

84-#750 - 12815

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GEOLOGICAL REPORT OF
STALL LAKE MINES CLAIMS

(LOT NOS: 297; 616; 765; 818; 824; 830; 833; 880; 890;
1011; 1092; 1217; 1711; 1885; 2379; 2458;
2459; 2460; 2461; 2462; 2940; 3365).

GREENWOOD MINING DIVISION

82 E/2E

Lat. 49° 06'N. Long. 118°41'W.

OWNER: STALL LAKE MINES

OPERATOR: STALL LAKE MINES

CONSULTANT: J. RICHARDSON, P.Eng.

AUTHOR: J. RICHARDSON

PERIOD OF WORK: 9-19 July; 14-31 August (part), 1984.

DATE SUBMITTED: 13 September, 1984.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

12,815

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| (2) Figure 2 - Property Map and Mineral Deposits - 1:12,000 |) pocket |
| (3) Figure 3 - Areal Geology - 1:12,000 |) |
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GEOLOGICAL REPORT - STALL LAKE MINES - GREENWOOD AREA CLAIMS

GREENWOOD MINING DIVISION, B.C.

INTRODUCTION

Stall Lake Mines, 167 Lombard Avenue, Winnipeg, Manitoba, hold under various agreements, two groups of claims adjoining the city of Greenwood on the east, north and west sides. They comprise a contiguous group of 19 claims to the east and north of the city and another contiguous group of three claims adjacent to the southwest corner of the community, as shown in Fig. 2.

During the period 9-19 July, the writer conducted a mapping and examination program of the property for Stall Lake Mines. The field work was preceded and succeeded by a study of the history of activities on the several claims, most of which appears in Annual Reports of the B.C. Dept. Mines dating from 1893 to 1915. These data were supplemented by more recent reports of the G.S.C., the latest of which is Paper 79-29, "Geology of the Greenwood Map-Area" by H.W. Little (1983).

The purpose of the examination was to appraise the mineral potential of the various claims to determine whether there are possibilities for the existence of mineral deposits that are worthy of further exploratory work. Most of the writer's field work was on Lots 765 and 2458 to 2462 at the east end of the property and on Lots 830, 880 and 1885 in the southwest group as no previous geological information of these claims was available to Stall Lake Mines.

LOCATION AND ACCESS

As stated above, the property adjoins the city limits of Greenwood (Fig. 1 and Fig. 2). The community is serviced by the Kettle Valley Branch of the C.P.R. and by Interprovincial Highway No. 3. Several unimproved roads and trails radiate from the city and from the Greenwood - Phoenix road onto or to the near - vicinity of all the claims.

Elevations on the property range from 2,400' (225 m.) in Boundary Creek Valley to 4,300' (400 m.) on the Crescent claim (Lot 1711), the most easterly of the group. The general area can be described as an upland plateau which has been deeply dissected by southerly-flowing Boundary Creek and its' main tributaries, Providence and Twin Creeks from the east and Greyhound Creek from the west. Notwithstanding this semi-rugged topography rock outcrops are relatively scarce except for the steep granite walls on either flank of Boundary Creek Valley in the vicinity of the city.

PROPERTY AND HISTORY

The property comprises the following 14 Crown-granted and eight reverted crown-granted claims, all held under various agreements by Stall Lake Mines Ltd., who are the current operators:

| <u>LOT NO.</u> | <u>NAME</u> | <u>STATUS</u> | <u>RECORD NO.</u> | <u>RECORD DATE</u> |
|----------------|-----------------|---------------|-------------------|--------------------|
| 297 | Elkhorn Fr. | Crown-granted | - | - |
| 765 | Lake | " | - | - |
| 818 | Elkhorn | " | - | - |
| 824 | D.A. | " | - | - |
| 880 | Bonnie Bell | " | - | - |
| 890 | Gold Bug | " | - | - |
| 1092 | Gold Pick Fr. | " | - | - |
| 1711 | Crescent | " | - | - |
| 1885 | Joliette Fr. | " | - | - |
| 2458 | Don Pedro | " | - | - |
| 2459 | Yellowstone | " | - | - |
| 2460 | Idola Fr. | " | - | - |
| 2461 | Yellowstone Fr. | " | - | - |

