

GEM

92H/12E

1975 Assessment Report
Geological Examination and Petrographic Studies

#5850

TITLE Clear Creek Property
CLAIMS Gem #1-4 Inclusive
COMMODITY Mo
LOCATED 29 miles north of Harrison Hot Springs
Latitude 49°43'N Longitude 121°43'W
New Westminster Mining Division 92 H/12E
BY D.G. Allen, P.Eng. (B.C.)
FOR AMAX Potash Limited
WORK PERIOD Work was carried out during
October 21 - 26, 1975.

5850

AMAX VANCOUVER OFFICE

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 5850 MAP.....

TABLE OF CONTENTS

SUMMARY----- A

INTRODUCTION

 Location and Access----- 1

 Property----- 1

 Physiography----- 1

 History----- 1

 Scope of Exploration Program----- 2

GEOLOGY

 Generalized Geology----- 3

 Mineralization and Alteration----- 4

TRACE ELEMENT ANALYSES----- 4

REFERENCES----- 6

APPENDICES

APPENDIX I - Statement of Costs

 II - Statement of Qualifications

 III - Sample Descriptions

 IV - Results of Multielement Analyses

 V - Contractor's Invoices

ILLUSTRATIONS

#1 FIGURE 1 - Location Map-----1:250,000----After Page 1

 #2 2 - Sample Location-----1:4,800----In Pocket

SUMMARY

The Clear Creek molybdenite prospect is situated 29 miles north of Harrison Hot Springs and 72 miles northwest of Vancouver. The property has been extensively explored during the period 1964 to 1968 by Utah Construction and Mining Company. The geology is well known.

An attempt was made to remap the property in 1975 but early snowfalls precluded all but an examination of most of the geologic units on surface and in drill core. Samples were taken for trace element analyses and thin section study and are used as the basis of this report. Several minor modifications of the geology have been made as a result of this study. The main changes are in more fully defining the nature of the quartz monzonite porphyry stock and breccia.

Multielement analyses of several of the units of the stock indicate no significant variance from typical quartz monzonites.

INTRODUCTION

Location and Access

The Clear Creek Molybdenite Prospect is situated 29 miles north of Harrison Hot Springs and 72 miles northwest of Vancouver. The property lies at the head of Clear Creek (Figure 1). Access at present is by helicopter. A former access road connecting logging roads along the east side of Harrison Lake has been washed out in several places along Clear Creek.

Property

The property consists of four claims, Gem 1 - 4 (13 units) staked for AMAX Potash Limited and recorded on June 5, 1975.

Physiography

The Gem claims lie near the head of the Clear Creek and Spuzzum Creek drainages between elevations 2,500 and 5,000 feet. Topography in the area is rugged - steep rock bluffs and talus slopes dominate the area.

Vegetation includes virgin red cedar, yellow cedar, hemlock, douglas fir and balsam fir. Thick growths of slide alder and salmonberry occur in slide areas.

History

The original discovery of molybdenite in the area was made prior to 1912. Gem Explorations obtained the property in



121° 45'

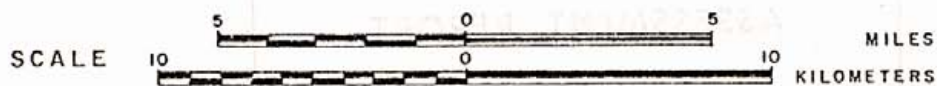
AMAX POTASH LIMITED

**CLEAR CREEK PROPERTY
GEM CLAIMS**

NEW WESTMINSTER M. D. — BRITISH COLUMBIA

LOCATION MAP

Donald S. Allen



1 : 250,000

N. T. S. Ref. 92 H 12

FIG. 1

1961 and carried out diamond drilling, trenching and constructed a 493 foot adit on the southeast side of Clear Creek.

In 1964 the property was optioned to Utah Construction and Mining Company. A road was constructed to the property and 14,445 feet of diamond drilling was carried out in 21 holes. Phelps Dodge Ltd. participated in the drilling in 1968. The interest acquired by these companies in the property was relinquished in 1969. Gem Explorations Ltd. (later Consolidated Gem Explorations Ltd. and Brendon Resources Ltd.) subsequently allowed the claims to lapse.

Scope of Exploration Program

Five days were spent on the Clear Creek Property. Heavy snowfalls prevented an attempt to initiate remapping of the Gem stock and surrounding area. However most of the geologic units were examined on surface and in drill core. Samples for trace element analyses and thin section preparation and study were taken. Core racks on the property were strengthened and covered to prevent possible collapse by snow. A topographic base map was prepared from air photos by Pacific Survey Corporation (Figure 2).

GEOLOGY

Generalized Geology

The geology of the Clear Creek Property is well known (see Young and Aird, 1969). Minor modifications have been made as a result of this study. The geology is summarized below and on Figure 2. Thin section descriptions are presented in Appendix III.

The Clear Creek area is underlain by Coast Crystalline rocks. The most common rock types in the area include granodiorite and quartz diorite of the Spuzzum and Scuzzy plutons and a series of quartz-feldspar-biotite gneisses and schists.

These rocks are intruded by a biotite quartz monzonite porphyry stock about 3,500 feet and 2,000 feet wide. The quartz monzonite typically is medium grained with numerous quartz, plagioclase and orthoclase phenocrysts crowded in a fine grained groundmass containing about 3 to 7% biotite. Locally the rock is equigranular.

