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REPORT
on the
Copper Property
of
ALVIJA MINES LTD. (N.P.L.)
Terrace Area
Omineca Mining Division
British Columbia

by
R.W. PHENDLER, B.Sc., P.Eng.

Vancouver, B.C.

June 16th, 1969.



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FRASER Scale 1" = 39 Miles

Not suitable for trailers through Tweedsmuir Park

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Maps accompanying report: Location Map - 1" = 39 miles.
Vertical Section - D.H. A3 - 1" = 40'
Drill Hole Map - Mineral Zone - 1" = 100'

References: Memoir 329 - Geological Survey of Canada
"Geology of Terrace Map Area, British Columbia -
S. Duffell and J.G. Souther.

SUMMARY

The Alvija Mines property lies twenty miles east of Terrace, B.C., on Bornite ridge.

Disseminated copper minerals are associated with a shear zone that strikes N.40°W and dips about 60°W. The shear zone is traceable for 260' on surface in the fine to medium-grained andesite. Widths vary between eight feet and twenty-seven feet on the surface.

Low grade disseminated mineralization is found to be associated with the principal structure and up to 200' to the west.

Diamond drilling in 1968 totalled 1042 feet with four holes drilled. The principal and 3 additional mineralized zones were intersected in depth with assays in the 1% Cu range across widths of 25-35'. Results warranted additional drilling along strike in both directions and down dip as well.

In 1969, diamond drilling was carried out with 1462' completed in three holes. Two holes indicated that the mineralized zone does not extend to the northwest and the third, within the mineralized zone, showed that all four zones are continuous with slightly less encouraging results than the 1968 drilling.

Assay results, combined with width of mineral intersections from the diamond drilling, indicate that with a slight improvement either in depth or along strike, the zones could be commercial. The continuity of the four mineral zones is impressive and the presence

of lamprophyre dykes suggests a throughgoing shear zone that can be expected to be mineralized in part.

Down-dip drilling is warranted, as is the exploration of two additional, newly discovered, mineral showings.

A total of 2500 feet of drilling is recommended at an estimated cost of \$32,000.

INTRODUCTION

The property of Alviija Mines Ltd. contains four mineralized zones within a host rock of medium to fine-grained andesite. The principal shear zone contains disseminations of chalcopyrite (minor), tetrahedrite and bornite across 8-27'. It can be traced on surface for 260'. Surface samples were in the 3.50-8.40% Cu range but appreciable enrichment is suspected.

Surface diamond drilling indicated continuity of the mineralized zones but also a somewhat erratic nature.

Additional mineral showings were discovered in 1969; these warrant exploration.

SCOPE

The property was visited by the writer on August 10 and 11, 1968, and March 14, 1969, in the presence of Mr. Ivan Todd, President of Alviija, for the purpose of surface geological mapping, sampling and the locating of diamond drill holes.

Most diamond drill core from the 1968 and 1969 programs has been examined by the writer. The remainder was examined by Mr. G. White, Consultant.

LOCATION AND ACCESS

The claims are located twenty miles from Terrace, British Columbia on Bornite ridge, at an elevation of 2000'. Access is by Highway 16 and then a moderately good logging road is followed for thirteen miles up Kleanza Creek to the property. Topography is relatively sharp and timber is heavy.

Four all-weather cabins on the property can accommodate twelve men.

Coordinates are as follows: Longitude - 129°15'W
Latitude - 54°35'N

HISTORY

In the Terrace area placer gold deposits were worked as early as 1884, but only on a small scale.

Mineral claims on lode deposits were first staked in 1893 near Usk and by 1910 there were about 200 claims staked on deposits containing gold, silver and copper. In 1914 prospecting had reached further afield and copper deposits were discovered near the head of Kleanza Creek in the vicinity of the Alviija Mines property.

For the next 15 years, small-scale mining operations were carried out and some new discoveries were made. Among these, it is believed, were the original workings on the Alviija property, consisting of trenching and two adits. The Consolidated Mining and Smelting Company is reported to have done the work.

Little was done in the area until 1933 when the Columario Consolidated Gold Mines Ltd. developed their property on Bornite Mountain.

This operation lasted until 1935 and, since then, a few other small exploratory operations have taken place.

Exploratory work on the Alvija property commenced in 1967 and each season additional development has been carried out.

