



GEOSCIENCE BC SUMMARY OF ACTIVITIES 2013



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Cover photo: Glacially carved U-shaped valley in the Itcha and Ilgachuz mountain ranges, TREK project area, British Columbia

Photo credit: David Sacco



Acknowledgments

I would like to thank the government of British Columbia for its ongoing support in making it possible for Geoscience BC to fund quality geoscience research and data collection. I would also like to express appreciation for the leaders in British Columbia's mineral exploration, mining, and oil and gas sectors who support our organization through their guidance, use and recognition of the information that we collect and distribute.

Robin Archdekin
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Foreword

Geoscience BC is pleased to present results from several of our ongoing geoscience projects and surveys in this, our seventh edition of the *Geoscience BC Summary of Activities*. The volume is divided into two sections, 'Minerals' and 'Oil and Gas', and contains a total of 14 papers.

The 'Minerals' section contains 11 papers from Geoscience BC minerals projects throughout the province. In the first paper, Geoscience BC's QUEST (QUesnellia Exploration STRategy) Project, a minerals research project launched in 2007, is used as a case study to measure investment in the province based on Geoscience BC-funded research. Reichheld addresses the success of Geoscience BC's investments as a return for the province from 2007 to 2010, using readily available public sources to ensure repeatability for similar analytical projects in the future.

The next three papers describe activities of Geoscience BC's newest major project, TREK (Targeting Resources through Exploration and Knowledge). Clifford and Hart provide an overview of 2013 activities, focusing on the TREK airborne magnetic survey and the purchase of proprietary industry airborne magnetic data. Sacco et al. describe the regional geochemistry program and basal-till potential mapping methods, and Lett and Jackaman detail the geothermal sampling program undertaken around the Nazko cone.

The papers following the TREK Project papers present interim results from three smaller Geoscience BC partnership projects in the same region of the province. Bordet et al. present a three-dimensional thickness model for the Chilcotin and Nechako plateaus; Celis et al. describe continued work on porphyry indicator minerals from alkalic porphyry Cu-Au deposits, including Mount Polley, Mount Milligan and Copper Mountain; and del Real et al. present new work on the paragenesis, alteration and mineralization at two of the porphyry deposits on the Woodjam property.

Moving to southern BC, the paper by Mortensen presents U-Pb ages, geochemistry and Pb-isotopic compositions of intrusions and associated mineralization in the southern Quesnel terrane. Webster and Pattison build on their project on the southern Kootenay Arc with new U-Pb ages to help constrain the area's geological evolution and associated mineralizing events. Clifford provides an update on Geoscience BC's SEEK (Stimulating Exploration in the East Kootenays) Project and summarizes two projects undertaken during 2013: an updated East Kootenay Gravity Database plus newly acquired gravity data in the St. Mary River area (released November 2013); and a paleomagnetic study that involved the collection of samples this past field season, with final results expected by summer 2014.

The last paper in this section describes research into a resource new to Geoscience BC's project portfolio. Derry et al. detail the creation of a database and heat favourability maps to quantify the resource potential for BC's geothermal power.

In the 'Oil and Gas' section of this year's volume, we present three papers. Salas and Walker provide an update on the regional seismograph network in northeastern BC. Following this is a description of a new subsurface aquifer study, recently undertaken by Hayes and Costanzo in the Liard Basin of northeastern BC to support unconventional oil and gas development. In the last paper of this section, Salas et al. give an update on the three-year surface-water monitoring program in the Horn River Basin, now entering its final year.

Readers are encouraged to visit our website for additional information on all Geoscience BC-funded projects, including project descriptions, posters and presentations, previous *Summary of Activities* or *Geological Fieldwork* papers, and final datasets and reports. The website also contains information on many of Geoscience BC's other activities, including workshops and student scholarships. All papers in this and past volumes are available for download through Geoscience BC's website (www.geosciencebc.com). Limited print copies of past volumes are also available from the Geoscience BC office.

