



**1985 ORIENTATION SURVEY
A FOLLOW UP OF TWO 1984 REGIONAL GEOCHEMICAL SURVEY
GEOCHEMICALLY ANOMALOUS DRAINAGES BY
PANNED STREAM SEDIMENT AND SILT SAMPLING
BLACKWATER MOUNTAIN AREA (93G/2)**

**AND
CLEAR MOUNTAIN AREA (93H/6)**

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INTRODUCTION

The purpose of this follow-up survey was to compare the usefulness of silt sampling versus panned stream sediment sampling. The method of the study was to follow up two separate geochemically anomalous drainages discovered during the 1984 Regional Geochemical Survey (British Columbia Regional Geochemical Survey 12, Geological Survey of Canada Open File 1107) with panned stream sediment and silt sampling.

The two geochemically anomalous drainage basins chosen have diverse geology and potential for several deposit types. One basin was thought to have potential for hosting precious metal deposits, the other, base metal deposits with associated precious metal values. As well, there were no mineral claims and no assessment work had been recorded in these areas.

BLACKWATER MOUNTAIN AREA (93G/2)
(Figs. 16-1, 16-2)

A creek draining the eastern flank of the Blackwater Mountain area contains silts which are geochemically anomalous (greater than the 95th percentile) in copper, molybdenum, zinc, silver, cadmium, nickel, and cobalt. The area is underlain by rocks of the Pennsylvanian and Permian Cache Creek Group. The geochemical expression suggests that the area has potential for oceanic-type, mafic volcanic hosted base metal deposits with precious metal values.

CLEAR MOUNTAIN AREA (93H/6)
(Figs. 16-3, 16-4)

Dominion Creek drains the western flank of Clear Mountain. Stream silt samples from this drainage are geochemically anomalous (greater than the 95th percentile) in lead, cobalt, iron, arsenic, and antimony.

The area is underlain by rocks of the Hadrynian Yankee Belle, Cunningham, and Isaac Formations, and the Miette Group. The Isaac Formation underlies a large portion of the historically important gold-producing area of Wells-Barkerville. As well, Dominion Creek lies along what appears to be a northwesterly trending structure which shows up clearly on some of the Regional Geochemical Survey geochemical trend maps, for example, the arsenic map. The target is a precious metal deposit.

FIELD AND ANALYTICAL METHODS

Silt sampling, data recording, sample preparation, and analytical work were carried out according to standard Regional Geochemical Survey methods (British Columbia Regional Geochemical Survey 12, Geological Survey of Canada Open File 1107; Geological Survey of Canada Paper 74-52).

Panned concentrate sampling involved 10 mesh (2 millimetres) wet sieving of stream sediment material until two gold pans were filled, then panning the sediment down to a constant volume which was equal to one-tenth of the original sample.

In preparation for analysis the panned concentrate sample was passed through a heavy liquid separation (specific gravity 2.96). Sink material was separated into magnetic and non-magnetic fractions using a handheld magnet. The non-magnetic fraction was pulverized to 100 mesh and submitted for analysis.

DATA

Statistical data from 1984 Regional Geochemical Survey 12 indicate that silts collected from the Blackwater Mountain and Clear Mountain areas have the following geochemical values for the 95th percentile:

**Blackwater Mountain Area
Cache Creek Group**

Cu.....	65.0 ppm
Mo.....	2.0 ppm
Zn.....	180.0 ppm
Ag.....	0.2 ppm
Cd.....	2.0 ppm
Ni.....	99.0 ppm
Co.....	21.0 ppm

**Clear Mountain Area
Miette Group**

Pb.....	23.0 ppm
Co.....	25.0 ppm
Fe.....	5.5 per cent
As.....	15.0 ppm
Sb.....	0.6 ppm

**Yankee Belle, Cunningham, and
Isaac Formations**

Pb.....	21.0 ppm
Co.....	18.0 ppm
Fe.....	4.3 per cent
As.....	15.0 ppm
Sb.....	0.5 ppm

Sample locations and analytical results from the 1985 follow-up survey are plotted on Figures 16-1 to 16-4. Analytical results are presented in Table 16-1.

RESULTS

In the Blackwater Mountain area results from the silt and panned stream sediment sampling surveys indicate a possible zonation from south to north of the following geochemical values: nickel-cobalt to copper-molybdenum-zinc-silver-cadmium-nickel-cobalt to silver-gold.