PROPERTY AND OWNERSHIP

The mineral showings are covered by 108 claims presently controlled by Alvija Mines Ltd. Twenty-two are under option from the following group - Mr. John Greer, Mr. Martin Liver, Mr. Joe Felber and the estate of the late Mr. Jack McCulloch - all of the Terrace area - and Mr. Ivan Todd of Vancouver.

The remaining 86 claims were staked by Alvija Mines Ltd. subsequent to the original option agreement.

GEOLOGY

The Terrace map area is on the eastern contact of the Coast Range batholith. The flanking, metamorphosed sedimentary and volcanic rocks range in age from late Paleozoic to early Cretaceous.

The andesite volcanics in which the Alvija showings occur are of the Hazelton group of Mesozoic age. These andesites are of remarkably uniform composition and comprise over 80% of the upper section of the Hazelton group. To a lesser extent, the volcanics are made up of basaltic, dacitic, and rhyolitic flows and some andesitic breccia. These rocks are commonly bright in colour, being green, grey-green, red, purple, white and rarely black.

Almost without exception the andesite flows are porphyritic, the phenocrysts being white feldspar or dark green pyroxene. Flow structure is poorly developed.

Light purple, red and salmon-pink rhyolites and trachytes are found in the area under discussion and are generally more favourable than the andesite for mineral deposition. Epidotization is widespread.

MINERAL DEPOSITS

Most of the mineral deposits that occur in the volcanic rocks of the Hazelton group are copper, consisting of quartz veins or disseminations that have formed in faults, shear zones and other openings and along the margins of dykes.

The Alviija mineralization consists of specks, blebs and disseminations of tetrahedrite, bornite and chalcopyrite within sheared and fractured trachytes and andesites.

Lamprophyre dykes have been recognized in the diamond drill core. The dykes themselves are not economically important but open spaces along their borders - due to fracturing, either contemporaneous with or subsequent to emplacement - have formed the loci of mineral deposition.

Veins and shear zones in the vicinity of the Alviija showings generally strike northwest and dip 45° to 60° SW, but a few diverge from this pattern.

The Principal showing has been traced on surface for 260'. Difference in elevation between the showings is about 200' and widths are estimated to average 20'.

Samples taken by the writer in 1968 across the Principal showing are as follows:

<u>Sample No.</u>	<u>% Cu</u>	<u>Oz. Ag</u>	<u>Width</u>	<u>Location</u>
1	3.50	2.10	14.0'	North end.
2	8.40	4.00	27.0	80' S of sample 1.
3	1.30	0.70	4.0	Face of lower adit.
4	5.90	2.00	8.0	15' above top adit.
5	7.00	2.30	6.0	Winze area, top adit.

The following samples were taken 150-200' west of the shear zone and appear to represent disseminations weakly associated with the shear:

<u>Sample No.</u>	<u>% Cu</u>	<u>Oz. Ag</u>	<u>Width</u>	<u>Location</u>
6	0.34	0.14	45.0'	200' W of top adit.
7	0.60	0.30	12.0	180' W of top adit.

Two adits have been driven on the southeast limit of the Principal showing. Samples in the 1% Cu range have been taken from the lower adit, which is 130 feet long. The upper adit is somewhat shorter and a short winze has been sunk on the mineralization. It is presently water-filled.

GEOCHEMICAL

A geochemical survey carried out by Alrae Explorations Ltd. in 1967 clearly outlined the copper mineralization in the vicinity of the Principal showing. An anomalous area 800' by 600' was shown to exist - with obvious downslope migration from the Principal showing.

A second anomalous area was discovered 1500 feet northwest of the Principal showing. Trenching here exposed mineralization that sampled 0.18% Cu and 0.18 oz. Ag across 30.0'. This exposure is known as the North Showing.

DIAMOND DRILLING

The diamond drilling program of 1968 attained its objective of exploring the Principal mineral zone at depth. It is evident that supergene enrichment by percolating surface waters accounts for the high grade copper found on surface. Four mineral zones were intersected with significant values as follows:

<u>Zone</u>	<u>Drill Hole No.</u>	<u>Width</u>	<u>% Cu</u>	<u>Oz. Ag</u>
#1 Principal	A1	9.2'	0.79	-
"	A2	4.3	0.06	0.29
"	A3	27.5	1.26	0.17
#2 Zone	A2	29.3	0.85	0.95
"	A3	10.0	0.18	-
#3 Zone	A2	12.0	0.48	0.87
"	A3	2.0	1.29	0.96
#4 Zone	A3	35.0	1.19	0.88

Four holes were drilled totalling 1042 feet. No. A4 hole was drilled at the south end of the zone but did not reach the extension of the #4 zone which assayed 1.19% Cu and 0.88 oz. Ag across 35.0' in D.H. A3. This zone warrants additional exploration in this direction.

