



**BRITISH  
COLUMBIA**

Ministry of Energy and Mines  
Energy and Minerals Division  
Geological Survey Branch

# **GEOLOGICAL FIELDWORK 1998**

A Summary of Field Activities  
and Current Research

**PAPER 1999-1**

# Energy and Minerals Division

## Geological Survey Branch

Parts of this publication may be quoted or reproduced if credit is given. The following is the recommended format for referencing individual works contained in this publication:

MacIntyre, D.G. and Struik, L.C. (1999): Nechako NATMAP Project, Central British Columbia - 1998 Overview; *in Geological Fieldwork 1998, B.C. Ministry of Energy and Mines*, Paper 1999-1, p. 1-14.

### British Columbia Cataloguing in Publication Data

Main entry under title:

Geological fieldwork: - 1974 -

Annual.

Issuing body varies

Vols. For 1978-1996 issued in series: Paper / British Columbia. Ministry of Energy, Mines and Petroleum Resources; vols for 1997- 1998, Paper / British Columbia. Ministry of Employment and Investment; vols for 1999- , Paper / British Columbia Ministry of Energy and Mines.

Includes Bibliographical references.

ISSN 0381-243X = Geological fieldwork

1. Geology - British Columbia - Periodicals. 2. Mines and mineral resources - British Columbia - Periodicals. 3. Geology - Fieldwork - Periodicals 4. Geology, Economic - British Columbia - Periodicals. 5. British Columbia. Geological Survey Branch - Periodicals. I. British Columbia. Geological Division. II. British Columbia. Geological Branch. III. British Columbia. Geological Survey Branch. IV. British Columbia. Dept. of Mines and Petroleum Resources. V. British Columbia. Ministry of Energy, Mines and Petroleum Resources. VI. British Columbia. Ministry of Employment and Investment. VII. British Columbia Ministry of Energy and Mines VIII. Series: Paper (British Columbia. Ministry of Energy, Mines and Petroleum Resources). IX. Series: Paper (British Columbia. Ministry of Employment and Investment). X. Series: Paper (British Columbia Ministry of Energy and Mines).

QE187.G46 622.1'09711 C76-083084-3 (Rev.)



VICTORIA  
BRITISH COLUMBIA  
CANADA

JANUARY 1999

## FOREWORD

Geological Fieldwork: A Summary of Fieldwork and Current Research, 1998 is the twenty-fourth edition of this annual publication and contains reports of Geological Survey Branch (GSB) activities and projects during 1998.

The Branch's field surveys in 1998 concentrated on under-explored frontier regions and on areas with established mining infrastructure. Highlights include:

- ♦ Completion of fieldwork for the 5 year Nechako Plateau NATMAP project, which is a collaborative effort with the Geological Survey of Canada and various universities. The focus of GSB work is on the Babine porphyry belt with its important mineral potential and the Sitlika assemblage for its volcanogenic massive sulphide potential (pages 1-68).
- ♦ Year 3 of the multidisciplinary Eagle Bay Project which is utilizing surficial geology and till geochemistry to look for buried mineral deposits in the Adams Plateau area (pages 223-246, 307-319).
- ♦ Continuation of the Devono-Mississippian VMS project which is mapping potential extensions of strata that host the Kudz Ze Kayah and Wolverine deposits into northern British Columbia (pages 143-156).
- ♦ The McConnell Range regional mapping project which extended existing coverage of the Toodoggone volcanic belt in the general area of the Kemess deposit (pages 103-114).
- ♦ Examination of a number of mineral deposits and deposit types, such as field investigations of sediment-hosted gold deposits (pages 165-178 and 179-192), and examination of a number of gemstone prospects (pages 285-293).
- ♦ Initiation of a new NATMAP project in the Foreland Belt in the northeast Rocky Mountains with the GSC. The westernmost part of the area is being studied by the GSB because of the known lead-zinc mineralization. The GSB carried out bedrock mapping and mineral deposit studies (pages 81-88, 89-102, 115-126).
- ♦ Completion of an aggregate potential study of the Nanaimo Regional District (pages 279-284).

Significant improvements were made to the Branch's Internet site in 1998. Using the MapGuide (TM) viewer (downloadable from our site) clients can view, plot and perform sophisticated analysis on most of the Geological Survey Branch's geo-referenced spatial information sets (eg. geology, mineral occurrences, geochemistry, geophysics, mineral tenure etc.). Some information, such as geology and regional geochemistry, is available for free download by map sheet or by user defined areas.

The Terrain Stability project, funded by Forest Renewal BC, continued in 1998. The Branch audits digital terrain data submitted by forest companies in compliance with the new Forest Practices Code and makes this data available over the Internet. Terrain maps are being increasingly used in mineral exploration, for example, as an aid in interpreting geochemical surveys (pages 157-164).