The Gem breccia (quartz monzonite porphyry breccia of Young and Aird) intrudes quartz monzonite porphyry. The breccia consists of subangular to subround rhyolite porphyry, granodiorite and granite fragments that vary from 1 cm to 1 m diameter. Quartz and feldspar crystal fragments as small as 0.01 mm are also present in a groundmass of comminuted rock. Finely disseminated biotite is visible in thin section in the groundmass.

A smaller body of "mixed" breccia outcrops along the northeastern edge of the Gem breccia. It consists of tightly packed angular to subangular fragments ranging from 2 to 20 cm with a very small amount of comminuted rock matrix.

Two texturally distinct phases of porphyritic granodiorite were encountered in a deep drill hole (see rock descriptions 21-1329 and 21-1466). These phases apparently intrude quartz monzonite porphyry.

A number of porphyritic quartz latite dykes of varied texture up to 15 metres wide have been observed cutting the Gem breccia.

Mineralization and Alteration

Molybdenite occurs mainly disseminated in and along veinlets of quartz that vary from 1 mm to 0.5 metre wide. Locally, small amounts of pyrrhotite, pyrite, chalcopyrite, sphalerite and scheelite occur in quartz veins.

Apart from abundant quartz veining the host rocks show little alteration. Along many of the quartz veinlets feldspars have been partly sericitized and biotite converted to chlorite for a distance of up to 0.5 cm. Very fine grained biotite, apparently of hydrothermal origin, occurs disseminated throughout the matrix of the Gem breccia.

TRACE ELEMENT ANALYSES

Thirteen rock samples were analyzed for a number of elements in order to determine whether the rocks are highly differentiated and to see whether or not any potentially significant spatial variations might be present in their trace element distributions. Results of the geochemical analyses are presented in Appendix IV.

None of the elements analyzed show any significant variance from typical quartz monzonites. Several show a weak

variation with depth. Tin appears to increase and nickel appears to decrease with depth. In the host granodiorite, zirconium shows a slight increase and niobium a slight decrease towards the quartz monzonite contact and/or with increasing depth.

D.G. Allen, P.Eng. (B.C.)

Donald G. Allen

REFERENCES

- YOUNG, M.J. and AIRD, C.A., 1969 Geology of the Gem Molybdenum Deposit. C.I.M. Bulletin, Vol. 62, No. 681, p. 41-46.

APPENDIX I - STATEMENT OF COSTS

<u>Period of Work</u>	October 21 - 26, 1975	
<u>Summary of Work</u>	Geological Examination and Petrographic Studies	
<u>Personnel</u>		
D.G. Allen - 601-535 Thurlow Street, Vancouver, B.C. Staff Geologist, 5 days @ \$93.50/day		467.50
F.R. Harris - 601-535 Thurlow Street, Vancouver, B.C. Staff Geologist, 5 days @ \$93.50/day		467.50
W.R. Ridgway - 601 Draycott St., Coquitlam, B.C. Junior Assistant, 5 days @ \$37.97/day		189.85
B.C. Wright - 3806 West 27th Ave., Vancouver, B.C. Junior Assistant, 5 days @ \$30.44/day		152.20
<u>Board</u> - 20 man days @ \$20.00/day		400.00
<u>Helicopter</u> - Highland Helicopters		
October 21 - 2.0 hours @ \$260.00/hour	\$520.00	
46 gals. @ \$.83/gal	38.18	
26 - 1.4 hours @ \$285.00/hour	399.00	
32.2 gals. @ \$.81/gal	<u>26.08</u>	983.26
<u>Topographic Base Map</u> - Pacific Surveys Corporation		840.00
<u>Trace Element Analysis</u> - Fluo-X-Spec Analytical Lab Skyline Labs, Inc. 13 samples for Sn, Zr, U, F, Si, Li, K, Na, Ca, Mn, Ni, Ba, Sr, Rb, Nb, Ti @ \$22.10/sample		287.30
<u>Thin Sections</u> - Vancouver Petrographics Ltd. 27 thin sections @ \$4.00/section		108.00
<u>Report Preparation and Drafting</u>		500.00
	Total	\$4,395.61 =====

Assessment work to be applied to -

- Gem 1 (4) and Gem 3 (4) 2 years each
- Gem 2 (4) and Gem 4 (1) 1 year each

Donald S. Allen

APPENDIX II

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

F.R. Harris

Education

University of Western Ontario - B.Sc. Honours Geology 1961
University of New Brunswick - M.Sc. Geology 1964

Experience

May 60 - May 64 - Summer employment while attending university with Geological Survey of Canada and the New Brunswick Department of Lands & Mines

May 64 - June 70 - Ontario Department of Mines based in Thunder Bay. Party Chief - mapping and writing final reports on areas ranging from 100 to 150 square miles

July 70 - Amax Exploration, Inc - Staff Geologist
Plans, organizes and supervises small property and prospect evaluation programs or assists with the planning and management of large property exploration programs utilizing all exploration techniques.
Selects, applies and interprets the most effective exploration approaches and techniques for any type of exploration survey.

STATEMENT OF QUALIFICATIONS

NAME: William R. Ridgway DATE OF BIRTH: August 27, 1951

EDUCATION: Killarney High School Vancouver - Graduated June, 1969
 University of British Columbia, Honours B.Sc. in Geology.
 Attended from September 1969 to May 1973.