In early 1969 three holes were completed for a total of 1462'. Two holes were drilled to check for the north extension of the Principal showing and failed to intersect values of interest (Holes B-2 and B-3).

Drill hole B-1 was drilled between D.H. A2 and D.H. A3 and intersected the four mineral zones as follows:

<u>Footage</u>	<u>Zone</u>	<u>Width</u>	<u>% Cu</u>	<u>Oz. Ag</u>
31.5'-37.0'	1	5.5'	0.70	0.09
45.5'-63.7'	2	18.2	0.74	0.07
139.5'-144.2'	3	4.7	0.66	0.05
211.0'-218.0'	4	7.0	1.71	1.05

CHRIS SHOWING

The Chris Showing lies about 2500' east of the Principal Showing on an unsurveyed cat road. The width, as originally uncovered in early 1969, was 25.0' and chip samples taken by the writer averaged 0.50% Cu and 0.26 oz. Ag. It is reported that later trenching added length in both directions. Quartz veining with disseminated chalcopryrite was observed; the showing warrants additional exploratory work.

RECOMMENDATIONS

It is recommended that additional diamond drilling be carried out on the Principal Showing, the North Showing and the Chris Showing.

COST ESTIMATE

The following program is recommended to fully assess the mineral possibilities of the Alviija Mines Ltd. property:

Diamond drilling of (1) Principal Showing beneath completed holes to the southeast of drill hole A4; (2) the North Showing, and (3) the Chris Showing

2500' @ \$12/foot

\$30,000

Engineering and geology

2,000

\$32,000

Respectfully submitted,

Bacon & Crowhurst Ltd.

