



Province of British Columbia
Ministry of Energy, Mines and
Petroleum Resources

MINERAL RESOURCES DIVISION
Geological Survey Branch

GEOLOGICAL FIELDWORK 1988

*A summary of Field Activities
and Current Research*

PAPER 1989 – 1

MINERAL RESOURCES DIVISION
Geological Survey Branch

British Columbia Cataloguing in Publication Data

Main entry under title:

Geological fieldwork. — 1974 —

(Paper, ISSN 0226-9430)

Annual.

Issuing body varies: 1974-1980, Geological Division;
1981-1985, Geological Branch; 1986– , Geogical
Survey Branch.

Subseries, 1979– , of: Paper (British Columbia.
Ministry of Energy, Mines and Petroleum Resources)

“A summary of field activities of the Geological
Division, Mineral Resources Branch.”

ISSN 0381-243X = Geological fieldwork

1. Geology — British Columbia — Periodicals.
2. Geology, Economic — British Columbia — Periodicals.
3. Mines and mineral resources — British Columbia — Periodicals. I. British Columbia. Geological Division. II. British Columbia. Geological Branch. III. British Columbia. Geological Survey Branch. IV. British Columbia. Ministry of Energy, Mines and Petroleum Resources. V. Series: Paper (British Columbia. Ministry of Energy Mines and Petroleum Resources)

QE187.G46 557.11'05

Rev. Dec. 1987

VICTORIA
BRITISH COLUMBIA
CANADA

January 1989

FOREWORD

The 1988 edition of *Geological Fieldwork: A Summary of Field Activities and Current Research* is the fourteenth in this publication series. It covers a year during which the Geological Survey Branch again expanded its mapping and research activity to improve the geoscience database in British Columbia.

The Branch budget was increased in 1988 for the second year in a row. The \$2 million increase in 1987 was followed by an additional \$1.5 million this year, bringing the total base budget of the Geological Survey Branch to \$6.7 million. The government's policy of encouragement for mineral exploration and mine development in the province is solidly backed by funding for geoscience research. Provincial base funding in 1988 supported 32 field projects, with an additional 10 projects funded by the Canada/British Columbia Mineral Development Agreement. Highlights of the program are:

- Three new 1:50 000 regional mapping projects, in the Atlin and Stikine River areas, were added to the seven continuing projects in the Sicker Group on Vancouver Island, the Sylvester allochthon, the Whitesail Lake and Taseko Lake – Bridge River areas, the Manson Creek – Germansen Landing area, the Babine and Telkwa ranges and the Tutshi and Tagish lakes area of northwestern British Columbia.
- Reconnaissance geochemical surveys were completed over four 1:250 000 map sheets covering northern Vancouver Island and the adjacent Mainland.
- Metallogenic studies included continuing work in the Iskut-Sulphurets gold belt, the Bridge River mining camp and the Rossland volcanic rocks of the West Kootenay District, and assessment of the mineral potential of Alaskan-type ultramafic complexes in northern British Columbia.
- Industrial minerals research included evaluation of the provinces sulphur, fluorite, zeolites and feldspar resources. Regional mapping and analysis of gypsum occurrences led to the discovery of extensive gypsum resources near Canal Flats in the East Kootenay District.

Fieldwork in the province's coalfields decreased in 1988 with the completion of several major projects in the Elk Valley, Peace River and Bowser Basin coalfields but work continued on regional mapping, sampling and coal-quality studies in the Comox and Nanaimo coalfields on Vancouver Island. The new computerized, mineral inventory database, MINFILE, entered its production phase during the year. Support to Universities and individuals was continued through the successful Geoscience Research Grant program and the 1988 results are reported in this volume.

This very active field program is reflected in the number of publications released during the year and in the increased number of contributions to this year's edition of *Fieldwork*. The volume continues to grow while the time available for its production does not. The efforts of our editorial staff, including Brian Grant and John Newell, who edited the volume and managed the production process; Doreen Fehr, Janet Holland, Debbie Bulinckx and other typists who wore out their fingers at the keyboards; Janet Fontaine who did the page layout; and John Armitage, Martin Taylor and Pierino Chicorelli, the drafting staff, are gratefully acknowledged. Appreciation is also extended to the management and staff of the Queen's Printer, without whose cooperation timely delivery would not be possible.

