Field
Jean Pautler

520308

1990 In-House Report

Geological, Geochemical, Geophysical Report

on the

AVALANCHE PROPERTY

NTS: 92J/10W

Latitude 50°33´N Longitude 122°54´W

Lillooet Mining Division

Owner: Teck Corporation in trust for:
Toscana Resources Ltd.
1104 - 750 West Pender Street
Vancouver, B.C.
V6C 2T8

Operator: Teck Exploration Ltd.
#960, 175 Second Avenue
Kamloops, B.C.
V2C 5W1

Jean Pautler
December, 1990

Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
Geological, Geochemical, Geophysical	61,757.56

AUTHOR(S) ... Jean Pautler ... SIGNATURE(S) ... Jean Pautler ...

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED ... Feb. 25/91 ... YEAR OF WORK 1990

PROPERTY NAME(S) ... Avalanche ...

COMMODITIES PRESENT ... Cu, Pb, Zn, Ag, (Au) ...

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN ... 92J ... 047 ...

MINING DIVISION ... Lillooet ... NTS ... 92J/10W ...

LATITUDE ... 50°33'N ... LONGITUDE ... 122°54'W ...

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

... Avalanche ..., Avalanche II ... (29 units) ...

OWNER(S)

(1) ... Teck Corporation ... in trust for (2) ...
... Toscana Resources Ltd. ...

MAILING ADDRESS

... 1104 - 750 W. Pender St. ...
... Vancouver, BC ... V6C 2T8 ...

OPERATOR(S) (that is, Company paying for the work)

(1) ... Teck Exploration Ltd. ... (2) ...

MAILING ADDRESS

... 960 - 175 2nd Ave ...
... Kamloops, B.C. ...
... V2C 5W1 ...

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

... The property is primarily underlain by volcaniclastic rocks of the Cadwallader Gp., a Triassic island arc assemblage. The Triassic section includes felsic A.F.P. pyroclastics and flows. The NW trending, regionally extensive Gruzly Shear Zone bisects the property. A large alteration zone consisting of pyritic quartz sericite schists is present at the base of the A.F.P. section. Mineralization within the A.F.P. consists of Cu, Zn, Ag with minor Pb + Au.

REFERENCES TO PREVIOUS WORK ... Assessment Reports ... 14078, 14224 ...
... MMAR ... 1923 - 1926 ...

(over)

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources
MINERAL RESOURCES DIVISION — TITLES BRANCH

DOCUMENT No. _____ OFFICE USE ONLY

FEB 25 1991
GOVERNMENT AGENT
KAMLOOPS
TRANS # 10001 2
RECORDING STAMP

Mineral Tenure Act
Sections 25, 26 & 27

STATEMENT OF WORK — CASH PAYMENT

Indicate type of title Mineral (Mineral or Placer)

Mining Division Lillooet

I, Jean Fautley (Name)
C 223 Fawn Lk Site (Address)
RR 1 Lone Butte, BC
593-4990 (Telephone) V0K 1X0 (Postal Code)
Valid subsisting FMC No. 304529
FMC Code PAUTJM

Agent for Teck Corporation (Name(s))
1199 W Hastings St (Address)
Vancouver, B.C.
687-1117 (Telephone) V6E 2K5 (Postal Code)
Valid subsisting FMC No. 304505
FMC Code TECCO

STATE THAT: (NOTE: If only paying cash in lieu, turn to reverse and complete columns G to J and Q to T.)

1. I have done, or caused to be done, work on the AVALANCHE, AVALANCHE II Claim(s)

Record No(s). 2795, 3357

Work was done from July 26, 1990, to Oct 1, 1990

and was done in compliance with Section 50 of the Mineral Tenure Act and Section 19(3) of the Regulation YES [X] NO [ ]

I hereby request that the claims listed in Column G on this Statement of Work be Grouped and I confirm that all claims listed are contiguous YES [X] NO [ ]

FEE — $10.00

TYPE OF WORK

PHYSICAL: Work such as trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails. Details as required under section 13 of the Regulations, including the map and cost statement, must be given on this statement.

PROSPECTING: Details as required under section 9 of the Regulations must be submitted in a technical report. Prospecting work can only be claimed once by the same owner of the ground, and only during the first three years of ownership.

GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL, DRILLING: Details must be submitted in a technical report conforming to sections 5 through 8 (as appropriate) of the Regulations.

PORTABLE ASSESSMENT CREDIT (PAC) WITHDRAWAL: A maximum of 30% of the approved value of geological, geophysical, geochemical and/or drilling work on this statement may be withdrawn from the owner's or operator's PAC account and added to the work value on this statement.

TYPE OF WORK (Specify Physical (include details), Prospecting, Geological, etc.)	VALUE OF WORK Physical	*Prospecting	*Geological etc.	
1:5,000 Scale mapping of property 1:2500 Scale mapping of grid line km of grid construction and soil sampling at 25m spacings VLF-EM on grid 8.0 line km			61,757.56	
TOTALS	A +	B +	C 61,757.56 =	D 61,757.56
PAC WITHDRAWAL — Maximum 30% of Value in Box C Only			E →	E
from account(s) of _____			TOTAL	F 61,757.56

* Who was the operator (provided the financing)? Name Teck Explorations
Address 960 - 175 2nd Ave
Kamloops Phone 372-0032

Transfer amount in Box F to reverse side of form and complete as required

SUMMARY:

The 29 unit Avalanche property is located 25km north of Pemberton, B.C. The property was optioned from Toscana Resources Ltd. as a volcanogenic massive sulfide target based on the favourable geology, alteration and presence of base metal occurrences on the property.

The property is primarily underlain by northwest trending volcano-sedimentary rocks of the Cadwallader Group, a Triassic island arc assemblage. The Cadwallader Group is intruded by a Cretaceous diorite pluton in the southwest and overlain by Tertiary basalt flows to the north. The Triassic stratigraphy has been subdivided into the following units from oldest to youngest: Lower Andesite, Mixed Pyroclastic with interbedded sedimentary units and pyritic chert, Quartz Feldspar Porphyry(Q.F.P.) Pyroclastic, Q.F.P. Flow, Upper Andesite and Upper Conglomerate.

The northwest trending, regionally extensive Grizzly Shear Zone bisects the property. Pyritic quartz sericite schists ± chlorite, ± clay, in part, are fault related but also form a larger alteration zone at the base of the Q.F.P. section.

The most significant stratabound mineralization on the property is exposed at the Eva Showing. At the Eva, a sericite altered Q.F.P. flow or large sill hosts a 1m wide zone containing 6% Cu, 0.2% Zn, 90g Ag, 0.1g Au within a 3m wide silicified, pyritic zone carrying 3% Cu, 0.1% Zn, 45g Ag, 0.05g Au. Remobilized Zn-rich mineralization is exposed along the Grizzly Shear Zone east and north of the Eva Showing. Other remobilized mineralization is evident on the property.

A soil survey was conducted over a 2.4km X 1.0km grid. The survey outlined two zones as having volcanogenic massive sulfide potential. The zones are defined by discontinuous but high contrast Cu, Pb, Zn anomalies with Mn and As enrichment and enhanced Fe, Ba, Au and Ag. Both B and As appear to be useful trace elements recognized in rock geochemistry over mineralized zones in addition to the base and precious metal anomalies. Limited whole rock geochemistry indicates that the volcanic suite is calc-alkaline.

A 2km long HEM conductor was outlined by an airborne survey. The conductor extends northwest from the Eva Showing. A partial ground VLF survey picked up the southeast end of the HEM conductor which may reflect the down dip extent of mineralization at the Eva Showing.