R. W. Phendler


R. W. Phendler, P. Eng.



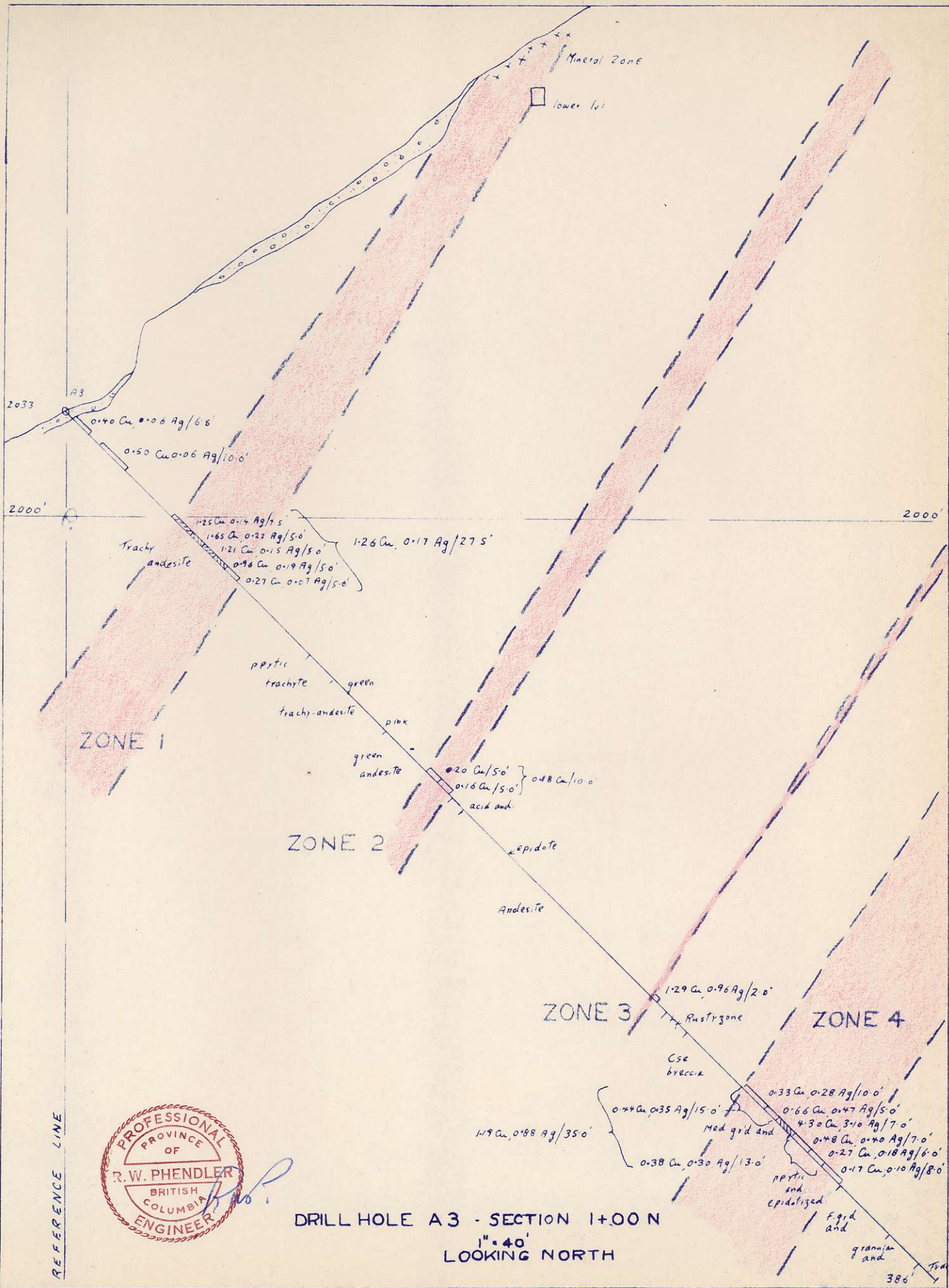
CERTIFICATION

I, Roy William Phendler, of the City of Vancouver in the Province of British Columbia, hereby certify as follows:

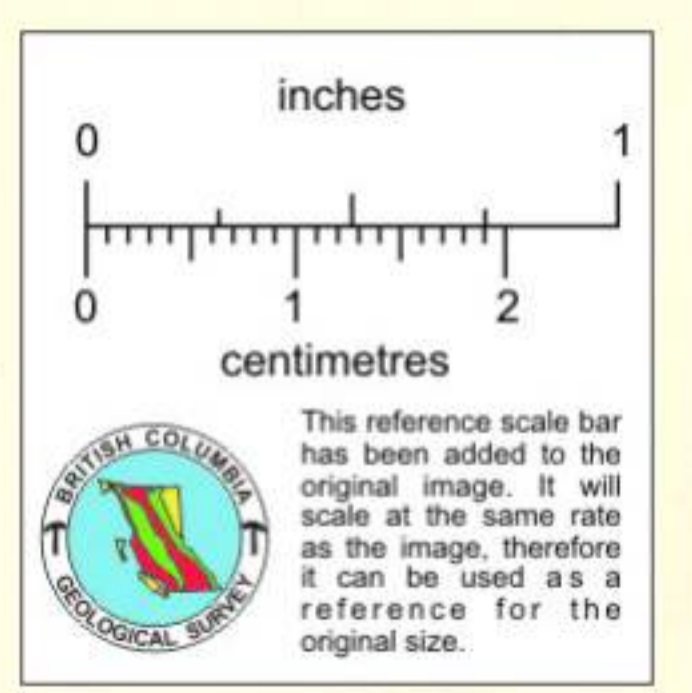
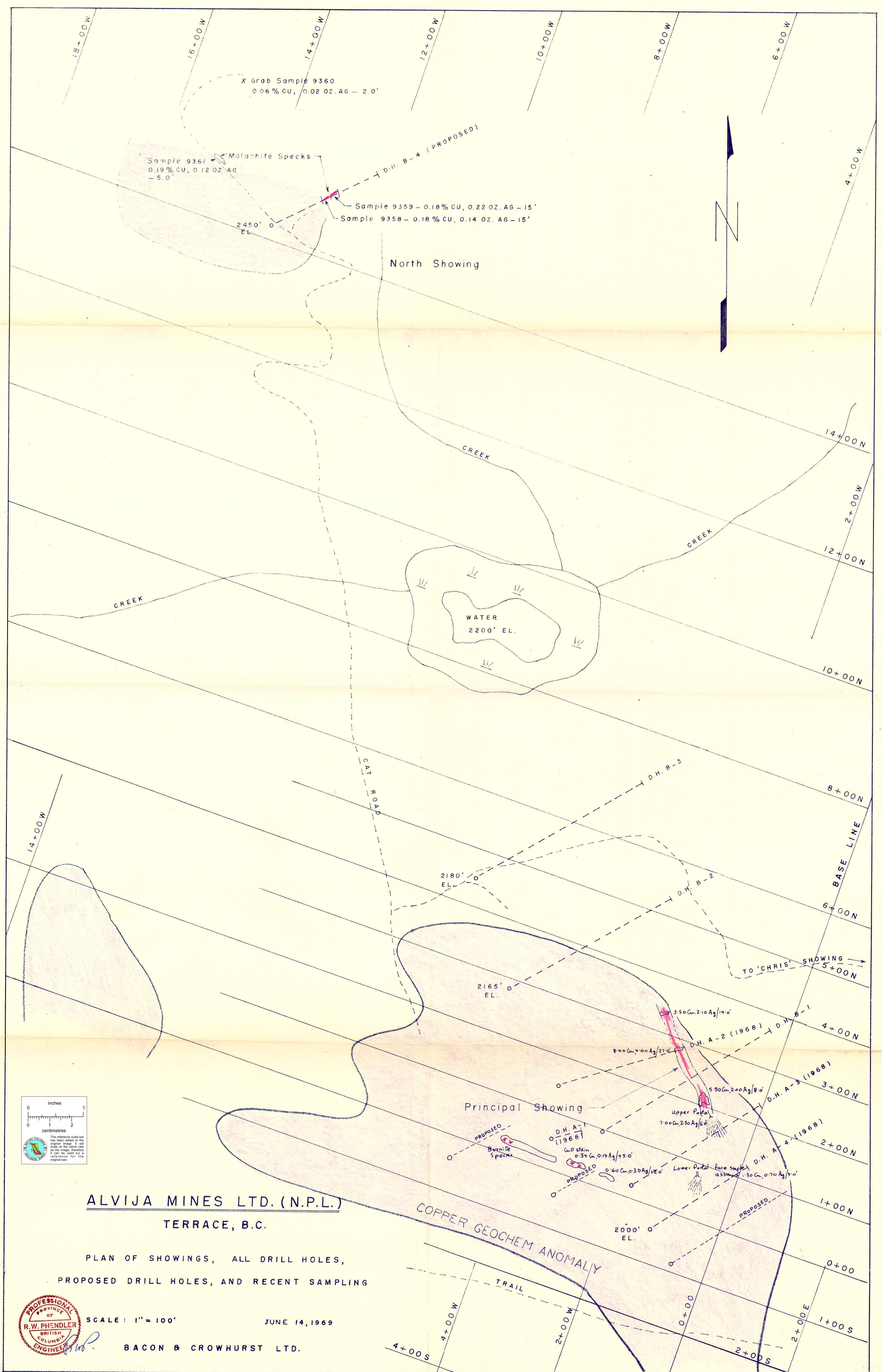
1. That I am a registered Professional Engineer in the Province of British Columbia, No. 4421.
2. That I am a graduate of McGill University, Montreal, Quebec, with a Bachelor of Science degree in Geology.
3. That I have practiced my profession as a geologist continuously for the past seventeen years in eastern and western Canada, the western United States, Mexico, Peru and Colombia.
4. That I have no interest directly or indirectly in Alvija Mines Ltd. mineral claims nor do I expect to receive any.
5. That the information contained herein was compiled after two visits to the property during the past year and the examination of much of the diamond drill core in Vancouver.

R. W. Phendler
R. W. Phendler, B.Sc., P.Eng.
A circular seal for a Professional Engineer in the Province of British Columbia. The seal contains the text: "PROFESSIONAL ENGINEER" around the top and bottom edges, "PROVINCE OF BRITISH COLUMBIA" around the inner edge, and "R. W. PHENDLER" in the center.

Vancouver, B.C.
June 16th, 1969.



DRILL HOLE A3 - SECTION 1+00 N
 1" = 40'
 LOOKING NORTH



ALVIJA MINES LTD. (N.P.L.)
TERRACE, B.C.

PLAN OF SHOWINGS, ALL DRILL HOLES,
 PROPOSED DRILL HOLES, AND RECENT SAMPLING



SCALE: 1" = 100' JUNE 14, 1969

BACON & CROWHURST LTD.