W.R. Smyth
Chief Geologist
Geological Survey Branch
Mineral Resources Division

GEOLOGICAL SURVEY BRANCH
1988 FIELD PROJECTS

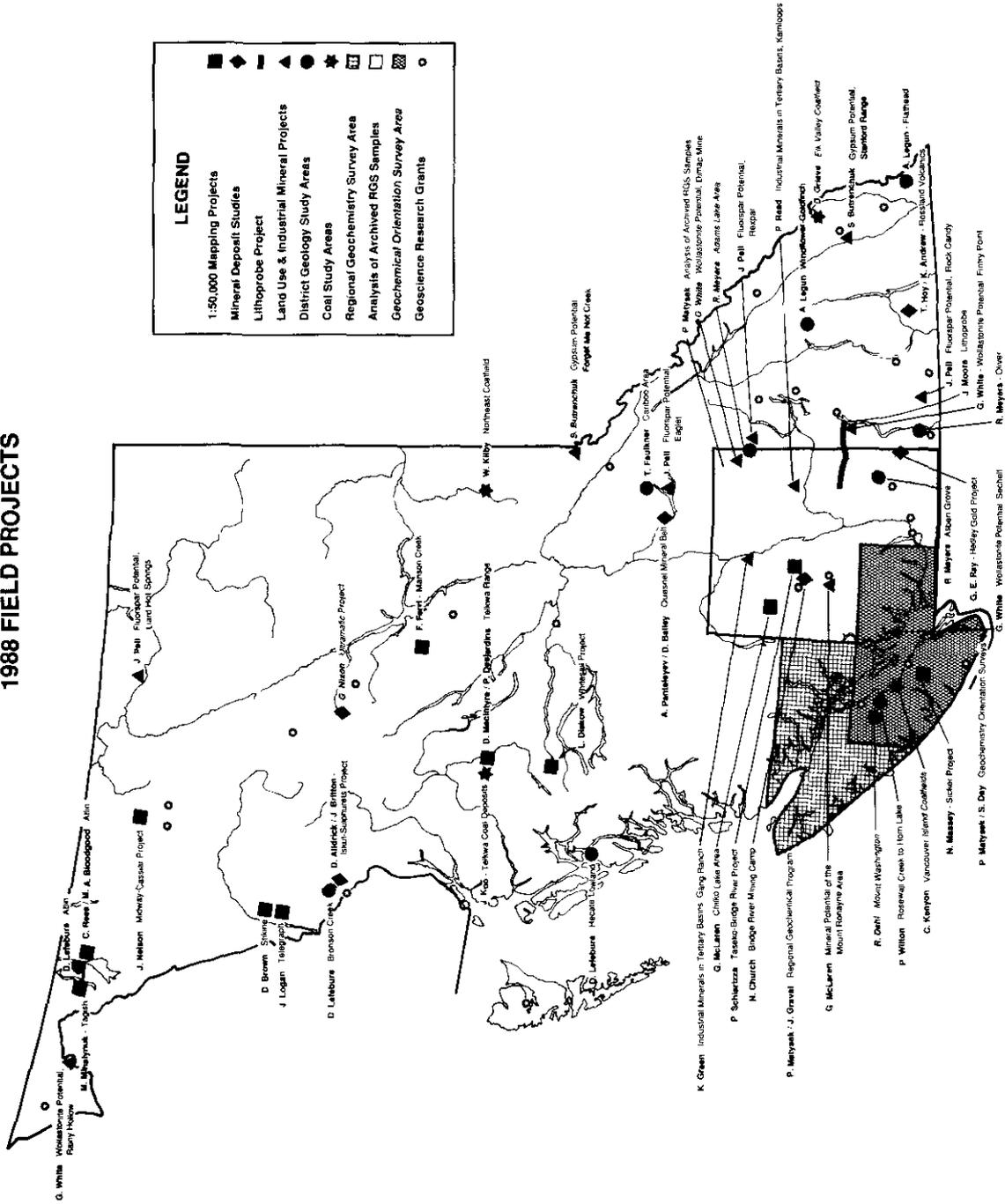


TABLE OF CONTENTS

	Page		Page
FOREWORD	3	1-12 Meg Coleman: Geology of Mission Ridge, near Lillooet, British Columbia (92I, J)	99
REGIONAL AND DISTRICT MAPPING			
1-1 James T. Fyles: Geology of the Pre-Tertiary Rocks in the Rock Creek-Greenwood Area (82E/2)	11	1-13 B.N. Church and A.R. Pettipas: Research and Exploration in the Bridge River Mining Camp (92J/15, 16)	105
1-2 Urs Mäder, Peter Lewis and J.K. Russell: Geology and Structure of the Kobau Group between Oliver and Cawston, British Columbia: With Notes on Some Auriferous Quartz Veins (82E/4E)	19	1-14 P. Schiarizza, R.G. Gaba, J.K. Glover and J.I. Garver: Geology and Mineral Occurrences of the Tyughton Creek Area (920/2, 92J/15, 16)	115
1-3 Myra Keep and J.K. Russell: The Geology of the Averill Plutonic Complex, Grand Forks, British Columbia (82E/9W)	27	1-15 John I. Garver, P. Schiarizza and R.G. Gaba: Stratigraphy and Structure of the Eldorado Mountain Area, Chilcotin Ranges, Southwestern British Columbia (920/2; 92J/15)	31
1-4 Trygve Høy and Kathryn Andrew: The Rossland Group, Nelson Map Area, South-eastern British Columbia (82F/6)	33	1-16 D.A. Archibald, J.K. Glover and P. Schiarizza: Preliminary Report on ⁴⁰ Ar/ ³⁹ Ar Geochronology of the Warner Pass, Noaxe Creek and Bridge River Map Areas (920/3, 2; 92J/16)	145
1-5 R.A. Burwash and P.A. Wagner: Sm/Nd Geochronology of the Moyie Intrusions, Moyie Lake Map Area, British Columbia (82G/5)	45	1-17 G.P. McLaren and J.N. Rouse: Geology and Mineral Occurrences in the Vicinity of Taseko Lakes (920/3, 4, 5, 6)	153
