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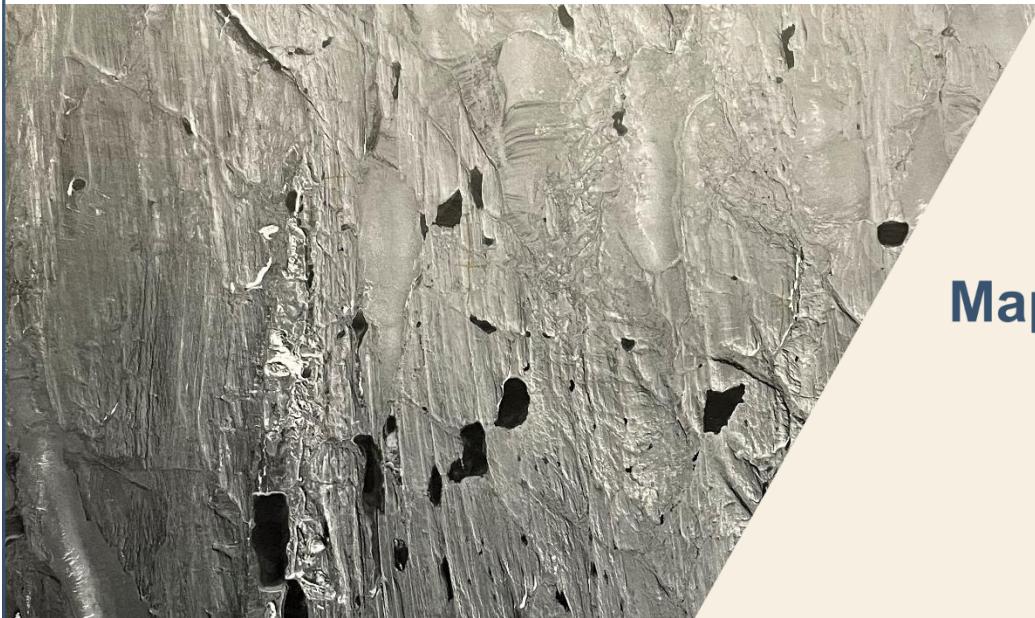
## CANADIAN GEOSCIENCE MAP 445

RECONNAISSANCE SURFICIAL GEOLOGY

# MARA RIVER

Nunavut

NTS 76-K



## Map Information Document

Geological Survey of Canada  
Canadian Geoscience Maps

2022

Canada



## MAP NUMBER

Natural Resources Canada, Geological Survey of Canada  
Canadian Geoscience Map 445

## TITLE

Reconnaissance surficial geology, Mara River, Nunavut, NTS 76-K

## SCALE

1:125 000

## CATALOGUE INFORMATION

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## **ABSTRACT**

The Mara River map area consists of extensive glacially and meltwater scoured bedrock, deposits of hummocky till, fluted till blanket, and till veneer throughout the map area, glaciofluvial sediments within major river valleys, and postglacial marine sediments in coastal lowlands. The boundaries of many till deposits were eroded to bedrock by proglacial and subglacial meltwater, and locally northwest-trending corridors are defined by eskers. Glacially dammed lakes, associated with deltas between 450 m and 230 m elevation, occupied some river valleys where retreating or stagnant ice impeded drainage to the east and north. Striations and streamlined landforms indicate a north-northwestward regional ice flow in the eastern and northern regions, diverging to a west-southwestward flow in the western regions. A series of glaciomarine and marine deltas, and fine-grained sediments record the marine incursion up to 200 m elevation. Isostatic rebound caused marine regression, forming deltas between 200 m and 60 m, and raised beaches from 150 m elevation to current sea level.

## **RÉSUMÉ**

La région cartographique de Mara River est composée d'affleurements rocheux profondément affouillés par les glaciers et les eaux de fonte, de dépôts de till bosselé, de nappes de till cannelé et de placages de till. Des sédiments fluvioglaciaires sont présents dans les principales vallées fluviales, et des sédiments marins postglaciaires occupent les basses terres côtières. Le pourtour de nombreux dépôts de till est marqué par une érosion s'étendant jusqu'au substratum rocheux, qui témoigne d'une action étendue des eaux de fonte proglaciaires et sous-glaciaires. Localement, des couloirs d'eaux de fonte de direction nord-ouest sont définis par des eskers. Des lacs endigués par la glace, auxquels sont associés des deltas à une altitude s'échelonnant de 450 m à 230 m, ont occupé certaines vallées fluviales, là où la glace en retrait ou stagnante a entravé l'écoulement des eaux vers l'est et le nord. Les stries et les formes de relief profilées indiquent un écoulement glaciaire régional dirigé vers le nord-nord-ouest dans les régions de l'est et du nord, divergeant en un écoulement dirigé vers l'ouest-sud-ouest dans les régions de l'ouest. Une série de deltas glaciomarins et marins ainsi que des sédiments fins témoignent d'une incursion marine jusqu'à 200 m d'altitude. Le relèvement isostatique postglaciaire a entraîné une régression marine, laissant des deltas entre 200 m et 60 m d'altitude, ainsi que des plages soulevées entre 150 m d'altitude et le niveau de la mer actuel.

