

2827

GEOCHEMICAL REPORT

AXE AND SKI GROUPS

Similkameen Mining Division, B. C.

by

T. N. Macauley, P. Eng.

January 15, 1971

Claims: Axe #1 to #16, Ski #1 to #4

Location: 10 miles south of Princeton, B. C.
 Lat. 49° 20' N, Long. 120° 35' W
 N.T.S. 92 H/7 E

Claims owned by: Kalco Valley Mines Ltd.

Work done by: Newmont Mining Corporation of Canada Limited

Work done between: November 2, 1970, and January 15, 1971.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2827 MAP

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MAPS

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Geochemical Map	In Pocket

INTRODUCTION

A geochemical soil survey for copper was conducted on the AXE and SKI claim groups under the supervision of the writer between November 2 and 8, 1970. Although the two groups are separated by a 1400' gap, the results of the survey are presented on one map to show the reader the relative positions of the two groups and to facilitate the comparison of results. However, the time spent and the costs of performing the survey on the two groups have been kept separate for assessment purposes (see Appendix).

It should also be noted that several lines of samples on the AXE group, designated on the accompanying map, have been taken from a previous survey. There was no need to duplicate this work, and the older results are shown here to give complete coverage to the property. The costs of this older work are not included in the costs of the present survey.

For information regarding size of the property, claim boundaries, exploration history, geology, and mineralization, the reader is referred to the Geological Report being submitted by the writer concurrently with this report. It is sufficient to say here that all of the SKI group and most of the AXE group are underlain by volcanic and sedimentary rock of the Nicola Group of Late Triassic age, the same group that contains the important copper deposits of Similkameen Mining Co. Ltd. on the property adjoining to the east. The following sections on Location and Access, and Topography and Overburden are taken from that report.

The claims upon which the survey was conducted are owned by Kalco Valley Mines Ltd. and are under option to Canmont Mining Properties Ltd. (a wholly-owned subsidiary of Newmont Mining Corporation).

LOCATION AND ACCESS

The property is located in the southern interior of British Columbia, 10 miles south of the village of Princeton, at lat. 49° 20' N, long. 120° 35' W (see Fig. 1). It lies on Kennedy Mountain, which forms a broad spur between the valleys of the Similkameen River and Whipsaw Creek. This area is in the Similkameen Mining Division. The Ingerbelle orebody of Similkameen Mining Co. Ltd. lies about one mile to the east of the AXE group.

Access to the property is achieved by driving 13 miles south from Princeton on Highway 3, then northwards on the Kennedy Lake road which bounds the AXE group on its east side. Access to the SKI group is by walking 1600 feet west from Kennedy Lake, or alternatively by the Whipsaw Creek road.

TOPOGRAPHY AND OVERBURDEN

The AXE group consists of gently sloping, hummocky land lying between 3750 and 4100 elevations on top of Kennedy Mountain. Drainage is mainly subsurface; no streams exist on the property. A few grassy swamps would hold water in the spring of the year. Forest cover consists mainly of jack pine and fir. The owner of surface lot 889, P. Duttonhoffer, lives in

