



**GEOSCIENCE BC
SUMMARY OF ACTIVITIES 2017:
MINERALS AND MINING**

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Cover photos and credits (clockwise from top left): **1)** QUEST project area, central BC (O. Peterson, 2007); **2)** Search Phase III geophysical survey helicopter, northern BC (B. Madu, 2017); **3)** Quartz vein breccia, central BC (M. Allan, 2016); **4)** Roadcut basal-till sampling site, QUEST-South project, south-central BC (W. Jackaman, 2009); **5)** Endako mine, central BC (W. Jackaman, 2008); **6)** Project map, northern BC (R. Whiten, 2015); **7)** View over Groundbirch area, northeastern BC (S. Morgan, 2016); **8)** Sample recovery of sediment pulps from archive storage, Ottawa ON (W. Jackaman, 2008); **9)** Basal-till sampling, TREK project, central BC (B. Madu, 2016).

Foreword

Geoscience BC is pleased to once again present results from our ongoing projects in our annual *Summary of Activities* publication. For the past 10 years, we have published the results from our minerals and energy projects together in one volume. This year we have decided to publish the ‘Minerals and Mining’ and ‘Energy’ papers in two separate volumes. This volume, *Summary of Activities 2017: Minerals and Mining*, contains 11 papers from Geoscience BC–funded projects and 2017 scholarship winners. A second volume, *Summary of Activities 2017: Energy*, contains 10 papers on projects in northeastern British Columbia (BC). Both volumes are also available for download from our website.

Summary of Activities 2017: Minerals and Mining

The first two papers in this volume provide updates on the Search project, which started in 2015. Madu and Ballantyne provide an overview of the Search Phase III airborne magnetic and radiometric survey in the Toadoggone region, the first time Geoscience BC has flown a terrain-contouring survey. Rahimi et al. continue to work in the Search Phase I area near Smithers and, in this volume, their work using ASTER data to identify potential alteration zones is highlighted.

Two papers detail ongoing work in northwestern BC. Arne et al. provide preliminary results on a regional assessment of stream-sediment geochemical data collected as part of the Regional Geochemical Survey program and modernized by Geoscience BC’s multiyear reanalysis program. McLeish et al. provide an update on their work examining the nature and origin of the Brucejack deposit.

Southeastern BC continues to be a focus for Geoscience BC. Höy has continued mapping in the Penticton area and, in this volume, introduces his current work in the Greenwood map area (NTS 082E/02). Rioseco and Pattison present preliminary observations on the mineralogically rich interface between the Purcell Anticlinorium and Kootenay Arc.

This past year also saw Geoscience BC taking on new types of projects as part of its growth beyond an early-stage mineral exploration focus. Simister et al. present an introduction to the first genomic study supported by Geoscience BC. Their work aims to develop microbial-community fingerprinting as an exploration tool. Similarly, Mackay et al. summarize the near-final results of the first coal project supported by Geoscience BC, an innovative project using a water-based Roben Jig to clean coal samples prior to analysis of their coking potential.

Three student papers also introduce research topics new to Geoscience BC. Kumar et al. examine rare-earth elements in coal, and Volden et al. examine selenium in the residual produced from biologically treated mine-impacted waters. Finally, Vanderzee et al. introduce research assessing the stabilization of ultramafic mine tailings and reduction of greenhouse gas emissions.

Geoscience BC Minerals and Mining Publications 2017

In addition to the two *Summary of Activities* volumes, Geoscience BC releases interim and final products from our projects as Geoscience BC reports. All Geoscience BC data and reports can be accessed through our website. Geoscience BC released the following minerals and mining reports in 2017:

- 19 technical papers in the *Geoscience BC Summary of Activities 2016* volume (the volume also includes energy papers)
- **Basal Till Potential Maps for the Anahim Lake (NTS 093C/06), Satoh Mountain (NTS 093C/07), Downtown Creek (NTS 093C/10), Christensen Creek (NTS 093C/11), Carnlick Creek (NTS 093C/14), Kushya River (NTS 093C/15) Map Areas, British Columbia**, by D. Sacco, H. Arnold, T. Ferbey and W. Jackaman (Geoscience BC Report 2017-02 and British Columbia Geological Survey Open Files 2017-02 to 2017-07)
- **Search Project Phase II: 2016 Airborne Magnetic Survey**, by Sander Geophysics Ltd. (Geoscience BC Report 2017-03)
- **2016 Regional Geochemical Survey Sample Reanalysis Project**, by W. Jackaman (Geoscience BC Report 2017-04)
- **Bedrock Geology, TREK Project Area, Northern Interior Plateau, Central British Columbia (parts of NTS 093B, C, F, and G)**, by J.J. Angen, M. Rahimi, C.J.R. Hart, E. Westberg, J.M. Logan and R. Kim (Geoscience BC Map 2017-06-01 and MDRU Map 12-2017)

