82K/16W

L50-116 NE

Claims: Alpine and O.K. Mineral Claims.

Owner: Silver Giant Mine

Engineer: Alfred R. Allen

June 21 to August 3, 1948.

0038

Alfred R. Allen

GEOLOGICAL ENGINEER

707 - 850 W. Hastings St.,
Vancouver, B. C.,
August 30th. 1948.

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Silver Giant Mines Ltd.,
707 - 850 West Hastings St.,
Vancouver, B. C.

Dear Sirs:-

Herewith is my report on the Geology of the mineral claims Alpine No.1, Alpine No.2, Alpine No.3, Alpine No.4 Fractional and O.K. Fractional, along with a geological plan and one cross-section C-C'.

Yours very truly,

Alfred R. Allen

ARA/RA

Alfred R. Allen.

REPORT OF GEOLOGICAL SURVEY

MINERAL CLAIMS

ALPINE No.1, ALPINE No.2, ALPINE No.3, ALPINE No.4 Fr. & O. K. Fr.

GOLDEN MINING DIVISION

B.C.

By

ALFRED R. ALLEN,

June 21 to August 3, 1948.

Silver Giant Mines Limited (N.P.L)
7 Miles West of Spillimacheen,
B.C. 50° 116° N.E.

REPORT OF GEOLOGY

ALPINE No.1, ALPINE No.2, ALPINE No.3, ALPINE NO.4 FR. & O.K. FR. MINERAL CLAIMS

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A. INTRODUCTION

The Alpine mineral claims and the O. K. fractional mineral claim were examined by the writer during the period June 21 to August 3, 1948. A combination of chain and compass, and pace and compass methods were used for the surveying. The 5 mineral claims were surveyed by R.P.Bishop B.C.L.S. October 1947, and the slashed-out claim lines and corner posts were useful for location purposes during the survey.

B. LOCATION

The Alpines and O.K. mineral claims are included in the group of mineral claims held by Silver Giant Mines Limited (N.P.L.) The property is in northeast quadrant of the quadrelateral the southeast corner of which is 50° 116°. The mine camp is 7.8 miles by road from railway station at Spillimacheen, B.C.

C. CONCLUSIONS

The Alpine mineral claims and O.K. fractional mineral claim are underlain by massive magnesian limestone of the Ottertail formation and stratified limestone, breccia, conglomerate and argillite of the Goodsir formation. These rocks form the steep southwest limb of an A-symetrical syncline which strikes northwesterly and plunges 10 to 20 degrees northwesterly, The axis of the fold lies a few hundred feet northeast of the map-area. Several hundred feet to the southwest of the map-area a major thrust fault which strikes northwest and dips southwest brings the

Pre Cambrian Horsethief formation into contact with the Cambrian Ottertail and Goodsir formation.

Mineral showings occur in the magnesian limestone near the contact with the overlying Goodsir formation. Most of the showings lie in shear zones parallel to the contact between the formations. Two hypotheses are considered with regard to the localization of the mineral zones, namely, the "Apex" and the "Contact". Development work in the Silver Giant Mine workings will likely bring to light sufficient data to warrant the acceptance of either the "Apex" or the "Contact" hypothesis. Regardless of the unknown factors pertaining to the genesis of the mineralized zones, the area is strategically located, and may warrant considerable exploration along the contact zone.

D. GEOLOGY

1. Stratigraphy

Within the map-area two geological formations, the Ottertail and Goodsir of Middle to Upper Cambrian age, are well exposed. The contact between the two formations, is, unfortunately, covered by overburden, and the location is projected from the known positions of it off the map-area.

(a) Ottertail Formation

The ottertail formation is composed of light grey, massive, fine-grained magnesian limestone, which because of irregular high-silica patches, weathers jagged and rough. The formation is approximately 2000 feet thick. Although massive limestone predominates there is a zone of well banded light and dark grey strata about 500 to 1000 feet from the bottom of the formation. The banded zone is exposed on the cliffs about the middle of the Alpine No. 4 fractional mineral claim and near the southeast corner of the Apline No. 3 mineral claim. The banded zone may be a valuable horizon marker should future work show it to be continuous throughout the formation. A large but probably isolated zone within the limestone near the southeast boundary of the Alpine No. 2 mineral claim contains what appear to be poorly preserved fossils. These are clearly discermable only on the weathered surface where they are rounded, dark grey, rough-weathered markings one-eighth to one inch in diameter. Apart from the two zones described above the formation appears to be devoid of internal structure.