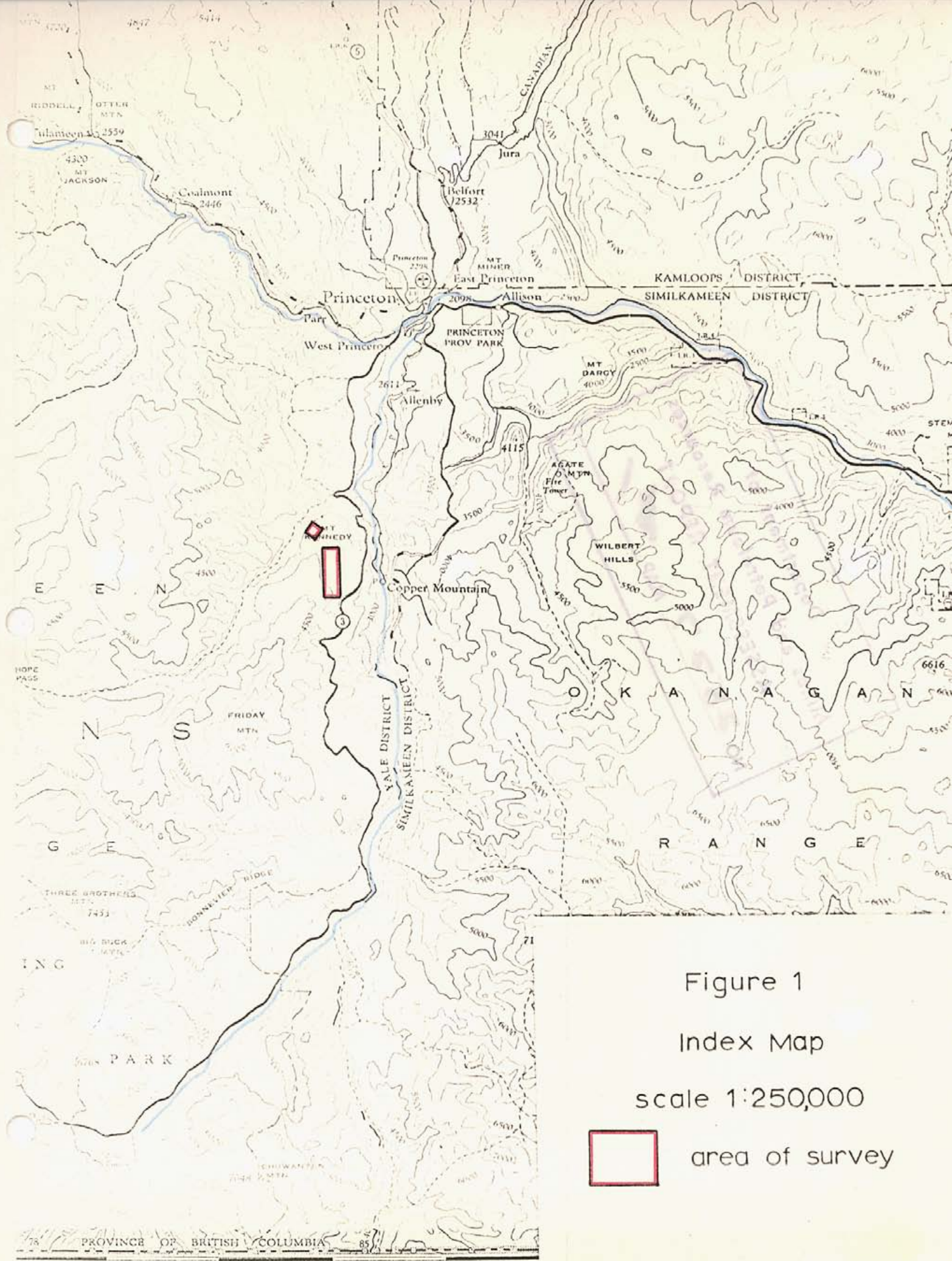


Figure 1

Index Map

scale 1:250,000



area of survey

his house on AXE #3 claim.

Overburden cover on the AXE group is extensive. It consists mainly of grey glacial till containing rounded pebbles and cobbles. It is probably only a few feet thick on the central portion of the property, but to the south on AXE 12 to 16 it is much thicker. The two percussion holes appeared to be still in till when stopped at 85 and 90 feet. Areas of angular rubble found mainly on gully walls are very likely indicative of the underlying rock type.

The SKI group lies on the moderately sloping west flank of Kennedy Mountain. Elevations range from 2920 at Whipsaw Creek to 3880 at the brow of the hill. No water runs in the gully shown on the map. Forest cover consists of fir, spruce and pine. Overburden consists mainly of grey-brown sandy loam, with relatively few outcrops or rubbly areas showing through. Thicknesses are probably not greater than 5 or 10 feet in most places. Several small terraces (less than 100 feet wide) of river gravels occur at lower elevations near Whipsaw Creek.

FIELD PROCEDURE

The control for the survey of the AXE group was provided by a set of E-W picket lines 400 feet apart that was already existing on the property. The location line of the claim group was used as the base line, and it has an average bearing of N 6° W. These lines are several years old, and some of the samplers' time was spent in re-establishing the grid and remarking the pickets. Several uncut lines were run by chain and compass. Lines at 96 + 00 N and the eastern half of 92 + 00 N were purposely omitted because they coincided with (a) a large swamp, or (b) the various buildings and farm-yard of the Kennedy Lake ranch, where the soils could be disturbed or contaminated.