Insufficient data preclude the determination of statistical values for gold. However, interesting gold values were obtained from the silts and panned stream sediment samples collected in the extreme northern portion of the area. These silt samples contain gold values ranging between 10 and 340 parts per billion. Only two of these silts contain geochemical values equal to the 95th percentile. Panned stream sediment samples collected in this area have gold values ranging from less than 10 to 21 000 parts per billion.

In the Clear Mountain area results from the silt and panned stream sediment sampling survey indicate geochemically anomalous values that increase toward the geological contact that separates the Miette Group from the Yankee Belle, Cunningham, and Isaac Formations.

CONCLUSIONS

The Blackwater Mountain area contains a zonation of anomalous geochemical values from south to north of nickel-cobalt to copper-molybdenum-zinc-silver-cadmium-nickel-cobalt to silver-gold. The geochemical signature is expressive of a mafic volcanic hosted deposit with precious metal values.

The panned stream sediment survey reflected the results obtained by the silt survey. However, panned stream sediment sampling proved useful in delineating an area of high geochemical gold values in the Blackwater Mountain area, which is not as apparent in the silt survey. A panned stream sediment survey would be useful in outlin-

ing areas of anomalous gold values discovered during regional silt sampling surveys or as a follow up to anomalous pathfinder elements. The latter were the basis of this study.

Regional silt sampling surveys are a quick and cost-effective method of testing the potential of a catchment basin for hosting base metal deposits. Gold results were too vague to determine the usefulness of standard silt sampling when testing an area for gold mineralization.

The Clear Mountain area contains a linear zone that is geochemically anomalous in lead-cobalt-iron-arsenic-antimony. This zone parallels the contact between the Miette Group and the Yankee Belle, Cunningham, and Isaac Formations. This survey is an example where the pathfinder elements arsenic and antimony did not indicate gold mineralization. The anomalous iron content may have scavenged the geochemically anomalous elements.

RECOMMENDATIONS

More research is required to determine if silt sampling is a viable method of testing an area for gold mineralization.

Possibly Regional Geochemical Survey silts collected in areas either suspected of containing gold mineralization or known to contain anomalous pathfinder elements should be analysed for gold. An alternative is to return to these areas and conduct a panned stream sediment survey.

More orientation surveys are needed to determine the most cost effective method of testing areas for gold mineralization. Variables should include field methods and laboratory techniques.

Sample location notes and summary statistics contained in the Regional Geochemical Survey open file reports should be studied prior to conducting follow-up programs.