(b) The Goodsir Formation

In contrast to the massive magnesian limestone of the Ottertail formation, the Goodsir formation is composed of well stratified beds of the following character:- blue-grey, thick-bedded limestone, blue-grey limestone breccia, conglomerate, argillite, light coloured, thin-bedded siliceous limestone. The formation, particularly at the base, is predominantly argillaceous. The Goodsir formation is about 2000 feet thick.

Throughout the entire formation, but particularly in the upper half, there are thick beds of blue-grey, fine-grained, light grey-weathering limestone. Some of the beds contain lense-shaped breccia zones, some of the angular fragments of which are banded limestone definitely of a different origin than the matrix and remainder of the bed. There are some beds up to 3 feet thick composed entirely of limestone breccia similar to that which occurs within some of the thick limestone beds. The conglomerate is a unique and distinctive rock. It is composed of light grey pebbles and cobbles of limestone in a matrix of grey-green argillaceous material. The pebbles and cobbles are distorted from their original shape to lenses an inch and less thick and a few inches to several feet long. The argillaceous matrix is platey to schistose and the thin layers conform to the shape of the limestone lense-shaped bodies.

Throughout the formation, particularly on the bottom and near the top, there are beds of grey-green to brown thin-bedded argillite. About 500 feet from the base of the formation there occurs about 100 to 200 feet of thin-bedded, light-coloured, siliceous limestone with partings of brown argillaceous material. The limestone contains pods of soft material which weather out leaving small brown-stained depressions on the surface. This zone has been tentatively named the Erin member of the Goodsir formation.

Although not exposed within the map-area several other important formations should be included in this description of the stratigraphy. The Donald and St. Piran formations of Cambrian age conformably underly the Ottertail formation.

The Donald formation, about 200 feet thick, is composed predominantly of sandy limestone, silicified limestone, and impure green slates. The St. Piran formation is composed largely of sandstone with some highly coloured argillite beds and massive pink quartzite. A third formation, the Horsethief of Pre Cambrian age is faulted against the Cambrian formation by a major thrust fault which strikes northwest-southeast and dips 45 degrees southwest. The Horsethief formation, near the map-area, is composed of massive light grey beds of arkose conglomerate and some thick interbeds of phyllite which contain a few thin beds of quartzite.

2. Structure

(a) General

The contact between the Ottertail and Goodsir formations may be structurally important since the known occurrences of barite and sulphides are located in shears within the magnesian limestone near and parallel to the contact with the Goodsir formation.

(b) Faults, Shears and Joints

Southwesterly from the map area a major thrust fault with an estimated displacement of about 10,000 feet brings the Horsethief formation into contact with the Ottertail and Goodsir formations. The fault strikes northwest-southeast and dips 45 degrees to the southwest. If the "Apex" hypothesis of the structural control of the "Giant" and smaller mineralized zones is correct, the intersection of the major fault plane with the base of the Goodsir formation is the determining factor for the localization of ore bodies in the area. As demonstrated by section C-C this intersection or former "apex" was located about 750 feet above the present land surface, and if any ore bodies existed within that zone they have been removed by erosion.

During the period of intense folding, when the west limb of the syncline was tilted to the present nearly vertical position, slipping movements within the Goodsir formation occurred within the conglomerate beds and the argillite beds along the contact between the two formations. Not so with the less competent Ottertail formation, however, and shear zones were formed parallel to and perpendicular to the contact between the formations. Most of the shear zones are barite-filled, and those trending parallel to the contact contain sulphides of lead, zinc, copper and iron. The limestone and overburden near the shear zones are in most places stained brick-red. Block jointing within the magnesian limestone, observed near the centre of the map-area, is as follows:-

Strike north 30 degrees east dip 85 degrees northwest strike south 60 degrees east dip 60 degrees southwest, and strike east to south 60 degrees east dip 10 to 20 degrees north to northeasterly.