Control for the SKI group was achieved by running a compass line N 65° W along the boundary between SKI #1 - 3 and SKI #2 - 4. Compass lines 400 feet apart were then marked out by blazing and flagging.

Soil samples were taken at 200 foot intervals along lines 400 feet apart. At the sample point a hole was dug with a mattock to a depth of 8 or 10 inches. The hole was then cleaned out and a sample taken from the bottom of it with a stainless steel trowel. Samples were placed in 3-1/2" x 6" Kraft paper envelopes, which were folded shut and shipped to Vancouver for analysis. The soils at the time of sampling were damp.

The soil profile, as observed in the sample holes, consisted of 1" to 3" of dark humus on top, underlain by light grey to light brown soil. No signs of a leached (A2) horizon or an enriched (B) horizon were seen.

LABORATORY PROCEDURE

The soil samples were analyzed at Crest Laboratories (B.C.) Ltd. in Vancouver. They were dried in their envelopes and then sieved through a

non-metallic screen. A one gram portion of the -80 mesh fraction was digested in hot $\text{HClO}_4 - \text{HNO}_3$ and then diluted to 25 ml. The copper content was then determined by atomic absorption (instrument Techtron "AA-5").

RESULTS AND INTERPRETATION

The copper content of the soil samples is plotted on the accompanying map at a scale of 1" = 400'. As the soil types on the two claims are different, these two areas are discussed separately.

AXE Group

Of the 165 samples taken on this group during the present survey, 152 (92%) contained 10 to 39 ppm Cu, nine samples (6%) contained 40 to 69 ppm, and four samples (2%) contained 70 to 100 ppm.

The background values of the older survey are slightly higher than the present survey, and it is thought that this might be caused by a slightly greater sample depth. In this older survey, sample holes were dug to a depth of 24" - 30" and two samples were taken. The upper sample has been plotted here, but its exact depth is not known. Profile sampling in nine of these holes showed that copper content increased from 10-20 ppm near surface to 30-50 ppm at the bottom. The results of these two surveys are therefore not directly comparable.

The samples containing higher amounts of copper do not form any good pattern, and the results are generally low for an area so near a major copper district. The chief problem in interpretation is the transported overburden. Pebbles and cobbles in the glacial till are rounded to sub-angular and of many types, although Nicola rocks predominate. Some of these pebbles and cobbles are in various stages of disintegration and could account for some of the anomalous values. It can also be seen that the few higher samples (greater than 70 ppm Cu) are in or near outcrop areas on AXE 6, 8 and 10, and here the soils probably reflect trace amounts of copper released in the erosion or weathering of the nearby bedrock.

In some places it can also be seen that the higher copper values are related to soil type and topography. For instance, on L 24 W, the sample at 12 W (76 ppm) is from a clay near the base of a broad gully. At 8 E (56 ppm) on the same line the sample is noted to contain organic material and is located at the bottom of a gully. The next sample at 10 E (50 ppm) is from a clay. Samples such as these represent collection of trace amounts of copper from groundwater seepage.

SKI Group

Of the 95 samples taken on this group, 73 (77%) contained 12 to 39 ppm Cu, 14 (15%) contained 40 to 69 ppm, and 8 (8%) contained 70 to 680 ppm. The limits of these three categories have been selected by inspection, and

the following explanations are made from the writer's observations of soil type, topography, bedrock geology and mineralization.

As previously mentioned, the predominant soil type on this group is a light grey to light brown sandy loam. Some clayey soil was noted in a few places. The soil contact with the bedrock is sharp and all of this sandy soil was likely deposited from glacial lake waters. The copper content of these soils, and also the river gravel terraces on L 24 W, is usually 12 to 39 ppm.

The soils lying on or near bedrock carry varying amounts of angular rock chips and often are a darker brown colour. The samples in the 40 - 69 ppm category are of this type. The low copper content of the rubbly soil at the SE corner of the property on lines 0 and 4 W reflects either or both of (a) the lower copper content in the argillite versus the other rock types, or (b) the topographic position of this area on top of the hill where there would be very little copper deposited from the downhill percolation of groundwater. Samples taken at L 16 W - 6 N, L 12 W - 4 N, L 4 W - 1 S are in a gully and could represent added amounts of copper from seepage.