EXPERIENCE: May 1973 - 1974 Falconbridge Nickel Mines Limited

STATEMENT OF QUALIFICATIONS

NAME: BERNARD WRIGHT

DATE OF BIRTH: January 30, 1950

EDUCATION:

Chomedey Catholic High School - Laval, P.Q. - Graduated 1968

Vancouver City College - September 1970 - January 1972

EXPERIENCE:

Canadian Pacific Railway

North Wales Hospital, U.K.

Brown Bros. Ford - Vancouver

Plans to return to University this Fall

APPENDIX III

SAMPLE DESCRIPTIONS

Note: Samples prefixed with a G are taken from surface
Drill hole samples are labelled by drill hole and
footage

SAMPLE NUMBER G-1

Porphyritic Quartz Latite

MEGASCOPIC DESCRIPTION - Rock contains about 15% subhedral to euhedral plagioclase phenocrysts ranging from 0.1 to 3 mm with 10% rounded quartz grains and aggregates of grains up to 7 mm. Biotite occurs as euhedral 0.1 mm grains. Groundmass is very fine grained and rich in K-feldspar.

MICROSCOPIC DESCRIPTION - Phenocrysts of plagioclase, quartz, biotite and orthoclase vary from 0.05 to 1 cm in diameter. Phenocrysts are generally euhedral to subhedral. Groundmass grain size is 0.04 to 0.1 cm and consists mainly of interlocking grains of orthoclase with undulatory extinction, quartz and fine biotite.

SAMPLE NUMBER G-5

Porphyritic Quartz Latite

MEGASCOPIC DESCRIPTION - Rock consists of about 20% euhedral plagioclase phenocrysts 0.1 to 1 mm long, 30% biotite phenocrysts and 3% quartz grains in a fine grained orthoclase-rich groundmass. A few plagioclase phenocrysts contain cores of garnet.

MICROSCOPIC DESCRIPTION - Abundant euhedral plagioclase, quartz and orthoclase phenocrysts in fine grained groundmass. Phenocrysts range from 0.1 to 2 mm in length. Groundmass consists of quartz and quartz-orthoclase myrmekitic intergrowths 0.04 - 0.02 mm in diameter. Biotite occurs both as ragged phenocrysts and as disseminated interstitial flakes in groundmass.

SAMPLE NUMBER G-5A

Gem breccia

MEGASCOPIC DESCRIPTION - Numerous rock fragments up to 6 mm in diameter and phenocrysts? of quartz and rock fragments as small as 0.1 mm in very fine grained groundmass of comminuted rock.

MICROSCOPIC DESCRIPTION - Breccia appears to be essentially a broken up, crushed rock with essentially no igneous matrix. Numerous rock and crystal fragments as small as 0.01 mm in diameter. Abundant hydrothermal biotite in groundmass averaging 0.01 mm. Some larger biotite fragments in groundmass partially altered to chlorite. A few quartz grains are veined by hydrothermal biotite.

SAMPLE NUMBER G-9

Gem breccia

MEGASCOPIC DESCRIPTION - Abundant rock fragments up to 2.5 cm consisting mainly of aphanitic rhyolite porphyry with numerous feldspar and quartz fragments. Weakly developed foliation.

MICROSCOPIC DESCRIPTION - Similar breccia as above with abundant rock and crystal fragments. Finely disseminated biotite in groundmass. Chlorite clots up to 0.5 mm are common. Some of the rock fragments are weakly sericitized.

SAMPLE NUMBER G-11

Porphyritic quartz latite

MEGASCOPIC DESCRIPTION - Rock contains scattered bipyramidal quartz grains up to 2 mm in length, subhedral grains and aggregates of plagioclase grains 0.1 mm with 3% subhedral biotite in a fine grained sugary textured groundmass of quartz and orthoclase.

MICROSCOPIC DESCRIPTION - Euhedral plagioclase (An_{20}) up to 1 mm, clots of anhedral grains up to 2 mm; a few quartz phenocrysts up to 2 mm; all in a fine grained groundmass of interlocking quartz and orthoclase grains ranging from 0.05 to 0.1 mm in diameter. Texture of groundmass is myrmekitic in places.

SAMPLE NUMBER G-16

Gem breccia

MEGASCOPIC DESCRIPTION - Numerous rock fragments up to 2 cm with feldspar and quartz fragments in groundmass of communitated rock.

MICROSCOPIC DESCRIPTION - Similar to G5A: numerous feldspar, quartz and rock fragments as small as 0.01 mm. Abundant finely disseminated biotite in groundmass.

SAMPLE NUMBER 3-156

Mixed breccia

MEGASCOPIC DESCRIPTION - Angular rock fragments up to 3 cm mainly schist and gneiss.

MICROSCOPIC DESCRIPTION - Relatively large rock fragments, packed in a small amount of fine grained matrix of interlocking quartz, K-feldspar and plagioclase. Groundmass appears quite dirty in thin section - feldspars are partially altered to sericite and clay. Grain size of groundmass 0.05 - 0.3 mm. Disseminated clots of chlorite are abundant in groundmass of rock.

SAMPLE NUMBER 3-577

Porphyritic quartz latite
Gem breccia ?

MEGASCOPIC DESCRIPTION - Abundant white feldspar phenocrysts 1-7 mm in length and irregular quartz grains up to 7 mm in diameter.

MICROSCOPIC DESCRIPTION - Phenocrysts of plagioclase, orthoclase and corroded quartz and aggregates of grains up to 2.5 mm in fine grained groundmass ranging from 0.02 to 0.05 mm. Groundmass consists mainly of interlocking quartz and K-feldspar. Biotite occurs finely disseminated throughout the groundmass and in occasional phenocrysts.