(c) Folds

Within the map-area the rocks are vertical to steeply tilted to the northeast, being on the steep west limb of an

A-symetrical syncline which plunges northwesterly at about 10 to 20 degrees. The axial plane of the syncline strikes approximately north 30 degrees west and dips about 60 degrees southwesterly. Along the axis of the syncline there are irregular minor folds and crumples.

E. SHAFTS, TRENCHES AND OPEN-CUTS

On the O.K. fractional mining claim there are 2 shallow shafts, 2 small trenches and one open-cut. The shafts and open-cuts are in brecciated and sheared zones in the magnesian limestone. Within these zones fractures are filled with barite and sulphide minerals and the sulphide minerals also occur disseminated throughout the limestone. The 2 small trenches expose a narrow crystalline barite vein, apparently void of sulphides.

On the Alpine No. 4 fractional mineral claim there is a shaft about 30 feet deep, 2 small trenches, and 2 large open-cuts. The shaft and the 2 small trenches have not been cleaned out and examined. The 2 large open-cuts expose a shear zone striking south 70 degrees east and dipping 70 degrees southwest to vertical. Several small, well mineralized cross shears occur almost perpendicular to the main break. Sulphide, principally galena, and barite occur throughout this brecciated shear zone.

F. HYPOTHETICAL CONSIDERATIONS

There are two hypotheses regarding the origin of the mineralized shear zones, namely the "apex" and the "contact".

(a) The Apex Hypothesis

Favoured by C. S. Evans of the Canadian Geological Survey, the essentials of the Apex hypothesis are as follows:-

(i) The intersection of the two planes - the major thrust fault and base of the Goodsir formation - sculpture the Ottertail formation to a chisel point, the cross-section of which is triangular in shape (see section C-C). Above the apex are the impervious agrillaceous rocks, fault gouge etc. of the Horsethief and Goodsir formations.

(ii) The ore-carrying solution passed through a zone of weakness, such as the major thrust fault or the contact zone between the Ottertail and Goodsir formations until they became damned along the apex of the triangular shaped mass of magnesian limestone. Along this apex, unable to permeate through the overlying Horsethief and Goodsir argillaceous rocks, the solutions replaced the magnesian limestone with barite and silica and later galena, sphalerite, cholcopyrite, pyrite, bornite, chalcocite, tetrahedrite and other minerals. Hence, according to this hypothesis, large orebodies may be expected only where the apex structures occur . This will be to the southwesterly below the present 3235 tunnel-level, because to the east the apex structure has been removed by erosion, and the present surface is several hundred feet below that level. (see section C-C)

The mineralized shear zones exposed on the Alpine and O.K. mineral claims are explained, according to supporters of the apex hypothesis, as small assoceated but minor outlying shears with little possibility of continuity or persistence, probably lying "en echelon" some hundreds of feet from the original apex structure.

(b) The Contact Hypothesis

The contact hypothesis is herein advanced as an alternative to the Apex hypothesis in an attempt to explain why numerous similarly mineralized zones occur in the Ottertail magnesian limestone at and near the contact with the overlying Goodsir formation on both limbs of the synclinal structure.

The Essentials of the Contact Hypothesis

(i) During the period of folding there was slipping, and some brecciation along the contact between the two formations. In the magnesian limestone there was shearing parallel to and perpendicular to the contact. Later when there was a subsidence of compressive forces the shears parallel to the contact may have been fractured and opened further.

(ii) Mineral bearing solutions percolating through zones of weakness such as the shear zones and contact zones would probably not pass into the impervious Goodsir argillaceous rocks but would move along the contact and through the shear zones within the Ottertail magnesian limestone only. Under favourable conditions, such as a series of intersecting shear zones, one particularly large and open shear zone, or a roll in the contact between the formations, the barite and sulphide, minerals may have been deposited, filling openings and replacing the limestone.

