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# CANADIAN GEOSCIENCE MAP 277

## PREDICTIVE SURFICIAL GEOLOGY

# WECHO RIVER

Northwest Territories
NTS 85-O

## Map Information Document

Preliminary

Geological Survey of Canada
Canadian Geoscience Maps

2016

Canada

## MAP NUMBER

Natural Resources Canada, Geological Survey of Canada
Canadian Geoscience Map 277 (Preliminary)

## TITLE

Predictive surficial geology, Wecho River, Northwest Territories, NTS 85-O

## SCALE

1:125 000

## CATALOGUE INFORMATION

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## COPYRIGHT



## RECOMMENDED CITATION

Morse, P.D., Kerr, D.E., Wolfe, S.A., and Olthof, I., 2016. Predictive surficial geology, Wecho River, Northwest Territories, NTS 85-O; Geological Survey of Canada, Canadian Geoscience Map 277 (preliminary); scale 1:125 000. doi:10.4095/298686

## ABSTRACT

The glaciated landscape exhibits ice flow features associated with ice advance such as drumlinoids, crag-and-tails and fluted bedrock, which together with striations, record a southwestward ice flow during the last glaciation. Glacially scoured bedrock dominates

the area. Discontinuous till veneer is generally restricted to the northeastern map area. Glaciofluvial sediments, including eskers and kames generally trend southwestward. Many eskers consist of a series of short segments. During deglaciation about 11–10 ka BP, fine-grained glaciolacustrine sediments, associated with glacial Lake McConnell, were deposited in many western and southern topographic lows, up to 240 m or possibly higher. Related glaciolacustrine deltas and beaches, marking the decreasing elevation of the glacial lake over time due to isostatic rebound, occur at 270–295 m, although isolated deltas have also been observed at 310, 320, 330 m and as high as 350 m in the northeast. Postglacial eolian sediments exhibit dunes recording both north-northwestward and south-southeastward paleowind directions.

## RÉSUMÉ

Le paysage glaciaire présente des entités associées à l'écoulement des glaces, comme des drumlinoïdes, des structures en crag-and-tail et un substratum cannelé, lesquelles témoignent, avec les stries, d'un écoulement glaciaire dirigé vers le sud-ouest lors de la dernière glaciation. Un substratum rocheux affouillé par les glaciers constitue l'élément dominant de la région. La présence d'un placage de till discontinu est en général limitée au nord-est de la région cartographique. Des sédiments fluvioglaciaires, se présentant entre autres sous la forme d'eskers et de kames, adoptent généralement une direction sud-ouest. De nombreux eskers sont constitués d'une série de courts segments. Lors de la déglaciation à environ 11–10 ka BP, des sédiments glaciolacustres fins, associés au Lac glaciaire McConnell, se sont déposés dans des dépressions topographiques à l'ouest et au sud jusqu'à une altitude de 240 m et peut-être plus. Des deltas et des plages glaciolacustres, témoignant de l'altitude décroissante du lac glaciaire dans temps en réponse au relèvement isostatique, se trouvent à une altitude de 270–295 m, bien que des deltas isolés aient également été observés à 310, 320 et 330 m et même jusqu'à 350 m au nord-est. Des sédiments éoliens postglaciaires présentent des dunes qui rendent compte de paléovents en provenance du nord–nord-ouest et du sud–sud-est.

## LICENCE AGREEMENT



## ACCORD DE LICENCE



## SHEET 1 OF 1, SURFICIAL GEOLOGY

### GENERAL INFORMATION

Authors: P.D. Morse, D.E. Kerr, S.A. Wolfe, and I. Olthof

Geology by P.D. Morse, and D.E. Kerr, 2014–2015

Geology conforms to Surficial Data Model v. 2.1

Geomatics by J. Kingsley and P.D. Morse

Cartography by D. Viner

Initiative of the Geological Survey of Canada, conducted under the auspices of the Mackenzie Region Project as part of Natural Resources Canada's Geo-mapping 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

Mean magnetic declination 2016, 17°30'E, decreasing 22' annually. Readings vary from 16°49'E in the SE corner to 18°09'E in the NW corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Glaciofluvial sediments and till veneer over bedrock, Wecho River, Northwest Territories. Photograph by P.D. Morse. 2016-035

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 publications in this series have not been scientifically edited.