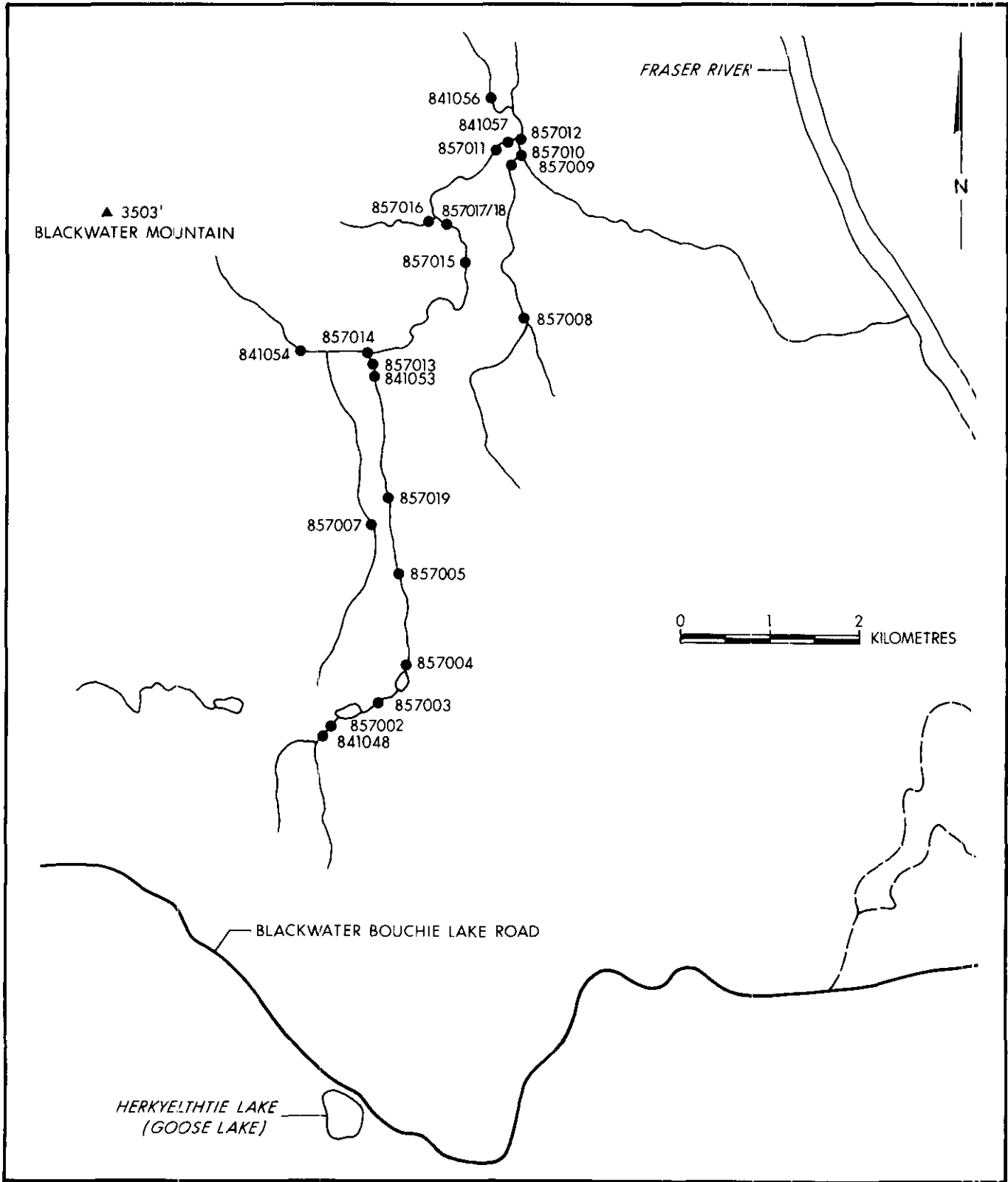


Figure 16-1. Sample locations, Cottonwood Canyon (93G/2).