SAMPLE NUMBER 8-453

Foliated quartz diorite gneiss

MEGASCOPIC DESCRIPTION - Quartz-plagioclase gneiss with about 20% biotite, cut by 3 mm wide quartz vein. Some K-feldspar? developed within 1-2 mm of quartz vein. Biotite has been converted to chlorite in this halo.

MICROSCOPIC DESCRIPTION - Inequigranular texture - quartz, stressed plagioclase (An₃₇) with biotite. Cut by quartz veinlet, within 2 mm of which plagioclase grains are sericitized and biotite chloritized.

SAMPLE NUMBER 8-471

Porphyritic quartz latite

MEGASCOPIC DESCRIPTION - Light brownish grey porphyritic quartz latite, 15% euhedral rounded quartz phenocrysts, 10% euhedral orthoclase, 15% plagioclase in fine grained sugary textured groundmass; ~1% disseminated light reddish brown garnets. Several 0.5 mm quartz veinlets with trace MoS₂. ✓

MICROSCOPIC DESCRIPTION - Phenocrysts of quartz, plagioclase (An₁₂), ranging in size from 0.2 to 2 mm in fine grained quartz-orthoclase groundmass about 0.02 to 0.06 mm. Biotite occurs as fine flakes and clots throughout the groundmass.

SAMPLE NUMBER 8-769

Altered quartz monzonite

MEGASCOPIC DESCRIPTION - Brownish grey altered phase found near quartz monzonite contacts. Equigranular quartz-orthoclase with disseminated irregular grains biotite, brown diopside and magnetite.

MICROSCOPIC DESCRIPTION - Interlocking grains plagioclase (An_{12}), orthoclase, quartz with interstitial biotite. Some hydrothermal biotite associated with clots of magnetite and diopside.

SAMPLE NUMBER 8-883

Porphyritic quartz monzonite

MEGASCOPIC DESCRIPTION - Inequigranular texture; euhedral quartz grains, subhedral orthoclase and anhedral to subhedral plagioclase, all crowded in quartz orthoclase fine grained groundmass about 7% disseminated biotite books. Some plagioclase grains appear to be rimmed by narrow layer of quartz.

MICROSCOPIC DESCRIPTION - Porphyritic texture - crowded quartz, plagioclase (An_5) and orthoclase phenocrysts crowded in a fine grained groundmass averaging 0.05 - 0.15 mm. Some plagioclase grains show weak zoning. Groundmass mainly quartz and orthoclase. Many plagioclase grains contain abundant sericite flakes.

SAMPLE NUMBER 9-532

Quartz monzonite porphyry

MEGASCOPIC DESCRIPTION - Subhedral rounded quartz phenocrysts, rounded plagioclase phenocrysts some with narrow rim of quartz, scattered subhedral orthoclase grains all crowded in a fine grained quartz orthoclase groundmass.

MICROSCOPIC DESCRIPTION - Crowded porphyry - quartz, plagioclase (An_{13}), orthoclase phenocrysts in fine grained groundmass averaging 0.05 - 0.15 mm.

SAMPLE NUMBER 15-605

Gem breccia

MEGASCOPIC DESCRIPTION - Abundant rock fragments up to 6 mm in diameter with numerous crystal fragments ? of quartz and feldspar.

MICROSCOPIC DESCRIPTION - Breccia similar to G1, G5A. Abundant biotite occurs in groundmass as fine disseminations. Chlorite occurs as irregular clots up to 0.25 mm in groundmass.

SAMPLE NUMBER 15-610

Gem breccia

MEGASCOPIIC DESCRIPTION - Similar to 15-605.

MICROSCOPIC DESCRIPTION - Abundant fine rock and crystal fragments crowded in a fine grained groundmass 0.01 - 0.02 mm. Abundant biotite mainly finely disseminated in groundmass as small as 0.01 mm but also in some relict plates up to 0.2 mm.

SAMPLE NUMBER 16-490

Porphyritic quartz latite

MEGASCOPIIC DESCRIPTION - Light pinkish grey porphyritic quartz latite. About 10% euhedral rounded quartz phenocrysts, 20% orthoclase and 15% subhedral white plagioclase all 1 - 4 mm in length in fine grained sugary textured groundmass. Trace pyrite and MoS_2 in quartz veinlet.

MICROSCOPIC DESCRIPTION - Euhedral to subhedral phenocrysts of quartz, orthoclase and sparse plagioclase (An_{10}) in a fine grained groundmass 0.02 - 0.1 mm. Groundmass of quartz and orthoclase is interlocking with slight tendency towards intergrowth.

SAMPLE NUMBER 17-202

Porphyritic quartz latite

MEGASCOPIC DESCRIPTION - Pinkish grey porphyritic quartz latite. Subrounded quartz phenocrysts (15%), rounded orthoclase phenocrysts (15%), and irregular anhedral plagioclase phenocrysts (10%) in fine grained quartzo-feldspathic groundmass. Trace disseminated biotite and pyrite.

MICROSCOPIC DESCRIPTION - Subhedral quartz, plagioclase (An₁₀), orthoclase phenocrysts 0.25 - 2 mm in fine grained groundmass mainly of quartz and orthoclase 0.05 - 0.1 mm.

