Part 1
of 3

GEOLOGICAL SURVEY

SIMILKAMEEN M.D., B.C.

92H-10E 78-#10-#6697

ACE CLAIM #49 - 20 UNITS

49°-39' : 120°-36' 14-6-77:30-8-77

Alfred R. Allen, P.Eng.

For:

CARDERO RESOURCES LTD.

1620-701 West Georgia
Vancouver, B.C. V7Y 1G2

By:

ALLEN GEOLOGICAL ENGINEERING LTD.

202 - 2025 Bellevue
West Vancouver, B.C. V7V 1B9

November 28, 1977.

CONTENTS

* * * * * * * * *

GEOLOGICAL SURVEY

ACE CLAIM #49

16-6-77 ; 27-8-77

INTRODUCTION

The Ace claim is 22 metres north of Princeton, B.C., on the south end of Dry Lake and west of Highway #5. The legal corner post is on the east side of the highway about 200 metres north of the Ministry of Highways gravel storage area.

The claim was staked by J. Turner as agent for G. O'Brian on May 5 and 6, 1976, and recorded June 4, 1976 as #49.

Mineral showings including pyrite, chalcopyrite, sphalerite, galena, malachite and azurite were partially exposed by trenches in the 1960's. The showings are in Nicola andesite west of the faulted contact with Coast Range granodiorite.

Geochemical and geophysical surveys were comducted over about one quarter of the property in 1972 by D. Cochrane, P.Eng.

A 100 by 150 metre grid was surveyed over the 500 hectare claim from June 16 to August 27, 1977. The geology was mapped after rehabilitating the access road and widening and deepening the trenches.

Survey results warrant additional investigations and a field programme is herewith recommended on the northeast quadrant of the Ace claim.

CARDERO RESOURCES LTD.

LOCATION MAP

SCALE: 1" = 136 Mls.

Drawn by	Date 26/11/77	ALLEN GEOLOGICAL ENGINEERING LTD.
Checked by	Drg no. 1	

ALTAIR drafting services ltd.

PROPERTY

The location post of the Ace claim is a few feet east of Highway 5, 22 kilometres north of Princeton, and between the road into the motel on the south side of Dry Lake and the Department of Highways gravel storage area.

The metal tag, number 11382, is firmly affixed to the post.

From the post the claim extends 4 units south and 5 units west, an area of 500 hectares.

The claim was staked by J.C. Turner, agent for George O'Brian, on May 5, and 6, 1976, and recorded June 4, 1976.

The record number is 49.

It is shown on the Ministry of Mines and Petroleum Resources Claims Map 92-H-10E and accompanying Index Map #2.

HISTORY

Chalcopyrite, malachite, azurite, sphalerite and pyrite mineralization was discovered on the claim prior to 1970. Reference is made to the area in the 1971-72 report Geology, Exploration and Mining by the Ministry of Mines and Petroleum Resources of B.C.

During the summer of 1972, D. Cochrane, P.Eng., conducted geochemical and magnetometer investigations over about one quarter of the claim area.

The property was acquired by Cardero Resources Ltd., in 1977.

CARDERO RESOURCES LTD.

PROPERTY LOCATION

TOPOGRAPHY

INDEX Map #2

Nov.4, 1976

Allen Geological Engineering Limited

Per Sigurd R. Allen P.Eng.

TOPOGRAPHY

The Ace claim is located in the Allison Creek Valley about one kilometre south of Dry Lake and west of Liard Lake.

There is a steep rise from the valley at 823 metres above sea level to the west boundary of the claim at 1,370 metres elevation.

Two creeks flow through narrow V-shaped valleys northeasterly across the property into Dry Lake.

The mineral showings are located near the central part of the property on the west flank of the largest creek at 1060m above sea level.

GRID CONTROL

Using chain and Brunton compass a base line was surveyed from the Legal Post west, and close to the location line, to the northwest corner of the claim.

Stations were established every 150 metres by stakes and the line was well flagged and blazed.

From each base line station lines were surveyed by chain and Brunton compass south to the south boundary of the claim. Stations were established at 100 metre intervals by stakes and flagging on all lines.

All stations were marked with the appropiate grid location.

The grid is shown on the accompanying maps #3 and #4.

TRENCHES

Seven trenches were widened, deepened and extended to expose bedrock.

Number One is 51 metres long, 6 metres wide and up to 7 metres deep. It is the most southerly of the workings and is about 25 metres east of grid station J 6.
Highly altered and strongly sheared black, green and purple andesite is exposed. It is about 40 metres west and 10 metres higher in elevation than a small rock trench that exposed silicified, strongly fractured pyritized andesite.
Slickensides are in various directions, the gouge is light brown, and vertical shearing strikes north.