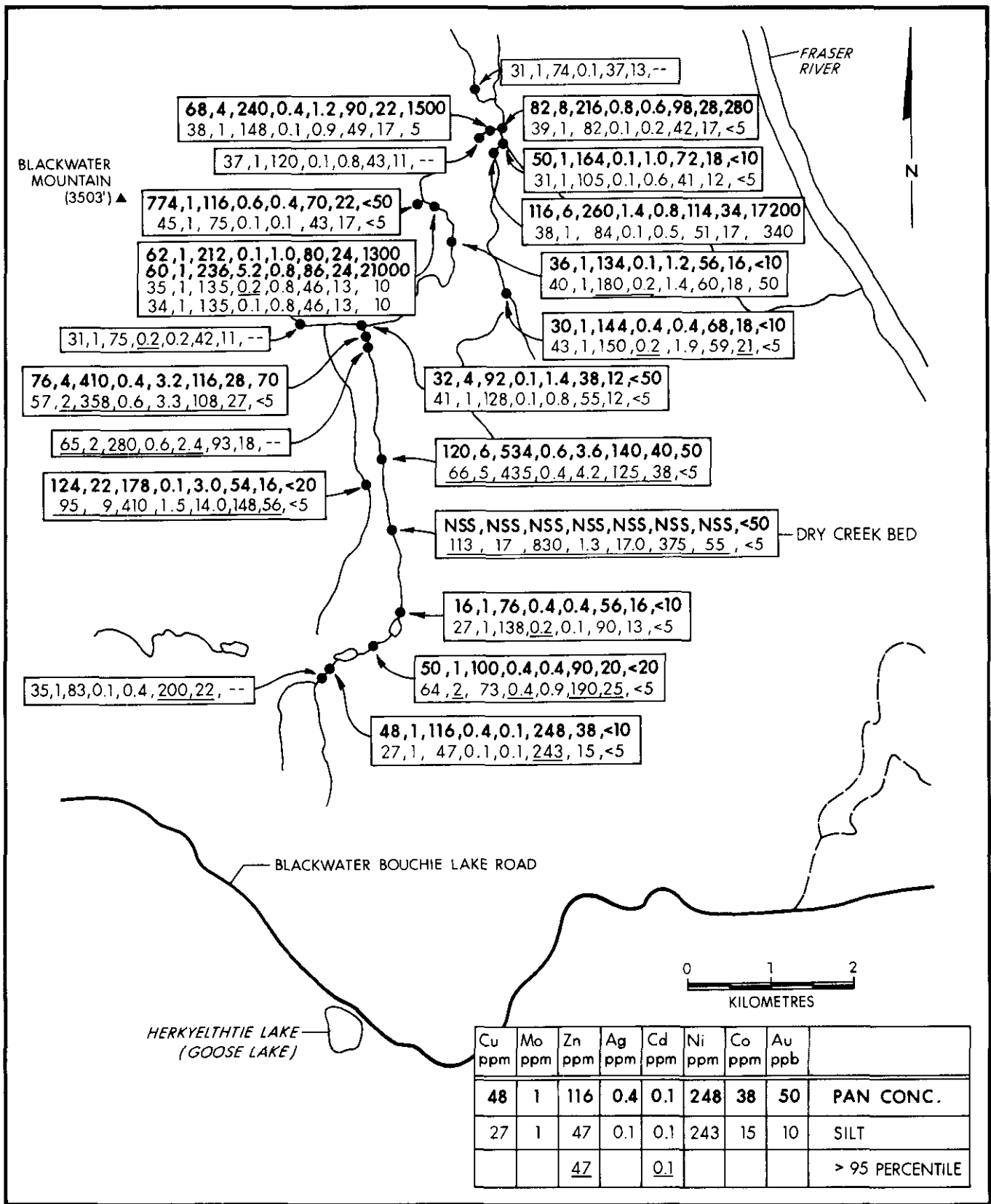


Figure 16-2. Assay data, Cottonwood Canyon (93G/2).

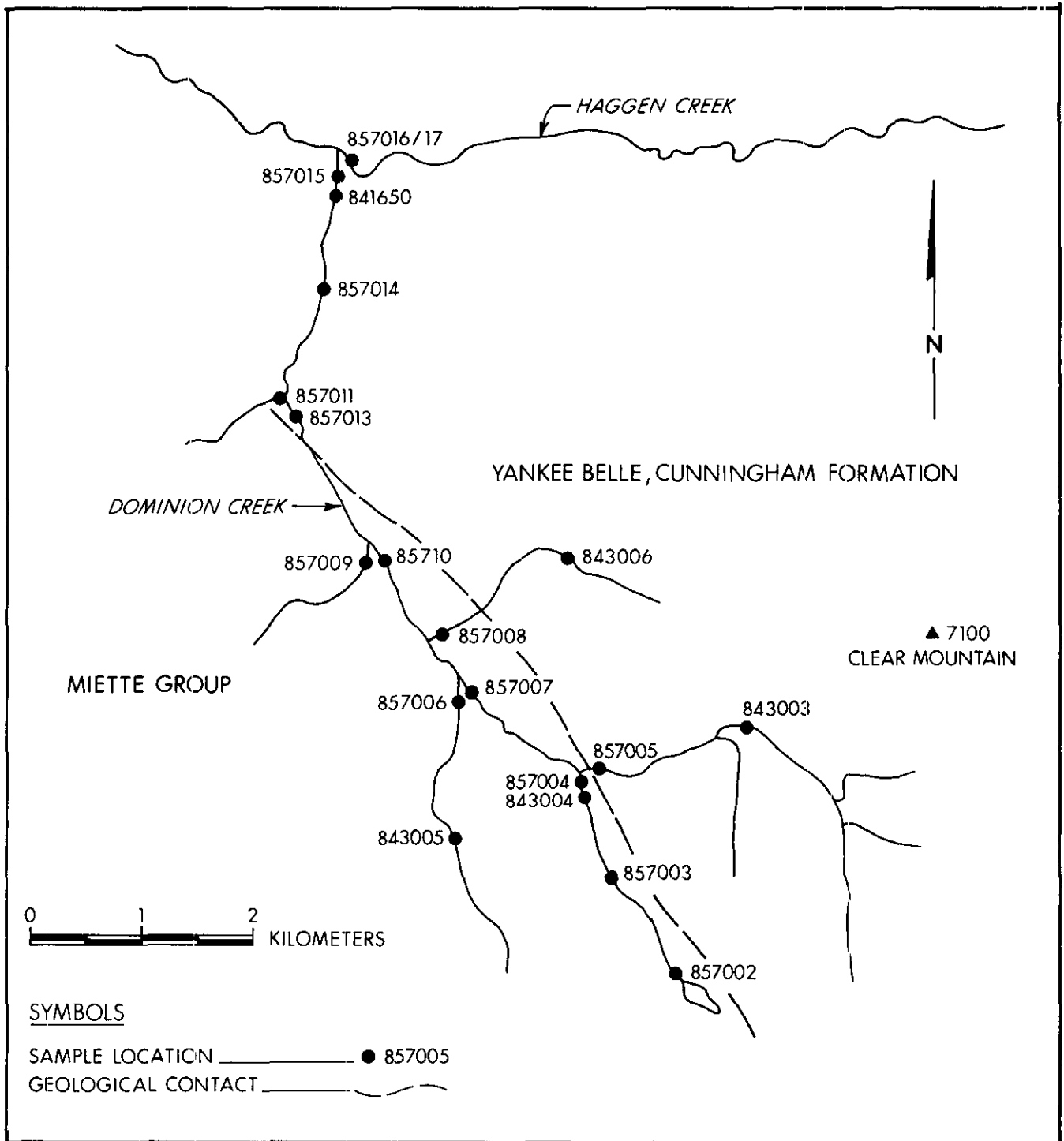


Figure 16-3. Sample locations, Dominion Creek, Indianpoint Lake (93H/6).