SAMPLE NUMBER 17-290

Fine grained quartz monzonite

MEGASCOPIC DESCRIPTION - Hand specimen appears to consist of two fragments of fine grained quartz latite enclosed in coarser grained quartz monzonite. Quartz plagioclase and orthoclase occur as inequigranular interlocking grains.

MICROSCOPIC DESCRIPTION - Inequigranular texture - interlocking grains quartz, orthoclase and plagioclase. A few corroded garnet grains containing sericite along fractures.

SAMPLE NUMBER 20-409

Quartz monzonite

MEGASCOPIC DESCRIPTION - Medium grained (0.1 - 1 mm) subequigranular texture. About equal amounts of quartz, plagioclase, and orthoclase with about 7% biotite in books and flakes.

MICROSCOPIC DESCRIPTION - Relatively fresh appearing interlocking grains of quartz (30%), orthoclase (40%), and plagioclase (An₁₂) (22%).

SAMPLE NUMBER 21-532

Quartz latite

MEGASCOPIC DESCRIPTION - Fine grained sugary textured quartz latite. Weak foliated texture with ~1 mm bleached halo.

MICROSCOPIC DESCRIPTION - Fine grained interlocking quartz and orthoclase 0.05 - 0.1 mm. Scattered fine grained clots sericite and chlorite. A few quartz veinlets with calcite with weak halos enriched in sericite and/or calcite.

SAMPLE NUMBER 21-578

Quartz monzonite

MEGASCOPIE DESCRIPTION - Inequigranular texture, rounded quartz grains (25%), anhedral plagioclase (40%) with interstitial orthoclase (35%) and fine grained quartzo-feldspathic groundmass. ~3% scattered grains biotite, 1% garnet.

MICROSCOPIC DESCRIPTION - Inequigranular texture - interlocking grains quartz, orthoclase and plagioclase ranging from 0.1 to 3 mm. Quartz and biotite generally finer grained.

SAMPLE NUMBER 21-604

Porphyritic quartz monzonite;
sugary textured, garnet bearing

MEGASCOPIE DESCRIPTION - Sugary textured, porphyritic quartz monzonite. Scattered anhedral rounded quartz grains, irregular plagioclase grains latite up to 3 mm. About 5% garnet grains 1-2 mm in diameter. Light grey sugary textured groundmass with 2% scattered biotite flakes.

MICROSCOPIC DESCRIPTION - Inequigranular - scattered anhedral grains plagioclase (An₁₀), 0.7 - 3 mm in groundmass as small as 0.05 mm. Garnet forms scattered corroded clots.

SAMPLE NUMBER 21-837

Porphyritic rhyodacite

MEGASCOPIC DESCRIPTION - About 5% plagioclase up to 3 mm long, a few up to 7 mm, and a few scattered irregular quartz phenocrysts on a fine grained groundmass containing abundant fine biotite and microlites of orthoclase. Some plagioclase phenocrysts rimmed by orthoclase. A 3 mm scheelite bearing veinlet cuts rock.

MICROSCOPIC DESCRIPTION - Scattered oscillatory zoned plagioclase phenocrysts in foliated groundmass of orthoclase and/or plagioclase and quartz. Biotite abundant in groundmass, interstitial to subhedral elongate zoned feldspar grains. Many biotite grains partially or completely chloritized. About 3% disseminated irregular grains epidote ?

SAMPLE NUMBER 21-957

Quartz monzonite porphyry

MEGASCOPIC DESCRIPTION - Rock consists of 1-4 mm quartz grains (20%), anhedral 1-7 mm plagioclase grains (50%), with subhedral orthoclase (1-3 mm (~25%)) all crowded in a sugary textured quartz orthoclase groundmass. Biotite occurs as scattered ragged grains 0.1 - 2 mm in diameter.

MICROSCOPIC DESCRIPTION - Subporphyritic texture - crowded anhedral to subhedral quartz, plagioclase, and orthoclase grains in groundmass 0.05 - 0.15 mm. Biotite occurs as corroded anhedral books. Some plagioclase grains moderately zoned. Many contain disseminated flakes of sericite.

SAMPLE NUMBER 21-983

Porphyritic quartz monzonite

MEGASCOPIC DESCRIPTION - Subhedral quartz, plagioclase and orthoclase phenocrysts 1-3 mm in diameter crowded in a fine grained sugary quartzo-feldspathic groundmass. Contains about 5% 0.1 - 1 mm ragged biotite books. Trace garnet, trace MoS_2 .

MICROSCOPIC DESCRIPTION - Differs from 21-957 in that phenocrysts are more euhedral and fine grained groundmass 0.03 - 0.1 mm slightly finer grained and more abundant (40%). Biotite occurs as ragged corroded books.

SAMPLE NUMBER 21-1329

Porphyritic biotite granodiorite

MEGASCOPIC DESCRIPTION - Hand specimen contains anhedral quartz phenocrysts, subhedral plagioclase, anhedral perthitic? K feldspar some with plagioclase rims, all in equigranular groundmass of orthoclase, plagioclase and abundant biotite.

MICROSCOPIC DESCRIPTION - In thin section phenocrysts appear to be euhedral to subhedral 1-5 mm in diameter. Groundmass generally 0.1 - 0.3 mm consists of elongate randomly oriented zoned plagioclase (An_{10-23}) grains with interstitial quartz and biotite. Larger plagioclase phenocrysts are unzoned.