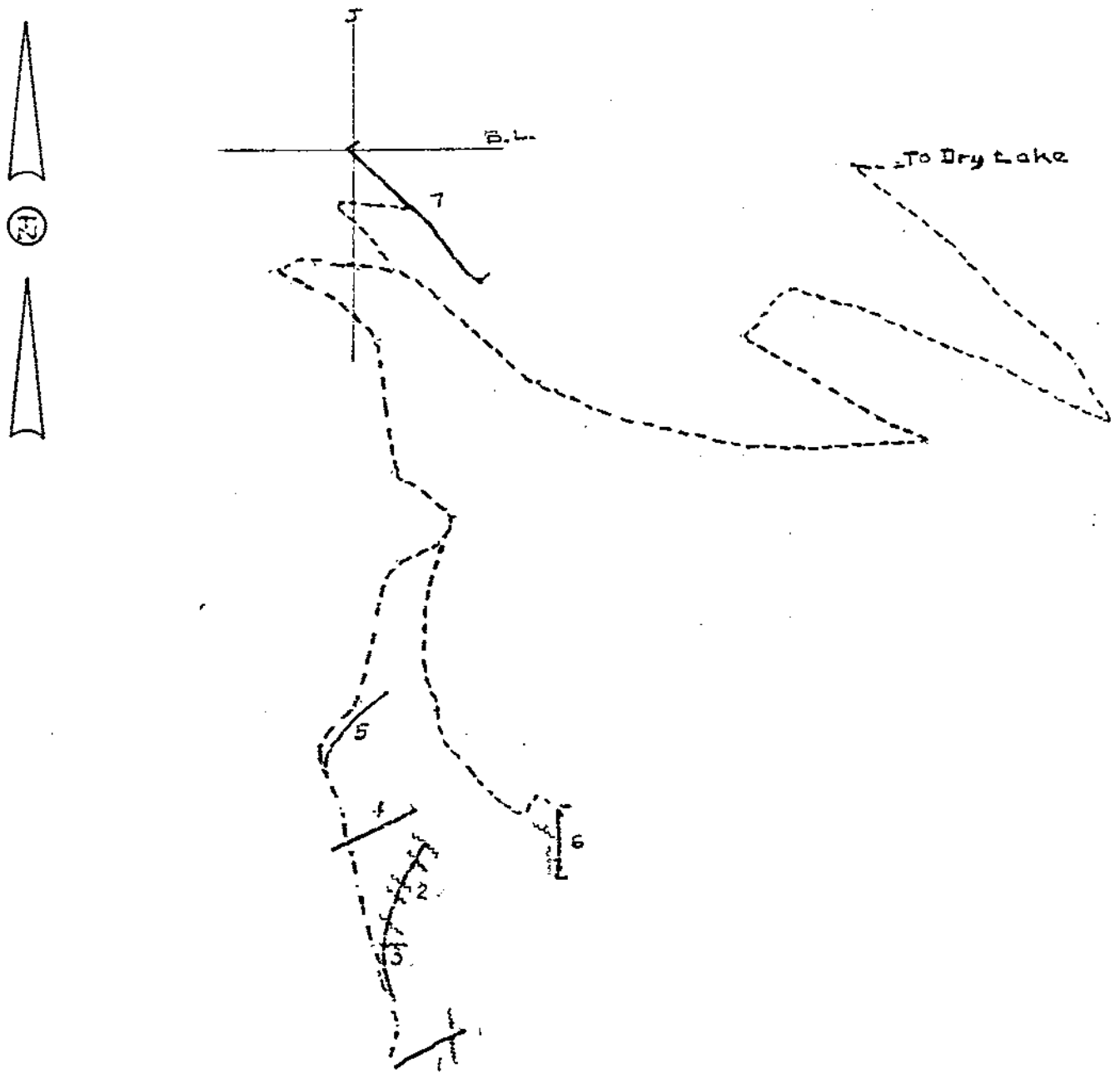
Specimen #1 from near the south end is black fine-grained, grey-weathering andesite.

Specimen #2 from near the south end is purple and grey, fine-grained andesite porphyry.

Specimen #3 from the central part of the trench is black, very soft and foliated andesite.

Little or no sulphide mineralization is evident.

Number Two is 30 metres long, 10 metres wide and 8 metres deep. It has been joined with Trench #3, and is the largest trench.
Irregular bands and shears contain pyrite, chalcopyrite, sphalerite, galena, malachite and azurite.
The shear zones strike northwesterly and dip 45 to 60 degrees southwest and 40 to 60 degrees northeast to vertical.
On the exposed west side, there is light grey, silicious, strongly fractured altered andesite with white opaque quartz, pyrite, chalcopyrite, sphalerite, galena, malachite and azurite.
Two chip samples were taken from the sheared and altered andesite.



CARDERO RESOURCES LTD.

ACE PROPERTY

Similkameen M.D. B.C.

TRENCHES

Scale 1"=100 m

No. 5

Date: 30-11-77

Allen Geological Engineering Ltd.