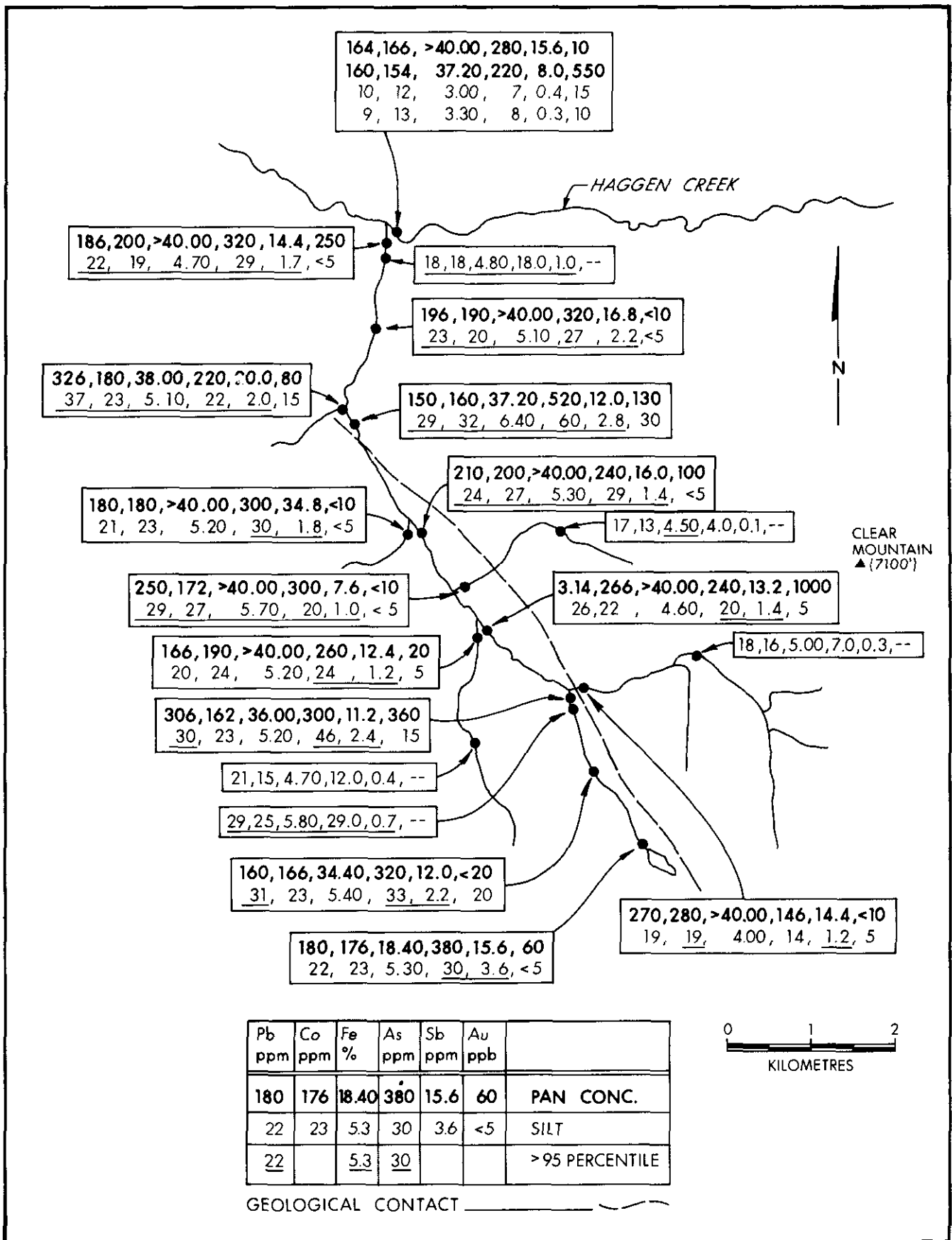


Figure 16-4. Assay data, Dominion Creek, Indianpoint Lake (93H/6).