Geoscience BC Publications 2013

In addition to this *Summary of Activities* volume, 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 at www.geosciencebc.com/s/DataReleases.asp. Geoscience BC datasets and reports released in 2013 are:

- 14 technical papers in the *Geoscience BC Summary of Activities 2012* volume
- **Heliborne High Resolution Aeromagnetic Survey: Northern Vancouver Island, BC**, by Geo Data Solutions (Geoscience BC Report 2013-02)

- **Heliborne High Resolution Aeromagnetic Survey: QUEST-Northwest Project Area, BC, Block 3**, by Geo Data Solutions (Geoscience BC Report 2013-03)
- **Lardeau (NTS 082K) Sample Reanalysis (ICP-MS)**, by W. Jackaman (Geoscience BC Report 2013-04)
- **Iskut River Area Geology, Northwest BC (104B/08, 09, 10 & part of 104B/01, 07/11)**, by P.D. Lewis (Geoscience BC Report 2013-05)
- **McLeod Lake (NTS 093J) Sample Reanalysis (INAA)**, by W. Jackaman (Geoscience BC Report 2013-06)
- **Burrell Creek Map**, by T. Hoy and W. Jackaman (Geoscience BC Report 2013-07)
- **Ice Flow Patterns in NTS 093G, H (west half) & J, and Detailed Ice Flow History for NTS 093J/05, 06, /11, /12, /13 & /14**, by D.A. Sacco, B.C. Ward and D.E. Maynard (Geoscience BC Report 2013-08)
- **Nelson (NTS 082F) Sample Reanalysis (ICP-MS)**, by W. Jackaman (Geoscience BC Report 2013-09)
- **New Terrain Maps in the McLeod Lake Map Area (NTS 093J), British Columbia**, by D.A. Sacco, B.C. Ward, M. Geertsema and D.E. Maynard (Geoscience BC Report 2013-10)
- **Regional Stream Sediment and Water Geochemical Data, Northern Vancouver Island, British Columbia**, by W. Jackaman (Geoscience BC Report 2013-11)
- **Northern Vancouver Island Till Sample Reanalysis (ICP-MS)**, by W. Jackaman (Geoscience BC Report 2013-12)
- **Leveraging Earth Science Standards to Enhance Mineral Exploration Success in British Columbia: Seeking the Efficiencies of Order**, by C. Smyth (Geoscience BC Report 2013-13)
- **Linking Porphyry Deposit Geology to Geophysics via Physical Properties: Adding Value to Geoscience BC Geophysical Data**, by D.E. Mitchinson, R.J. Enkin and C.J.R. Hart (Geoscience BC Report 2013-14)
- **Drift Prospecting for Porphyry Copper-Gold, Volcanogenic Massive Sulphide Mineralization and Precious and Base Metal Veins within the QUEST Project Area, Central British Columbia (NTS 093J)**, by B.C. Ward, M.I. Leybourne, D.A. Sacco, R.E. Lett and L.C. Struik (Geoscience BC Report 2013-15)
- **Geochemical Techniques for Detection of Blind Porphyry Copper-Gold Mineralization under Basalt Cover, Woodjam Property, South-Central British Columbia (NTS 093A/03, 06)**, by T. Bissig, D.R. Heberlein and C.E. Dunn (Geoscience BC Report 2013-17)
- **Examining Present and Future Water Resources for the Kiskatinaw River Watershed, British Columbia**, by University of Northern British Columbia (Geoscience BC Report 2013-19)
- **Use of Organic Media in the Geochemical Detection of Blind Porphyry Copper-Gold Mineralization in the Woodjam Property Area, South-Central BC (NTS 093A/03, /06)**, by D.R. Heberlein, C.E. Dunn and B. MacFarlane (Geoscience BC Report 2013-20)
- **Geology of the Mount Polley Intrusive Complex (Draft Version)**, by C. Rees, G. Gillstrom, L. Ferreira, L. Bjornson and C. Taylor (Geoscience BC Report 2013-21)
- **A Geo-Exploration Atlas of the Endako Porphyry Molybdenum District (Draft Version)**, by F. Devine, M. Pond, D.R. Heberlein, P. Kowalczyk, W. Kilby and F. Ma (Geoscience BC Report 2013-22)
- **Stimulating Exploration in the East Kootenays (SEEK Project): The Updated East Kootenay Gravity Database (EKGDB) and the 2013 St. Mary Gravity Survey**, by T. Sanders (Geoscience BC Report 2013-23)

All releases of Geoscience BC reports and data are announced through our website and e-mail list. If you are interested in receiving e-mail regarding these reports and other Geoscience BC news, please contact info@geosciencebc.com.

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