| <u>LOT NO.</u> | <u>NAME</u> | <u>STATUS</u> | <u>RECORD NO.</u> | <u>RECORD DATE</u> |
|----------------|-----------------|----------------|-------------------|--------------------|
| 2462 | Crescent Fr. | Crown-granted | - | - |
| 616 | Warwick Fr. | Reverted C.-G. | 1312 | 15 Sept./78 |
| 830 | Fred D. | " " | 990 | 5 Apr./78 |
| 833 | C.S. & H. | " " | 992 | 5 Apr./78 |
| 1011 | Spokane | " " | 1314 | 15 Sept./78 |
| 1217 | Freemont | " " | 1313 | 15 Sept./78 |
| 2379 | Admiral | " " | 1311 | 15 Sept./78 |
| 2940 | Minneapolis Fr. | " " | 991 | 5 Apr./78 |
| 3365 | Coronation | " " | 1310 | 15 Sept./78 |

The claims are shown by Lot No. and name in Fig. 3. Apparently all of the claims were staked originally during the last decade of the 19th century. Prospecting and more or less continuous, but limited, development work was done on several of them until about 1915, with sporadic work on some thereafter. Exploratory work consisted of the testing of small quartz veins, with generally high silver and moderate gold content, by shallow shafts, pits and rock trenches. The only record of diamond drilling was mention of a few very short holes in the D.A. and Gold Bug vein and in 1935 in the main Elkhorn vein. The writer did not find any record of systematic geochemical or geophysical surveys having been done on the property.

GEOLOGICAL SURVEY

The area geologically surveyed by the writer in the subject period comprised some 460 acres (182 hectares). This current work was added to previous work on the claims by the writer (1983), then all of which was superimposed on a portion of the recently published G.S.C. Map 1500A (Paper 79-29) to give the attached compiled map (Fig. 3) at a scale of 1" = 1000' (R.F. 1: 12,000), which shows the general geological setting of the property within the Greenwood mineralized area. The base map was made available from a more extensive topographic map compiled from air photos.

During the period 9-19 July, 1984, nine days were spent in the field establishing base lines by pace and compass from which pace or compass traverses guided by air photos and the topographic map, were made to map outcrops and to locate and map old prospects and mine workings. The traverses were mapped at a scale of 1" = 1000' and the vicinity of the mineral showings at 1" = 100' or 1" = 400'. The detail work was later reduced onto the base map (Fig. 3). As far as possible the lithological terminology used corresponds with that of H.W. Little's in the above-mentioned G.S.C. Map 1500A.

As shown in the attached geological plan (Fig. 3) the claims, for the most part, are underlain by rocks of the Knob Hill Group of Carboniferous or Permian age. The rock units of this Group in the property are a thick and extensive assemblage of massive chert with interlayers of minor greenstone (Unit 6) and a lesser unit of greenstone with minor chert interlayers (Unit 7). Because of this interlayering nature the contact between these two members is, of course, difficult to establish. There is a small occurrence of amphibolite (Unit 8) in the vicinity of the Elkhorn claim (Lot 818). The remaining claims are underlain by the Greenwood Stock (Unit 4), a near-circular pluton of granodiorite 3 Km. in diameter, dated as a Nelson intrusion of Juro-Cretaceous age. This intrusive body is bisected by the southerly - flowing Boundary Creek, the Valley of which is 500 m. wide and floored by an undoubtedly thick deposit of alluvium and glacial debris (Unit 1). All of the Coronation claim (Lot 3365) and much of Lots 297 and 818 are covered by this recent unconsolidated material. The traverse mapping disclosed some small intrusive or extrusive bodies of a distinctive feldspar porphyry (Unit 2 F.P.) and diorite (4 D). The larger bodies of these rocks are shown in Fig. 3 in the eastern part of the property.

Bedding in the massive chert and greenstone layered rocks was rarely observed. The few attitudes available indicate a general north-easterly strike with a moderate dip to the northwest.

Frequent reference is made in old descriptions of the mineral showings of small faults offsetting the veins from 10' to 80'. The position of pits and open cuts extending from the main shaft indicate such offsetting structures at the Crescent, Lake, and D.A. showings. Apart from these minor faults, the only other evidence of a possible fault is that of a steep draw striking at 090° near the northeast corner of the Yellowstone claim (Lot 2459) (Fig. 2).