SAMPLE NUMBER 21-1466

Porphyritic biotite granodiorite

MEGASCOPIIC DESCRIPTION - Abundant plagioclase phenocrysts 1-5 mm in length, larger phenocrysts are anhedral, smaller ones tabular and subhedral. Groundmass consists of quartz, K feldspar plagioclase and abundant fine biotite (some biotite and scattered quartz grains up to 1 mm).

MICROSCOPIC DESCRIPTION - Subhedral elongate zoned plagioclase ($An_{20\pm}$) grains (~27%) 1-3 mm long in 0.05 - 0.1 mm groundmass containing 25% quartz and 35% orthoclase. Biotite (12%) occurs as fine grained interstitial clots and as a few ragged books up to 1 mm.

APPENDIX IV

RESULTS OF MULTIELEMENT ANALYSES

Note: Samples prefixed with G are taken from surface
Drill core samples are labelled by drill hole and
footage

SAMPLE	PPM											%				
	Sn	Zr	Mn	Ni	Ba	Sr	Rb	Nb	Ti	U	Li	F	K ₂ O	Na ₂ O	CaO	SiO ₂
G 9	<30	120	180	50	630	130	300	65	990	3	55	0.086	3.8	3.9	1.3	74.4
G 11	<27	120	330	18	1800	81	150	48	500	<2	35	.060	3.8	4.3	.70	79.4
7: 890-900	<28	100	310	74	360	39	220	35	660	8	35	.076	4.8	3.5	.57	75.5
8: 945-950	<28	120	550	60	360	67	270	98	660	6	35	.074	4.2	3.9	.70	76.8
15: 460	27	77	310	50	250	54	250	34	160	5	30	.10	4.7	3.5	.47	76.0
16: 430	<29	150	810	38	270	60	440	11	490	4	30	.14	4.6	4.4	.52	75.4
17: 361	27	68	530	74	470	14	320	36	490	5	25	.064	4.6	4.2	.38	75.8
18: 315-320	<28	80	370	20	280	39	340	12	830	6	25	.072	4.8	4.2	.48	75.7
21: 60-70	<29	100	400	50	1200	1000	120	78	1100	<2	50	.21	1.6	5.1	3.8	66.4
21: 528-538	28	120	210	18	1800	240	150	12	320	<2	25	.080	4.0	4.2	1.2	74.4
21: 620-630	27	300	660	<10	1600	660	85	37	1500	<2	60	.14	1.2	4.6	3.2	72.1
21: 895-910	58	290	550	<10	990	710	130	24	810	<2	80	.18	1.2	4.4	3.5	69.1
21: 1206-1210	54	180	460	10	530	39	240	23	1300	5	40	.086	4.6	4.0	.64	73.5

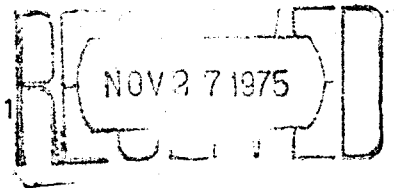
Sample G 9	- Gem breccia
G 11	- Porphyry quartz latite
7: 890-900	- Quartz monzonite porphyry
8: 945-950	- Quartz monzonite porphyry
15: 460	- Porphyry rhyolite
16: 430	- Quartz monzonite porphyry
17: 361	- Quartz monzonite porphyry
18: 315-320	- Quartz monzonite porphyry
21: 60-70	- Gneissic granodiorite
21: 528-538	- Aplite
21: 620-630	- Gneissic granodiorite
21: 895-910	- Gneissic granodiorite
21: 1206-1210	- Quartz monzonite porphyry

APPENDIX V

CONTRACTOR'S INVOICES

HIGHLAND HELICOPTERS LTD.

424 Agar Drive, International Airport South, Vancouver, B.C. (604) 273-6161



IN ACCOUNT WITH:

Amax Potash Ltd.,
601 - 535 Thurlow Street,
Vancouver, B. C.

DATE: October 31, 1975

INVOICE No. 1731

CUSTOMER P.O. # _____

DATE	TICKET No.	FLIGHT TIME	RATE - HR.	CHARGE
Oct 21/75	8928	2.0	260.00	520.00

Fuel and Oil charges 2.0 x 23 gal. per hr. = 46 gal @ 0.83¢

38.18

\$ 558.18

Para

ADD & EXT. CORRECT					
APPROVED					DATE
Project Number	Group Code	Activity Code	Account Class.	Sub Class	Amount
699	-	-	8684		558.18

12/1/75

Para

EX 1 4124 DEC -1 '75

RATE: Class 4 Charter

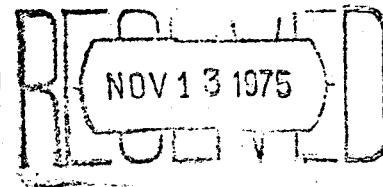
Terms: Net 30 days from date of invoice.
Interest at 1.5% per month will be charged on all overdue accounts.



Member of Air Transport Association of Canada

HIGHLAND HELICOPTERS LTD.

424 Agar Drive, International Airport South, Vancouver, B.C. (604) 273-6161



IN ACCOUNT WITH:

Amax Potash
535 Thurlow Street,
Vancouver, B. C.

DATE: November 3, 1975.