Per Alfred E. Allen P.Eng.

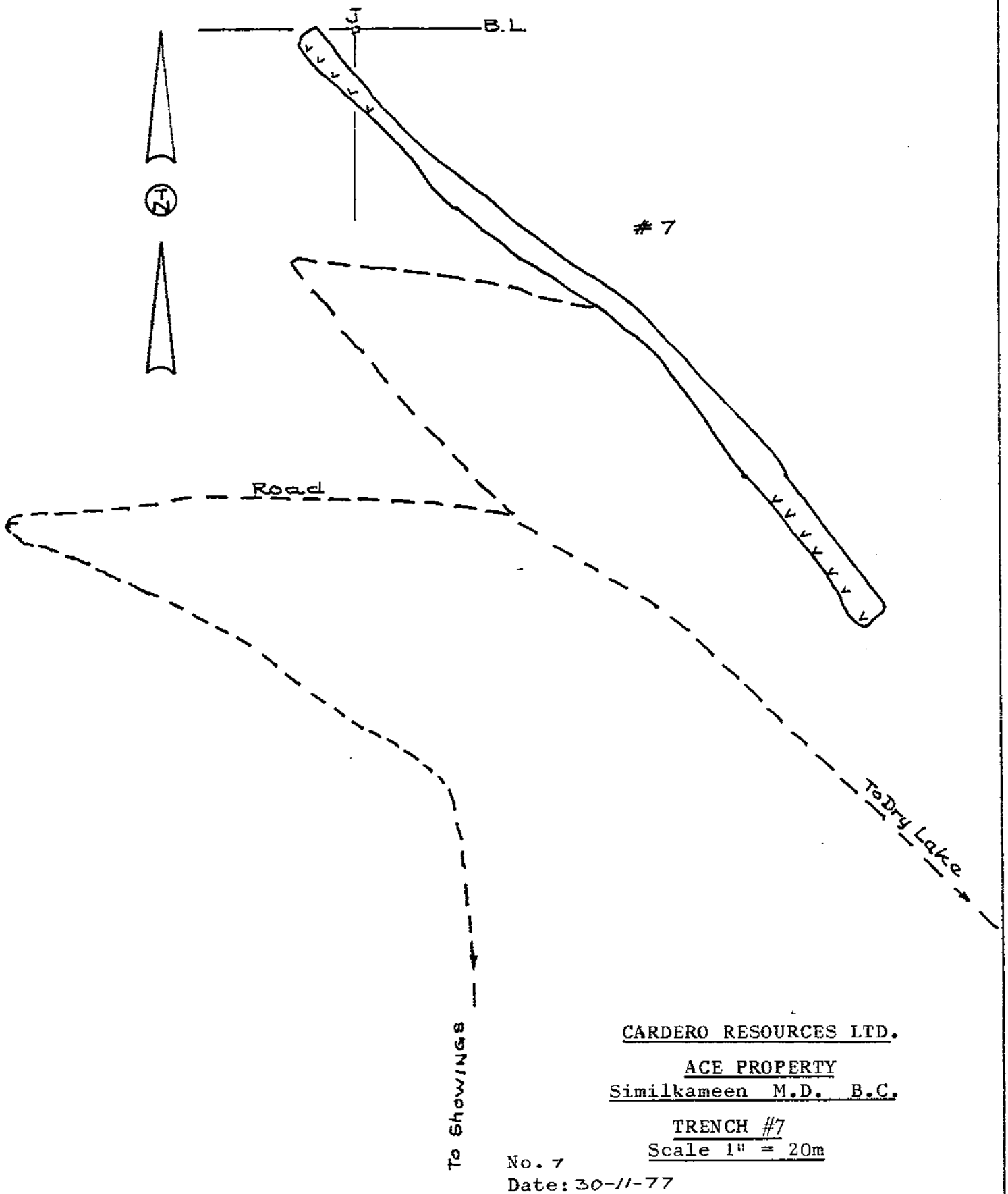
Chain & Compass Survey

Number Three has been enlarged and widened to become the southerly extension of Number Two and the geology is similar.
One character sample was taken from the siliceous rock west of this trench.

Number Four is 38 metres long, 5 metres wide and about 4 metres deep. It has been extended to the west side of the road to expose light grey quartzitic strongly fractured rock and highly altered andesite. Pyrite occurs as fracture fillings and disseminated bunches.
Similar rock is exposed on the east side of the road and within the trench. Altered andesite is exposed in the northeasterly end of the trench. It is fine-grained, hard and brown to dark green rock.

Number Five is 60 metres long, 5 metres wide and up to 6 metres deep.
Except at the southwest end where black compact andesite is exposed, bedrock was not evident.
Two soil samples, T 51 and T 52, were taken from the hard grey overburden.