(iii) According to the Contact hypothesis, replacement bodies of barite and sulphides may occur in the magnesian limestone anywhere along and within a reasonable distance from the contact between the Ottertail and Goodsir formations. It is possible, therefor, should subsequent investigations substantiate the contact hypothesis, that further exploration expenditures may be warranted along the contact zone located within the O.K. fractional and Alpine mineral claims.

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G. REFERENCES

Reports of the Minister of Mines of B.C., 1895, 1898, 1907, 1908, 1923, 1926, 1927, 1928, 1930.

Report of the Zinc Commission, 1906.

Report No. 1, B.C. Department of Mines, Non-Metallic Investigation, April, 1932.

Report to the Golden Giant Mines Ltd., by Lewis Hind, Victoria, B.C. August 25, 1909.

Report to the Golden Giant Mines Ltd., by Rush J. White, Mining Engineer, Wallace, Idaho, March, 1924.

Reports to Pacific Mines and Petroleum Development Co. Ltd., by J.L. Parker, Mining Engineer, November 1929 and November 1930.

Reports to Pacific Mines and Petroleum Development Co. Ltd., by F. Eighelberger.

Memorandum re Diamond Drilling Giant Mine in 1926, by A.W.Davis, Mining Engineer, December 4, 1928.

Evans, Geological Survey Summary Report, Part AII.

Mining and Marketing of Barite, U.S. Dept. of Interior, Bureau of Mines, Information Circular 7345, May 1946.

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Alfred R. Allen
GEOLOGICAL ENGINEER

707 - 850 West Hastings St.,
Vancouver, B. C.,
August 30th. 1948.

Silver Giant Mines Ltd.,
707 - 850 West Hastings St.,
Vancouver, B. C.

Dear Sirs:-

The following is a list of fees and wages paid myself and one assistant, David Stewart, of Spillimacheen, B.C., for conducting the geology survey of the mineral claims Alpine No.1, No.2, No.3, No.4 Fr. and O.K. Frs., Golden Mining Division, B.C.

Date 1948.		Name	Rate	Name	Rate	
June	21	A.R.Allen	$35.00	D. Stewart	$8.00	
"	22		35.00		8.00	
"	23		35.00		8.00	
"	24		35.00		8.00	
"	25		35.00		8.00	
"	27		35.00		8.00	
"	28		35.00		48.00	$ 48.00
"	29		35.00			
"	30		35.00			
July	30		35.00			
"	31		35.00			
August	1		35.00			
"	2		35.00			
"	3		35.00			
			490.00			490.00
				Total		$538.00

ARA/RA

Yours very truly,

Alfred R. Allen

Alfred R. Allen.

