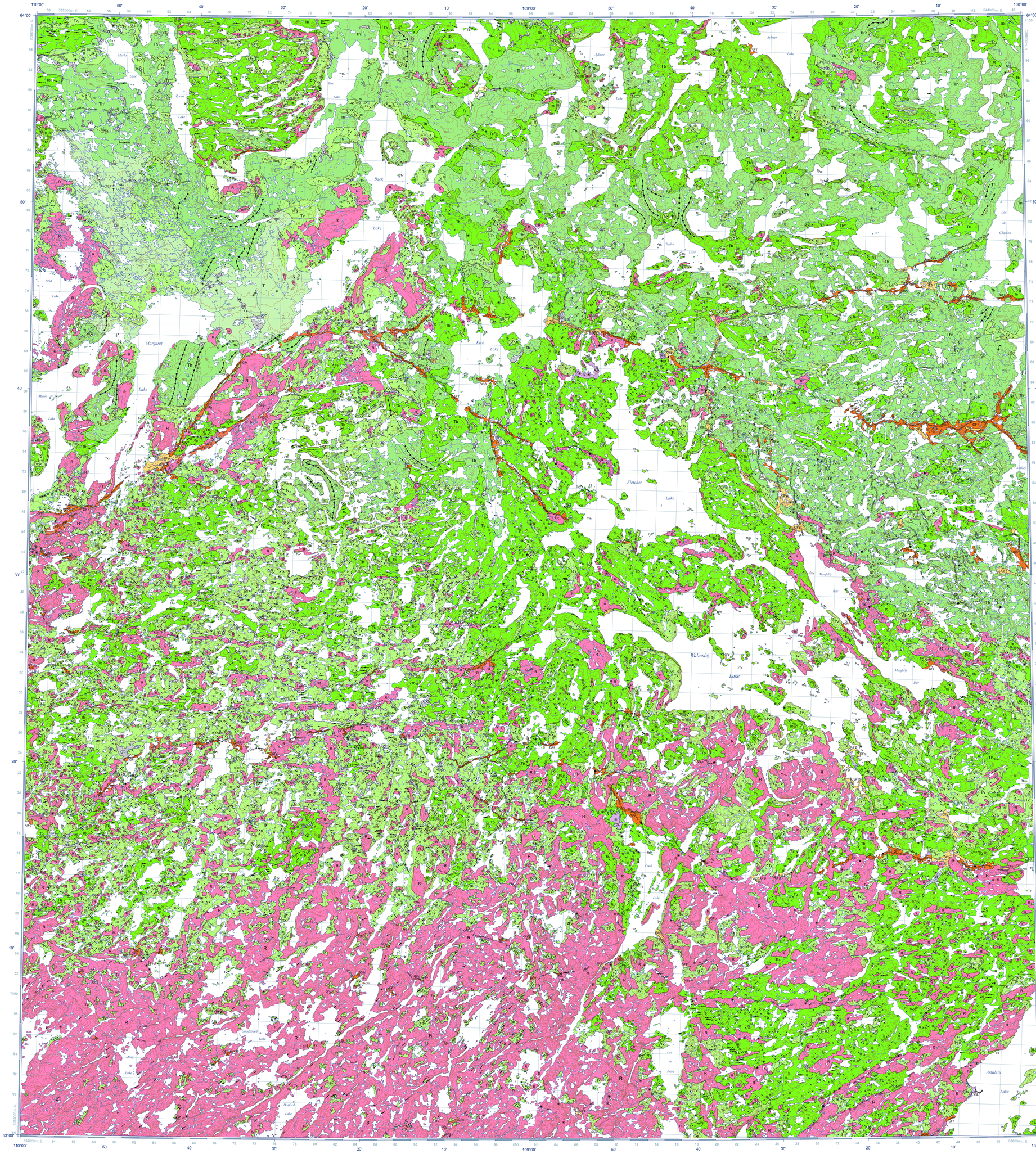


QUATERNARY

SURFICIAL DEPOSITS

HOLOCENE

NONGLACIAL ENVIRONMENT

Isn	**Icing or snowpack:** ice and snow, variable thickness, annual or perennial, observed on aerial photographs taken in 1953 and 1954.
O	**Organic deposits, undifferentiated:** peat and muck up to 2 m thick; formed predominantly by the accumulation of vegetative material in bogs; occurs in depressions, poorly drained areas and along valley bottoms; may contain ice-wedge polygons; small unmapped organic deposits occur in moist terrain units.
Ap	**Floodplain sediments:** silt to gravel; massive to stratified; 1 m to 3 m or more thick; deposited by modern streams and rivers; include floodplains and braided and meandering rivers.
A	**Alluvial sediments, undifferentiated:** silt to gravel; massive to stratified; 1 m to 3 m or more thick; deposited by modern streams and rivers; may include floodplains and alluvial fans in braided and meandering rivers; may be overlain by organics.