Number Six is 30 metres long, 5 metres wide, and up to 6 metres deep.
It is 80 metres east of the northeast end of #2 trench.
It exposes shearing striking north and dipping 70 degrees south, with a cross shear northwesterly and dipping 45 degrees northeast near the north end.
Near the latter shear, in black andesite there is a 15 centimetre band of pyrite with minor chalcopyrite and malachite.
The central part exposes iron stained black altered andesite.
Thirty metres from the south end of the trench there is malachite and azurite with quartz.
A sample of this was taken from the trench floor.



CARDERO RESOURCES LTD.

ACE PROPERTY

Similkameen M.D. B.C.

TRENCH #7

Scale 1" = 20m

No. 7

Date: 30-11-77

Allen Geological Engineering Ltd.

Per Alfred P. Allen P.Eng.

Chain & Compass Survey

vvv Granodiorite

Number Seven is located near base line J, 400 metres north of Trench Number Five. It is 130 metres long, 5 metres wide and about 3 metres deep.
It exposes granodiorite at both ends. It is a medium-grained, light grey rock, stained brown from iron filled fractures, and in places somewhat altered. Small xenoliths are included.
The contact with Nicola andesitic rocks is projected about 50 metres to the west, but overburden masks the exact location.

GEOLOGICAL SURVEY

All grid lines were traversed as well as the secondary road, numerous trails, and the two creeks.

Regionally, the area is underlain by the Nicola Group, composed chiefly of andesite and basalt including porphyritic, agglomeritic, vesicular amygdaloidal and massive flows. Overlying unconformably are hard, reddish andesitic and basaltic remnants of the Lower Cretaceous Spences Bridge Group and volcanic breccia of the Lower Cretaceous Kingsvale Group. These volcanic rocks have been intruded by Jurassic or Later Coast Range granite and granodiorite. Major faults trend northwesterly.

The Ace claim is underlain by Nicola andesite, except for the southeast corner which may include limited Kingsvale volcanic breccia, and the northeast corner which is Coast Range granite and granodiorite. The only evident structural features are the strong shearing in the Nicola andesite with which pyrite, chalcopyrite, sphalerite, galena, malachite and azurite are associated, and the faulted contact between the Nicola and Coast Range granodiorite in the northeast quadrant of the property.

Type specimens were acquired from outcrop areas and retained for possible further study, as follows:

Nicola Group, Upper Triassic

Specimen Number	Grid Location	Description
10	S18-20	Black porphyritic andesite, weathering grey
11	S12-13	Greenish grey agglomerate, rounded fragments, light green and grey rings
7	S13-14	Grey-green andesite, fine-grained red jasper in fractures.
13	L5	Black andesite agglomerate and massive black andesite

Kingsvale Group, Lower Cretaceous

1	B20	Breccia - Rounded pebbles of red Spences Bridge andesite in grey andesite porphyry
2	B20	Black fine-grained amygdaloidal basalt, adjacent to band of volcanic breccia
3	B20	Light grey, slightly vesicular and obicular structure, volcanic flow(?)
4	4cm west of B20	Reddish brown compact, dark brown weathering aphanitic volcanic rock
8	Float	Volcanic agglomerate, light brown matrix and dark purplish angular fragments of andesite.

Coast Range Intrusives, Jurassic-Lower Cretaceous

1A	A3	Reddish fine-grained granodiorite
4A	A4	Grey medium-grained biotite, hornblende granodiorite
5	A8	Granodiorite porphyry
6	B5	Light pinkish grey, altered quartz diorite

SURVEY RESULTS

Closely traversed on grid lines, ridges, trails, roads and creeks, the Ace claim was found to be underlain largely by Nicola andesite, porphyritic andesite and agglomerate.

Although no clear-cut contact was observed, there are outcrops on the southeast boundary of the claim that are classified as Kingsvale volcanic rocks.

The northeastern part of the claim is underlain by Coast Range intrusive rocks. The contact with the Nicola volcanics is not exposed but has been closely located by rock outcrops. Because of strong shearing and alteration of the Nicola volcanic rocks near the contact zone it is believed to be faulted.

The predominant rock types are as follows:

The Upper Triassic Nicola Group:

Massive black, grey-weathering andesite.
Black, compact, finely crystalline andesite with numerous small angular grey to cream coloured phenocrysts.
Dark greenish grey andesite, weathering light grey and finely fractured in several attitudes.
Andesite breccia with angular vari-coloured angular fragments up to 8 centimetres long.
Compact, massive, andesitic agglomerate with porphyritic and vesicular to amygdaloidal rounded pebbles to fist-sized and larger vari-coloured fragments.
Grey andesite with brown to purple weathering.

The Lower Cretaceous Kingsvale Group:

In the southeasterly part of the claim area there are volcanic outcroppings classified as Kingsvale, but associated with what appears to be typical andesite and porphyritic andesite of the Nicola Group. There is no distinct contact evident between the Nicola and Kingsvale groups.