1-6 B.J. Johnson: Geology of the West Margin of the Shuswap Terrane near Sicamous: Implications for Tertiary Extensional Tectonics (82L, M)	49	1-18 Andre Panteleyev and Kirk D. Hancock: Quesnel Mineral Belt: Summary of the Geology of the Beaver Creek – Horsefly River Map Area	159
1-7 Robert J. Scammell and John M. Dixon: Stratigraphy along the North Flank of Frenchman Cap Dome, South Omineca Belt, British Columbia (82M/10, 15)	55	1-19 D.G. Bailey: Geology of the Central Quesnel Belt, Swift River, South-central British Columbia (93B/16, 93A/12, 93G/1)	167
1-8 N.W.D. Massey and S.J. Friday: Geology of the Alberni–Nanaimo Lakes Area, Vancouver Island (92F/1W, 92F/2E and part of 92F/7)	61	1-20 J. Lu: Geology of the Cantin Creek Area, Quesnel River (93B/16)	173
1-9 Anne Andrew and Colin I. Godwin: Galena Lead Isotope Model for Vancouver Island	75	1-21 L.J. Diakow and J. Drobe: Geology and Mineral Occurrences in North Newcombe Lake Map Sheet (93E/14)	183
1-10 J.E. Muller: Tertiary Low-angle Faulting and Related Gold and Copper Mineralization on Mount Washington, Vancouver Island (92F/11, 14)	81	1-22 G.E. Rouse and W.H. Mathews: Palynology of Subsurface Cenozoic Sediments and Pyroclastic Rocks Southwest of Vanderhoof, British Columbia (93F/10, 16)	189
1-11 John M. Moore: Geology along the Lithoprobe Transect between the Guichon Creek Batholith and Okanagan Lake (92I/1, 2, 7, 8; 82L/3, 4, 5, 6)	93	1-23 D.G. MacIntyre, P. Desjardins and P. Tercier: Jurassic Stratigraphic Relationships in the Babine and Telkwa Ranges (93L/10, 11, 14, 15)	195