LAST GLACIATION (WISCONSIN)

PROGLACIAL AND GLACIAL ENVIRONMENT

GLd	**Glaciolacustrine deltaic sediments:** sand, gravel, and cobbles, massive to cross-stratified; up to 5 m or more thick; associated with temporary glacier-dammed lakes; may exhibit kettle lakes, braided paleochannels, ice-wedge polygons, and beach ridges; may contain massive ground ice.
GL	**Glaciolacustrine sediments, undifferentiated:** fine grained sediments, variable thickness, associated with temporary glacier-dammed lakes.
GFp	**Glaciofluvial outwash plain sediments:** sand and gravel; massive to cross-stratified; 3 m to 20 m or more thick; generally flat-topped; occur as plains; may include subaqueous fans; may exhibit kettle lakes and contain buried ice.
GFc	**Glaciofluvial ice-contact sediments:** sand and gravel; massive to cross-stratified; 3 m to 10 m or more thick; flat-topped to irregular hummocky topography with kettle lakes, may include small eskers.
GFr	**Glaciofluvial esker sediments:** sand, gravel, cobbles, and small boulders; in planar, cross-stratified, and massive beds; 1 m to 30 m or more thick; forms ridges with both sharp-crested and flat-topped segments up to 30 km long, and 10 m to 250 m wide with mounds and flanking aprons; deposited at or behind the ice margin; formed subglacially or in subaerially exposed ice-walled channels; may be associated with zones of scoured rock and till veneer; boulder lags, isolated kame deposits, and small transverse gravel ridges; may exhibit kettle lakes and contain buried ice.

GLACIAL ENVIRONMENT

Tv	**Till veneer:** diamicton; low compaction; less than 1–2 m thick; occurs as a discontinuous layer where rock structure is generally visible, and as a lag on washed bedrock; may include outcrops shown by symbols, and small isolated units of glaciofluvial sediments and till blanket.
Tb	**Till blanket:** diamicton; moderately compact; from 2 m to 5 m thick; occurs as till plains mimicking bedrock topography and as extensive drumlinoid fields with various streamlined landforms shown by symbols; may contain small areas of till veneer.
Th	**Hummocky till:** diamicton; compact; from 3 m to 5 m or more thick; forms irregular to rolling terrain; may contain low morainal ridges a few km in length, local relief up to 5 m; some areas have abundant small esker segments.
T	**Till, undifferentiated:** diamicton, variable thickness, exhibits irregular to subdued topography with no distinct glacial landforms; gradational contacts with till veneer and hummocky till.

PRE-QUATERNARY

BEDROCK

R	**Bedrock, undifferentiated:** sedimentary, volcanic, plutonic, and metamorphic rocks of the Slave Craton; rock types exhibit a range of weathering, from well-preserved ice flow features to surfaces which have undergone grussification and chemical dissolution of 2 cm or more; may include patches of till veneer and glaciofluvial sediments; areas of shattered frost heaved rock and meltwater scour are shown by symbols.

- Felsenmeer
- Washed scoured lag
- Geological contact, defined
- Geological contact, approximate
- Terrace scarp
- Beach crest
- Minor moraine ridge, transverse ridges
- Major moraine ridge
- Esker, direction unknown
- Esker, direction known
- Buried or poorly defined drumlinoid
- Drumlinoid (1 = oldest, 2 = youngest)
- Drumlin (1 = oldest, 2 = youngest)
- Crag-and-tail
- Fluted bedrock (roche moutonnée), direction known
- Fluted bedrock (roche moutonnée), direction known, poorly defined
- Patterned ground (ice-wedge polygons)
- Bedrock erosional form (S-form)
- Kame
- Striation, direction known, poorly defined
- Striation, direction known
- Striation, direction known (1 = oldest, 2 = youngest)
- Small outcrop
- Sample location

REFERENCES

Additional geological data from:

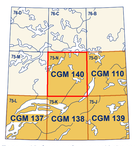
Wright, D.F., Ambrose, E.J., Lemkow, D., and Bonham-Carter, G.F. (ed.), 2013. Mineral and energy resource assessment of the proposed Thaidene Nene National Park Reserve in the area of the East Arm of Great Slave Lake, Northwest Territories; Geological Survey of Canada, Open File 7196. doi:10.4095/292447