The Branch continued to produce print-on-demand publications and moved toward Internet publishing for maps and reports. Selected geoscience publications can be found at: <http://www.em.gov.bc.ca/geology>.

Many thanks to the contributing authors, the Ministry's Communications Division, the Manager of publications and the Section managers for their exceptional work in making this publication possible.

*W.R. Smyth*  
*Chief Geologist*  
*Geological Survey Branch*

# TABLE OF CONTENTS

<b>FOREWORD</b> .....	i
<b>REGIONAL MAPPING</b>	
<b>D.G. MacIntyre and L.C. Struik:</b> Nechako NATMAP Project, central British Columbia, 1998 Overview .....	1
<b>Victor M. Levson, David Mate and Andrew J. Stuart:</b> Quaternary geology and drift prospecting studies in the north central Nechako Plateau (93 F and K) .....	15
<b>David J. Mate and Victor M. Levson:</b> Quaternary Geology of the Marilla map sheet (NTS 93 F/12) .....	25
<b>Paul Schiarizza and Don MacIntyre:</b> Geology of the Babine Lake - Takla Lake area, central British Columbia (93K/11, 12, 13, 14; 93N/3, 4, 5, 6) .....	33
<b>Filippo Ferri, Trygve Höy and Richard M. Friedman:</b> Description, U-Pb age and tectonic setting of the Quesnel Lake gneiss, east-central British Columbia .....	69
<b>JoAnne Nelson, Janet E. Gabites and Suzanne Paradis:</b> New galena lead isotopic data from carbonate rocks in northeastern B.C. - implications for regional MVT fluid migration .....	81
<b>JoAnne L. Nelson, Suzanne Paradis and Willem Zantvoort:</b> The Robb Lake carbonate-hosted lead-zinc deposit, northeastern British Columbia: a Cordilleran MVT deposit ....	89
<b>Chris Rogers, and Jacques Houle:</b> Geological setting of the Kemess South Au-Cu porphyry deposit and local geology between Kemess Creek and Bicknell Lake (NTS 94E/2) ....	103
<b>A.S. Legun:</b> Geology of the Mount McCusker area, northeastern British Columbia (94G/4W) ..	115
<b>M.G. Mihalynuk, P. Erdmer, E.D. Ghent, D. Archibald, R.M. Friedman, F. Cordey, G.G. Johannson, and J. Beanish:</b> Age constraints for emplacement of the northern Cache Creek Terrane and implications of blueschist metamorphism .....	127
<b>JoAnne Nelson:</b> Devono-Mississippian VMS project: continuing studies in the Dorsey Terrane, northern British Columbia .....	143
<b>I.C.L. Webster, P.J. Desjardins and W.E. Kilby:</b> The digital terrain map library: an explorationist's resource .....	157
<b>ECONOMIC GEOLOGY</b>	
<b>David V. Lefebure, Derek A. Brown and Gerald E. Ray:</b> The British Columbia sediment-hosted gold project .....	165
<b>Derek A. Brown and Robert Cameron:</b> Sediment- hosted, disseminated gold deposits related to alkalic intrusions in the Howell Creek structure, southeastern British Columbia (82G/2, 7) .....	179
<b>B.N. Church and L.D. Jones:</b> Metallogeny of the Beaton - Camborne mining camp, Lardeau District (082K 12 & 13) .....	193
<b>Trygve Höy:</b> Massive sulphide deposits of the Eagle Bay Assemblage, Adams Plateau, south central British Columbia (082M3,4) .....	223
<b>Barry Ryan, Ross Leeder, John T. Price and John F. Gransden:</b> The effect of coal preparation on the quality of clean coal and coke .....	247
<b>INDUSTRIAL MINERALS</b>	
<b>Peter T. Bobrowsky, Alex Matheson, Roger Paulen and Nick Massey:</b> Aggregate potential project for the Nanaimo Area, Vancouver Island (NTS 92B, C, F and G) .....	279

**G.J. Simandl, S. Paradis, L.J. Diakow, P.J. Wojdak, and A.J. Hartley:** Precious opal in the Whitesail Range, west-central British Columbia, Canada (NTS 93E/10W and 93E/11E) . . . .285

**GEOCHEMISTRY**

**R.E. Lett, W. Jackaman and A. Yeow:** Detailed geochemical exploration techniques for base and precious metals in the Kootenay Terrane (82L13, 82L/14, 82M/4, 82M/5, 92P/1) . . . . .297

**Roger C. Paulen, Peter T. Bobrowsky, Ray E. Lett, Ahren J. Bichler, and Candice Wingerter:** Till geochemistry in the Kootenay, Slide Mountain and Quesnel terranes . . . . .307