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## **SHEET 1 OF 1, RECONNAISSANCE SURFICIAL GEOLOGY**

### **GENERAL INFORMATION**

Author: D.E. Kerr

Geology by D.E. Kerr based on airphoto interpretation in 2019 and 2020 of 1:60 000 scale photos taken in August 1957, and limited fieldwork in 1986 and 1987; additional striations from Bird and Bird (1961), Kerr (1994), and unpublished field manuscript map by W. Blake Jr., 1962.

Geological data conforms to Surficial Data Model v. 2.4.0 (Deblonde et al., 2019).

Geomatics by L. Robertson and J. Kingsley

Cartography by N. Côté

Scientific editing by L. Ewert

Initiative of the Geological Survey of Canada, conducted under the auspices of the Supporting Adaptation in Coastal Studies project as part of Natural Resources Canada's Climate Change Geoscience program

Map projection Universal Transverse Mercator, zone 12  
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 2022, 12°30'E, decreasing 7.1' annually  
Readings vary from 11°28'E in the NE corner to 13°25'E in the SW corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Strongly fluted bedrock and till, south of the eastern Burnside River.  
Photo from the National Air Photo Library. NAPL photo A15771-34

The Geological Survey of Canada welcomes corrections or additional information from users ([gscpublications-cgcpublications@nrcan-rncan.gc.ca](mailto:gscpublications-cgcpublications@nrcan-rncan.gc.ca)).

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 (<https://geoscan.nrcan.gc.ca/>).

#### **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.

#### **CARTOGRAPHIC REPRESENTATIONS USED ON MAP**

This map utilizes ESRI Cartographic Representations in order to customize the display of standard GSC symbols for visual clarity on the PDF of the map only. The digital data still contains the original symbol from the standard GSC symbol set. The following legend features have Cartographic Representations applied:

- Major subglacial meltwater corridor margin
- Ice-contact scarp

#### **DEFINITION QUERIES USED ON MAP**

This map utilizes definition queries in order to customize the display for visualization on the PDF of the map only and does not affect the digital data. The following features have a definition query applied:

- FieldStations

#### **REFERENCES**

Bird, J.B. and Bird, M.B., 1961. Bathurst Inlet, Northwest Territories; Geographical Branch, Canada Department of Mines and Technical Surveys, Memoir 7, 66 p.

Deblonde, C., Cocking, R.B., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Parent, M., Plouffe, A., Robertson, L., Smith, I.R., and Weatherston, A., 2019. Surficial Data Model: the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 8236, ver. 2.4.0, 1 .zip file.  
<https://doi.org/10.4095/315021>

Kerr, D.E., 1994. Late Quaternary stratigraphy and depositional history of the Parry Peninsula-Perry River area, District of Mackenzie, Northwest Territories; Geological Survey of Canada, Bulletin 465, 39 p. <https://doi.org/10.4095/194069>

#### **SUGGESTED READINGS**

Blake, W., Jr., 1963. Notes on glacial geology, northeastern District of Mackenzie; Geological Survey of Canada, Paper 63-28, 12 p. <https://doi.org/10.4095/101060>

Craig, B.G. and Fyles, J.G., 1960. Pleistocene geology of Arctic Canada; Geological Survey of Canada, Paper 60-10, 21 p. <https://doi.org/10.4095/101191>

Kerr, D.E. and Seaton, J.B., 1987. A preliminary investigation on the extent of Glacial Lake Hood, northeastern District of Mackenzie, NWT; Exploration Overview, Geology Division, INAC, p. 29–30.

#### **AUTHOR CONTACT**

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

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K1A 0E8  
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#### **COORDINATE SYSTEM**

Projection: Universal Transverse Mercator

Units: metres

Zone: 12

Horizontal Datum: NAD83

Vertical Datum: mean sea level

#### **BOUNDING COORDINATES**

Western longitude: 110°00'00"W

Eastern longitude: 108°00'00"W

Northern latitude: 67°00'00"N

Southern latitude: 66°00'00"N

#### **SOFTWARE VERSION**

Data has been originally compiled and formatted for use with ArcGIS™ desktop version 10.7.1 developed by ESRI®.

#### **DATA MODEL INFORMATION**

##### **Surficial**

The Geological Survey of Canada (GSC) through the Geo-mapping 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:

Deblonde, C., Cocking, R.B., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Parent, M., Plouffe, A., Robertson, L., Smith, I.R., and Weatherston, A., 2019. Surficial Data Model: the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 8236, ver. 2.4.0, 1 .zip file.  
<https://doi.org/10.4095/315021>