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These data accompany:

Preliminary Map P.3812, *Precambrian Geology of Tuuri and Walsh Townships, Northwestern Ontario*

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Miscellaneous Release—Data 361

**Geological, Geochemical, Geophysical and Petrographic Data from Tuuri and Walsh Townships, Schreiber–Hemlo Greenstone Belt, Wawa–Abitibi Terrane, Superior Province**

by S.J. Magnus

This publication can be downloaded from

[http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm\\_dir.asp?type=pub&id=MRD361](http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD361)

This release contains field notes, outcrop photographs and magnetic susceptibility data collected during the summer field seasons in 2015 and 2016 as part of 1:20 000 scale bedrock geology mapping in Tuuri and Walsh townships (Project Unit 15-004). Whole-rock geochemical data and petrographic data are provided for collected samples. Also included is a presentation to the public related to the project. These data augment Preliminary Map P.3812, *Precambrian Geology of Tuuri and Walsh Townships, Northwestern Ontario* (Magnus 2017) which was released in April 2017; the legend and marginal notes for this map are also provided. This release comprises 91 images (as *.jpg* files), 9 Microsoft® Excel® 2010 (*.xlsx*) workbook files and 6 documents in portable document format (*.pdf*).

The Tuuri and Walsh township mapping project was undertaken to begin improvement on outdated bedrock maps in the western Schreiber–Hemlo greenstone belt.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 the projects in this belt going forward 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.3812 (Magnus 2017) and in 2 Ontario Geological Survey Summary of Field Work articles (Magnus and Walker 2015; Magnus and Arnold 2016).

Data are organized into 6 folders:

1. Field Data
2. Geology

3. Geochemistry
4. Geophysics
5. Petrography
6. Presentations

**1. Field Data.** This folder contains 6 Microsoft® Excel® 2010 (.xlsx) workbook files, which contain raw data collected while working in the field during summers of 2015 and 2016 using a customized ESRI® ArcPad® application on portable computers (Trimble® Juno™ SB Handheld and Trimble® Juno™ 5 Handheld).

*MRD361\_Tuuri Walsh\_Stations.xlsx* consists of 1 worksheet, in which is provided a brief description of each station visited, including descriptions of the observed outcrops and their surroundings, the rock type code associated with each station on the map (P3812, Magnus 2017) as well as the date of each visit and the geographic co-ordinates for each station (in Universal Transverse Mercator (UTM) co-ordinates in North American Datum 1983 (NAD83), Zone 16).

*MRD361\_Tuuri Walsh\_Samples.xlsx* consists of 1 worksheet, in which a brief description of each sample collected in the field is provided, along with the analyses for which each sample was submitted and the geographic co-ordinates for each station (in Universal Transverse Mercator (UTM) co-ordinates in North American Datum 1983 (NAD83), Zone 16).

*MRD361\_Tuuri Walsh\_Rock Types.xlsx* consists of 5 worksheets, labelled “Volcanic Flow”, “Volcanic Pyroclastic”, “Sedimentary”, “Metamorphic” and “Intrusive”, in which the mineral, rock, and outcrop textures and relationships for each station visited are described.

*MRD361\_Tuuri Walsh\_Structure.xlsx* consists of 1 worksheet, in which any planar or linear structural features contained within each observed outcrop are reported, including the classification, orientation and a brief description of each feature. Abbreviations in this worksheet correspond to those listed in Jackson, Muir and Romkey (1995, 2010).

*MRD361\_Tuuri Walsh\_Alteration.xlsx* consists of 1 worksheet, in which are described any features that may indicate that the bulk geochemistry of the rock was changed.

*MRD361\_Tuuri Walsh\_Mineralization.xlsx* consists of 1 worksheet, in which any ore minerals (particularly sulphide and oxide minerals) are reported, along with their textures, abundances and associations.

**2. Geology.** This folder contains 3 portable document format (.pdf) files and 3 subfolders with 20 subfolders containing 90 field photographs (as .jpg files).

*P3812\_Legend.pdf* is the general legend (rock codes) used as the base for Ontario Geological Survey Preliminary Map P.3812, *Precambrian Geology of Tuuri and Walsh Townships, Northwestern Ontario*. Material in the geochemistry, petrography, samples, stations and photo descriptions files are cross-referenced to rock codes in the legend.