The most extensively exposed rock is a massive weakly brecciated, crystalline, brown to purplish weathering fairly soft volcanic rock.

What may be a volcanic flow rock, light grey, fairly coarse-grained with vesicular and spheroidal or obicular semi-transparent particles in a very fine-grained ground mass.

Black amygdaloidal basalt adjacent to brecciated dark grey andesite.

The Jurassic Lower Cretaceous Coast Range Intrusives

The northeastern portion of the claim includes numerous exposures of grey biotite, hornblends granodiorite.

The contact with the Nicola Group has not been observed on the claim area.

A fine-grained phase with brownish-red colouration was noted near the east boundary.

Several outcrops of coarser grained rock with 40 to 50% hornblende and low quartz content were observed.

One diorite dike outcrops at D9, near the indicated contact with the Nicola Group.

Exposures in Trench #7 and on the west bank of the creek show fracturing and alteration.

On the west side of the creek where trenches have exposed sulphide mineralization there is faulting and strong shearing in a northwest direction.

Structural evidence is lacking within the exposures of volcanic rocks except for the following:

From L5 southwesterly to the creek near G8 there are scattered outcrops of andesitic agglomerate which may represent the general attitude of the Nicola volcanics in the northwest quadrant of the claim.
At P18-19 and N20 and R0-2 shear zones possibly indicating a northwest trend.

In trenches 2,3 and 6 there is alteration and silicfication of faulted and sheared andesitic rocks with pyrite, chalcopyrite, sphalerite, galena, malachite and azurite.
The alteration and silicification is also exposed in the southwest end of Trench #4.

Samples assayed as follows:

No.	Location	Width metres	Ag Oz/T	Cu %	Pb %	Zn %	Description
876K	Trench 2	0.3	0.19	1.11	0.06	2.14	Shear zone
069001	" 6	1	0.03	0.56	-	0.80	Altered zone
069002	"2	1	0.16	0.14	0.09	1.35	Altered zone
069003	selected		0.02	0.17	0.02	1.33	Silicified zone

In Trench #1, a 30 metre zone is very strongly sheared.
The old rock trench below and ea t of the No.1 trench exposes light grey, highly fractured, pyritized andesite similar to that exposed in Trenches 2, 3 and the west end of 4.

SUMMARY AND CONCLUSIONS

The 20 unit Ace claim #49 is located 22 metres north of Princeton, west of Highway #5 and south of Dry Lake.

A geological survey was conducted over the property by the writer, June 16 - August 30, 1977. Grid lines, trails, roads and two creek valleys were traversed. Trenches were widened and deepened and mineral showings sampled. Type specimens of the various rocks were taken and stored for future reference.

Most of the claim is underlain by Nicola andesitic rocks. The southeast area includes outcrops of volcanic rocks classified as part of the Lower Cretaceous Kingsvale Group. Most of the northeast quadrant is underlain by Coast Range granodiorite.

Pyrite, chalcopyrite, sphalerite, galena, malachite and azurite mineralization has been partially exposed by trenches west of the faulted contact between the Nicola andesite and Coast Range granodiorite.

It is concluded that additional investigations are warranted on the northeast quadrant of the Ace claim in order to assess the mineral potential and therefore an exploration programme is recommended.

RECOMMENDATIONS

The following investigations are recommended on the northeast quadrant of the Ace claim:

	Estimated Costs
1. Establish a 50metre by 50metre grid over the rectangular area A-K : 0-10,	$ 1,000.00
2. Conduct a geochemical survey over the area,	2,500.00
3. Conduct a magnetometer survey over the area,	1,000.00
4. Conduct an electromagnetic survey over the area	1,000.00
5. Conduct an induced polarization survey over the area,	3,500.00
6. Bulldoze where necessary to check bedrock over anomalous zones,	2,000.00
7. Office, overhead and supervision,	2,500.00
8. Contingencies,	1,500.00
	$15,000.00

Completion time is estimated at two months.

Respectfully submitted,
ALLEN GEOLOGICAL ENGINEERING LIMITED

Per Alfred R. Allen P.Eng.
Alfred R. Allen

West Vancouver, B.C.
November 28, 1977.

REFERENCES

Rice, H.M.A.,	Geological Survey of Canada	Memoir 243 1947.
Cochrane, D.R.,	Geophysical and Geochemical Surveys on AT Group	Assessment Report #4349, 1972.
Skerl, A.C.,	Geochemical Survey, Allison Lake Claims, near Princeton, B.C.	Assessment Report #1857, 1969.
Geology, Exploration and Mining,	B.C. Department of Mines and Petroleum Resources	1971-72

* * * * * * * * * *

Allen Geological Engineering Limited
2025 BELLEVUE AVENUE
WEST VANCOUVER, B.C., V7V 1B9

Telephone
604-926-4785

CERTIFICATE

November 28, 1977.