Potential for economic mineralization on the property appears to be near the base of the Q.F.P. section, at depths greater than 200m. Consequently, recommendations for the 1991 program include:

1) completion of grid geological mapping
2) completion of whole rock geochemistry
3) possible extension of the 1990 soil grid to cover the remaindar of the Q.F.P. exposure
4) ground geophysical survey (deep EM, Mag, IP ?)
5) 3000′ + of diamond drilling.

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1. LOCATION AND ACCESS (Figure 1)

The Avalanche property, NTS map sheet 92J/10W, is located 25km north of Pemberton, B.C. in the Lillooet Mining Division. Pemberton lies 150km north of Vancouver via Highway 99. Latitude and longitude of the property are 50°33´N, 122°54´W.

Access is by helicopter from Pemberton. The closest road access from Pemberton is north from Mt. Currie along the D'Arcy Road to the South Birkenhead Road then west along the Tenquille Creek Road. The latter road terminates approximately 1.5km south of the property.

2. LEGAL DESCRIPTION (Figure 2)

The Avalanche property consists of 29 contiguous units. The claims were optioned from Caliente Resources Ltd. (now Toscana Resources), of Vancouver, B.C. by Teck Corporation, Vancouver, B.C. A statement of claims with expiry dates follows:

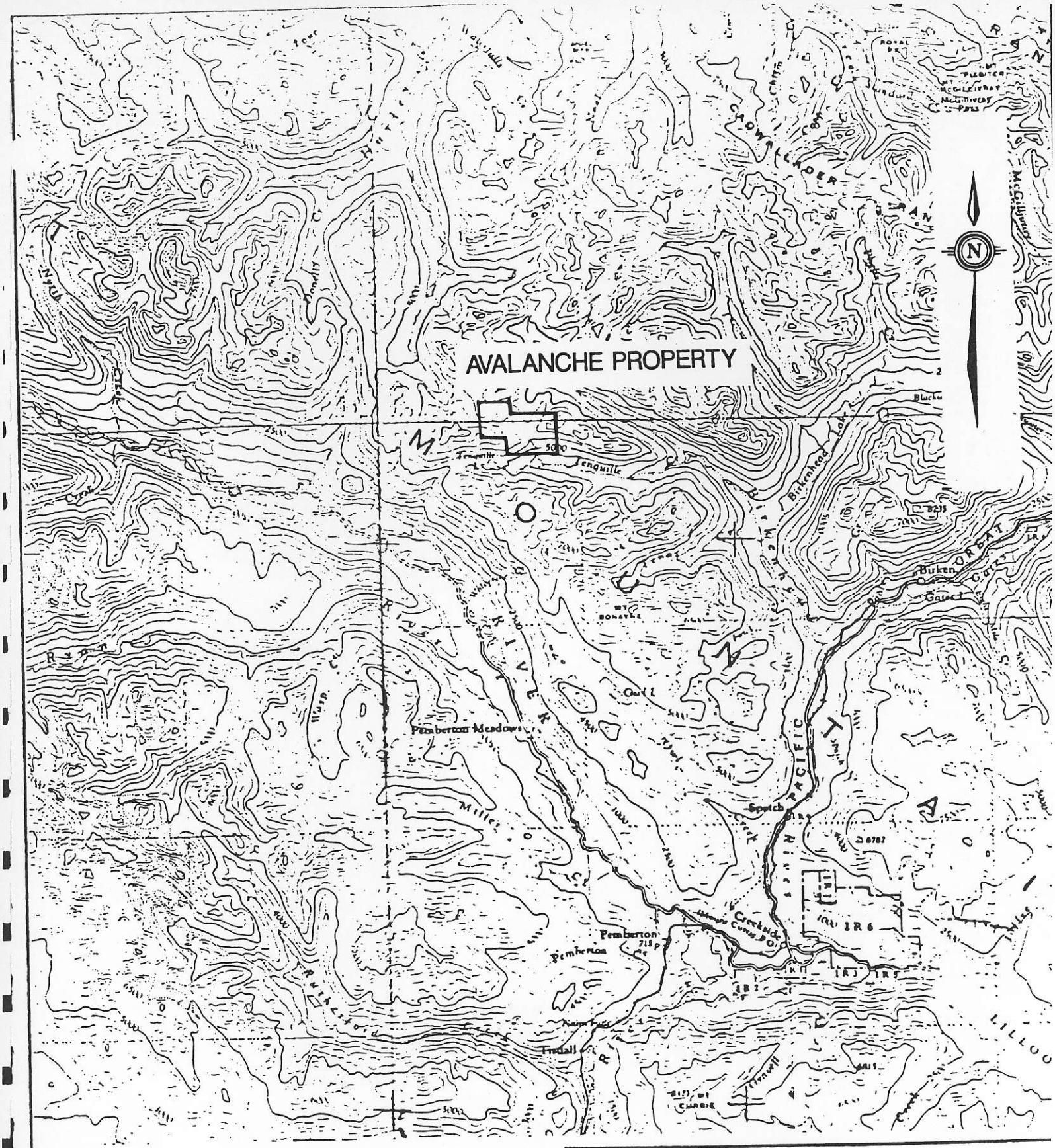
Claim Name	Record No.	No. of Units	Expiry Date	Years to be Applied	New Expiry Date
Avalanche	2795	20	Mar 9, 1994	6	Mar 9, 2001
Avalanche II	3357	9	Sept 20, 1992	8	Sept 20, 2001

3. PHYSIOGRAPHY

The property straddles an alpine ridge northeast of Tenquille ~~Creek~~ Lake within the Pacific Range. Elevations range from 1525m in the southeast along Grizzly Creek to 2225m on Finch Ridge. Only the southeast part of the property lies below tree line. The property is bisected by Grizzly Creek which forms a canyon in the southeast property area.

4. HISTORY

Mineralization was originally discovered in the area in the early 1920's by George Moffat. At this time the property was known originally as the Moffat and then the Eva Group. From 1922 to 1926 five adits, as well as several