The major faults shown in G.S.C. Map 1500A have been plotted, in part, in Fig. 3. Their presence was not investigated in the field by the writer as they are essentially outside of the area of immediate interest.

MINERAL DEPOSITS

The Stall Lake Claims lie within one of the most varied and extensively mineralized areas in British Columbia. This well mineralized area extends from Granby River on the east for 17 Km. to Deadwood Ridge Fault on the west and for 15 Km. north from the 49th parallel to Eholt Creek. The property is situated near the northwest corner of this mineralized area and, as shown, the claims are draped around the north and northeast sides of the Greenwood stock. Throughout the area there is a strong overprint of silver and gold mineralization in several types of occurrences, which may be grouped into the following main types:

- (1) "Skarn-type" copper deposits in the Brooklyn limestone formation. (Phoenix and Deadwood Camps).
- (2) Massive pyrite-pyrrhotite bodies in siliceous argillite with significant gold values (Kettle River's recently discovered Sylvester property adjacent to the Phoenix open pit).
- (3) Massive to disseminated pyrrhotite-pyrite-arsenopyrite in layered rocks near intrusive contacts.
- (4) Quartz veins in chert, greenstone or Nelson granodiorite with generally very high silver and significant gold values.

Mineral production has been greatest, by far, from Type (1) deposits where the Phoenix Camp has produced some 32 million tons of ore grading 0.9% Cu, 0.2 oz/T Ag and 0.03 oz/T Au. No limestone members of any age were found in Stall Lake's Claims during the current mapping program nor in a review of published maps. Accordingly, it can be assumed that there is little likelihood of finding Phoenix-type deposits in this property.

One deposit of Type (3) occurs in the property in the Lake claim (Lot 765). This prospect was developed in the early 1900's by a shaft to 150' which is said to have followed ore most of the way down. No information could be found of any lateral work having been done from the shaft, nor is there any record of activity on the property subsequent to 1903. The only mineralized material available to the writer for sampling was from the dumps of the caved workings. Two samples of silicified greenstone with considerable pyrrhotite averaged only 0.04 oz/T Ag and 0.01 oz/T Au. From the limited material available it is not known if the samples are representative of the ore zone. A sample of silicified greenstone, free of sulfides, was taken and geochemically assayed for background values in the host rock. The analysis gave 0.3 ppm Ag and 3 ppb Au. For the same purposes a sample of silicified greenstone with disseminated pyrite was taken along the large trench at the south boundary of the claim 700' south of the shaft. The geochemical analysis gave 0.4 ppm Ag and 9 ppb Au.

Other deposits of Type (3) in the Greenwood camp are the Winnipeg and Athelstan - Jackpot mines, the former being the second largest gold mine in the area, with a production of about 60,000 tons averaging 0.2% Cu, 0.6 oz/T Ag and 0.2 oz/T Au.

Because of the similarity of mineralization and the geological setting of the Winnipeg and Lake deposits, the writer considers that the relatively unexplored Lake claim has reasonable possibilities worthy of further testing, of containing one of the larger mineral deposits in the property.

All of the other known showings in Stall Lake's claims are of Type (4), comprising small quartz veins mainly in chert and greenstone members. The veins have a general northeasterly strike and are near - vertical or dip to the southeast at a high angle. They vary from an inch up to 5' locally in width and some, such as those on the Elkhorn, Crescent and Crescent Fraction have been traced for approximately 300' (100 m.). They are characteristically of very high silver and moderate gold grade. Several of the vein deposits have been described in some detail in reports by Consulting Geologists J.E. Hughes and J.B.P. Sawyer dated 9 September 1974 and 23 October 1978, respectively. (Stall Lake Files). Both of these reports, based largely on a comprehensive review of the literature, contain useful data on the nature and extent of underground workings and are therefore valuable in directing any proposed drilling program designed to test the depth and extension components of the known veins. It is to be noted that the mine workings are all shallow as the deepest level reached was about 200' at the Crescent and Elkhorn claims.

Also, frequent mention is made of parallel veins and silicified wall rocks in the deposits. These features present the possibility of developing a broad stockwork of veins with the possibility of ore values in the intervening altered wall rock as there is no record of any significant lateral testing of the main veins by crosscuts or diamond drill holes having been done. Notwithstanding the extensive shallow prospecting work that has been done on the claims, interesting possibilities for additional high grade ore at depth and laterally remain to be tested.