Abstract

The Walmsley Lake map area is characterized by three broad zones based on distribution and nature of surficial sediments. In the north, hummocky till with a few isolated subdued moraine ridges, and smaller areas of till blanket dominate the landscape. The central area is defined by extensive regions of hummocky till in the east, and till blanket in the west. The southern regions consist of a combination of till blanket, till veneer, hummocky till and bedrock, the latter becoming more prevalent to the west. Tills are locally dissected by glaciofluvial corridors consisting of eskers, ice-contact sediments and scoured bedrock. These features record a westward meltwater paleoflow in the eastern regions, and a northwestward flow in the western regions. The earliest ice flow, defined by rare striae in the north, was southwestward. The last, dominant ice flow forms a partial radiating pattern defined by striae, fluted bedrock, crag-and-tails and drumlinoids. Ice flow was northwestward in the north and central regions, becoming west-southwestward in the south, though minor variations are found locally.

Résumé

La région cartographique du lac Walmsley se caractérise par trois zones déterminées selon la répartition et la nature des sédiments superficiels. Au nord, le paysage est dominé par du till bosselé et quelques crêtes moraniques isolées à relief adouci, et de plus petites nappes de till. La zone centrale est définie par de vastes régions de till bosselé à l'est et de nappes de till à l'ouest. Au sud, il y a une combinaison de nappes de till, de placages de till et de substratum rocheux, ce dernier devenant plus répandu vers l'ouest. Par endroits, les tills sont recoupés par des couloirs fluvioglaciaires constitués d'eskers, de sédiments de contact glaciaire et de substratum rocheux décapé. Ces éléments attestent un paléoécoulement d'eau de fonte vers l'ouest dans les régions à l'est, et vers le nord-ouest dans les régions à l'ouest. L'orientation de l'écoulement glaciaire le plus ancien, défini d'après de rares stries au nord, était vers le sud-ouest. Le dernier écoulement glaciaire dominant a tracé un motif rayonnant défini par des stries, un substratum rocheux cannelé, des tétards et des drumlinoïdes. Dans les régions du nord et du centre, l'écoulement glaciaire était vers le nord-ouest, alors que dans le sud, il se réorientait vers l'ouest et le sud-ouest, avec quelques détours localisés.



National Topographic System reference and index to adjoining published Geological Survey of Canada maps

Cover illustration
Vegetated till veneer over bedrock.
Photograph by D.R. Sharpe. 2013-233

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Natural Resources Canada — Ressources naturelles du Canada

CANADIAN GEOSCIENCE MAP 140

SURFICIAL GEOLOGY

WALMSLEY LAKE

Northwest Territories

NTS 75-N

1:125 000

ess.nrcan-gc.ca

Canadian Geoscience Maps

Canada

Authors: D.E. Kerr, R.D. Knight, D.R. Sharpe, and D.I. Cummings

Geology based on aerial photograph interpretation by D.E. Kerr, 2008, 2009, 2012, 2013 with field work in the east half by D.E. Kerr, R.D. Knight, D.R. Sharpe, D.I. Cummings, and B.A. Kjarsgaard, 2008; D.E. Kerr and R.D. Knight, 2009.

Geomatics by L. Robertson

Cartography by D. Viner

Initiative of the Geological Survey of Canada, conducted under the auspices of the Mineral and Energy Resources Assessment (MERA) for the Proposed East Arm National Park and the Tri Territorial Surficial Database Project as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) program.

Map projection Universal Transverse Mercator, zone 12. North American Datum 1983

CANADIAN GEOSCIENCE MAP 140
SURFICIAL GEOLOGY
WALMSLEY LAKE
Northwest Territories
NTS 75-N
1:125 000

2 0 2 4 6 8 10 km

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.
Elevations above mean sea level are expressed in metres (NTS 75-N/1, 75-N/2, 75-N/5, 75-N/6, 75-N/7, 75-N/8, 75-N/9, 75-N/10, 75-N/11, 75-N/12, 75-N/13, 75-N/14, 75-N/15, 75-N/16) and feet (NTS 75-N/3, 75-N/4)

Mean magnetic declination 2014, 13°35'E, decreasing 26' annually. Readings vary from 12°37'E in the SE corner to 14°32'E in the NW corner of the map.

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map.
See documentation accompanying the data.

This publication is available for free download through GEOSCAN (http://geoscan.nrcan.gc.ca/).

Preliminary publications in this series have not been scientifically edited.

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CANADIAN GEOSCIENCE MAP 140
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