INVOICE No. 1722

CUSTOMER P.O. # _____

DATE TICKET No. FLIGHT TIME RATE - HR. CHARGE

26 Oct 75 8894 1.4 ✓ 285.00 399.00 ✓

Fuel and Oil Charges 32.2 @ 0.81¢ 26.08 ✓

425.08 ✓
Laura

ADD & PXT. CORRECT					
APPROVED <i>11/20/75</i> DATE					
Project Number	Group Code	Activity Code	Account Class	Sub Class	Amount
699	-	-	8684		425.08 ✓

CK.1 41 01 NOV 19 '75

RATE: Class 4 Charter

Terms: Net 30 days from date of invoice.
Interest at 1.5% per month will be charged on all overdue accounts.



Member of Air Transport Association of Canada

INVOICE

PACIFIC SURVEY CORPORATION

1409 WEST PENDER STREET VANCOUVER, B.C., CANADA V6G 2S4 TELEPHONE: 683-6501

SC

Amax Exploration Inc.
535 Thurlow Street
Vancouver, B.C.

Attn: Mr. H. Pires

699

AMAX
OCT 3 1975
VANCOUVER OFFICE
INVOICE NO. 9194
DATE 30 September 1975
YOUR ORDER NO. 75-175
JOB NO.
PACKING SLIP NO.
SHIPPED VIA

QUANTITY DESCRIPTION UNIT PRICE TOTAL

TO:

Completion:

Re: Gem Property - Spuzzem, B.C.

Topographic mapping in pencil manuscript form at a scale of 1-inch equals 400 feet with 20 foot contours as per packing slip No. 8578.

Lump sum

\$840.00

ADD & EXT. CORRECT					
APPROVED				DATE	
Project Number	Group Code	Activity Code	Account Class	Sub Class	Amount
699	-	-	8626		840.00

TERMS: NET CASH. INTEREST CHARGED ON OVERDUE ACCOUNTS

014015 001-875

[Handwritten signature]

Lava

FLUO-X-SPEC ANALYTICAL LAB.

718 Sherman St. (Rear)
 Phone 255-9396
 DENVER, COLORADO 80203

ANMAX

Customer's Order No. Req 7832 Date 9 Jan 1976
 Name Ashof Exploration Inc
 Address Denver 699

SOLD BY	CASH	C O D	CHARGE	ON ACCT	MOSE RETD	PAID OUT
			X			19200
QUAN.	DESCRIPTION				PRICE	AMOUNT
55	TEA - Zn + Zn					27500
Reports direct to C J Hodgson J Thomas J Mullen						
	Less 1%					25575

*** All claims and returned goods MUST be accompanied by this bill.

24611

Rec'd by

SKYLINE LABS, INC.

SPECIALISTS IN EXPLORATION GEOCHEMISTRY
 12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033

TEL.: (303) 424-7718

Co	Ni	Cu	Zn	Ga
Rh	Pd	Ag	Cd	In
Ir	Pt	Au	Hg	Tl

INVOICE

INVOICE NO.: 8963
 JOB NO.: 24830
 P. O. NO.:
 Req. No. 7832
 Project No. 699
 DATE: January 23, 1976

TERMS: NET 30 DAYS

AMAX

SOLD TO: AMAX Exploration, Inc.
 Attention: C. J. Hodgson
 601-535 Thurlow Street
 Vancouver, B.C. Canada

RECEIVED
 MAR 31 1976
 VANCOUVER OFFICE

Analysis of 56 Pulp Samples

56 Uranium @ \$2.75	\$ 154.00
56 Fluorine @ \$2.25	126.00
56 Silica @ \$4.00	224.00
56 Lithium @ \$2.50	140.00
56 Potassium, Sodium, & Calcium (single digestion) @ \$5.95	<u>333.20</u>

TOTAL \$ 977.20

EX: O.K. to pay
 C J Hodgson
 Project 699
 2-5-76

EX: 3673
 C REC NO 3553

ORIGINAL INVOICE



Vancouver Petrographics Ltd.

216 EAST 28TH AVENUE, VANCOUVER, B.C. V5V 3M1 Telephone (604) 874-1650

INVOICE **742**

Customer Order No. _____
 Customer Charge Code _____
 Ordered By: D.G. ALLEN

FOR
 AMAX MINERALS EXPLORATION
 601-535 THURLOW STREET
 VANCOUVER, B.C.