TABLE OF CONTENTS *(Continued)*

		Page		Page	
1-24	Filippo Ferri and David M. Melville: Geology of the Germansen Landing Area, British Columbia (93N/10, 15)	209	MINERAL DEPOSIT STUDIES		
1-25	K. Bellefontaine: Tectonic Evolution of Upper Proterozoic Ingenika Group, North-central British Columbia (94C/12)	221	2-1	R.E. Meyers and W.A. Taylor: Metallogenic Studies of Lode Gold-silver Occurrences in South-central British Columbia, a Progress Report (82E, 82L).	355
1-26	K. Minehan: Takla Group Volcano-sedimentary Rocks North-central British Columbia: A Summary of Fieldwork (94D/9)	227	2-2	C.H.B. Leitch, C.I. Godwin, T.H. Brown, B.E. Taylor and W.C. Cornell: Characteristics of Mineralizing Fluids in the Bralorne-Pioneer Mesothermal Gold Vein Deposit: Results of a Fluid Inclusion, Stable Isotope, and Thermodynamic Study (92J/15W)	365
1-27	D.J. Aldrick: Volcanic Centres in the Stewart Complex (103P and 104A, B)	233	2-3	Nicholas Eyles and Stephen P. Kocsis: Sedimentological Controls on Gold Distribution in Pleistocene Placer Deposits of the Cariboo Mining District, British Columbia.	377
1-28	J.M. Britton, I.C.L. Webster and D.J. Aldrick: Unuk Map Area (104B/7E, 8W, 9W, 10E)	241	2-4	John Knight and K.C. McTaggart: Composition of Gold from Southwestern British Columbia: A Progress Report.	387
1-29	Derek A. Brown and Michael H. Gunning: Geology of the Scud River Area, North-western British Columbia (104G/5, 6).	251	2-5	Henry Marsden and John M. Moore: Stratigraphic and Structural Setting of the Shasta Silver-gold Deposit, North-central British Columbia (94E).	395
1-30	J.M. Logan and V.M. Koyanagi: Geology and Mineral Deposits of the Galore Creek Area, Northwestern British Columbia (104G/3, 4).	269	2-6	James R. Clark and A.E. Williams-Jones: New K-Ar Isotopic Ages of Epithermal Alteration From the Toodoggone River Area, British Columbia (94E).	409
1-31	Jeffrey A. Phillipone and John V. Ross: Stratigraphy and Structure in the Twin Glacier – Hoodoo Mountain Area, Northwestern British Columbia (104B/14)	285	2-7	Colin I. Godwin, Janet E. Gabites and T.G. Schroeter: Galena Lead Isotopes of the Toodoggone Epithermal Gold Camp, North-central British Columbia (94E).	413
1-32	M.G. Mihalynuk, L.D. Currie and R.L. Arksey: The Geology of the Tagish Lake Area (Fantail Lake and Warm Creek) (104M/10W)	293	2-8	Jennifer Pell, Richard Culbert and Michael Fox: The Kechika Yttrium and Rare-earth Prospect (94L/11, 12 and 13)	417
1-33	M.A. Bloodgood, C.J. Rees and D.V. Lefebure: Geology and Mineralization of the Atlin Area, Northwestern British Columbia (104N/11W and 12E)	311	2-9	Anthony B. Christie: Cinola Gold Deposit, Queen Charlotte Islands (103F/9E).	423
1-34	JoAnne L. Nelson and John A. Bradford: Geology and Mineral Deposits of the Cassiar and McDame Map Areas, British Columbia (104P/3, 5)	323	2-10	Graham T. Nixon, Christopher H. Ash, James N. Connelly and Glen Case: Alaskan-type Mafic-Ultramafic Rocks in British Columbia: The Gnat Lakes, Hickman, and Menard Creek Complexes.	429
1-35	Tekla A. Harms: Geology of the Northeast Needlepoint Mountain and Erickson Mine Areas, Northern British Columbia (104P/4)	339			
1-36	H.E. Plint and P. Erdmer: Structure and Metamorphism in the Horseranch Range, North-central British Columbia (104P/2, 7, 10)	347			