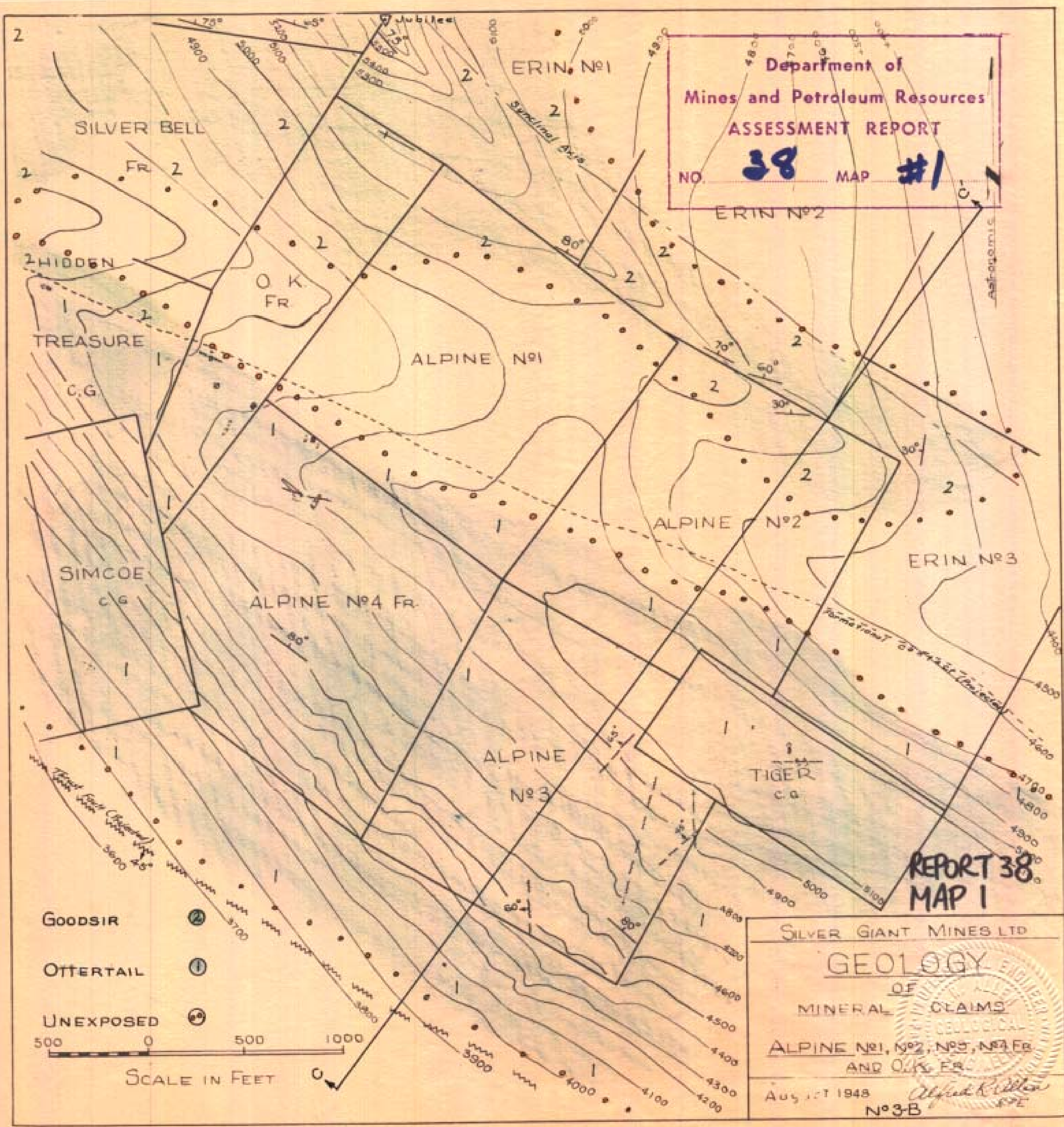
I, ALFRED ROY ALLEN, of 4850 Connaught Drive, in the City of Vancouver, in the Province of British Columbia, MAKE OATH AND SAY AS FOLLOWS:-

