

GEOSCIENCE BC SUMMARY OF ACTIVITIES 2021: MINERALS

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Front cover photo and credit: Ph.D. candidate and *Summary of Activities* author V.K. Kuppusamy collects a sample as part of a coal-leaching experiment at the Norman B. Keevil Institute of Mining Engineering (The University of British Columbia). Photo by D. Stenzel (April 2021).

Foreword

Geoscience BC is pleased to once again present results from our ongoing projects and scholarship recipients in our annual *Summary of Activities* publication. Papers are published in two separate volumes: *Energy and Water*, and this volume, *Minerals*. Both volumes are available in print and online via www.geosciencebc.com.

Summary of Activities 2021: Minerals

This volume, *Summary of Activities 2021: Minerals*, contains nine papers from Geoscience BC–funded projects and scholarship recipients that are within Geoscience BC’s strategic focus area of minerals. The papers are divided into two sections, based on Geoscience BC’s strategic objectives of

- 1) Identifying New Natural Resource Opportunities, and
- 2) Advancing Science and Innovative Geoscience Technologies.

The ‘Identifying New Natural Resource Opportunities’ section starts off with Sacco et al. providing an update on a surficial exploration program, part of the Central Interior Copper-Gold Research series, with a focus on the innovative use of the Talon Drill™ that has been modified with custom purpose-built tooling to sample subglacial till. The remaining three papers are contributions from Geoscience BC Scholarship recipients. Damant and Enkelmann consider the burial and exhumation history of the Intermontane Belt and related implications for preservation of porphyry deposits, and Voegeli and Lecumberri-Sanchez examine the spatial distribution of the hydrothermal system at the Lawyers property, as well as the broader structural/lithological controls within the Toodoggone region. Finally, Kuppusamy and Holuszko present an update on ongoing research into extracting rare-earth elements from southeastern British Columbia coals.

The ‘Advancing Science and Innovative Geoscience Technologies’ section features five papers from Geoscience BC Scholarship recipients. Iulianella Phillips et al. describe continuing research into using microbial-community fingerprinting to explore for mineral deposits, and Williams et al. consider both traditional Indigenous knowledge and contemporary ecological theory, as they relate to using fire, as a tool in post-mining reclamation activities. Yang et al. examine rock-engineering standards and the feasibility of integrating them with machine learning, and Hendi et al. present results from an investigation on the response of fibre optic cables used in monitoring geological stresses underground. Finally, Adria et al. explore the application of the parametric-breach method for modelling two tailings-dam breaches and the resultant flows.

Geoscience BC Minerals Publications 2021

Geoscience BC published the following six interim and final reports and maps in 2021:

- Fifteen technical papers in the **Geoscience BC Summary of Activities 2020: Minerals** volume (Geoscience BC Report 2021-01)
- **Surficial Geology, Drift Thickness and Till Sampling Suitability Maps (NTS 093J/03, 047; 093K/09, 16; 093O/03, 04), British Columbia**, by Palmer (Geoscience BC Report 2021-03)
- **Logging SEDAR: A Review of the Contribution of NI 43-101 Reports to Public Geoscience Data**, by N.D. Barlow, J.R. Barlow, K.E. Flower, E.D. Hardie and J.G. McArthur (Geoscience BC Report 2021-04)
- **Geochemical and Indicator Mineral Data from a Regional Bulk Stream-Sediment Survey, Boundary District, South-Central British Columbia**, by W. Jackaman (Geoscience BC Report 2021-05)
- **Smithers Exploration Group’s Rock Room Project: Geoscience BC Final Report**, by A. Ledwon, C. Ogryzlo and L. Farrell (Geoscience BC Report 2021-06)
- **Geochemical Reanalysis of Archived Till Samples, CICGR Surficial Exploration Project, Interior Plateau, North Central BC (parts of NTS 093A, B, G, J, K, O)**, W. Jackaman, D.A. Sacco and R.E. Lett (Geoscience BC Report 2021-09)
- **Golden Triangle Geophysics Data Compilation Project Summary Report**, by B.K. Clift, T.A. Ballantyne and C.L. Pellett (Geoscience BC Report 2021-15)

All releases of Geoscience BC reports, maps and data are published on our website and announced through our website and e-mail updates. Most final reports and data can be viewed or accessed through our Earth Science Viewer at <https://gis.geosciencebc.com/esv/?viewer=esv>.

Acknowledgments

Geoscience BC would like to thank all authors and reviewers of the *Summary of Activities* for their contributions to this volume. COVID-19 once again made this a challenging year for all our field programs and laboratory research, and Geoscience BC continues to be grateful for the perseverance of our researchers and scholarship recipients in continuing their projects.

RnD Technical is also acknowledged for its work in editing and assembling both volumes. As well, Geoscience BC would like to acknowledge the Province of British Columbia and our project funding partners for their ongoing support of public geoscience, and express our appreciation for the leaders and volunteers in British Columbia's mineral exploration, mining and energy sectors who support our organization through their guidance, use and recognition of the data and information that we collect and distribute.

Christa Pellett
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Contents

Identifying New Natural Resource Opportunities

- D.A. Sacco, B. Janzen and W. Jackaman:** Mineral exploration in the Central Interior Copper-Gold Research projects area, central British Columbia: new tools for a proven approach to exploration under cover 1
- K.A. Damant and E. Enkelmann:** Upper-crustal cooling history of the Intermontane Belt in southern British Columbia. 11
- P. Voegeli and P. Lecumberri-Sanchez:** Spectral and geochemical characterization of the Silver Pond argillic–advanced argillic alteration lithocap, Lawyers property, Toodoggone district, north-central British Columbia 21
- V.K. Kuppusamy and M.E. Holuszko:** Development of rare-earth elements database for the East Kootenay coalfield of southeastern British Columbia using field-collected samples: updated results 39

Advancing Science and Innovative Geoscience Technologies

- B.P. Iulianella Phillips, R.L. Simister, P.M. Luck, C.J.R. Hart and S.A. Crowe:** Microbial sensing of sulphide mineralization, southern British Columbia and Vancouver Island 45
- B.J. Williams, W.C. Gardner, C.W. Mason and L.H. Fraser:** Using traditional Indigenous knowledge of prescribed burning as a tool to shift a reclaimed tailings storage facility in southern British Columbia dominated by agronomic grass to a native plant community 53
- B. Yang, D. Elmo and D. Stead:** Revisiting rock engineering empirical standards in the era of machine learning to benefit the mineral resources sector in British Columbia 67
- S. Hendi, E. Eberhardt and M. Gorjian:** Investigating the effect of contributory factors on the response of fibre optic cable for underground monitoring of geological stress in British Columbia 73
- D. Adria, S. McDougall and S.G. Evans:** Parametric method for tailings-dam breaches and its application to the breach event at the Mount Polley mine, south-central British Columbia 81