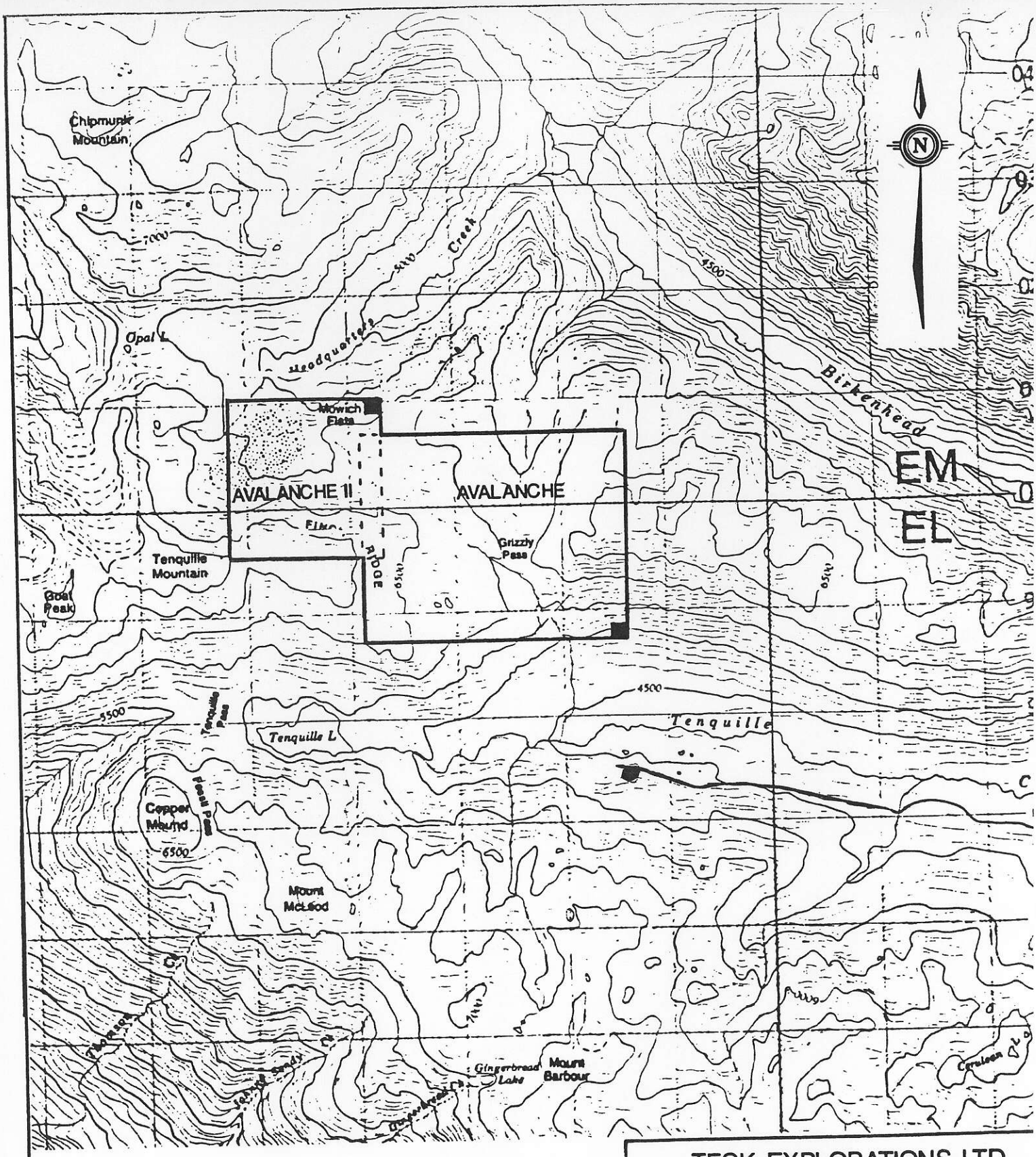


TECK EXPLORATIONS LTD

AVALANCHE PROPERTY

LOCATION MAP

NTS : 92J/10W



TECK EXPLORATIONS LTD

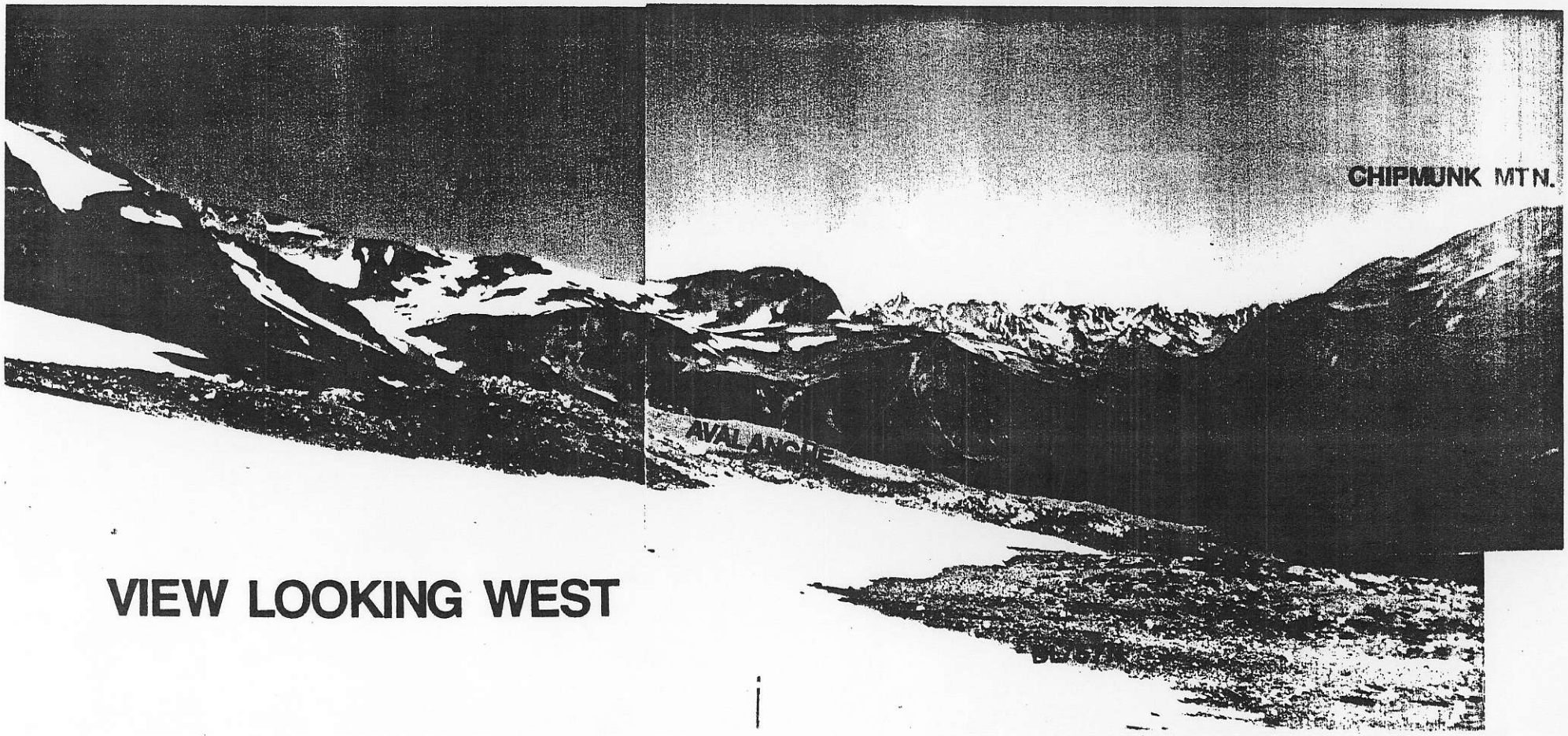
AVALANCHE PROPERTY

CLAIM MAP

NTS : 92J/10W

SCALE : 1 : 50,000 | FIGURE : 2

PHOTO 1 : AVALANCHE PASS - ALTERATION ZONE



VIEW LOOKING WEST

EVA SHOWING

UPPER ADIT AND VERTICAL SHAFT

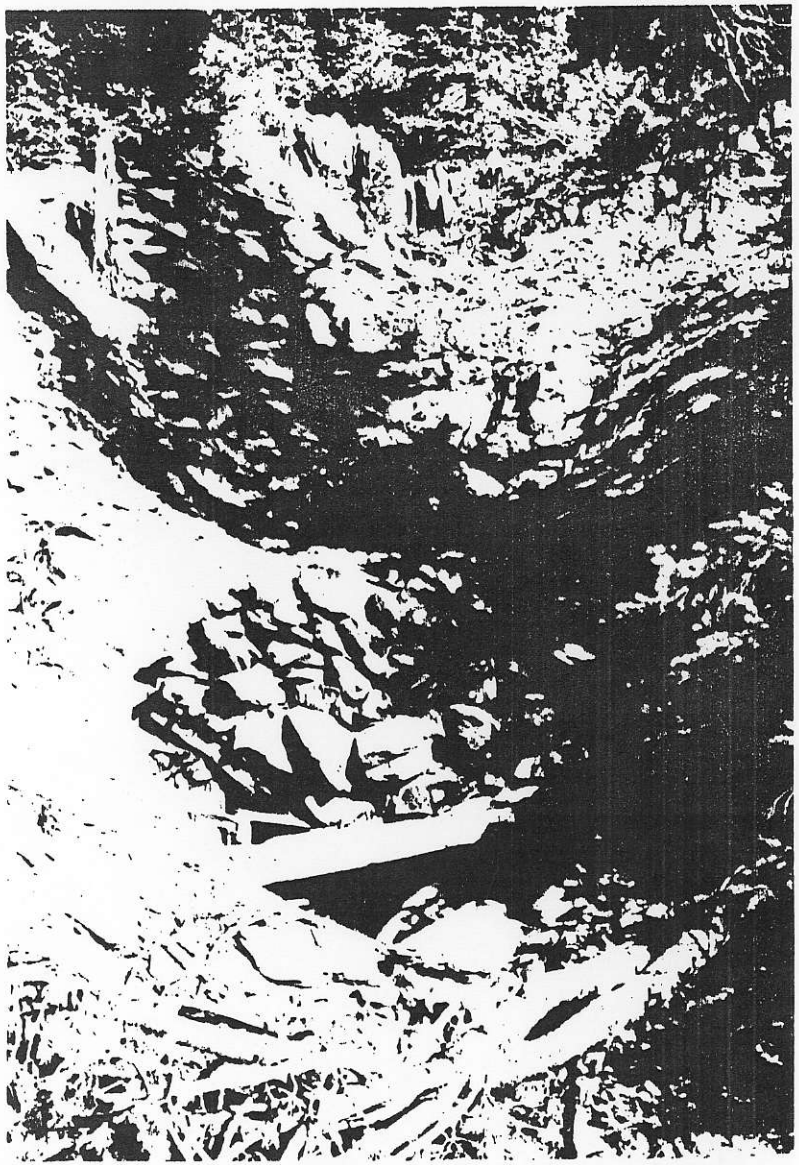


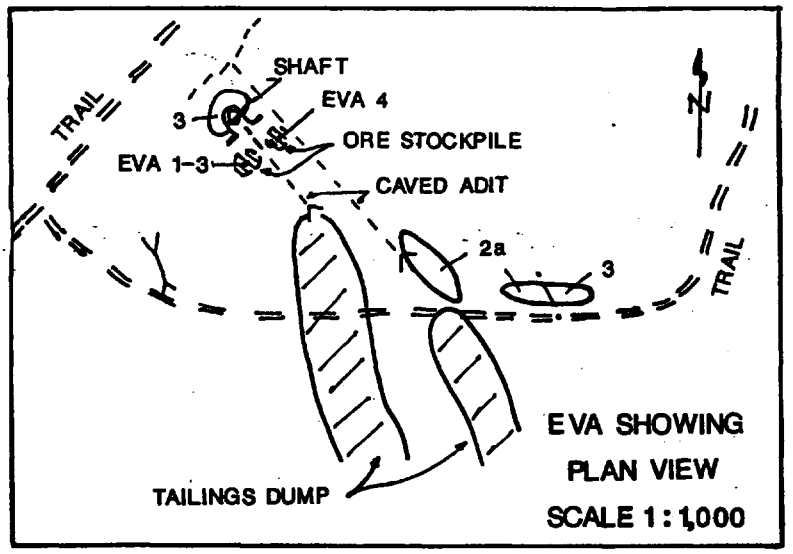
PHOTO 4

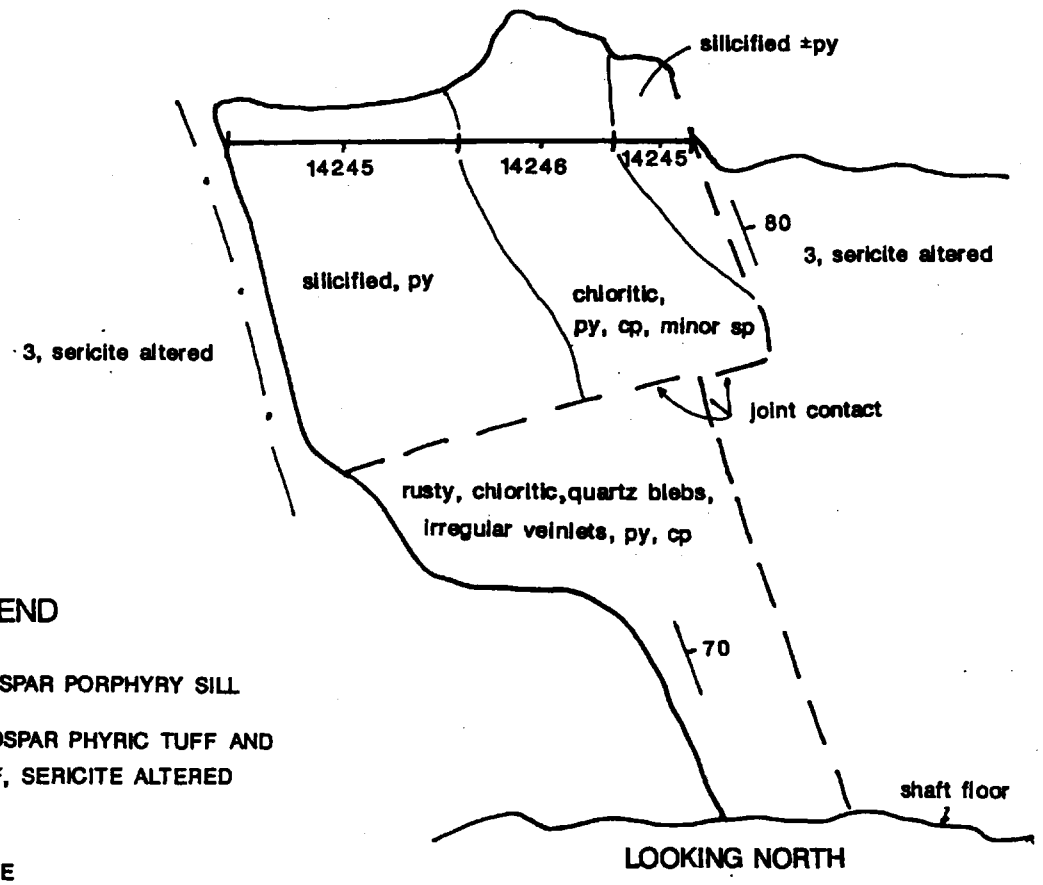
DISCOVERY SHOWING – VERTICAL SHAFT

PHOTO 5

RESULTS

SAMPLE No.	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)
EVA 1	74603	4	2193	71.3	70
EVA 2	32623	140	1518	31.4	60
EVA 3	60116	148	2331	130.0	180
EVA 4	67744	65	2761	92.6	80
14245	1411	50	173	8.7	10
14246	56152	1	1578	88.3	80





LEGEND

3	QUARTZ FELDSPAR PORPHYRY SILL
2a	QUARTZ FELDSPAR PHYRIC TUFF AND LAPILLI TUFF, SERICITE ALTERED
py	PYRITE
cp	CHALCOPYRITE
sp	SPHALERITE
	OPEN CUT

TECK EXPLORATIONS LTD

AVALANCHE PROPERTY

EVA SHOWING

VERTICAL SECTION OF SHAFT

SCALE : 1 : 50 | FIGURE : 7

showing was also explored in the early 1920's by two adits, now caved, and several pits and trenches.

The 1m wide mineralized knob consists of chalcopyrite and minor pyrite, sphalerite and bornite with quartz blebs and chlorite. The mineralization occurs within a 3m wide silicified, pyritic zone hosted by a much larger sericite altered zone in a thin felsic quartz feldspar porphyry flow or sill. The pyrite within the alteration zone is very fine grained and disseminated with minor remobilization along fractures.

Deeper in the shaft, irregular pyrite and chalcopyrite veinlets cut a rusty chloritic rock with quartz blebs. Historically, at a depth of 15' in the shaft and upper adit a "3 foot wide mineralized seam of Cu was reported within a 6 foot mineralized zone".

In the caved adit, 100' vertically below these upper workings, narrower bands of quartz sericite schist with pyrite and chalcopyrite were reported.

The Lower Creek Adit, along Grizzly Creek, was driven in the 1920's to intersect the Eva Zone at a lower elevation (Photos 6,7). The adit is 400m east-southeast of the Eva showing and 700' lower in elevation. Pyritic quartz sericite schists are exposed at the portal. Reports indicate that similar mineralization to the upper Eva adit was encountered in this adit.