I, Alfred R.Allen, certify that:

I am a graduate of the University of British Columbia and hold the following degrees therefrom:

BASc Geological Engineering 1939

MASc Geological Engineering 1941

I am a member of the Association of Professional Engineers of the Province of British Columbia.

I have practised my profession for the past thirty years.

I hold no interest in the properties or securities of Cardero Resources Ltd., or affiliates thereof, nor do I expect to receive any, directly or indirectly.

The accompanying report on the Ace property is based on field work done by the writer June 6, 1977 to August 28, 1977.

I consent to this report being filed with the British Columbia Securities Commission.

Alfred R. Allen, P.Eng.

Alfred R. Allen

Allen Geological Engineering Limited
2025 BELLEVUE AVENUE
WEST VANCOUVER, B.C., V7V 1B9

Telephone
604-926-4785

November 28, 1977.

British Columbia Securities Commission
756 Fort Street
Victoria, B.C.

Dear Sirs:

Re: Cardero Resources Ltd.

I hereby consent to the use of my report Dated November 28, 1977, on the Ace claim, Similkameen M.D., B.C., in any prospectus or Statement of Material facts or other material to be filed with the British Columbia Securities Commission or the Vancouver Stock Exchange by Cardero Resources Ltd.

Yours very truly,

Alfred R. Allen P.Eng.

Alfred R. Allen

For:
ALLEN GEOLOGICAL ENGINEERING LTD.

GEOCHEMICAL SURVEY

THE ACE CLAIM #49, Map 92H-10E

SIMILKAMEEN M.D., B.C.

FOR: CARDERO RESOURCES LTD.

PERSONNEL AND TIME

GRID
GEOLOGICAL SURVEY
GEOCHEMICAL SURVEY
MAGNETOMETER SURVEY

FIELD TIME

Name	Month	Grid	Dates Geology	Geochem. & Mag.	Man Days
A.R. Allen,	June:	16-18,22,23	15,24-28		11
	July:	7,21-23	13-15,24	3,16-20	14
	Aug.:		1,14,24-27,30	2,4-6,8-10,19	15
T. Thomas,	Aug.:	24-26		27	4
S. Money,	June:	16-17,20-30			13
	July:	1,4-10			8
R. Barnatson,	July:	16,17,21-24			6
M. Racher,	June:	26-30			5
	July:	1,4,5,7-10,13-15 17,21-23			14
	Aug:			4,5	2
K. Parks,	June:	16,17,21-24			6

MOBILIZATION, MAPPING, REPORTS

A.R. Allen,	June:	6,13,14,22	4
	July:	6,12,	2
	Aug.:	3,24,29	3
	Sept:	5-10,13-15	9
	Oct.:	4-9,14	7
	Nov.:	13,14,28	3
TOTAL			126

GEOLOGICAL SURVEY

ACE CLAIM - #49, Map 92H - 10E

SIMILKAMEEN M.D. B.C.

FOR: CARDERO RESOURCES LTD.

Personnel, Time and Costs

OPERATOR: Alfred R. Allen, Geological Engineer @ $185.00/day
202 - 2025 Bellevue, West Vancouver, B.C.
June 6 - November 28, 1977.

CREW: T. Thomas, Experienced field man, @ $75.00/day
Shook Road, Mission, B.C.
S. Money, Axeman, Princeton, B.C. @ $7.00/hour
M. Racher " " @ $7.00/hour
K. Parkes " " @ $7.00/hour
R. Barnatson " " @ $7.00/hour

SURVEY:	Man Days	Costs
T. Thomas	2	$ 150.00
A.R. Allen	17	3,145.00
GRID	10	806.00
TRANSPORTATION, 2 cars, 20¢/mile		388.00
ACCOMMODATION, Motel @ $20.00/day		300.00
SUPPLIES		25.00
FOOD		238.00
MAPS, AIR PHOTOS		17.00
VEHICLE RENTALS, Jeep, Dune Buggy @ $20.00/day		54.00
BULLDOZING, @ $55.00/hour		895.00
MOBILIZATION, MAPPING, REPORTS, A. R. Allen	6	1,110.00
TOTAL	35	$7,128.00

Legal Post
Tag 11582
ACE # 495(2)

Princeton Hwy

Spec 1-A

Spec 4A

Spec 5

Spec 12

Spec 11

Spec 7 J"

Spec 10

Spec A-14

Spec 4 & Spec. 1, 2 & 3

Spec. 8 & 9

CREEK

CREEK

camp

Grid By Chain & Brunton

Granite & Granodiorite	∨	Specimen, Spec	
Diorite	▫	Faulting	ww
Black Andesite	A	Shearing	//
Porphyritic "	P	Fracturing	45
Brecciated "	▫▫	Rock Trenches	⌠5
Agglomeritic"	oo	Road	
Jasper in Fractures	J	Base Line	B.L
Few or no outcrops	---	Glacial Striae	
Geological Contact	....	Chip Sample	⊖

100 50 0 100 200 300 400
SCALE METRES

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

6697

NO.

