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Preliminary Map P.3802, *Precambrian Geology of Sackville Township, Shebandowan Greenstone Belt, Wawa–Abitibi Terrane*.

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Miscellaneous Release—Data 342

Geological, Geochemical, Geochronological and Geophysical Data from Sackville Township, Shebandowan Greenstone Belt, Wawa–Abitibi Terrane

by L.M. Ratcliffe

This publication can be downloaded from
http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD342

This digital data release consists of geological information (field descriptions, field photographs and slab sample photographs), whole-rock geochemical data, U/Pb geochronological data, magnetic susceptibility data and petrographic data, derived from bedrock geological mapping in 2014, at a scale of 1:20 000, in Sackville Township within the Shebandowan greenstone belt. This release comprises 129 photographs (as *.jpg* files), 5 Microsoft® Excel® 2010 (*.xlsx*) files and 5 documents in portable document format (*.pdf*). These data augment Preliminary Map P.3802, *Precambrian Geology of Sackville Township, Shebandowan Greenstone Belt, Wawa–Abitibi Terrane*; the marginal notes and the geological legend for this map are also provided.

Data are organized into 6 folders:

1. Field Data
2. Geochemistry
3. Geochronology
4. Geology
5. Geophysics
6. Petrography

1. Field Data. This folder contains 1 Microsoft® Excel® 2010 (*.xlsx*) workbook file and 2 subfolders with 129 photographs (as *.jpg* files). Photos in the "Field Photographs" subfolder were taken during the summer of 2014 as part of the mapping project. Photos in the "Slab Photographs" subfolder were taken after hand samples were cut for detailed examination.

MRD342_Sackville_Field-Data-2014.xlsx consists of 5 worksheets of information collected by L.M. Ratcliffe and field assistants during the summer of 2014 (or through follow-up work) as part of bedrock geological mapping in 2014, at a scale of 1:20 000, in Sackville Township. Locations are provided as Universal Transverse Mercator (UTM) co-ordinates using North American Datum 1983 (NAD83), Zone 16 (even though some stations are in Zone 15).

"Station_summary" worksheet provides a summary of each station mapped in Sackville Township during the summer of 2014. The worksheet includes the geographic co-ordinates for each station in Universal Transverse Mercator (UTM), a description of the quality and size of the outcrop and the rock code for that station, as published on Preliminary Map P.3802 (Ratcliffe 2016). In addition, columns labelled "Field Description", "Slab Photo", "Field Photo", "Geochemistry", "Thin Section" and "Geochronology" show which stations have additional data related to that station available as part of this data release (MRD 342).

"Field_descriptions" worksheet provides the raw field lithological data collected using a customized ESRI® ArcPad® application on a portable computer (Trimble® Juno™ SB handheld global positioning system (GPS) device). The worksheet combines lithological data from several ArcPad® tables into a single worksheet; through this process, the original files have been edited (to remove abbreviations and spelling errors) and abridged, in particular, blank columns have been removed from the original files.

"Structural_data" worksheet contains the raw structural data collected using a customized ESRI® ArcPad® application on a portable computer (Trimble® Juno™ SB handheld global positioning system (GPS) device). The data set includes station information, structure type, structure symbol, orientations and notes of each feature. The symbol abbreviations in this worksheet correspond to those listed in Jackson, Muir and Romkey (1995, 2010).

"Field-photographs_captions" worksheet provides the field photograph number, station number, station location, rock code, additional reason for taking the photograph ("Annotation", i.e., mineralization or alteration), a brief photo description and identifies the scale used in the photo. Photo file names for the *.jpg* files are based on station location, e.g., 14LMR022P01-2 is photograph number 2 ("-2") from position 1 ("P01") at station LMR022 in 2014.

"Slab-photographs_captions" worksheet provides the photograph number of the slabbed hand sample, station number, station location, rock code, additional reason for taking the photograph ("Annotation", i.e., mineralization or alteration), a brief photo description and identifies the scale used in the photo. Photo file names for the *.jpg* files are based on station location, e.g., 14LMR031A01-2 is photograph number 2 ("-2") of the slabbed hand sample 1 from rock type A ("A01") at station LMR031 in 2014; and 14LMR234D01-2 is photograph number 2 ("-2") of the slabbed hand sample 1 from rock type D ("D01") at station LMR234 in 2014.

Field Photographs subfolder contains 31 photos (as *.jpg* images) that are representative of the primary rock types observed in Sackville Township in 2014. Each image is labelled according to the station number for the outcrop at which the photograph was taken. The photo number, listed in the "Station_summary" worksheet under the heading "Field Photo", includes the station number.

Slab Photographs subfolder contains 98 photos (as *.jpg* images) of slabs cut from hand samples collected from outcrops in Sackville Township. Each image is labelled according to the sample number which correlates to the station number. The photo number is listed in the "Station_summary" worksheet under the heading "Slab Photo", with the corresponding station information.

2. Geochemistry. This folder contains 1 Microsoft® Excel® 2010 (*.xlsx*) file and 1 portable document format *(.pdf*) file.