TABLE OF CONTENTS *(Continued)*

		Page		Page
2-11	James L. Oliver and C. Jay Hodgson: Geology and Mineralization, Bearskin (Muddy) and Tatsamenie Lake District (South Half), Northwestern British Columbia (104K)	443	COAL STUDIES	
2-12	J.M. Peter: The Windy Craggy Copper-cobalt-gold Massive Sulphide Deposit, Northwestern British Columbia (114P)	455	4-1	D.A. Grieve: Numerical Depositional Modelling of the Elk Valley Coalfield (82G, J) 535
INDUSTRIAL MINERALS STUDIES			4-2	Candace Kenyon and Corilane G.C. Bickford: Vitrinite Reflectance Study of Nanaimo Group Coals of Vancouver Island (92F) 543
3-1	Jennifer Pell and Janet Fontaine: Fluorspar in British Columbia 469	469	4-3	Corilane G.C. Bickford: Geology, Mining Conditions and Resource Potential of the Wellington Coal Bed, Georgia Basin (92F/1; 92G/4) 553
3-2	G.V. White: Feldspar and Nepheline Syenite Potential in British Columbia 483	483	4-4	Corilane G.C. Bickford, Georgia Hoffman and Candace Kenyon: Coal Measures Geology of the Quinsam Area (92F) 559
3-3	G.V. White: Wollastonite Occurrences in British Columbia 489	489	4-5	W.E. Kilby: Tectonically Altered Coal Rank, Boulder Creek Formation (93P/3) 565
3-4	S.B. Butrenchuk: Gypsum in British Columbia (82G, J, 83E) 497	497	4-6	M.N. Lamberson and R.M. Bustin: Petrology, Sedimentology and Geochemistry of Gates Formation Coals, Northeastern B.C.: Preliminary Results (93P/3, 4; 931/13, 14) 571
3-5	M.E. MacLean: Mount Brussilof Magnesite Project, Southeast British Columbia (82J/13E) 507	507	APPLIED GEOCHEMISTRY	
3-6	Virginia V. Marcille: Industrial Zeolites in the Princeton Basin (92H) 511	511	5-1	Paul F. Matysek, Stephen J. Day and John L. Gravel: Applied Geochemistry Subsection: Highlights of 1988 Activities 579
3-7	P.B. Read: Miocene Stratigraphy and Industrial Minerals, Bonaparte to Deadman River Area Southern British Columbia (92I/14, 15; 92P/2, 3) 515	515	5-2	John L. Gravel and Paul F. Matysek: 1988 Regional Geochemical Survey, Northern Vancouver Island and Adjacent Mainland (92E, 92K, 92L, 102I) 585
3-8	K.C. Green and S. Trupia: Structure, Stratigraphy and Industrial Minerals in the Gang Ranch Area, Southern British Columbia (92O/8, 9) 519	519	5-3	Stephen J. Day and Paul F. Matysek: Using the Regional Geochemical Survey Database: Examples From the 1988 Release (104B, F, G, K) 593
3-9	C.E. Kilby, E. Van der Flier-Keller, B.D. Bornhold and J.V. Barrie: Nearshore Morphology and Heavy Mineral Deposits, Juan de Fuca Strait, Sooke to Port Renfrew (92B/5; 92C/8, 9) 525	525	5-4	W.K. Fletcher and Zhang Wenqin: Size Distribution of Gold in Drainage Sediments: Mount Washington, Vancouver Island (92F/14) 603
3-10	B.J. Thompson: Native Sulphur Occurrences in Devonian Evaporites, Northeastern British Columbia (094) 529	529		

TABLE OF CONTENTS *(Continued)*

		Page			Page
5-5	W.K. Fletcher: Preliminary Investigation of Platinum Content of Soils and Sediments, Southern British Columbia (82E/9, 92H/7, 10, 92I/14)	607	6-3	Robert G. Berman, Thomas H. Brown and Ernest H. Perkins: PTA System: A Software Package for Microcomputer Calculation and Display of Activity-Temperature-Pressure Phase Diagrams.....	621
DATA SYSTEMS			UNIVERSITY RESEARCH		
6-1	L.D. Jones: The Search and Report Power of MINFILE/pc.....	613	7-1	University Research in British Columbia.....	627
6-2	Z.A. Radlowski and A.J. Sinclair: LITHCHEM – Geological Database System: Recent Developments	619		Geological Survey Branch photograph	629
				Organization Chart	630