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Miscellaneous Release—Data 381

Geological, Geochemical and Petrographic Data from Priske Township and Nd, Sm and Sr Isotopic Data from Priske, Strey, Syine, Tuuri and Walsh Townships, Western Schreiber–Hemlo Greenstone Belt, Wawa–Abitibi Terrane, Superior Province, Northwestern Ontario

by S.J. Magnus

This publication can be downloaded from
http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD381

This release contains field notes and outcrop photographs collected during the summer field seasons of 2015, 2016, 2017 and 2018 as part of 1:20 000 scale bedrock geology mapping in Priske Township (Project Unit NW-18-001). Whole-rock geochemical data and petrographic data are provided for samples collected primarily in Priske Township, with a small number of additional samples from Strey and Killraine townships and Pays Plat Lake and Lower Aguasabon Lake areas. These data augment Preliminary Map P.3845, *Precambrian Geology of Priske Township, Northwestern Ontario* (Magnus 2021); the legend and marginal notes for this map are also provided. This release also contains Nd, Sm and Sr isotopic data collected from a selection of Archean and Proterozoic rocks from Priske, Strey, Syine, Tuuri and Walsh townships. This release comprises 54 photographs (as *.jpg* files), 4 Microsoft® Excel® for Office 365 (*.xlsx*) workbook files and 8 documents in portable document format (*.pdf*).

The mapping of Priske Township was undertaken concurrently with the mapping of Strey Township in 2018 under the same project number (Project Unit NW-18-001). This project was undertaken to improve on outdated bedrock maps in the western Schreiber–Hemlo greenstone belt. By gathering new field data and applying modern analytical techniques, the goal of this project and previous projects in the belt is to produce an updated genetic model for the greenstone belt that may be used as a framework for more detailed academic and mineral exploration activities. Inferences made about the depositional history of the supracrustal rocks and the structural history of the bedrock in the map area, based on field observations, whole rock geochemistry and U/Pb geochronology data, are summarized in the marginal notes for Preliminary Map P.3845 (Magnus 2021), in an Ontario Geological Survey *Summary of Field Work and Other Activities* article (Magnus and Hastie 2018), and in Open File Report 6357 (Magnus 2019).

Data are organized into 4 folders:

1. Field Data
2. Geology
3. Geochemistry
4. Petrography

1. Field Data. This folder contains 1 Microsoft® Excel® for Office 365 (*.xlsx*) workbook file, which contains raw data collected while working in the field, during the summers of 2015, 2016, 2017 and 2018, using a customized ESRI® ArcPad® application on portable computers (Trimble® Juno™ SB Handheld and Trimble® Juno™ 5 Handheld).

MRD381_Priske_Field Data.xlsx consists of 8 worksheets, labelled "Station", "Structure", "Volcanic Flow", "Intrusive", "Sediment", "Volcanic Pyroclastic", "Alteration" and "Mineralization". The "Station" worksheet includes brief descriptions of the observed outcrops and their surroundings, and the rock type code associated with each station on the map (P.3845, Magnus 2021). The "Structure", "Mineralization" and "Alteration" worksheets provide descriptions of any alteration, mineralization and structural features observed at each of the stations described in the "Station" worksheet. The "Volcanic Flow", "Volcanic Pyroclastic", "Sediment" and "Intrusive" worksheets contain descriptions of the mineral, rock and outcrop textures and relationships for each station. All of these worksheets provide the geographic co-ordinates for each data point (in Universal Transverse Mercator (UTM) co-ordinates in North American Datum 1983 (NAD83), zone 16).

2. Geology. This folder contains 3 portable document format (*.pdf*) files and 17 subfolders containing 54 field photographs (as *.jpg* files).

*P*3845*_Legend.pdf* is the general legend (rock codes) used on Ontario Geological Survey, Map P.3845, *Precambrian Geology of Priske Township, Northwestern Ontario*. Material in the geochemistry description file, petrography description file, and all of the spreadsheets in the "Field Data" folder are cross-referenced to rock codes in the legend.

*P*3845*_Marginal Notes.pdf* provides additional information on the study area using a version of the marginal notes, with 2 tables and 1 figure, from Preliminary Map P.3845.

MRD381_Priske_Photo Descriptions.pdf provides descriptions for each photograph in the 17 subfolders in the "Geology" folder.