*P3812\_Marginal Notes.pdf* provides additional information on the study area using a version of the marginal notes, with 2 tables, from Preliminary Map P.3812.

*MRD361\_Tuuri Walsh\_Photo Descriptions.pdf* provides descriptions for each photograph in the subfolders “Rock Type Photos”, “Structural Photos” and “Alteration Photos”.

**Rock Type Photos** subfolder contains 14 additional subfolders corresponding to 14 of the rock units in the legend (*P3812\_Legend.pdf*). Rock type 14, “Diabase (undifferentiated)” does not have a folder, since dikes under this category look like those in rock types 12 or 13, but have not been confirmed with

geochemical analyses. Each subfolder contains a number of 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 (example *1b 15SJM041.jpg* is a photograph of pillowed mafic flow (unit 1b) at station 15SJM041).

**Structural Photos** subfolder contains 6 additional subfolders, one containing photos that display primary igneous and sedimentary features, and 5 folders that contain photos displaying features related to 5 deformational events interpreted for the map area. Each folder contains a number of photographs, labelled by station number, which represent structural features related to the deformational events.

**Alteration Photos** subfolder contains 4 photos, labelled by station number, which depict outcrops with significant evidence for hydrothermal alteration.

Location information (UTM co-ordinates) for the stations to which the photographs correspond can be found in the file *MRD361\_Tuuri Walsh\_Stations.xlsx*, located in the Field Data folder

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

*MRD361\_Tuuri Walsh\_Major and Trace Element 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. 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 location data (“Easting”, “Northing” and “Township”), “Rock Type” and stratigraphic information, if known, for each sample collected; UTM co-ordinates are provided in North American Datum 1983 (NAD83), Zone 16.

*2015 Geo Labs Brochure.pdf* describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories during the period when these data were obtained.

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

*MRD361\_Tuuri Walsh\_Magnetic Susceptibility Data.xlsx* contains 2 worksheets.

“MagSus\_Data” worksheet provides magnetic susceptibility data from the study area collected during the summers of 2015 and 2016.

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  $0.01 \times 10^{-3}$  SI units; the largest value is  $999 \times 10^{-3}$  SI units. Sample location information is given in UTM co-ordinates, Zone 16, NAD83.

“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.

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

*MRD361\_Tuuri Walsh\_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 “Notes” column.

**6. Presentations.** This folder contains 1 portable document format (*.pdf*) file, which includes slides for an oral presentation given by the author at the 2017 Northwestern Ontario Mines and Minerals Symposium in Thunder Bay, hosted by the Ontario Prospector’s Association. This presentation summarizes the stratigraphic and structural history of the map area as outlined in the marginal notes for Preliminary Map P.3812 (Magnus 2017).

## Acknowledgments

This study focussed on the geology and geochemistry of the western Schreiber–Hemlo greenstone belt in Tuuri and Walsh townships 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, and upon which the author intends to continue expanding while mapping the remainder of the western Schreiber–Hemlo greenstone belt.

The author would like to thank the field crews from the summers of 2015 (Joseph Walker, Andrea Nywening, Matthew Hanewich and Lauren Madronich) and 2016 (Kira Arnold, Mallory Metcalf, Lucas Wolfe and Haley Aldred) for their hard work and perseverance through the particularly rough terrain. The author would also like to thank the Richards family of Terrace Bay, who hosted the crew at their Jackfish Lake cottages on Highway 17 during the 2015–2017 field seasons, with special thanks to local prospector Wayne Richards, for all of his logistical aid and for sharing his abundance of local mineral exploration knowledge. Thanks to the people of Pic River and Pic Mobert First Nations communities for their gracious blessing and for allowing us to work on their traditional lands. The author would also like to thank local prospector Rudy Wahl, Mike Koziol of Alto Ventures Ltd. and Troy Gill of Sanatana Resources for tours of their properties and allowing us access to their properties over the last several field seasons. Thanks also to Dorothy Campbell and Mark Puumala of the Resident Geologist Program Thunder Bay office for all of their help during this project.

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

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