

## 1995 REGIONAL GEOCHEMICAL SURVEY PROGRAM: REVIEW OF ACTIVITIES

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### INTRODUCTION

Work conducted in 1995 as part of the Regional Geochemical Survey Program (RGS) included :

- The publication of previously unreleased instrumental neutron activation stream sediment analytical data from the Terrace (NTS 103I), Prince Rupert (NTS 103J) and Nass River (NTS 103O/P) map sheets.
- A reconnaissance-scale stream sediment and water survey in the Cry Lake map sheet (NTS 104I).
- A reconnaissance-scale stream sediment and water survey over parts of the western margin of the northern Rocky Mountain Trench (NTS 94L).
- The completion of a joint federal-provincial lake sediment and water survey in the northwest corner of the Fort Fraser map sheet (NTS 93K).

### 1995 RGS RELEASE (103I, J, O, P)

On June 2, 1995, RGS open files B.C. RGS 42 and 43 were published for NTS map sheets 103I/J and 103O/P. Originally conducted in 1978, the surveys involved the systematic collection of stream sediments and waters from over 3800 sample sites covering an area of approximately 32 000 square kilometres. The original survey results were published in 1979 and included analytical determinations for 13 metals in stream sediments, and uranium, fluoride and pH in stream waters. In the early 1990s the archived sediment pulps were analyzed using instrumental neutron activation for gold and 25 other metals. This new, previously unreleased information, together with original field and analytical data, was released as open files B.C. RGS 42 and B.C. RGS 43 (Matysek and Jackaman, 1995; Jackaman and Matysek, 1995).

These open file publications incorporated digital information on catchment basins which are used to improve RGS data integration with other polygonal and point databases, as well as enhance geochemical patterns and trends on hard-copy maps. Using results from the surveys, Matysek and Jackaman (1996, this volume)

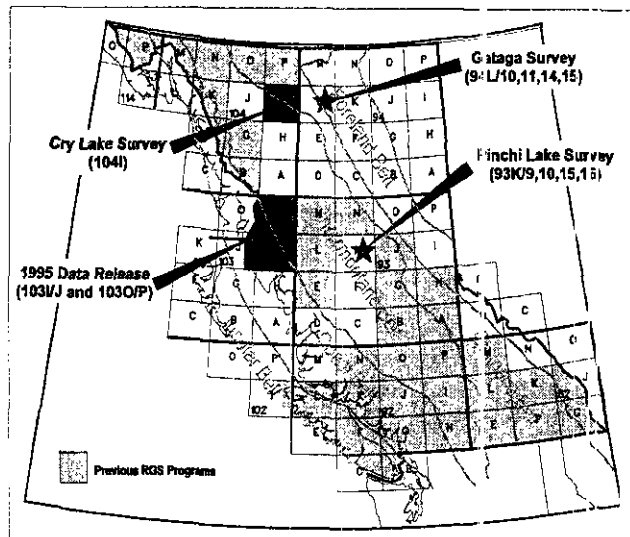


Figure 1. Location map of 1995 RGS projects.

present an example of how catchment basins can be used to identify and evaluate RGS anomalies. Digital data files of the catchment basin polygons have been included as part of each data package.

A total of 989 claim units were recorded from June to August 1995 in map sheets 103I, 103J and 103O/P. Although RGS anomalies were staked immediately following the release, numerous areas with anomalous concentrations of base and precious metals remain unstaked as of November 1, 1995.

### CRY LAKE SURVEY (104I)

Located to the east of Dease Lake, the Cry Lake map area (NTS 104I) is relatively unexplored and has significant potential for lode gold, porphyry copper-gold and base metal massive sulphide mineralization. Underlain by the Stikinia, Cache Creek and Slide Mountain terranes, the map area contains 107 recorded mineral occurrences including the Kutcho Creek massive sulphide deposit (MINFILE 104I, 1996).

McElhanney Consulting Limited (Vancouver) was selected by competitive bid to conduct a reconnaissance-scale regional geochemical survey during September, 1995. Stream sediment samples, stream water samples and field observations were systematically collected from 1159 sites over a total area of 13 200 square kilometres. Ministry representation by the senior author was maintained throughout the survey to ensure all aspects of sample collection, data recording, sample drying, packing

and shipping were in accordance with standards set by the National Geochemical Reconnaissance Program (Ballantyne, 1991). Stream sediment samples will be analyzed for precious and base metals, pathfinder elements and rare earths (Table 1). Stream water samples will be analyzed for pH, fluoride, uranium and sulphate. Survey results are expected to be released in the spring of 1996.