Part 1 of 3

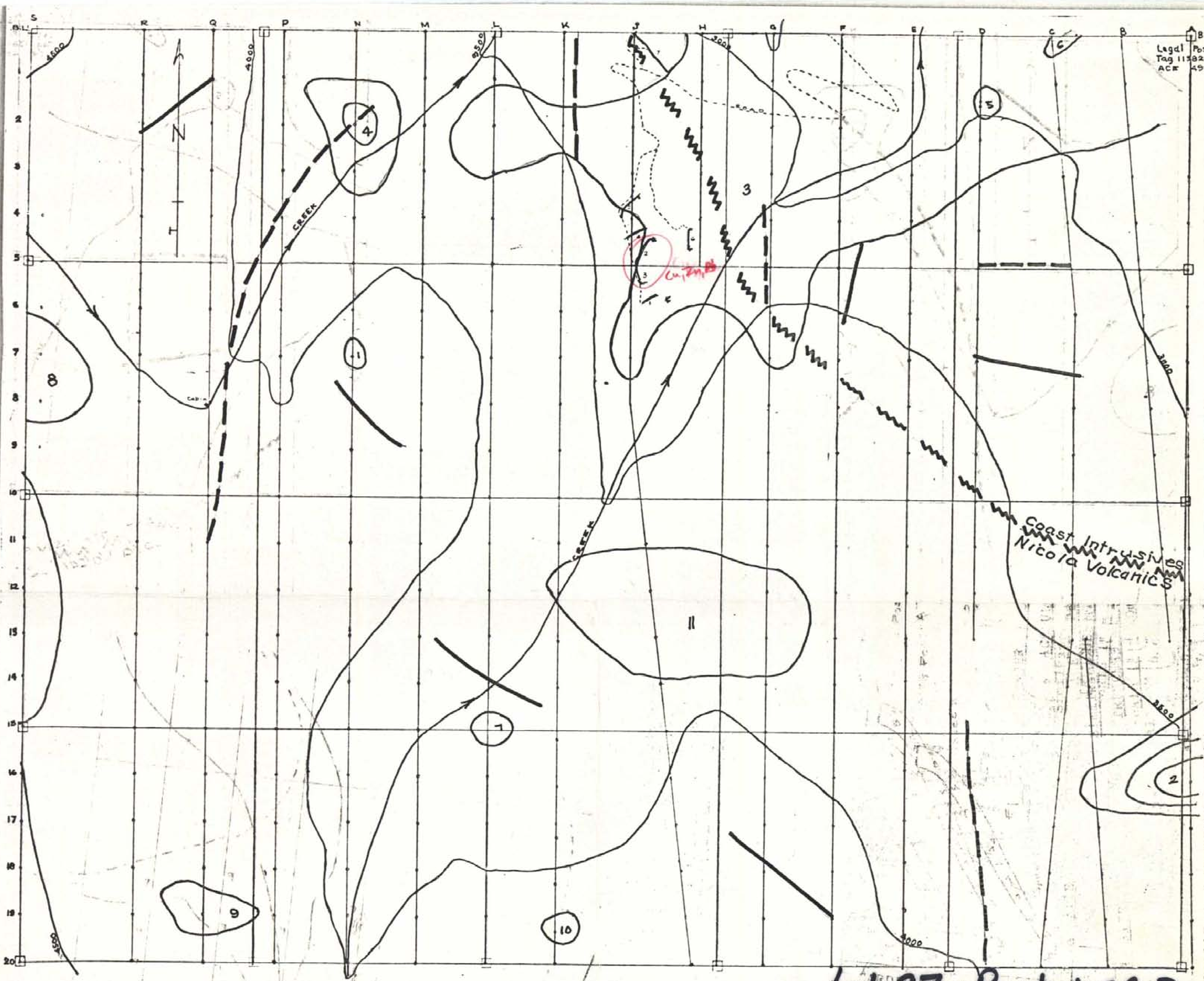
CARDERO RESOURCES LTD.

ACE PROPERTY
Similkameen M.D. B.C.

GEOLOGY
Scale 1"=200m

No.
Date:

Allen Geological Engineering Ltd.
Per Clifford R. Allen P.Eng.



6697 - Part 1 of 3

LEGEND

COAST RANGE INTRUSIVES	
NICOLA VOLCANICS	
APPROXIMATE LOCATION FAULT CONTACT	
GEOCHEMICAL ANOMALIES - COPPER	
RELATIVE MAGNETIC HIGH	
RELATIVE MAGNETIC LOW	
TRENCHES EXPOSING COPPER MINERALIZATION	
MINE ROAD	

SCALE METRES

COMPOSIT PLAN

CARDERO RESOURCES LTD.