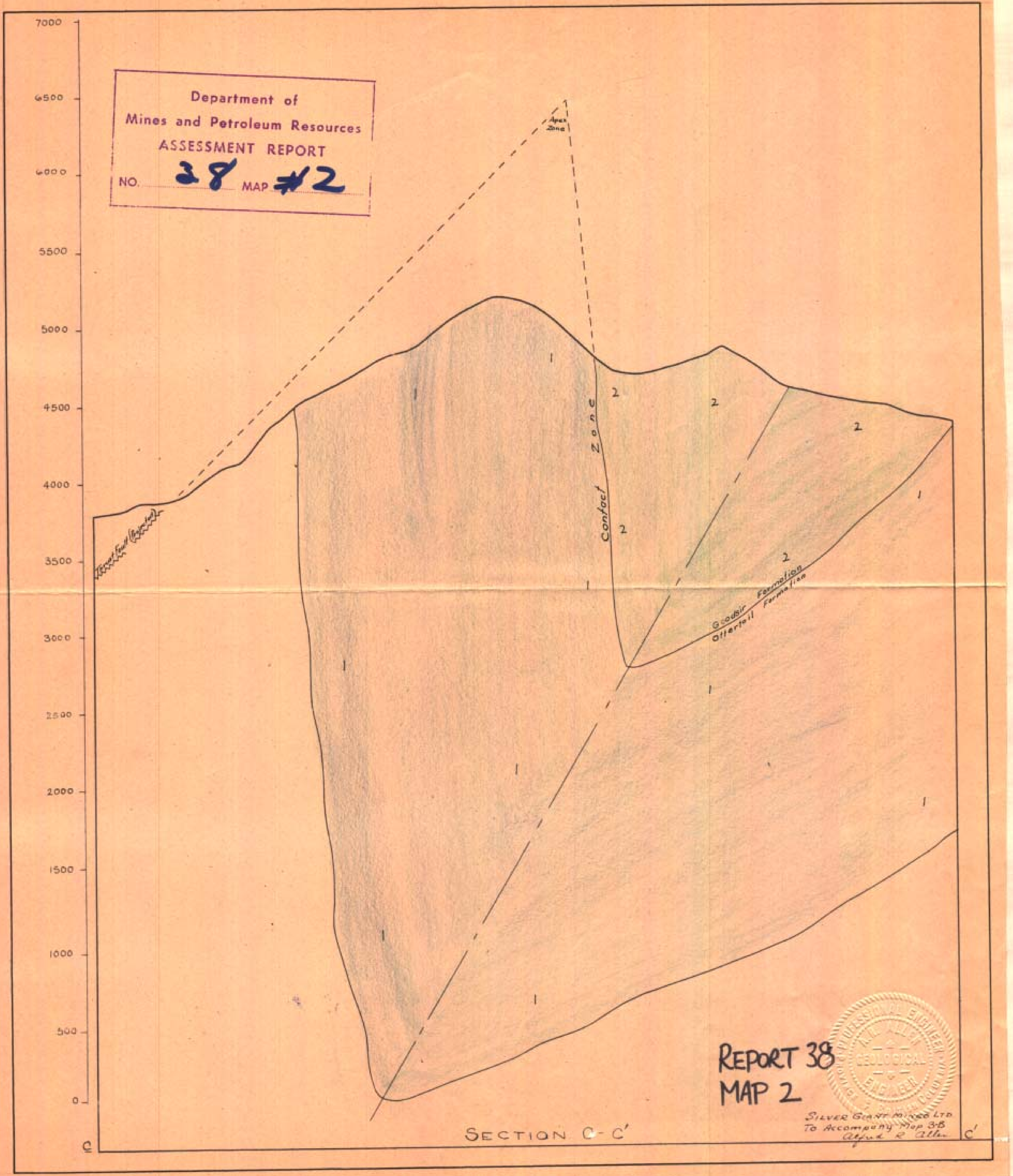
1. That the assessment account herein contained in respect of Alpine No's 1, 2, 3 and 4 Fr. and O.K. Fr. is true and correct.

DATED at Vancouver, B. C. this 7th day of September, A.D. 1948.

SWORN BEFORE ME at the City of Vancouver, in the Province of British Columbia, this 7th day of September, A.D. 1948.)	Alfred R. Allen

A Commissioner for taking affidavits within British Columbia.


Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 38 MAP #1
SILVER BELL
FR.
ERIN No1
ERIN No2
ERIN No3
HIDDEN
O.K. FR.
TREASURE
C.G.
ALPINE No1
ALPINE No2
ALPINE No4 FR.
ALPINE No3
SIMCOE C.G.
TIGER C.G.
Synclinal Axis
Formational contact (Projected)
Thrust fault (Projected)
Jubilee
Goodsir
Ottertail
Unexposed
500 0 500 1000
Scale in Feet
REPORT 38
MAP 1
Silver Giant Mines Ltd
GEOLOGY
OF
MINERAL CLAIMS
ALPINE No1, No2, No3, No4 Fr.
AND O.K. Fr.
August 1948
No 3-B



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 38 MAP #2
7000
6500
6000
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5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Contact Zone
Goodsir Formation
Ottertail Formation
1
2
REPORT 38
MAP 2
SILVER GIANT MINES LTD
To Accompany Map 3-B
Alfred R Allen
SECTION C-C'
C
C'