Grizzly Shear Zone:

More Zn-rich mineralization is associated with pyritic quartz sericite schists along the Grizzly Shear Zone proximal to the Eva Showing. The Canyon and Creek Adits, excavated in the 1920's, expose this type of mineralization along Grizzly Creek.

The 5m long Canyon Adit contains pyrite, sphalerite with minor chalcopyrite, and galena mineralization within a 1m wide silicified zone hosted by pyritic quartz sericite schists. The original composition of the schists appears to be felsic crystal tuffs, (Unit 2a). This mineralized zone can be traced for 300m.

The 35m long Creek Adit was excavated in the 1920's to intersect a 1.5m wide pyritic silicified zone exposed in an open cut northwest of the Creek

Adit. The siliceous zone is hosted by pyritic quartz sericite schist and carries sphalerite with minor galena. Chalcopyrite mineralization is hosted by quartz sweats in the vicinity. Bands of sphalerite mineralization can be traced for 200m along the creek.

There is additional evidence of remobilized mineralization along the Grizzly Shear Zone. Mineralized quartz sweats are exposed within pyritic quartz sericite schists approximately 1.0 to 1.8km northwest of the Canyon Adit. A quartz sweat bearing pyrite and chalcopyrite is exposed at L57N/51+75E. Other pyritic quartz sweats also occur in this area. Pyrite and sphalerite mineralization are exposed within a quartz sweat near L60N/51+50E. Just north of the grid, at approximately L63N/51+50E, pyrite, sphalerite and galena mineralization are hosted by quartz sweats and silicified zones along a fault breccia.

Shale Contacts:

Mineralogically similar, but less extensive mineralization to the Eva is exposed at several localities up to 1.5km northwest of the Eva Showing. At these locations, (L49N/47+50E, L56N/49E and L57N/49E), the mineralization consists of pyrite, chalcopyrite and malachite hosted by silicified and sericite altered quartz feldspar porphyry sills and/or dykes at shale contacts.

At a fourth location pyrite, chalcopyrite, with minor sphalerite, is hosted by silicified zones and quartz sweats within dacitic lapilli tuff and tuff-breccia, again near a shale contact.

Less than 100m grid east of the latter zone, an area with pockets of 'sulphide burn' occur within mudstone or fine dacite ash tuff proximal to quartz feldspar porphyry sills. Pyrite ± pyrrhotite mineralization is evident and accompanied by silicification and chloritization.

Other:

A pyritic, silicified zone trending 350°/E has also been exposed by an old open cut at about L44N/56E. Base metal mineralization is not evident.

At the northwest end of the Grizzly Grid, chalcopyrite with minor sphalerite mineralization appears to be hosted by the lower massive andesite unit. The mineralization occurs within talus boulders below a steep outcrop

area, (Cliff Zone), at L59N/46+50E. Blebs of chalcopyrite and pyrite make up about 10% of the rock. Microscopically, altered pyrrhotite was found to form 24% of the rock. The remainder was found to consist of green coloured quartz with only trace chlorite. A few irregular secondary quartz veins, also mineralized with minor pyrite, chalcopyrite and sphalerite, cut the specimen.

7. GEOCHEMISTRY (Figures 4, 6, 7)

a) Procedure

A total of 116 rock samples, 900 soil samples, 18 moss mats and 16 silt samples were collected from the property. The samples were sent to Rossbacher Labs, Burnaby, B.C. and analyzed for Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Au, Fe, La, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Si, Ag, Sr, Tl, W, U, V and Zn using a 31 element ICP package which involves a nitric-aqua regia digestion. Au was also analyzed by fire assay with an atomic absorption finish. Lab procedures and results are outlined in Appendix III.

The rock samples primarily consisted of chip samples across mineralized zones, alteration zones, veins and stringers. Grab samples were collected from areas of float or limited subcrop.

Moss mats were collected from the lee side of boulders within the creek and placed in waterproof kraft bags. Silt samples were collected as check samples for the moss mats and in areas where moss was not available.

Only six samples were collected for whole rock analysis due to snow conditions. However an additional 14 samples collected for thin section study were analyzed.

Most of the soil samples were collected from the Grizzly Grid by a contractor. The preparation, results and interpretation of these samples are discussed in Appendix II. The remaining five soil samples were collected from the B horizon and sent to the lab in waterproof kraft bags.

b) Results and Interpretation

Eva Showing:

The 1m wide mineralized knob at the Eva showing runs 5.6% Cu, 1ppm Pb, 1578ppm Zn, 88.3g Ag and 80ppb Au. The 1.5m wide pyritic silicified footwall and 0.5m wide similar hanging wall contain 1411ppm Cu, 50ppm Pb, 173ppm Zn, 8.7g Ag and 10ppb Au. This averages 28865ppm Cu, 26ppm Pb, 876ppm Zn, 44.4g Ag and 45ppb Au; approximately 3% Cu, .1% Zn, 45g Ag and 0.05g Au across 3m.

Four samples from ore stockpiled in the vicinity of the shaft averaged 58772ppm Cu, 89.3ppm Pb, 2201ppm Zn, 81.3g Ag and 93ppb Au; approximately 6% Cu, 0.2% Zn, 80g Ag with 0.1g Au. From the trace element geochemistry, B and As are anomalous. Boron values range from 1883 to 4443ppm and two As values lie between 100 and 200ppm. Fe content averages around 20%. The presumed width for this mineralized zone would be 1m which is the width of the seam of Cu reported from the shaft and in the upper adit. A sample collected from the lower adit in 1925 reportedly assayed 8.5% Cu with 1.6 oz/t Ag.

The Lower Creek Adit was not accessed but samples from what remained of the old dump and from the vicinity of the adit carried up to 728ppm Cu, 1331ppm Zn, 9.89g Ag and trace Au with 117ppm As (B was not analyzed).

Grizzly Shear Zone:

A grab sample from the Canyon Adit assayed 4% Cu, 0.7% Pb, 9% Zn with 20.0g Ag and 0.1g Au. Previous results from 1m wide chip samples along the adit are tabulated below:

Sample No.	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)
AD1	45	35	174	0.4	5
AD2	247	369	2150	2.1	50
AD3	0.1%	0.28%	2.25%	0.05 oz/t	.005 oz/t
AD4	71	146	331	0.4	5
AD6	1.02%	1.14%	6.60%	0.76 oz/t	.005 oz/t

A grab sample of pyritic quartz sericite schist from the Creek Adit returned values of 621ppm Cu, 989ppm Pb, 3784ppm Zn, 12.6g Ag and 250ppb Au. The Au content appears to be associated with the pyrite since a sample of 1 - 3cm wide pyritic lenses within the schist carried 1620ppb Au. A grab/chip of the extremely silicified exposure at the open cut ran 1.2% Cu, 1.5% Pb, 4.3% Zn with 40g Ag and 160ppb Au over a 1.5m width. Narrow (10cm) quartz sweats in the area carry 0.5% Cu, 0.2% Pb, 3% Zn with 10g Ag and 1.5g Au.

Shale Contacts:

Mineralization within quartz feldspar porphyry sills at shale contacts ranges up to 1.5% Cu, 0.3% Zn, 660ppm Pb, 13.8g Ag with 40ppb Au. Arsenic values are generally in the 100 to 250ppm range with Fe ranging from 5 to 20%. There are no direct relationships between the elements. Maximum width on the samples is 1.0m. Most of the samples were grab samples since the trenches had sloughed in.

