

GRS 15 METADATA

IDENTIFICATION GENERAL INFORMATION

Title

Three-Dimensional Modelling of Surficial Deposits in the Orangeville–Fergus Area of Southern Ontario

Alternate Title

GRS015

Creation Date

27 April 2016

Publication Date

27 April 2016

Cited Responsible Party

Abstract

Burt, A.K., Dodge, J.E.P. (authors)

This publication can be downloaded from GeologyOntario: see Distribution Information section.

This digital data release contains information regarding the three-dimensional (3-D) distribution and character of surficial materials that form groundwater aquifers and aquitards within the Orangeville–Fergus area of southern Ontario. The study area occupies an area of 1550 square kilometres and is situated above the Niagara Escarpment between the Waterloo Region and the city of Orangeville.

The data sets are organized into a series of folders, each containing information of varying type and format. The folders and contents are as follows. 1) Analytical Data: Laboratory grain size and carbonate analysis results coded according to hydrostratigraphic unit and depositional environment. 2) ArcInfo Grids: ESRI® ArcInfo® structural contour and isopach grids of modelled surfaces. Hillshade (25 m cell size) of the bedrock surface. 3) Google Earth: Isopach (thickness) and structural contour maps of hydrostratigraphic units, subsurface database and excerpts from seamless geology maps viewable using Google Earth™ mapping service. 4) Graphic Borehole Logs: Graphic borehole logs depicting geological information, hydrostratigraphic units and select analytical results. 5) Modelled Surfaces: Comma-separated value files of x and y co-ordinates of 100 model cells and the elevation (z) and thickness of each hydrostratigraphic unit. Includes continuous and discontinuous surfaces. 6) Movie: example from the Waterloo Region 3-D project showing the use of the Google Earth™ mapping service (.kmz). 7) Plates: High-resolution plates depicting borehole logs, unit distribution maps, isopach (thickness) maps, structural contour maps, bird's-eye-view maps, cross-sections (hydrostratigraphic units and aquifer–aquitard class legends and aquifer vulnerability maps. 8) Report: Report detailing the results of this study. 9) Subsurface Data: Data set used to construct the 3-D block model including location, formation and picks tables.

Additional information and metadata are found within a readme file provided with the product.

Purpose or Objective

This report describes a study designed to improve the understanding and protection of groundwater resources within the Orangeville–Fergus area of southern Ontario. It contains comprehensive information regarding the three-dimensional (3-D) distribution and character of surficial geological

materials that form groundwater aquifers and aquitards. The study area occupies an area of 1550 square kilometres and is situated above the Niagara Escarpment between the Waterloo Region and the city of Orangeville. This Groundwater Resources Study, which is one of a series of 3-D mapping projects undertaken by the Ontario Geological Survey, was undertaken between 2008 and 2015.

Forty-three (43) new boreholes were drilled and these, together with new geophysical surveying, surface sampling and analysis of a significant volume of legacy data, were the basis for the creation of a 3-D model of the area. The model was generated digitally using applications running within commercially available software. The model is underpinned by a conceptual geological framework which subdivides the Quaternary sediments into a regional-scale aquifer–aquitard sequence consisting of 16 hydrostratigraphic units. The hydrostratigraphic units are identified on the basis of age and the sediment characteristics resulting from deposition in different environments. Undifferentiated Paleozoic bedrock forms the basal hydrostratigraphic unit across the map area.

The objective of this product is to collect and disseminate geoscience information for Ontario.

Status

Complete

Point of Contact

Maintenance and Update Frequency

Not Planned

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Geological Survey

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Ministry of Northern Development and Mines

MNDM

Ontario Geological Survey

OGS

Groundwater Resources Study

GRS

3-D Modelling

Hydrogeology

Aquifer

Source Water Protection

Borehole

Geophysics, General

Gravity

Surficial Geology, General

Quaternary Surficial Geology

Glacial Deposits

Drift Thickness

Overburden

Till

Sediment

Stratigraphy
Waterwell
Data Collection
Digital Data
Mapping

Business Theme:

Geological Survey (theme)
Geology (theme)

Use Limitation

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GEOGRAPHIC INFORMATION

Geographic bounding box

North bounding latitude: 43° 59'

South bounding latitude: 43° 36'

West bounding latitude: -80° 28'

East bounding latitude: -80° 00'

Description of Completeness: irregularly shaped study area - completeness not available

MAPPING INFORMATION

Grid Coordinate System Used: Universal Transverse Mercator

Map Projection: Transverse Mercator

Horizontal Geodetic Datum: NAD83

Vertical Datum: Not Applicable

Horizontal Position Accuracy of Features: Precise +/- 5 m

Vertical Position Accuracy of Features: Precise +/- 5 m

EXTENT

Geographic bounding box

North bounding latitude: 43.9833°

South bounding latitude: 43.6000°

West bounding latitude: -80.4667°

East bounding latitude: -80.0000°

Description: irregularly shaped study area - completeness not available

REFERENCE SYSTEM INFORMATION

Grid CS = Universal Transverse Mercator; Map Proj = Transverse Mercator; Horiz. Datum = NAD83;

Vert. Datum = Not Applicable

DATA QUALITY INFO

Hierarchy level

Dataset

Measure description

Horizontal: +/- 5 m; Vertical: +/- 5 m

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Protocol: Web address (URL)

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SOURCE DATA SOURCE INFORMATION

Description Data Source Type and Description:

Includes Bibliographic Information: Product includes references to other sources of information

Description Data Source Type and Description:

Direct Field Collection: Survey conducted from May 2008 to October 2015

METADATA

Metadata language

English

Contact

CONTACT INFORMATION

GENERAL CONTACT:

Position: Publication Sales Representative

Language: English

Organization: Ministry of Northern Development and Mines

Organization Sub-Unit: Ontario Geological Survey

Business Phone: (705)670-5691

FAX: (705)670-5770

Internet Email Address: pubsales.ndm@ontario.ca

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Organization Sub-Unit: Ontario Geological Survey

Business Phone: (705)670-5691

FAX: (705)670-5770

Internet Email Address: pubsales.ndm@ontario.ca

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