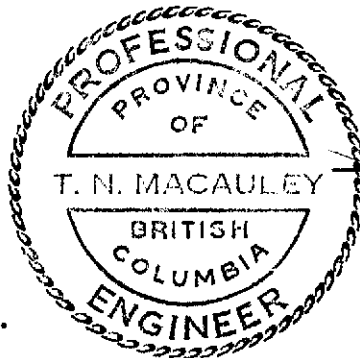
Most of the samples containing more than 70 ppm Cu are related to bedrock containing visible copper mineralization. On L 4 W at 5 N to 9 N are outcrop, talus and rubble of andesite mineralized unevenly with trace to 2% pyrrhotite, and a very rare trace of chalcopyrite.

At the north end of L 24 W the sample point is about 50 feet higher and 75 feet south of Whipsaw Creek, and is just below an old pit in the hillside. The soil is a rich brown colour with much intermixed rubble. Bedrock and blocks of greenish Nicola volcanics contain 2 or 3% pyrrhotite, < 1% pyrite and < 1% chalcopyrite. At 100 feet to the south darker volcanics contain 3% pyrite. No malachite was seen around here. Similar mineralization in bedrock covered with a little deep brown rubbly soil at L 24 W - 8 S yielded 680 ppm Cu in the soil sample. The effect of narrow river terraces is seen in the low samples on L 24 W at 8 N to BL, 6 S, 10 S and 12 S. Rubbly soils occur at 2 S and 4 S. Only at 14 S is nearby mineralized bedrock not detected in the overlying soil.

From the foregoing it is seen that contouring of geochemical values and predicating trends of mineralization are not warranted.

Vancouver, B. C.

January 15, 1971.



T. N. Macauley
T. N. Macauley, P. Eng.

APPENDIX

STATEMENT OF COST - AXE GROUP

<u>Charges</u>	<u>Dates</u>	<u>Man Days</u>	<u>Cost/ Man Day</u>	<u>Cost</u>
S. W. Barclay	Nov. 5, 6, 7, 8, 1970	4	\$41.00	\$164.00
G. Wright	Nov. 4, 5, 6, 7, 8	5	41.00	205.00
T. N. Macaulay	Nov. 16 (1/2), Jan. 8, 11, 13 (1/2)	3	75.00	225.00
Room and Board for Barclay & Wright		9	13.50	121.50
Transportation - Jeep vehicle		5	10.00	50.00
Analysis		165 samples @	1.10	181.50
Report and Map Preparation (Typing, Printing, etc.)				49.65
TOTAL COST				\$996.65

Declared before me at the *City*, in the
of *Vancouver*, Province of British Columbia, this *22nd*
day of *January*, 1971, A.D.

T N Macaulay

W Phillips
A Commissioner of the Mines and Geology in British Columbia or
A Notary Public in the Province of British Columbia. **SUB-MINING RECORDER**

APPENDIX

STATEMENT OF COST - SKI GROUP

<u>Charges</u>	<u>Dates</u>	<u>Man Days</u>	<u>Cost/ Man Day</u>	<u>Cost</u>
S. W. Barclay	Nov. 2, 3, 4, 1970	3	\$41.00	\$123.00
G. Wright	Nov. 23, 1970	2	41.00	82.00
T. N. Macauley	Jan. 12 (1/2), 1971	1/2	75.00	37.50
Room and Board for Barclay and Wright		5	13.50	67.50
Transportation - Jeep vehicle		2	10.00	20.00
Analysis		95 samples @	1.10	104.50
Report and Map Preparation (Typing, Printing, etc.)				12.40
TOTAL COST				<u><u>\$446.90</u></u>