MRD342_Sackville_Geochemistry.xlsx consists of 1 worksheet that contains the results of all geochemical analyses performed at the Geoscience Laboratories (Geo Labs), Ontario Geological Survey, Sudbury, for samples collected in Sackville Township. Analyses for major and trace elements (and oxides), specific gravity and loss-on-ignition values, as well as assay analyses for gold, platinum and palladium are included. The methods used, lower detection limit for each method, and reported units for each method are included for each element (and oxide) listed. This worksheet also contains general information, including "Station ID", "Sample", "Map Code", "Rock Type" and location data ("Easting", "Northing" and "Township"), for each sample collected; UTM co-ordinates are provided in NAD83, Zone 16.

2015 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories.

4. Geochronology. This folder contains 2 portable document format *(.pdf*) files and 1 Microsoft® Excel® 2010 (*.xlsx*) workbook file.

MRD342_Sackville_U-Pb_ID-TIMS_Kamo-report.pdf summarizes the results of zircon U/Pb isotopic analyses using isotopic dilution thermal ionization mass spectrometry (ID–TIMS) from the Jack Satterly Geochronology Laboratory. Excerpted from a larger report prepared by S.L. Kamo (2015), this document contains a Concordia diagram with U/Pb results and photographs of the zircons analyzed for sample 14LMR021, a granodiorite from the Kekekuab Lake pluton. These data are shown on Preliminary Map P.3802 (Ratcliffe 2016) in abbreviated form. Analytical data are provided in the accompanying workbook ("*MRD342_Sackville_U-Pb_data.xlsx*") file.

MRD342_Sackville_U-Pb_LA-ICP-MS_Davis-report.pdf summarizes the results of zircon U/Pb isotopic analyses using laser ablation inductively coupled plasma mass spectrometry (LA-ICP–MS) from the Jack Satterly Geochronology Laboratory. Excerpted from a larger report prepared by Davis (2016), this document contains Concordia diagram with U/Pb results and photographs of the zircons analyzed for sample 14LMR029, a wacke from the Greenwater assemblage. These data are shown on Preliminary Map P.3802 (Ratcliffe 2016) in abbreviated form. Analytical data are provided in the accompanying workbook ("*MRD342_Sackville_U-Pb_data.xlsx*") file.

MRD342_Sackville_U-Pb_data.xlsx consists of 2 worksheets that contains the results of zircon U/Pb isotopic analyses on 2 samples from Sackville Township.

"14LMR021", a granodiorite from the Kekekuab Lake pluton, was analyzed using isotopic dilution thermal ionization mass spectrometry (ID–TIMS) (excerpted *from* Kamo 2015) at the Jack Satterly Geochronology Laboratory. These data include isotopic ratios, calculated errors at the 2 sigma (2σ) level, and age estimates for each grain analyzed.

"14LMR029", a wacke from the Greenwater assemblage, was analyzed using laser ablation inductively coupled plasma mass spectrometry (LA-ICP–MS) (excerpted *from* Davis 2016) at the Jack Satterly Geochronology Laboratory. These data include isotopic ratios, calculated errors at the 1 sigma (1σ) level, and age estimates for each grain analyzed.

4. Geology. This folder contains 2 portable document format (*.pdf*) files related to a map associated with this project. A preliminary report on the geological mapping of Sackville Township was published by Lodge, Ratcliffe and Walker (2014); this report is related to this project, but is not provided herein.

P3802_Legend.pdf is the general legend (rock codes) used as the base for Ontario Geological Survey Preliminary Map P.3802, *Precambrian Geology of Sackville Township, Shebandowan Greenstone Belt, Wawa–Abitibi Terrane* (Ratcliffe 2016). Material in the geochemistry workbook file are cross-referenced to the map codes in this legend.

P3802_Marginal Notes.pdf provides additional information about Sackville Township using a version of the marginal notes, with 2 figures and 3 tables, from Preliminary Map P.3802. Figure 1 is an interpretation of the stratigraphic units in Sackville Township; and Figure 2 shows the first vertical derivative of the residual magnetic field. Table 1 summarizes the diamond-drill core data; Table 2 summarizes the geochronological data; and the "Occurrences" table lists the main mineral occurrences in the township.

5. Geophysics. This folder contains 1 Microsoft® Excel® 2010 (*.xlsx*) file.

MRD342_Sackville_Magnetic Susceptibility Data-2014.xlsx contains 2 worksheets.

"Mag sus data_Sackville-2014" worksheet provides magnetic susceptibility data from the study area collected during the summer of 2014.

Measurements were collected using an Exploranium® KT-10 magnetic susceptibility meter. Magnetic susceptibility is defined as the degree to which a substance can be magnetized and, in this case, is expressed as the ratio of the intensity of magnetization (k) to the ratio of the Earth's magnetic field to magnetic field induced by the susceptibility meter. The readings (k) are expressed as 10^{-3} times the SI unit for susceptibility and are dimensionless. The minimum value that can be recorded by the meter is 0.01×10^{-3} SI units; the largest value is 999×10^{-3} SI units. Sample location information is given in UTM co-ordinates, NAD83, Zone 16.

"Pick Lists, Notes" worksheet provides additional information about the pick-lists for fields ("Geological Province", "Meter Number", "UTM Zone", "Rock Type Pick List", "Rock Types Corresponding to Pick List", "Dike Swarm Name", "Metamorphic Grade") used in the workbook.

6. Petrography. This folder contains 1 Microsoft® Excel® 2010 (*.xlsx*) file.

MRD342_Sackville_Petrography.xlsx consists of 1 worksheet that contains the descriptions of thin sections and the observed mineralogy of samples collected from Sackville Township during the 2014 field season.

References

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