

Mines

DESCRIPTION, LOCATION, STRUCTURAL AND LITHOGEOCHEMICAL DATA FOR ROCKS OF THE BRIDAL VEIL (Cu–Ag ± Pb ± Au ± Zn) MINERALIZED ZONE, GANDER LAKE SUBZONE, NEWFOUNDLAND (NTS MAP AREA 2D/15)

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Open File 002D/15/0951

St. John's, Newfoundland February, 2020

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Recommended citation:

Sandeman, H.A.I. and Peddle, C.

2020: Description, location, structural and lithogeochemical data for rocks of the Bridal Veil (Cu–Ag \pm Pb \pm Au \pm Zn) mineralized zone, Gander Lake Subzone, Newfoundland (NTS map area 2D/15). Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, Open File 002D/15/0951, 8 pages.



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SUMMARY

This open file release contains field, lithological and structural information for sixty-six field stations, including numerous field observations at some sites, from in and around the Bridal Veil and Abbotts Ridge mineralized zones in the Gander Lake Subzone of the Newfoundland Appalachians (NTS map area 2D/15, Figure 1). The database also includes lithogeochemical data for twenty-one representative rock samples. The data are available in digital format (*i.e.*, comma separated value files; *.csv). This report does not provide an interpretation of the data, however, a discussion of the nature of the mineralization and a summary of our current knowledge-base for the region may be found in Sandeman and Peddle (2020).

NOTES ON DATABASE

The database consists of this brief report, along with 10 appendices of data, and one table. Appendix A provides geological station location data in Universal Transverse Mercator (UTM) eastings and northings, based on NAD 27 (Zone 21), along with sample descriptions and structural data obtained at the respective stations.

All lithogeochemical samples represent ~ 2 kg grab samples from outcrop. These were crushed to ~ 1 cm rock chips and then pulverized in a mild steel shatter box. Four of the samples were split into two aliquots after crushing to ~ 1 cm chips, and were then separately pulverized and treated

as rock duplicates. All the samples were analyzed at the geochemical laboratory of the Geological Survey of Newfoundland and Labrador (GSNL) in St. John's, following methods outlined in Finch et al. (2018). Briefly, major elements were analyzed by ICP-OES following borate fusion. FeO was determined through titration, $Fe_2O_3^T$ is the total iron as ferric oxide and Fe₂O₃ was calculated from the other two iron analyses. Loss-on-ignition (LOI) was calculated using the gravimetric method. Trace elements were determined using both ICP-MS following borate fusion, and ICP-OES following four-acid digestion. Silver was determined through ICP-OES following nitric acid digestion. An ion selective electrode (ISE) was used to analyze for fluorine. A suite of 27 elements, in particular Au, Sb and Se were analyzed by Instrumental Neutron Activation

Table 1. List of abbreviations		
JPF	Jonathan's Pond Formation	
MafSch	mafic schist	
Qtz vein	quartz vein	
MafDyk	mafic dyke	
-99	sample not analyzed for that element	
$Fe_2O_3^T$	total iron as Fe_2O_3	
FeO	iron as FeO	
wt. %	weight percent	
ppm	parts per million	
ppb	parts per billion	
Grav.	Gravimetric analysis	
ICP-MS FUS	Inductively Coupled Plasma-Mass Spectrometry	
	following lithium metaborate/tetraborate fusion	
ICP-OES 4 Acid	Inductively Coupled Plasma-Optical Emission	
	Spectrometry following HF-HCl-HNO ₃ -HClO ₄	
	acid digestion	
ICP-OES-FUS	Inductively Coupled Plasma-Optical Emission	
	Spectrometry following lithium metaborate/	
	tetraborate fusion	
ICP-OES-HNO ₃	Inductively Coupled Plasma-Optical Emission	
	Spectrometry following nitric acid digestion	
ISE	Ion Selective Electrode following alkaline fusion	
LOI	Loss-on-ignition	
Negative	value is below detection limit	
detection limit		
REFMAT_name	reference material name	

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Figure 1. Location map of the study area showing the setting of the Bridal Veil and Abbotts Ridge mineralized zones in the northeastern Newfoundland Appalachians.

Analysis (INAA) at Becquerel Laboratories (now Bureau Veritas Laboratories, https:// www.bvlabs.com). Major elements are reported in wt. % and trace elements are reported in ppm with the exception of Au, which is given in ppb. Negative detection limit values represent analyses below the detection limit, and -99 represents samples that were not analyzed for that element. For comparative purposes, five archival samples from the Gander Lake granite were selected from the Department of Natural Resources Geoatlas (https://gis.geosurv.gov.nl.ca/), plutonic rock lithogeochemical database and their respective archived rock powders were analysed by ICP-MS for their rare earth elements and associated elements. Information on quality assurance and quality control (QA/QC) procedures with respect to the reference materials are in the appendices of Finch *et al.* (2018). The combined lithogeochemical results for all rock samples are given in Appendix B. Four of the powdered rock samples were treated as analytical duplicates and the results are presented in Appendix C. Appendix D gives the ICP-MS analytical results for the archival samples of Gander Lake granite. Appendices E through J give analytical results for reference materials analyzed along with the Bridal Veil samples.

ACKNOWLEDGMENTS

I would like to thank the staff of the Geochemical Laboratory of the Geological Survey of Newfoundland and Labrador for quality sample preparation and analysis. Gerry Hickey provided invaluable logistical assistance during the 2014 and 2016 field seasons. Pauline Honovar is gratefully acknowledged for a complete review of the database.

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APPENDICES A–I

Appendices A–J are available as digital comma-separated files (.csv) through this link.

Appendix A: Field Descriptions, Location Data and Structural Data for the Rocks from the Bridal Veil Map Area. S0 - bedding; S1-2 - main composite foliation; FA - fold axis; ExL - extension lineation. The right hand rule applies to all strikes and dips. The value -99 indicates no observation or measurement are available.

Appendix B: Lithogeochemical Data for Rocks from the Bridal Veil Map Area

Appendix C: Lithogeochemical Data for Analytical Duplicates of Rock Samples from the Bridal Veil Map Area

Appendix D: ICP-MS Data for Archival Samples of the Gander Lake Granite Selected from the Department of Natural Resources Geoatlas, Plutonic Rock Lithogeochemical Database

Appendix E: Major Element ICP-OES Data for Reference Materials that were Analyzed along with the Samples from the Bridal Veil Map Area

Appendix F: Trace Element ICP-OES Data for Reference Materials that were Analyzed along with the Samples from the Bridal Veil Map Area

Appendix G: Trace Element ICP-MS Data for Reference Materials that were Analyzed along with the Samples from the Bridal Veil Map Area

Appendix H: Trace Element INAA Data for Reference Materials that were Analyzed along with the Samples from the Bridal Veil Map Area

Appendix I: Silver (Ag) Data Obtained Through ICP-OES and Nitric Acid Digestion for Reference Materials that were Analyzed along with the Samples from the Bridal Veil Map Area. **Appendix J:** Fluorine (F) Ion Specific Electrode (ISE) Data for Reference Materials that were Analyzed along with the Samples from the Bridal Veil Map Area.