At the dacite pyroclastic/shale contact silicified zones up to 30 - 50cm wide carry up to 6766ppm Cu, 1699ppm Zn, 135ppm Pb, 7.4g Ag and 110ppb Au with 228ppm As. Quartz sweats within these zones ran 1.5% Cu, 0.3% Zn, 228ppm Pb with 41.4g Ag and trace Au over 30cm. Fault gouge in the vicinity contains 2640ppm Cu, 219ppm Pb, 229ppm Zn with 2.0g of Ag, trace Au.

The pockets of sulphide burn carry values of up to 2607ppm Cu, 101ppm Pb, 340ppm Zn, 4.7g Ag and 50ppb Au, across 50cm to 1m.

Other:

A 1m chip from the pyritic silicified zone within an open cut at L44N/56E ran 267ppm Cu, 106ppm Pb, 166ppm Zn with 7.2g Ag and 490ppb Au. A grab of the pyritic siliceous host carried 2716ppm Cu, 55ppm Pb, 187ppm Zn with 5.0g Ag and 140ppb Au.

Talus boulders from the Cliff Zone contained 4% Cu, 1262ppm Zn, 48g Ag, 90ppb Au.

Moss, Silt, Soil Samples:

The moss/silt samples collected from the property were weakly anomalous in base metals with many in the order of 100ppm Cu, 30ppm Pb, 200ppm Zn, 0.6g Ag. There is one significant exception from a moss mat collected from Grizzly Creek at L41N/52E. The sample contains 1032ppm Cu, 99ppm Pb, 533ppm Zn, 0.6ppm Ag, 10ppb Au. Mineralization exposed in the Canyon Adit 500m upstream could account for the values. However, the source could originate from within 350m of overburden cover between the anomalies. Additional follow up sampling is necessary in this area.

The few reconnaissance soil samples collected off the grid were not significantly anomalous. A soil collected from the tailings dump of the Eva Showing ran 1941ppm Cu, 20ppm Pb, 457ppm Zn, 4.0ppm Ag and 20ppb Au. This gives an idea of the magnitude of the anomalies expected over mineralized areas in talus fines.

Grizzly Grid:

In summary, the soil survey over the Grizzly Grid outlined two zones indicating volcanogenic massive sulfide potential, one 2.4km long, the other 1.2km long. Both zones exhibit discontinuous but high contrast Cu, Pb and Zn anomalies with enriched Mn and As and enhanced Fe, Ba and precious metals. The base metal anomalies are spatially related to interpreted volcanic centres. The presence of chlorite and clay alteration is also suggested by the data.

Three volcanic centres were interpreted at the following locations:

1. L55N/55E

2. L56N/49+50E

3. L48N/47+50E.

The first centre corresponds to a Q.F.P. subvolcanic intrusion that was geologically interpreted as a centre (see Geology - Unit 3i). The second is located in a geologically complex area within a large base metal anomaly. More work is necessary to substantiate this centre. The third centre is located in an area of dacitic pyroclastics including coarse breccias. A broad base metal

anomaly is present. This may well represent a centre for the dacitic to andesitic volcanism of Unit 2.

Whole Rock:

A total of 20 samples were analyzed for whole rock geochemistry. Only six were collected systematically along a grid line due to snow conditions. The additional samples were from thin section rejects collected across the entire Grizzly Grid. Consequently, an alteration analysis is not possible at this time.

On the alkali-silica plot (Figure 8), the Triassic volcanic rocks fall into the subalkaline field. Sample 17, anomalously low in silica compared to the rest of the suite, lies just inside the alkaline field. This sample probably represents a basaltic dyke related to the Tertiary volcanics in the area. The field specimen was extremely fine grained making its origin questionable.

The presence of felsic volcanics is evident in this diagram. Although thin section work identified the felsics as dacitic in composition, rhyolite compositions are clearly evident in the whole rock geochemistry. Most of the rocks are of dacitic composition and true andesites are rare. The andesites are from the Lower Andesite Unit. The sample descriptions are shown in the following table:

Ref. No.	Sample No.	Description
1	13871	Andesite Unit 1
2	13872	Chlorite Schist - Andesite - Unit 1
3	13873	Rhyolite feldspar porphyry - sericite altered sill
4	13874	Dacite lapilli tuff - breccia
5	13875	Dacite feldspar porphyry
6	13876	Cherty tuffs
7	AV-07	Andesite ash tuff - (Dacite)
8	AV-10	Felsite - cherty matrix - coarse lapilli tuff
9	AV-12	Andesite lapilli tuff - (Dacite)
10	AV-14	Chloritic andesite
11	AV-16	Felsic dust tuff or mudstone

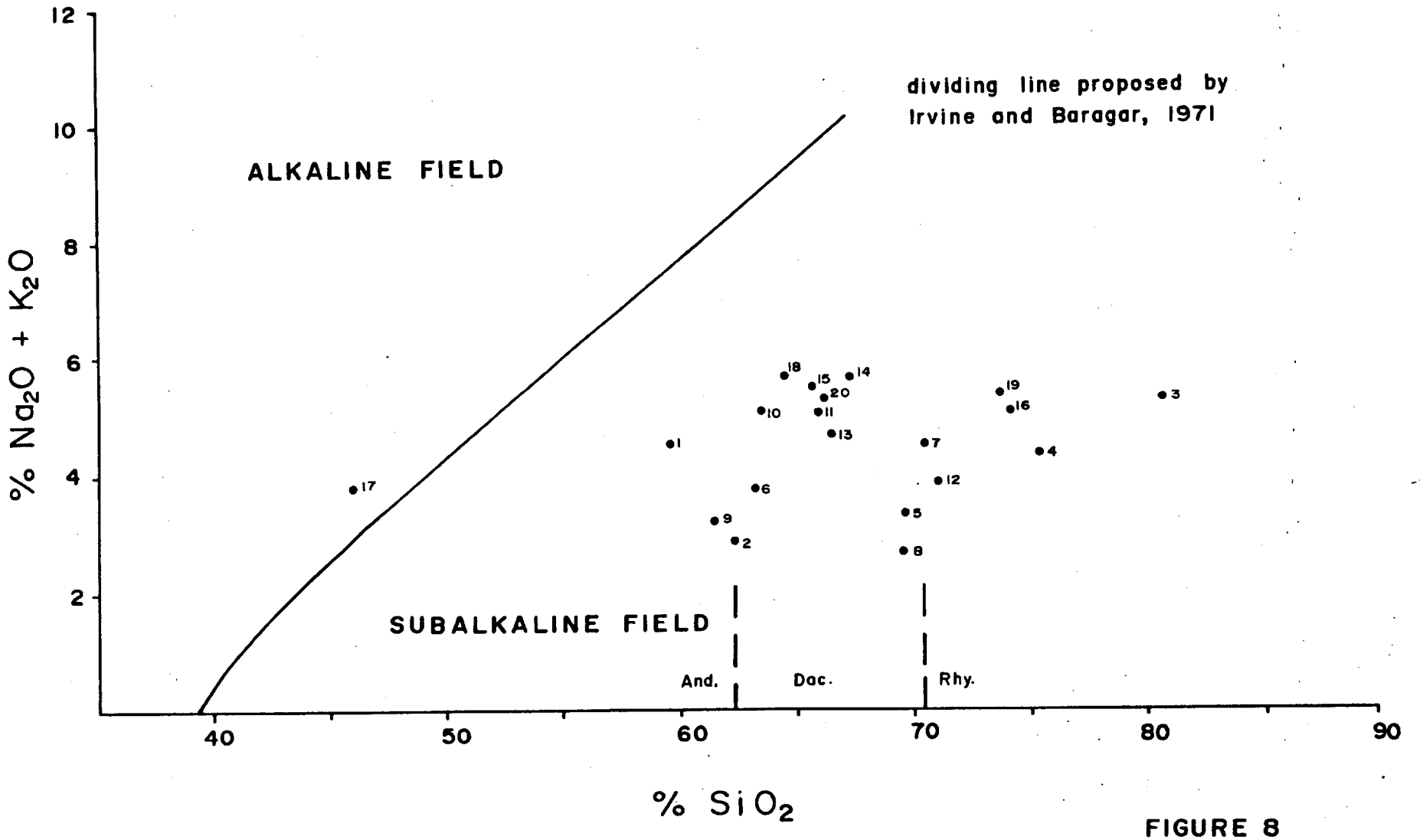


FIGURE 8
ALKALI-SILICA PLOT

Ref. No.	Sample No.	Description (cont'd)
12	AV-20	quartz sericite schist → Q.F.P. pyroclastic
13	AV-21	Andesite ash tuff
14	AV-22	Dacite lapilli tuff
15	TS-1	Andesite porphyry - Diorite (s.v.)
16	TS-2	Q.F.P., sericite altered - EVA
17	TS-4	Dacite ash tuff
18	TS-5	Dacite porphyritic tuff
19	90059X-2	Q.F.P. felsite
20	90060X-3	Q.F.P. dacite