**TABLE 1. CURRENT RGS ANALYTICAL SUITE FOR STREAM AND LAKE SEDIMENTS**

Element	Analytical Method	Detection Limit	Unit
Antimony	AAS/INA	0.2/0.1	ppm
Arsenic	AAS/INA	0.2/0.5	ppm
Barium	INA	50	ppm
Bismuth	AAS	0.2	ppm
Bromine	INA	0.5	ppm
Cadmium	AAS	0.2	ppm
Cerium	INA	3	ppm
Cesium	INA	1	ppm
Chromium	INA	5	ppm
Cobalt	AAS/INA	2/1	ppm
Copper	AAS	2	ppm
Fluorine	ION	40	ppm
Gold	INA	2	ppb
Hafnium	INA	1	ppm
Iron	AAS/INA	0.02/0.01	%
Lanthanum	INA	0.5	ppm
Lead	AAS	2	ppm
LOI	GRAV	1.0	%
Lutetium	INA	0.05	ppm
Manganese	AAS	5	ppm
Mercury	AAS	10	ppb
Molybdenum	AAS/INA	1/1	ppm
Nickel	AAS/INA	2/20	ppm
Rubidium	INA	5	ppm
Samarium	INA	0.1	ppm
Scandium	INA	0.1	ppm
Silver	AAS	0.2	ppm
Sodium	INA	0.01	%
Tantalum	INA	0.5	ppm
Terbium	INA	0.5	ppm
Thorium	INA	0.2	ppm
Tungsten	INA	1	ppm
Uranium	INA	0.5	ppm
Vanadium	AAS	5	ppm
Ytterbium	INA	0.2	ppm
Zinc	AAS	2	ppm

## GATAGA SURVEY (94L/7, 8, 9, 10, 11, 14, 15)

Located in the Muskwa Ranges of the northern Rocky Mountains, the Gataga regional geochemical survey was conducted as part of a multi-disciplinary examination of this portion of the Kechika Basin (Ferri *et al.*, 1996, this volume), an area which is host to numerous

sedimentary exhalative barite-lead-zinc deposits. Conducted by Ministry personnel, the survey involved the systematic collection of stream sediment and water samples from 186 sites covering an area of 1200 square kilometres. Stream sediment analyses are listed in Table 1. Water samples will also be analyzed for trace and major elements by ICP-MS in addition to pH, fluoride, uranium and sulphate.

As part of a review of geochemical problems faced by mining companies currently exploring for base metal deposits in the Kechika Trough, other geochemical research conducted in the region included a detailed study of spring water chemistry and orientation work on known barite occurrences. These projects were initiated in the Driftpile Creek area of the northern Rocky Mountains during the 1994 field season (Lett and Jackaman, 1994).

## PINCHI LAKE SURVEY (93K/9, 10, 15, 16)

The Pinchi Lake regional lake sediment and water survey was conducted in October, 1995 over four 1:50 000 NTS map areas (93K/9, 10, 15, 16) in the northeast quadrant of the Fort Fraser map area. The survey was carried out jointly by the British Columbia Geological Survey Branch and the Geological Survey of Canada under the auspices of the Mineral Development Agreement (MDA). The survey area straddles a terrane boundary and is bisected by the Pinchi fault zone. To the northeast, early Mesozoic Takla Group rocks of the Quesnel Terrane have potential for porphyry copper-gold targets (Nelson *et al.*, 1991). To the southwest are late Paleozoic to early Mesozoic pelagic sediments, carbonates and ultramafic rocks of the Cache Creek Terrane (Ash and Macdonald, 1993). Felsic intrusive rocks of the Middle Jurassic Shass Mountain pluton (Bellefontaine, 1995) also outcrop in the extreme southwestern corner of the survey area.

Lake sediments and waters were obtained from 413 sites at a sampling density of approximately one site per 9.1 square kilometres. Lake sediment analyses are listed in Table 1. Waters will be analyzed for pH, uranium, fluoride and sulphate. As well, an additional lake water sample was collected at every second site for ICP-MS analysis of trace and major elements.

The Pinchi Lake survey is a contribution to the ongoing Regional Geochemical Survey (RGS) lake sediment coverage of the northern Interior Plateau, providing baseline geochemical data for mineral exploration and environmental studies. Previous surveys in the Nechako River map area (NTS 93F; Cook and Jackaman, 1994) to the south, conducted in 1993, were successful in delineating areas of known mineralization and in revealing locations of new mineralized zones such as the Tsacha gold prospect. In addition, baseline regional data on the distribution of mercury in lake sediments along the Pinchi fault zone should provide valuable information on the natural concentration range of mercury in the environment. The data release is scheduled for summer, 1996.

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## NOTES