ACE PROPERTY

Similkameen M.D. B.C.

GEOCHEMICAL MAGNETOMETER GEOLOGY

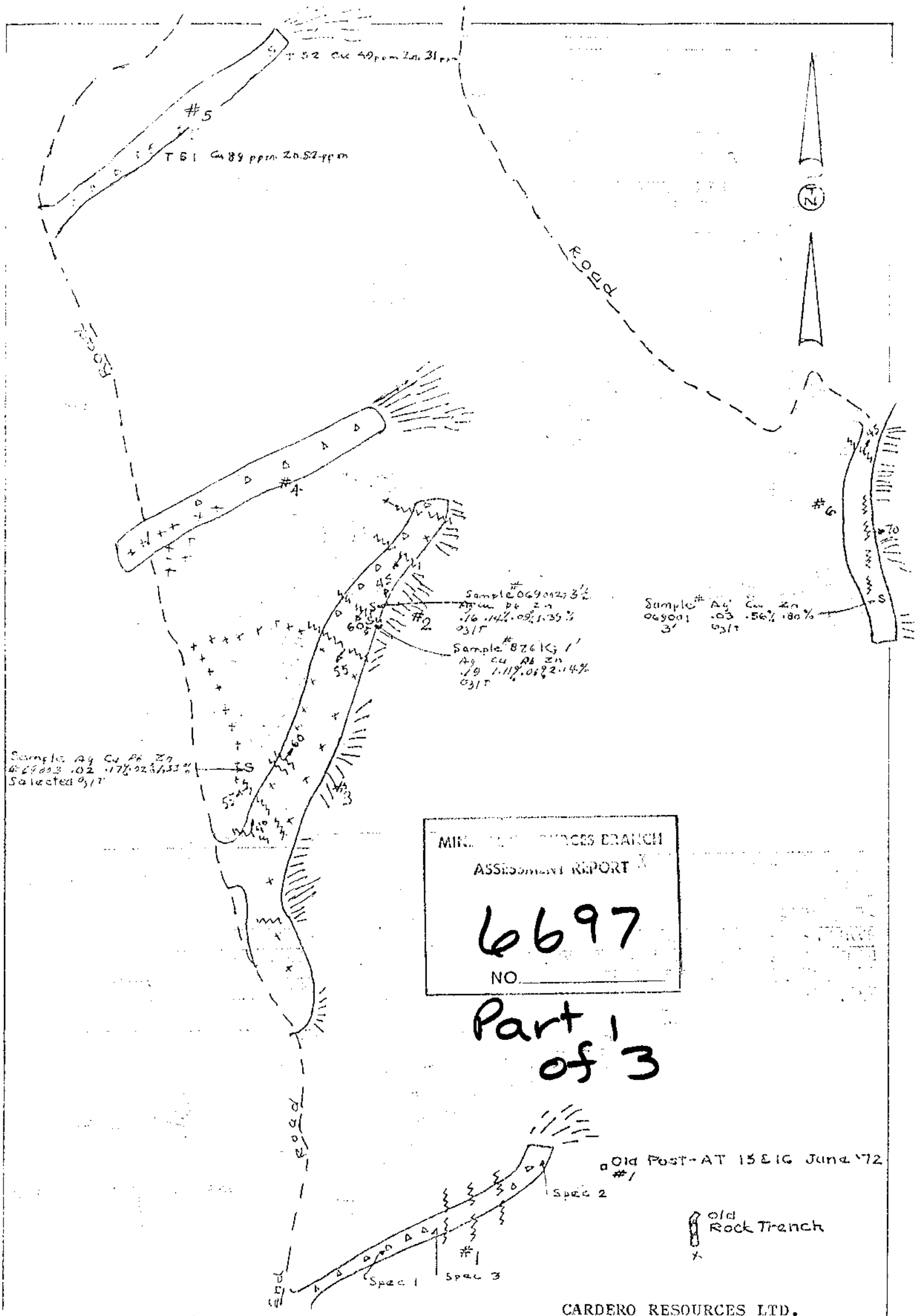
Scale 1"=200m

No. 4

Date: 28/11/77

Allen Geological Engineering Ltd.

Per ______ P.Eng.



LEGEND

ANDESITE	△
SILICIFIED ANDESITE, QUARTZ	×
PYRITE, CHALCOPYRITE, SPHALERITE	×
SAMPLES, SOIL AND ROCK	S
SPECIMENS	Spec.
SHEARS	
DUMP	
CHAIN & BRUNTON SURVEY	

CARDERO RESOURCES LTD.

ACE PROPERTY
Similkameen M.D. B.C.

TRENCHES #1 - #6
Scale 1" = 20m

No. 6
Date: 30/11/77

Allen Geological Engineering Ltd.
Per Alfred P. Allen P.Eng.