Minor shipments of ore were made in early history of several of the claims within Stall Lake's property. They are shown in the following list:

| <u>Property</u> | <u>Tons</u> | <u>Oz/T.Ag.</u> | <u>Oz/T.Au.</u> |
|------------------|-------------|-----------------|-----------------|
| Elkhorn | 197 | 77.5 | 0.87 |
| Elkhorn Fraction | 48 | 162.0 | 0.17 |
| Gold Pick | 3 | 46.0 | 0.67 |
| Gold Bug | 46 | 16.5 | 0.57 |
| Freemont | 5 | 29.0 | 0.20 |
| Crescent | 274 | 52.5 | 0.22 |
| D.A. | 43 | 21.5 | 0.30 |
| Don Pedro | 30 | 75.5 | 0.20 |

(No record of ore shipments could be found for the remaining 14 claims).

Undoubtedly in several of these minor shipments the ore was pre-sorted, thus giving exaggerated grades. Nevertheless, they show that veins in the claims around the northeast corner of the Greenwood Stock have a very high silver and a substantial gold content. The overall silver to gold ratio is greater than 100:1 and the average grade for all the shipments is 65 Oz/T Ag and 0.45 Oz/T Au.


CONCLUSIONS

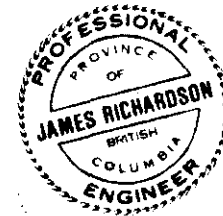
1. Stall Lake Mines have assembled a group of 22 claims, draped around the north and northeast sides of the Greenwood stock, in one of the most varied and extensively mineralized areas in British Columbia.
2. Several of the claims contain small vein deposits with very high silver and substantial gold values. For the most part, these deposits have been inadequately tested and possibilities remain for finding more ore at depth and laterally from the known veins.
3. None of the claims have been subjected to systematic geochemical or geophysical surveys. These indirect search methods along with the accumulating geological knowledge of the camp, as a result of renewed interest in the area, should make exploration programs more effective than in the past. Geochemical sampling in the vicinity of quartz veins and magnetometer surveys at the

sulfide occurrence in the Lake claim could prove of value in future exploration.

4. The property has an ideal location with all the necessary infrastructure, local labor supply and other amenities readily at hand.
5. Inasmuch as any one vein or vein system is likely to contain a relatively small tonnage of ore, the future of the property might lie in direct shipping of siliceous high grade ore to the TRAIL smelter located 100 miles (160 Km.) east on the C.P.R. and Highway 3, or in shipping ore to a central mill. The mill on the adjoining Providence claim is said to be available with some renovation.

Report by:


J. Richardson, P. Eng.
September 2, 1984.



Attachments:

- Fig. 1 - Index and Claim Map (1: 50,000)
- Fig. 2 - Property Map and Mineral Deposits (1:12,000)
- Fig. 3 - Areal Geology (1:12,000)
- Itemized Cost Statement
- Author's Qualifications
- Assay Certificates

References:

- Annual Reports B.C. Dept. Mines (1893-1915)
- B.C. Dept. Mines Bulletin No. 1, (1932)
- B.C. Dept. Mines Bulletin No. 20 (Part III) (1945)
- B.C. Dept. Mines Index No. 3 and No. 4
- G.S.C. Memoir No. 21 (1912)
- G.S.C. Papers: 45-20; 65-1; 66-1; 69-22; and 79-29.
- G.S.C. Map 6 - 1957
- G.S.C. Annual Report 1902

ITEMIZED COST STATEMENT

A. Consulting Fees:

| | | |
|---|--------------|---------|
| - Field Work 10-18 July 1984 7 days @ \$400 per day..... | \$2,800 | |
| - Travelling Time 9 July & 19 July 2 days @ \$300 per day..... | 600 | |
| - Report & Maps Preparation 6 days @ \$300 per day..... | 1,800 | |
| - Literature Research 3 days @ \$300 per day..... | <u>900</u> | |
| | <u>6,100</u> | \$6,100 |

B. Accommodation:

| | | |
|--|------------|-----|
| - 9-15 July and 17-19 July 1984 at Greenwood..... | 214 | |
| - Meals 11 days @ \$13 per day..... | <u>134</u> | |
| | <u>348</u> | 348 |