The 17 subfolders correspond to 16 of the rock units in the legend of map P.3845 (*P3845_Legend.pdf*) and 1 of a clean outcrop of mineralized rock (Worthington Bay). Rock types 9, "Crossman Lake Batholith"; 15, "Paleoproterozoic Diabase"; and 18, "Diabase (undifferentiated)", do not have subfolders with pictures because there were no photographs collected of suitable quality or value for representing these rock types. Each folder contains photographs that are representative of the rock units described in the legend. Each photograph is labelled with its corresponding legend code, followed by the station number for the outcrop from which it was collected (for example, *1bd 18EM136.jpg* is a photograph of a variolitic pillowed mafic flow (unit 1bd) at station 18EM136).

3. Geochemistry. This folder contains 2 Microsoft® Excel® for Office 365 (*.xlsx*) workbook files and 4 portable document format (*.pdf*) files.

MRD381_Priske_Major and Trace Element Geochemistry.xlsx consists of 5 worksheets that contain the results of all geochemical analyses performed at the Geoscience Laboratories (Geo Labs), Ontario Geological Survey, Sudbury. The samples are split into 5 worksheets, "2015 samples", "2016 samples", "2017 samples", "2018 samples", according to which year the samples were analyzed, and "Assay Results", which contains all assay analyses from the map area. The methods used, lower detection limit for each method, and reported units for each method are included for each element (and oxide) listed. These worksheets contain "Easting", "Northing" and "Township" location data; UTM co-ordinates are provided in North American Datum 1983 (NAD 83), Zone 16. Each worksheet also contains descriptive data for each sample, including the rock composition, form, relative age, stratigraphic information, and geochemical affinities, which can all be useful for sorting the data.

MRD381_WSHGB_Isotope Geochemistry.xlsx consists of 5 worksheets related to samples analyzed for Nd/Sm and Rb/Sr isotopes at The Earth Resources Research and Analysis Facility (TERRA) at Memorial University, Newfoundland.

"NdSm Data" worksheet contains the raw Nd and Sm isotope data collected by thermal ionization mass spectrometry (TIMS) and the formulas that reduce the raw data to the final results.

"NdSm Standard" worksheet contains the Nd and Sm isotopic data collected by TIMS for a standard sample used for quality assurance and quality control.

"Sr Data" worksheet contains the raw data for Sr isotopes collected by thermal ionization mass spectrometry (TIMS).

"Sr Standard" worksheet contains the Sr isotopic data collected by TIMS for a standard sample used for quality assurance and quality control.

"SrRb Results" worksheet contains the Sr isotopic data from the "Sr Data" worksheet, along with Rb and Sr concentrations collected by inductively coupled plasma mass spectrometry (ICP–MS), which are combined using the data-reducing formulae contained in the spreadsheet to calculate Sr isotopic compositions at the time of rock formation.

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

2016 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories for rocks analyzed during 2016.

2017 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories for rocks analyzed during 2017.

2018 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories for rocks analyzed during 2018.

4. Petrography. This folder contains 1 Microsoft® Excel® for Office 365 (*.xlsx*) workbook file.

MRD381_Priske_Petrographic Data.xlsx consists of 1 worksheet that contains a modal analysis for every sample collected during this study. Notes on the mineral and rock textures and relationships are included for each sample. For samples that contain a modal abundance reported under the column "other", the known or speculated mineral is discussed in the "Description" column. This worksheet also contains the rock type for each sample based on the Total Alkalis versus Silica Diagram (LeMaitre 1989), cross-referenced from the geochemical data in this data release, along with rock type, form and stratigraphic information. The geographic co-ordinates for each sample are also provided (in Universal Transverse Mercator (UTM) co-ordinates in North American Datum 1983 (NAD83), Zone 16).

Acknowledgments

This study focussed on the geology and geochemistry of the western Schreiber–Hemlo greenstone belt in Priske Township with the intent of interpreting a depositional (for supracrustal rocks), emplacement (for intrusive rocks) and structural history for this part of the belt. It is the intent of the author that these data and interpretations be used as a broad framework upon which more detailed academic and mineral exploration activities may improve and expand.

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Further information pertaining to this body of work is available through the author.

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