On the A.F.M. diagram, (Figure 9), most of the samples fall into the calc-alkaline field. A few of the andesite to dacite pyroclastics of the mixed pyroclastic unit fall close to the line dividing the tholeiitic and calc-alkaline fields or slightly within the tholeiitic field. This is a common trend within volcanic rocks hosting massive sulfide deposits. The more mafic base of the stratigraphy is commonly thoeliitic grading upwards to more calc-alkaline trends.

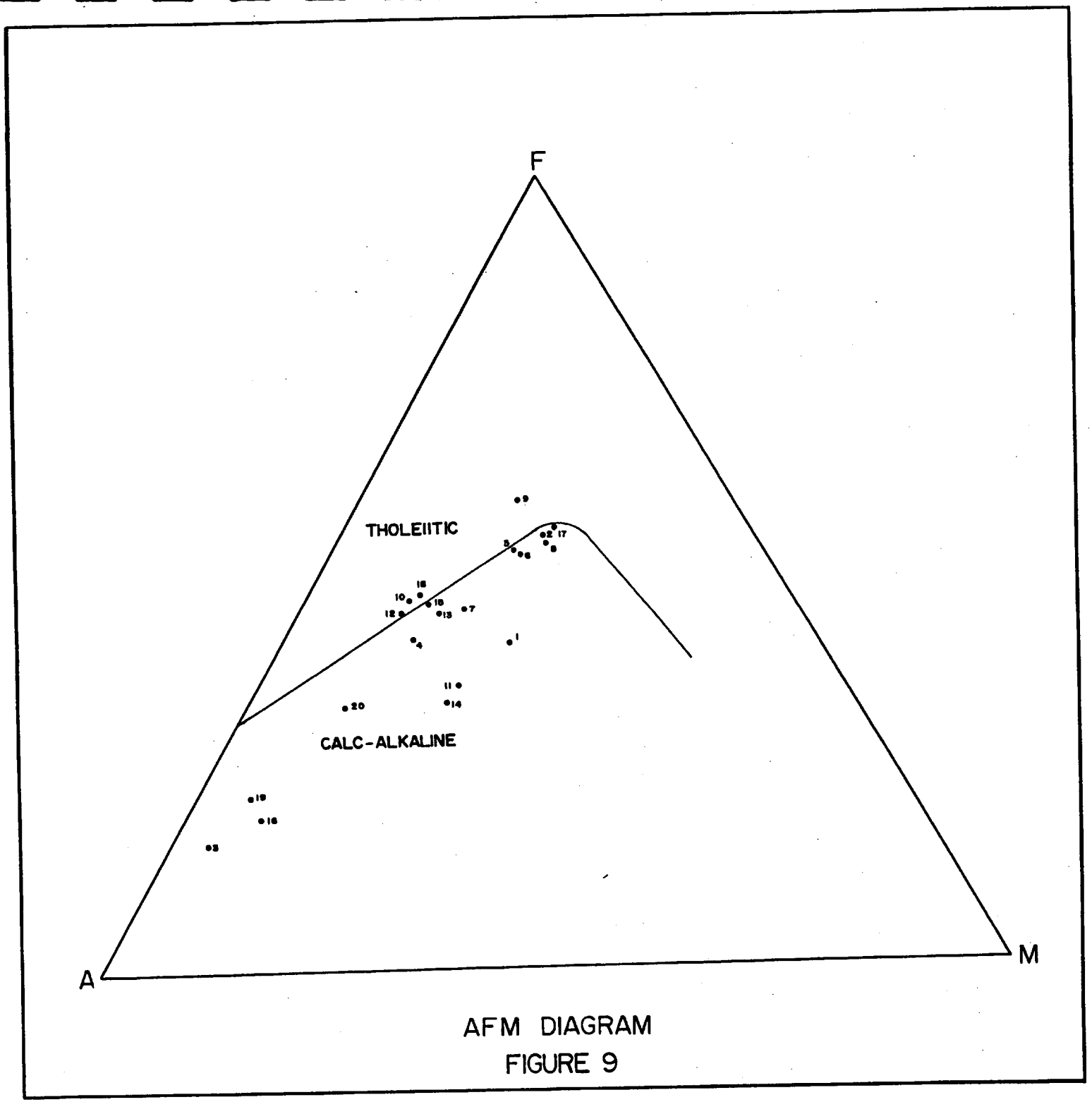
8. GEOPHYSICS

a) Airborne (Figures 3,10)

The airborne geophysical survey included four frequency electromagnetic, magnetic and 2 frequency VLF-EM surveys. The procedure, results and interpretation of the survey are outlined in detail in Appendix VII.

In general, the survey outlined a 2km long HEM conductor that extends northwest from the Eva Showing towards the shale/qfp sill contacts (along which some remobilized mineralization is exposed). (Refer to Section 8b). Three 400m long northerly trending HEM conductors were outlined in the northern part of the property. One of these is known to correspond to a fault zone. The Grizzly Shear Zone was not identified by the survey.

Several airborne magnetic trends were outlined by the survey. Most of the trends define geological contacts. The Grizzly Shear Zone is also defined by a magnetic high trend.



AFM DIAGRAM

FIGURE 9

b) VLF - EM (Figures 10, 11)

The VLF - EM survey was carried out over approximately half of the Grizzly Grid, totalling 8.0 line km. The survey utilized a Crone Radem unit, model 97. Readings were taken using the Annapolis, Maryland station at 25m intervals on lines spaced 100m apart. Null readings were taken with the instrument facing southeasterly. The field strength was also measured using a base level of 200%.

Despite the incompleteness of the survey, three conductors (A, B and C) and two possible conductors (D and E) were delineated. These conductors are outlined on the dip angle profile map in Figure 10. The field strength contours are shown on Figure 11.

Conductor A is a moderate conductor that correlates with the Grizzly Shear Zone. The conductor shows a weaker response between L41N and L38N, (at the southeast end). At L42N/52+25E a high field strength reading of 500% (compared to a base of 200%) was obtained. This lies just upstream from a highly anomalous silt sample containing 1032ppm Cu, 99ppm Pb, 533ppm Zn, 0.6ppm Ag, 10ppb Au. This further substantiates that the source of mineralization indicated by this sample originates from an overburden covered area along Grizzly Creek, more specifically near L42N/52+25E.

Conductor B is a strong conductor with a corresponding high field strength (>500%) within the Q.F.P. Flow Unit. The zone, in part, corresponds to a fault related to the Grizzly Shear Zone. There is a gap in the geological mapping and VLF data southeast of this conductor. Completion of the mapping may better outline the cause of this anomaly.

There are two possible orientations for Conductor C; the most probable is shown in the heavy dashed lines on Figure 8. This orientation corresponds to a fault that, in this area, follows the contact between the Lower Andesite Unit and the Mixed Pyroclastic Unit.