C. Transportation:

| | | |
|---|------------|-----|
| - Vancouver to and from Greenwood 600 miles @ 30¢/Mile..... | 180 | |
| - Greenwood to and from Property - (14 x 6) 84 miles @ 30¢/Mile..... | <u>25</u> | |
| | <u>205</u> | 205 |

D. Drafting and Printing Services:

| | | |
|---|------------|-----|
| - Preparation of Base Map (Fig. 3) Points West Design..... | 90 | |
| - Map reduction - Western Reproducers.... | 34 | |
| - Map Photocopies (2 copies) Western Reproducers..... | 12 | |
| - Report Photocopies (2 copies) Western Reproducers..... | <u>4</u> | |
| | <u>142</u> | 142 |

E. Assaying & Geochem. Analyses:

| | | |
|---|-----------|----|
| - 5 Samples for Au and Ag - Chemex Lab. | <u>85</u> | 85 |
|---|-----------|----|

F. Stenographic Services:

| | | |
|--|-----------|----|
| - Report typing (5 hours @ \$10/hr.).... | <u>50</u> | 50 |
|--|-----------|----|

TOTAL EXPENDITURES..... \$6,930



James Richardson

STATEMENT OF QUALIFICATIONS

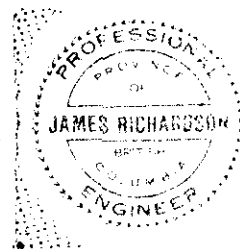
J. RICHARDSON

Graduated in Geology from the University of Toronto in 1940. Worked for Cominco Ltd. from 1940 to 1980 as a Mine and Exploration Geologist and held various senior technical and administrative positions including District Exploration Manager, Chief Exploration Geologist, and Assistant to the Vice President Exploration. During this period, extensive experience was gained in all types of mineral environments throughout North America, in Australia, Central and South America, and Europe. Have authored several papers on exploration strategies and tactics and made extensive studies on ore reserve analyses and supply and demand of mineral commodities leading to forecasting of short and long term metal prices.

Since retiring from Cominco in 1980, have established a private mineral exploration consulting business in Vancouver.

I am a Fellow of the Geological Association of Canada, a Life Member of the Canadian Institute of Mining and Metallurgy and a member of the Association of Professional Engineers of British Columbia.

James Richardson





Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

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CERTIFICATE OF ANALYSIS

TO : RICHARDSON, MR. JAMES

4883 CEDAR CRESCENT,
DELTA, B.C.
V4M 1J9

CERT. # : A8414095-001-A
INVOICE # : I8414095
DATE : 7-AUG-84
P.O. # : NONE

| Sample description | Prep code | Ag ppm | Au NAA ppb | | | | |
|--------------------|-----------|--------|------------|----|----|----|----|
| 872 | 205 | 0.4 | 9 | -- | -- | -- | -- |
| 875 | 205 | 0.3 | 3 | -- | -- | -- | -- |
| 877 | 205 | 0.4 | <1 | -- | -- | -- | -- |
| 878 | 205 | 1.9 | 1 | -- | -- | -- | -- |



