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Miscellaneous Release—Data 324

Results of 2011–13 Overburden Drilling Programs in the Southern Part of the County of Simcoe, South-Central Ontario

by A.F. Bajc, R.P.M. Mulligan, D.R.B. Rainsford and J.L. Webb

This publication can be downloaded from
http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD324

This digital data release contains borehole information resulting from overburden drilling programs conducted within the southern part of the County of Simcoe in 2011, 2012 and 2013. A total of 25 PQ diameter (8 to 9 cm) continuous cores, 24 of which extend to bedrock, are being reported on in this digital data release. Cores were obtained using a mud rotary drill equipped with a Christensen core barrel retrievable by wire line. Core was visually logged, photographed and representative intervals sampled in the field for combinations of grain size, carbonate and heavy mineral content as well as radiocarbon dating. Induction (EM conductivity) and natural gamma borehole geophysical surveys were also conducted in 12 of the 25 boreholes.

Graphic and written logs (*.pdf*), high resolution core photos (*.jpeg*) and associated analytical data sets (Microsoft® Excel® 2003 *.xls*) are stored in nested folders (*see* **DATA STRUCTURE** section of this document). A visual representation of this information is included in a hyperlinked format, accessible from an index map provided in portable document format (*.pdf*). PDF viewing software, such as Adobe® Reader®, is available online at http://get.adobe.com/reader. For optimal viewing, a monitor resolution of 1280 × 1024 to 2560 × 1600 is recommended. To improve performance of the data release on your computer, it is recommended that the entire folder (**MRD324**) be copied onto your computer's hard drive. It is imperative that the folder structure and file folder naming convention be maintained.

Opening the file titled **Index_Map.pdf** will launch the browser in Adobe® Reader® and open a clickable image map of borehole locations within the South Simcoe study area. Clicking on one of the borehole labels on the index map results in a new window opening up containing a *.pdf* version of the graphic log of the borehole as well as a visual representation of analytical data obtained from samples collected from the core. This graphical log also contains hyperlinks to additional information including: 1) the Strater® log (*.xls*); 2) AMS radiocarbon ages (*.xls*); 3) detailed written logs (*.pdf*); 4) grain size data (*.xls*); 5) Chittick carbonate data (*.xls*); 6) natural gamma and induction (EM conductivity) downhole geophysical data (*.xls*); 7) heavy mineral data on the fine sand fraction (0.125-0.25 mm) (*.xls*); and 8) high resolution photographs of the core on 0.25 m intervals (*.jpeg*). These files are accessed by clicking over the respective areas of the graphic log. Clicking on the various segments of the **Stratigraphic Classification** field of the graphic log will take the user to the corresponding

depth of the detailed written log for that borehole. Borehole location and monitoring well construction information is also included in the **MISCELLANEOUS_DATA** folder.

Note: A warning message will appear when hyperlinked areas of the logs are selected. This can be eliminated by checking the **Do not show this message again** *box and then clicking on the* **Open** *button.*

Note also: On the graphical logs, when the area labelled "Click here for photographs of core" is clicked, the user's default photo viewing software will open with the first photo of the folder being displayed. Use the software's custom tools to advance to the next photo in the sequence. Should the user wish to view a photo a considerable distance down in the sequence, they are advised to open the ***PHOTOS*** *folder in the root directory and double click on the photo of interest. See bullet 6 below regarding the photo file naming convention used in this MRD.*