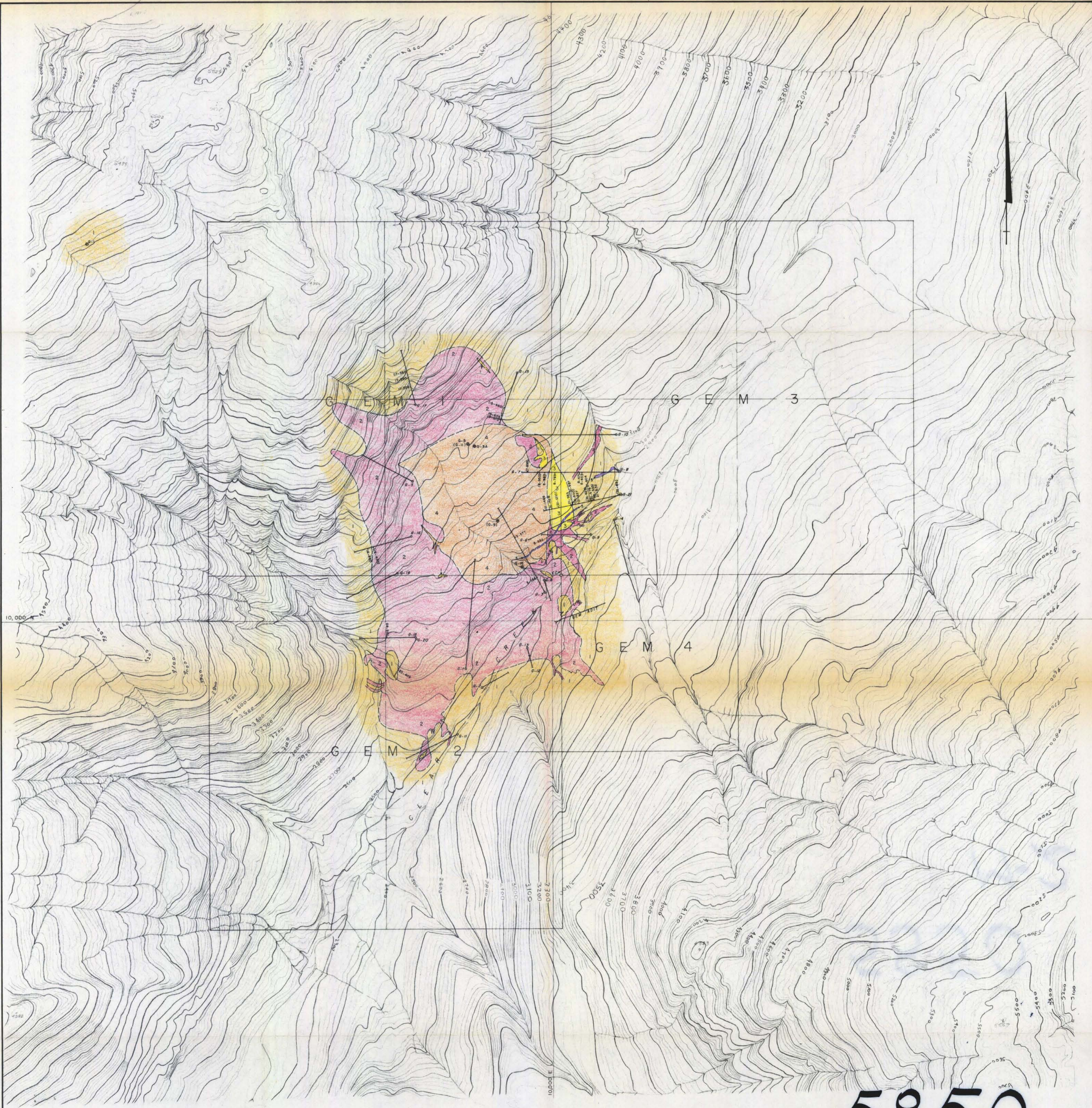
QUANTITY	DESCRIPTION	COST
42	THIN SECTIONS \$4.00 ea	\$ 168.00
	POLISHED THIN SECTIONS \$9.00 ea	
	POLISHED ORE MOUNTS \$6.00 ea	
	POLISHED ORE MOUNTS \$5.00 ea (SAME CUT AS THIN SECTION)	
	GROUND & LABELLED THIN SECTION REJECT SLICES \$.75 ea	
	POLISHED MINERAL GRAIN MOUNTS \$6.00 ea	
	MINERAL GRAIN THIN SECTIONS \$6.00 ea	
	MINERAL GRAIN POLISHED THIN SECTIONS \$10.00 ea	
	THIN SECTION K-SPAR STAINS \$1.00 ea	
	ROCK K-SPAR STAINS \$.50 ea	
	CERAMIC PULVERIZER PLATES LAPPED \$7.50 ea	
	PETROGRAPHIC REPORT	
	27 thin sections Sam Project 005 108	
	15 " " Santa River Project 701 \$60	
	SHIPPING	
	TOTAL (Canadian Funds)	\$ 168.00

ADD & EXT. CORRECT					
APPROVED <i>[Signature]</i>					DATE <u>2/2/76</u>
Project Number	Group Code	Activity Code	Account Class	Sub Class	Amount
005	-	-	8691	-	108.00
701	-	-	8691	-	60.00
					168.00

Receiving Date JAN. 20/76

Shipping Date JAN. 26/76

Via PICKED UP IN PERSON



L E G E N D

- Andesite, diorite dykes.
- Gem breccia.
- Mixed breccia.
- Quartz monzonite porphyry.
- Gneissic quartz diorite, schist, gneiss.
- Geological contact.
- Location of surface sample for thin section study.
- Location of surface sample for multi element analyses.
- Collar location and surface projection of diamond drill hole.
- Diamond drill core sample for thin section study.
- Diamond drill core sample for multi element analyses.
- Legal corner post, claim boundary.
- Claim unit boundary.
- Building.
- Road.
- Stream.
- Topographic contour (contour interval 20').

NOTE —
Base map is a pencil manuscript prepared by Pacific Survey Corporation at 1" = 400' and a 20' contour interval for AMAX using aerial photographs BC 5215 (148-150).

Geology modified after Young and Aird, 1969

5850

M-2

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5850 MAP 2

Donald S. Allen

AMAX POTASH LIMITED			
CLEAR CREEK PROPERTY			
GEM CLAIMS			
NEW WESTMINSTER MINING DIVISION - BRITISH COLUMBIA			
SAMPLE LOCATION MAP			
SCALE 1" = 400'			
DATE REVISED	DATE PRINTED	Drawn by	
	APR 14 1976	Date	
		N T S File	FIG 2
		92 H 12	
To accompany "1975 GEOLOGICAL ASSESSMENT REPORT - CLEAR CREEK PROPERTY" by D.G. Allen			