### *Map Viewing Files*

The published map is distributed as a Portable Document File (PDF), and may contain a subset of the overall geological data for legibility reasons at the publication scale.

### *Descriptive Notes*

The Wecho River predictive surficial geology map was generated using radiometrically balanced LANDSAT 7 imagery, fire history, elevation models, and integration of knowledge gained from air photo interpretations of training areas, field observations, and legacy datasets. Some of these additional geological features include small bedrock outcrops, kames, esker ridges, beach ridges, and ice flow indicators such as striations, crag-and-tails, and fluted bedrock point and line features. These geological features may also exist beyond the boundaries of the airphoto interpreted training areas. Small map unit polygons and most small outcrops derived from remote predictive

mapping are not shown on the map but are included in the accompanying geodatabase. Lakes may include hydrographic layers and mask areas. The map conforms to Geological Survey of Canada's Surficial Data Model (SDM version 2.1, Cocking et al., 2015). See digital Supplementary Notes for full methodology.

## REFERENCES

Cocking, R.B., Deblonde, C., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Laviolette, A., Parent, M., Plouffe, A., Robertson, L., St-Onge, D.A., and Weatherston, A., 2015. Surficial Data Model, version 2.1.0: Revisions to the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 7741, 276 p. doi:10.4095/296568

Jackson, V.A., 1999. Geology of the northern Russell Lake area (85-O/4); NWT Geology Division, Department of Indian Affairs and Northern Development, Yellowknife, N.W.T. EGS 1999-08, 1 map, 1:50 000 scale.

Jackson, V.A., 2003. Preliminary compilation of the geology of the Snare River (1998–2002 results), Wijinnedi Lake, Labrish Lake and Russell Lake area, parts of 85N and 85-O; C.S. Lord Northern Geoscience Centre, Yellowknife, N.W.T. NWT Open report 2003-002, 1 map, 1:100 000 scale.

Kerr, D.E., 1990. Surficial geology of the Yellowknife River basin, parts of NTS 85-I, 85J, 85-O, 85P, and 86A: NWT Geology Division; Indian and Northern Affairs Canada, EGS 1990-03

Yardley, D.H., 1949. Wecho River, east half, District of Mackenzie, Northwest Territories; Geological Survey of Canada, Paper 49-14, 1 sheet. doi:10.4095/108501

## ADDITIONAL INFORMATION

The Additional Information folder of this product's digital download contains figures and tables that appear in the map surround as well as additional geological information not depicted on the map, nor this document, nor the geodatabase.

## AUTHOR CONTACT

Questions, suggestions, and comments regarding the geological information contained in the data sets should be addressed to:

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## COORDINATE SYSTEM

Projection: Universal Transverse Mercator
Units: metres

Zone: 11
Horizontal Datum: NAD83
Vertical Datum: mean sea level

### *Bounding Coordinates*
Western longitude:  116°00’00”W
Eastern longitude:  114°00’00”W
Northern latitude: 64°00’00”N
Southern latitude: 63°00’00”N

### *Software Version*
Data has been originally compiled and formatted for use with ArcGIS™ desktop version 10.2 developed by ESRI®.

### *Data Model Information*

**Surficial**
The Geological Survey of Canada (GSC) through the Geomapping for Energy and Minerals Program (GEM) has undertaken the Geological Map Flow to develop protocols for the collection, management (compilation, interpretation), and dissemination of surficial and bedrock geology data and map information. To this end, a data model has been created.

The Surficial Data Model (SDM) was designed using ESRI geodatabase architecture. The XML workspace document provided can be imported into a geodatabase, and the geodatabase will then be populated with the feature datasets, feature classes, tables, relationship classes, subtypes, and domains.

Shapefile and table (.dbf) versions of the data are included within the data. Column names have been simplified and the text values have been maintained within the shapefile attributes. The direction columns are numerical, to display rotation for points, and the symbol fields will hold the correct values to be matched to the appropriate style file.

For a more in depth description of the data model please refer to the official publication:

Cocking, R.B., Deblonde, C., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Laviolette, A., Parent, M., Plouffe, A., Robertson, L., St-Onge, D.A., and Weatherston, A., 2015. Surficial Data Model, version 2.1.0: Revisions to the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 7741, 276 p. doi:10.4095/296568