Analytical Methods

1. Graphic log generated using Strater® v.3.4.807 software.
2. AMS (Accelerator Mass Spectrometer) radiocarbon ages obtained from the Illinois State Geological Survey radiocarbon lab. Radiocarbon ages calibrated using Intcal 13.
3. Particle size information obtained using a Microtrac particle size analyzer.
4. Carbonate data obtained using the Chittick method (Dreimanis 1962).
5. Heavy mineral data are derived by energy-dispersive X-ray analysis on a scanning electron microscope of over 2000 fine sand (0.125-0.25 mm) grains per sample.
6. Photo file names are labelled according to the borehole number and top depth of the interval to 2 decimal places (e.g., SS-11-01-13025 indicates that the photo is taken from borehole SS-11-01 at a depth of 130.25 m). To quickly view photos from a specific depth, the user is advised to open the **PHOTOS** folder for the particular borehole and double click on the file of interest.
7. Borehole geophysical logs were collected primarily by DGI Geoscience Inc., with the Geological Survey of Canada collecting data for borehole SS-13-08 (*see* Geological Survey of Canada Open File 7883 (Crow et al. 2015) for details regarding collection methods and interpretation).
8. Gamma logs were obtained by DGI Geoscience Inc. using a 2PGA-1000 Natural Gamma probe manufactured by Mount Sopris Instruments. Detector type: sodium iodide. Detector volume: 0.0295 dm^3. Resolution: 0.02% full scale. Range 0-100000 cps. Measurement interval: 0.02 m. Logging speed: 5 m/min. Smoothed gamma logs were generated using a 21 point moving average.
9. Induction (EM conductivity) logs were obtained by DGI Geoscience Inc. using a 2EMA-1000 EM39 induction probe manufactured by Mount Sopris Instruments. Detector type: Geonics EM-39 induction probe. Resolution 0.02% full scale. Scales: 100mS/m, 1000mS/m, 10000mS/m. Receiver-transmitter coil separation: 50 cm. Measurement interval 0.05 m. Logging speed 5 m/min.

References

Crow, H.L., Brewer, K.D., Bajc, A.F., Pugin, A.J.-M., Mulligan, R.P.M. and Russell, H.A.J. 2015. Downhole geophysical data from two boreholes in south Simcoe County, Ontario; Geological Survey of Canada, Open File 7883, 18p.

Dreimanis, A. 1962. Quantitative gasometric determination of calcite and dolomite by using Chittick apparatus; Journal of Sedimentary Petrology, v.32, p.520-529.

Abbreviations Used in MRD 324

BP = before present
cps = counts per second
CS = calculated surface, provided in units of m^2/cc; the value provides an indication of the specific surface area
IntCal13 = Northern hemisphere radiocarbon calibration curve from IntCal13
ka = thousand years
MA = mean diameter, in microns, of the "area distribution", calculated from the volume distribution
m bgs = metres below ground surface
mS/m = milliSiemens per metre
MN = mean diameter, in microns, of the "number distribution", calculated using the volume distribution data and is weighted to the smaller particles in the distribution
MV = mean diameter in microns of the "volume distribution" and represents the centre of gravity of the distribution
SD = standard deviation in microns, also known as the graphic standard deviation (σg); it is one measure of the width of the distribution

DATA STRUCTURE

MRD324

- MRD324_Readme.pdf
- DATA
  - ANALYTICAL_DATA
    - BOREHOLE_GEOPHYSICS (13 files)
    - CARBONATE_DATA (25 files)
    - HEAVY_MINERAL_DATA (25 files)
    - MISCELLANEOUS_DATA (3 files)
      - Location.xls
      - AMS_Radiocarbon_Dates.xls
      - Monitoring_Wells.xls
    - PARTICLE_SIZE_DATA (26 files)
    - STRATER_DATA (27 files)
  - GRAPHIC_LOGS (26 files)
  - PHOTOS
    - SS-11-01 (571 files)
    - SS-11-02 (626 files)
    - SS-11-03 (429 files)
    - SS-11-04 (518 files)
    - SS-11-05 (174 files)
    - SS-11-06 (328 files)
    - SS-11-07 (295 files)
    - SS-11-08 (619 files)
    - SS-11-09 (339 files)
    - SS-12-01 (42 files)
    - SS-12-02 (698 files)
    - SS-12-03 (396 files)
    - SS-12-04 (664 files)

SS-12-05 (670 files)
SS-12-06 (564 files)
SS-12-07 (428 files)
SS-12-08 (302 files)
SS-13-01 (356 files)
SS-13-02 (378 files)
SS-13-03 (314 files)
SS-13-04 (403 files)
SS-13-05 (422 files)
SS-13-06 (793 files)
SS-13-07 (466 files)
SS-13-08 (653 files)
WRITTEN_LOGS (26 files)
Index_Map.pdf