Conductor D is a possible conductor within the southeast end of the Upper Conglomerate Unit. There is no outcrop in this area but the conductor may be reflecting the contact between the Upper Conglomerate and the Mixed Pyroclastic Units.

Conductor E is a possible conductor that closely corresponds to the southeastern end of the airborne HEM conductor. The remainder of the surface trace of the airborne conductor (except for L50N and L51N) has not been surveyed on the ground. The southeast end of the HEM conductor was encountered on the ground approximately 100m northeast of the Eva Showing. It may reflect the down dip oxtent of mineralizatioo at the showing.

9. DISCUSSION (Figure 12)

Figure 12 depicts a schematic cross section across L56N of the Grizzly Grid. From southwest to northeast along the line the geology is as follows: Cretaceous Diorite/ Lower Andesite/ Mixed Pyroclastic with shale and pyritic chert interbeds/ Q.F.P. Flow/ Q.F.P. Pyroclastic/ Q.F.P. Flow/ Tertiary Basalt. The Triassic stratigraphy generally dips steeply to the northeast. Numerous Q.F.P. dykes and sills intrude the Lower Andesite and Mixed Pyroclastic Units. A small Q.F.P. subvolcanic intrusion occurs near station 55E just off the section. Upper Andesite dykes cut the Q.F.P. flow unit.

The mineralized showings along L56N are shown on the section as well as others projected from the southeast. The Eva Showing is shown near the contact batween the Q.F.P. flow and Q.F.P. pyroclastic units at the base of the Q.F.P. section. The Canyon Adit represents remobilized Zn rich mineralization along the Grizzly Shear Zone, peripheral to the Eva Showing. The airborne HEM conductor, in this section, corresponds to the shale unit or to remobilized mineralization proximal to the shale unit. However, the southeastern extent of this conductor corresponds to what may be the down dip extent of mineralization at the Eva.

The Cu, Pb, Zn soil profiles are shown above the section. The soil anomalies are much broader and more extensive than the narrow mineralized zones exposed. There are two broad anomalies both within the base of Q.F.P. section and over Unit 2 (Mixed Pyroclastic with sedimentary and chert interbeds). The alteration zone also extends across the two anomalies.

Based on this data, a deeper (probably greater than 200m), more extensive source for base metal mineralization is suggested and the most prospective environment is at the base of the Q.F.P. Section.

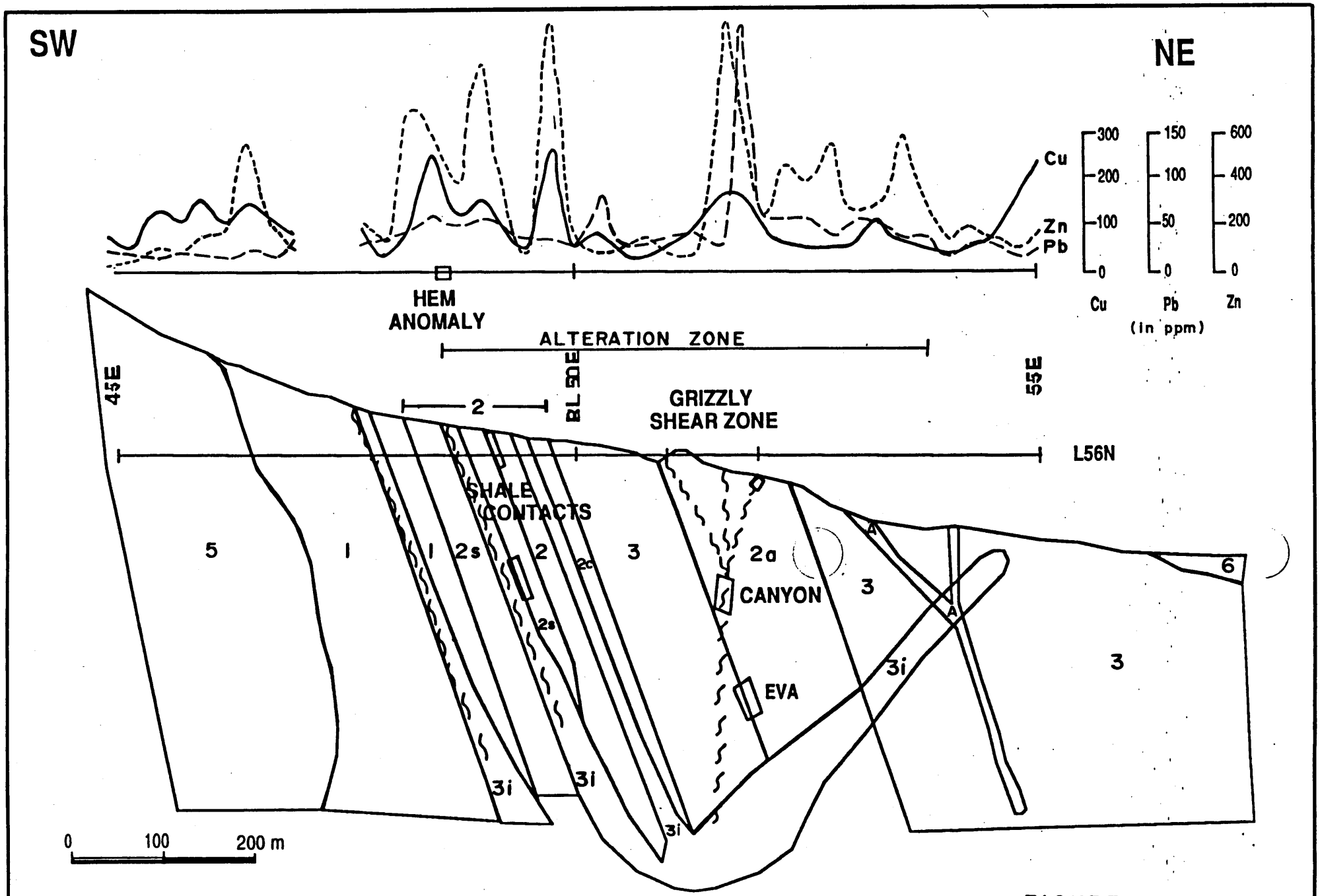


FIGURE 12

LEGEND: see FIGURE 5

SCHEMATIC CROSS SECTION

10. CONCLUSIONS AND RECOMMENDATIONS

Results from the 1990 program are very encouraging and further work is strongly recommended.

The Avalanche property is a polymetallic volcanogenic massive sulfide target that exhibits the following favourable characteristics:

1. Favourable geology
    a) felsic calcalkaline volcanic pile
    b) pyritic chert horizon(s)
    c) pyritic quartz sericite schists ± chlorite, ± clay.

2. Significant base metal showings, (particulary the Eva Showing).

3. Coincident soil anomalies,(Cu, Pb, Zn, Mn, As with enhanced Fe, Ba, Au, Ag).

4. Airborne (Mag, Em) and ground VLF geophysical anomalies.

Furthermore the property has never been drill tested and is located 1.5km from good road access.

The 1991 program should involve the following:

1. completion of the 1:2500 scale geological mapping of the grid, (approximately 6.0 line km).

2. completion of whole rock geochemistry across the stratigraphy on three or four selected grid lines.

3. possible extension of the soil grid to the north and west over the remainder of the Q.F.P. section to delineate the extent of the soil anomalies (not completely necessary, therefore of lower priority).

4. implementation of detailed ground magnetic and electromagnetic geophysical surveys (25m stations on lines 100m apart) possibly using a deep penetrating E.M. system. Possible selected areas may be surveyed by I.P.

5. at least 3000' of diamond drilling to test the geophysical conductors in areas of favourable geology and geochemistry, outlined in recommendations 1./ to 4./.

APPENDIX I

Selected References

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APPENDIX II

Soil Geochemical Report on the Grizzly Grid