Geoscience BC

# GEOSCIENCE BC SUMMARY OF ACTIVITIES 2011

Geoscience BC Report 2012-1

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**Cover photo:** Stream-sediment sampling in the QUEST-Northwest project area, northwestern British Columbia.
**Photo credit:** Wayne Jackaman, Noble Exploration Services Ltd., 2011.

# Foreword

Geoscience BC is pleased to present results of many of our ongoing and recently completed geoscience projects and surveys in this, our fifth edition of the *Geoscience BC Summary of Activities.* The volume is divided into three sections, and contains a total of 16 papers.

The first section contains three papers from the QUEST-Northwest project, Geoscience BC's latest major mineral geoscience initiative. The QUEST-Northwest project is designed to stimulate new mineral exploration activity in the northwestern part of the province, and to enhance the success of existing exploration activities in the region. Like the QUEST, QUEST-West and QUEST-South projects before it, QUEST-Northwest includes both airborne geophysical surveys and regional geochemical programs. However, the QUEST-Northwest program also includes a regional mapping component, which was undertaken in partnership with the BC Geological Survey. Simpson and Jackaman describe the airborne magnetic surveys and regional geochemical surveys respectively, while Logan et al. discuss the regional mapping program (also discussed in the BC Geological Survey's *Geological Fieldwork 2011* volume).

The second section of this volume describes ongoing Geoscience BC–supported mineral geoscience projects throughout BC, and is roughly organized by project type and area. Devine provides an update on Geoscience BC's Porphyry Integration Project, which is currently pulling together existing geological, geochemical and geophysical datasets from select BC porphyry deposits. This project is complementary to the work of Blaine and Hart, who are developing geochemical-exploration models for BC porphyry deposits. Muezelaar and Monecke provide a final report on their geochemical modelling project aimed at constraining fluid controls on ore genesis in the Eskay Creek deposit.

Two papers deal with till sampling programs in central British Columbia: Stumpf discusses the development of a till database for the Bulkley River valley region, and Ward et al. provide an update on heavy-mineral analysis of till samples in the QUEST Project area. Vasa et al. discuss chemical variations in pyroxene and Fe-Ti–oxide crystals in basalts of the Nicola Group in southern BC, and relate the results to magma alkalinity and the location of known deposits. Finally, Höy and Jackaman describe a new Geoscience BC mapping project that will focus on the Burrell Creek map area in southeastern BC. This work is a continuation of work the authors previously undertook for Geoscience BC in the Deer Park map area in 2009.

The third section of this volume discusses Geoscience BC's oil and gas projects, which are split between northeastern BC and the Nechako Basin in central BC. Chapman et al. describe a partnership project between Geoscience BC and the BC Oil and Gas Commission aimed at completing hydrological modelling in northeastern BC, which will help guide use and development of water resources in the region, including potential use in unconventional gas development. This project is complementary to the two major projects Geoscience BC has undertaken in northeastern BC over the past few years: the Horn River Basin Aquifer Project (Phases 1 and 2) and the Montney Water Project. These projects are focused on understanding surface and subsurface water sources in the Horn River Basin and Montney gas play respectively. Also in northeastern BC, Chalmers et al. examine geological controls on tight-gas in the Montney play, and Golding et al. and Henderson et al. undertake stratigraphic studies in the area. Finally, Kushnir et al. present the results of a rock-property study in the Nechako Basin (raw data released as Geoscience BC Report 2011-10; see below), and Spratt et al. discuss the use of magnetotelluric transfer functions to test the usefulness of ZTEM data in the Nechako Basin.

Readers are encouraged to visit the 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. All papers in this and past volumes are available for download through Geoscience BC's website (www.geosciencebc.com). Limited copies of past volumes are also available from the Geoscience BC office.

## Geoscience BC Publications 2011

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 2011 include the following:

- 25 technical papers in the *Geoscience BC Summary of Activities 2010* volume
- ***Northern BC Sample Reanalysis Project,*** by W. Jackaman (Geoscience BC Report 2011-2)
- ***The application of surface organic materials as sample media over deeply buried mineralization at the Kwanika Central Zone, North-Central British Columbia,*** by D.R. Heberlein and C.E. Dunn (Geoscience BC Report 2011-3)

- ***Regional Stream Sediment and Water Geochemical Data, Vancouver Island, British Columbia,*** by W. Jackaman (Geoscience BC Report 2011-4)
- ***Catchment Analysis and Interpretation of Stream Sediment Data from QUEST-South, British Columbia,*** by D.C. Arne and E.B. Bluemel (Geoscience BC Report 2011-5)
- ***Ground Testing of Predicted Geology Based on Stream and Lake Sediment Geochemistry in the QUEST Area, Using Previously Undocumented Bedrock Exposures,*** by T. Bissig, J. Logan, D.R. Heberlein and F. Ma (Geoscience BC 2011-6)
- ***Preliminary Bedrock Topography and Drift Thickness of the Montney Play,*** by A.S. Hickin and M.A. Fournier (Geoscience BC Report 2011-7 / BC Ministry of Energy and Mines, Energy Open File 2011-1)
- ***Compilation of Geological Survey of Canada Surficial Geology Maps for NTS 094A and 093P,*** by A.S. Hickin (Geoscience BC Map 2011-8-1 / BC Ministry of Energy and Mines, Energy Open File 2011-2)
- ***Till Geochemistry of the Colleymount Map Area (093L/01), West-Central British Columbia,*** by T. Ferbey (Geoscience BC Report 2011-9 / BC Geological Survey Open File 2011-06)
- ***Rock Physical Property Measurements to Aid Geophysical Surveys in the Nechako Basin Oil and Gas Region, Central British Columbia,*** by G. Andrews, S. Quane, R.J. Enkin, K. Russell, A. Kushnir, L. Kennedy, N. Hayward and M. Heap (Geoscience BC Report 2011-10)
- ***Montney Water Project: Watershed Posters,*** by Foundry Spatial Ltd. (Geoscience BC Report 2011-12)
- ***Preliminary Lithological and Structural Framework of Eocene Volcanic Rocks in the Nechako Region, Central British Columbia,*** by E. Bordet, C.J.R. Hart, and D. Mitchinson (Geoscience BC Report 2011-13)
- ***Regional 3-D Inversion Modelling of Airborne Gravity and Magnetic Data: QUEST-South, BC, Canada,*** by Mira Geoscience Ltd. (Geoscience BC Report 2011-14)
- ***Regional 3-D Inversion Modelling of Airborne Gravity, Magnetic, and Electromagnetic Data, Central BC, Canada,*** by Mira Geoscience Ltd. (Geoscience BC Report 2011-15)
- ***The Characteristics, Origin and Exploration Potential for Sediment-Hosted Cu±Ag Mineralization in the Purcell Supergroup, Canada,*** by R.P. Hartlaub, W. J. Davis and C.E. Dunn (Geoscience BC Report 2011-16)
- ***Porphyry Indicator Minerals (PIMS): A New Exploration Tool for Concealed Deposits in South-Central British Columbia***, by F. Bouzari, C.J.R. Hart, S. Barker and T. Bissig (Geoscience BC Report 2011-17)

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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