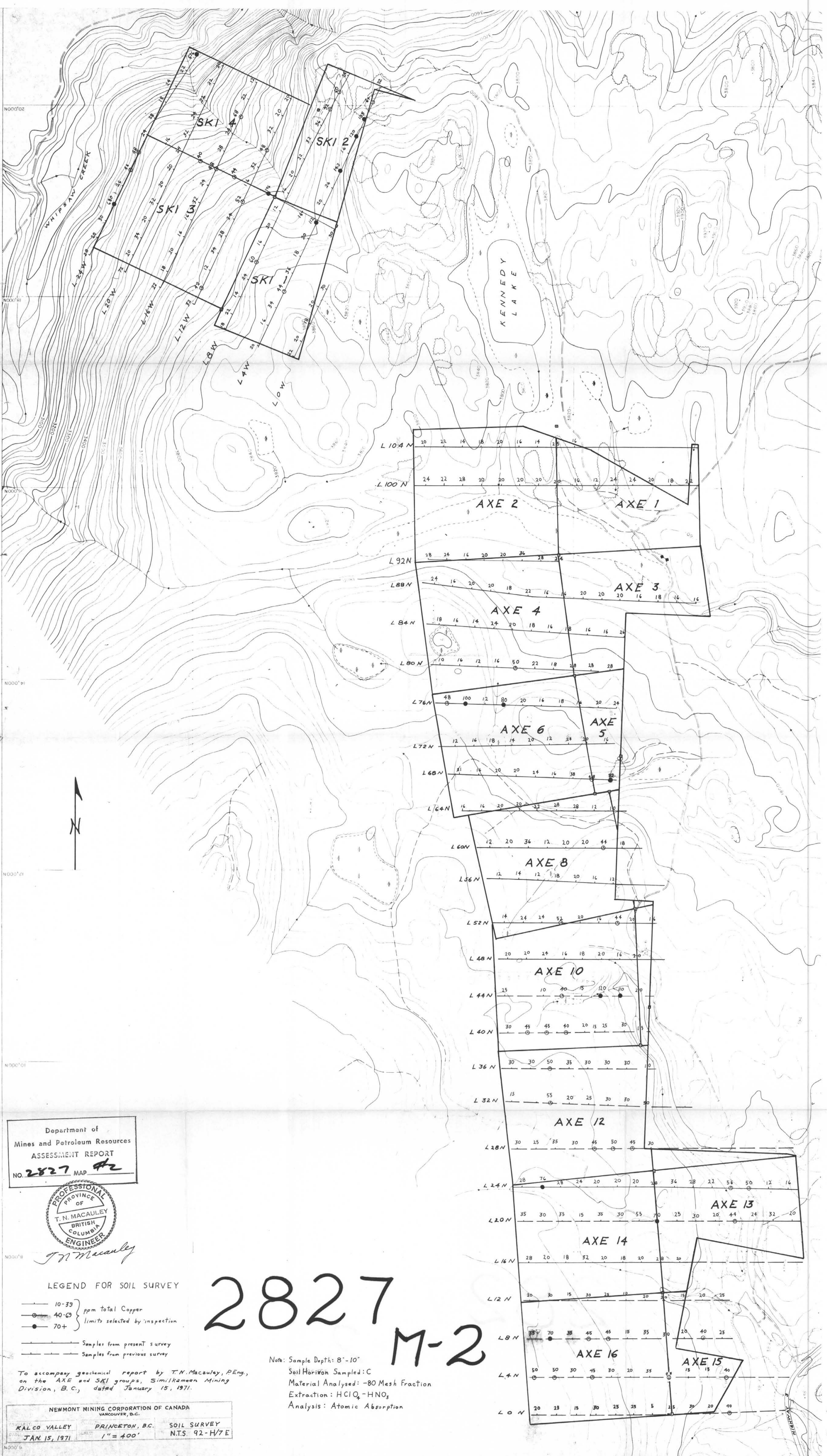
Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 22nd
day of January 1971, A.D.

T N Macauley

S. Phillips

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

SUB-MINING RECORDED



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2827 MAP #2



T.N. Macauley
Professional Engineer

LEGEND FOR SOIL SURVEY

- 10-39 } ppm total Copper
- 40-63 } limits selected by inspection
- 70+ }
- Samples from present survey
- Samples from previous survey

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M-2

To accompany geochemical report by T.N. Macauley, P.Eng., on the AXE and SKI groups, Similkameen Mining Division, B.C., dated January 15, 1971.

Note: Sample Depth: 8"-10"
Soil Horizon Sampled: C
Material Analysed: -80 Mesh Fraction
Extraction: HClO₄-HNO₃
Analysis: Atomic Absorption

NEWMONT MINING CORPORATION OF CANADA
VANCOUVER, B.C.
KALCO VALLEY PRINCETON, B.C. SOIL SURVEY
JAN 15, 1971 1" = 400' N.T.S. 92-H/7E