- **Aeromagnetic Correlation with Bedrock Geology, TREK Project Area, Northern Interior Plateau, Central British Columbia (parts of NTS 093B, C, F, and G)**, by J.J. Angen, M. Rahimi, C.J.R. Hart, E. Westberg, J.M. Logan and R. Kim (Geoscience BC Map 2017-06-02 and MDRU Map 13-2017)
- **Constraints on the Metallogeny and Geochronology of the Bridge River Gold District and Associated Intrusions, Southwestern British Columbia (NTS 092J/15)**, by C.J.R. Hart and R.J. Goldfarb (Geoscience BC Report 2017-08)
- **Paleomagnetic Evidence for Extreme Block Faulting East of the Rocky Mountain Trench near Kimberley, BC**, by P.W. Ransom, T. Day and R.J. Enkin (Geoscience BC Report 2017-09)
- **Geology of the Christian Valley Map Sheet (NTS 082E/10)**, by T. Höy (Geoscience BC Map 2017-10-01)
- **Halogens and Other Volatile Compounds in Surface Sample Media as Indicators of Mineralization, Part 1: Lara VMS Deposit, Vancouver Island, BC (NTS 092B/13)**, by D.R. Heberlein, C.E. Dunn and S. Rice (Geoscience BC Report 2017-11)
- **Halogens and Other Volatile Compounds in Surface Sample Media as Indicators of Mineralization, Part 2: Mount Washington Epithermal Au-Cu-Ag Prospect, Vancouver Island, BC (NTS 092F/14)**, by D.R. Heberlein, C.E. Dunn and S. Rice (Geoscience BC Report 2017-11)
- **Rapid, Field-Based Hydrogeochemical-Survey Analysis and Assessment of Seasonal Variation Using a Field-Portable Photometer and Voltammeter, Marmot Lake NTS Area, South-Central British Columbia (NTS 093B/13)**, by R. Yehia, D.R. Heberlein and R.E. Lett (Geoscience BC Report 2017-13)
- **TREK Project Area Gravity Compilation, Enhancement Filtering and Structure Detection**, by A.J. Buckingham, D.P. Core, C.J.R. Hart and S. Jenkins (Geoscience BC Report 2017-14)
- **Orogenic Gold Mineralization of the Eastern Cordilleran Gold Belt, British Columbia: Structural Ore Controls in the Cariboo (093A/H), Cassiar (104P) and Sheep Creek (082F) Mining Districts**, by M.M. Allan, D.A. Rhys and C.J.R. Hart (Geoscience BC Report 2017-15)

All releases of Geoscience BC reports and data are announced through our website and e-mail list. If you are interested in receiving information regarding these reports and other Geoscience BC news, please contact info@geosciencebc.com. Most final reports and data can be viewed through our Earth Science Viewer at <http://www.geosciencebc.com/s/WebMaps.asp>.

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Contents

B.E. Madu and T. Ballantyne: Search project: Phase III activities in north-central British Columbia	1	Anticlinorium and the Kootenay Arc, southeastern British Columbia	47
M. Rahimi, J.J. Angen and C.J.R. Hart: Application of ASTER data to identify potential alteration zones on Microwave ridge, northeastern Search project area, west-central British Columbia	7	R.L. Simister, P.A. Winterburn and S.A. Crowe: Responses of the soil microbial community to weathering of ore minerals	57
D.C. Arne, R. Mackie, C. Pennimpede and E. Grunsky: Integrated assessment of regional stream-sediment geochemistry for metallic deposits in northwestern British Columbia	23	M.L. Mackay, R.L. Leeder, L. Giroux, H. Dexter, M. Holuszko, J. Halko, C. Howey and D. Thomas: Producing clean coal from western Canadian coalfields using the water-based Roben Jig process . . .	69
D.F. McLeish, A.E. Williams-Jones, W.S. Board and J.R. Clark: Nature and origin of the Brucejack high-grade epithermal gold deposit, northwestern British Columbia: 2017 update	31	V. Kumar, A. Kumar and M.E. Holuszko: Occurrence of rare-earth elements in selected British Columbian coal deposits and their derivative products	87
T. Höy: Geology of the Greenwood map area, Boundary district, southern British Columbia	41	L.M. Volden, D. Kirste, R.A. Gordon and M. Bianchin: Geochemistry of selenium in the residual from biologically treated mine-impacted waters	101
N.A. Rioseco and D.R.M. Pattison: Preliminary investigations of the metamorphic and thermochronological interface between the Purcell		S.S.S. Vanderzee, I.M. Power, G.M. Dipple and P.M.D. Bradshaw: Carbon mineralization in ultramafic tailings, central British Columbia: a prospect for stabilizing mine waste and reducing greenhouse gas emissions	109