Certified by Hart Buchler



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CERTIFICATE OF ASSAY

TO : RICHARDSON, MR. JAMES
4883 CEDAR CRESCENT,
DELTA, B.C.
V4M 1J9

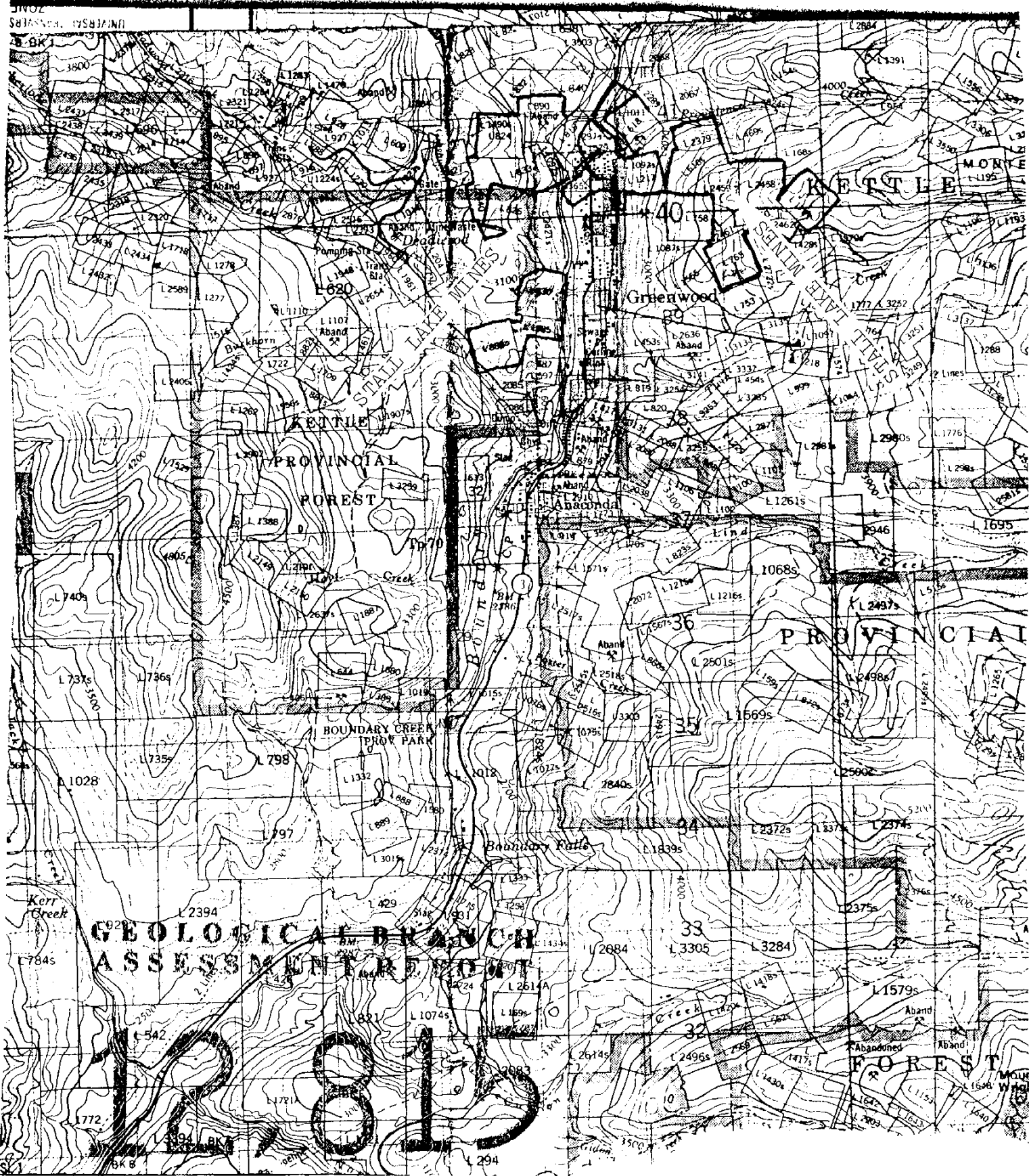
CERT. # : A8414096-001-1
INVOICE # : 18414096
DATE : 6-AUG-84
P.U. # : NONE

| Sample description | Prep code | Ag FA oz/T | Au FA oz/T | | | | |
|--------------------|-----------|------------|------------|----|----|----|----|
| 873 | 207 | 0.08 | 0.003 | -- | -- | -- | -- |
| 874 | 207 | 0.01 | 0.008 | -- | -- | -- | -- |
| 876 | 207 | 0.34 | 0.010 | -- | -- | -- | -- |

Richardson

.....
Registered Assayer, Province of British Columbia

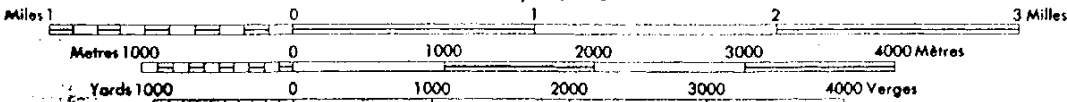




GREENWOOD
 SIMILKAMEEN DIVISION OF YALE LAND DISTRICT
 BRITISH COLUMBIA

82E/2E. FIG. 1

Scale 1:50,000 Échelle



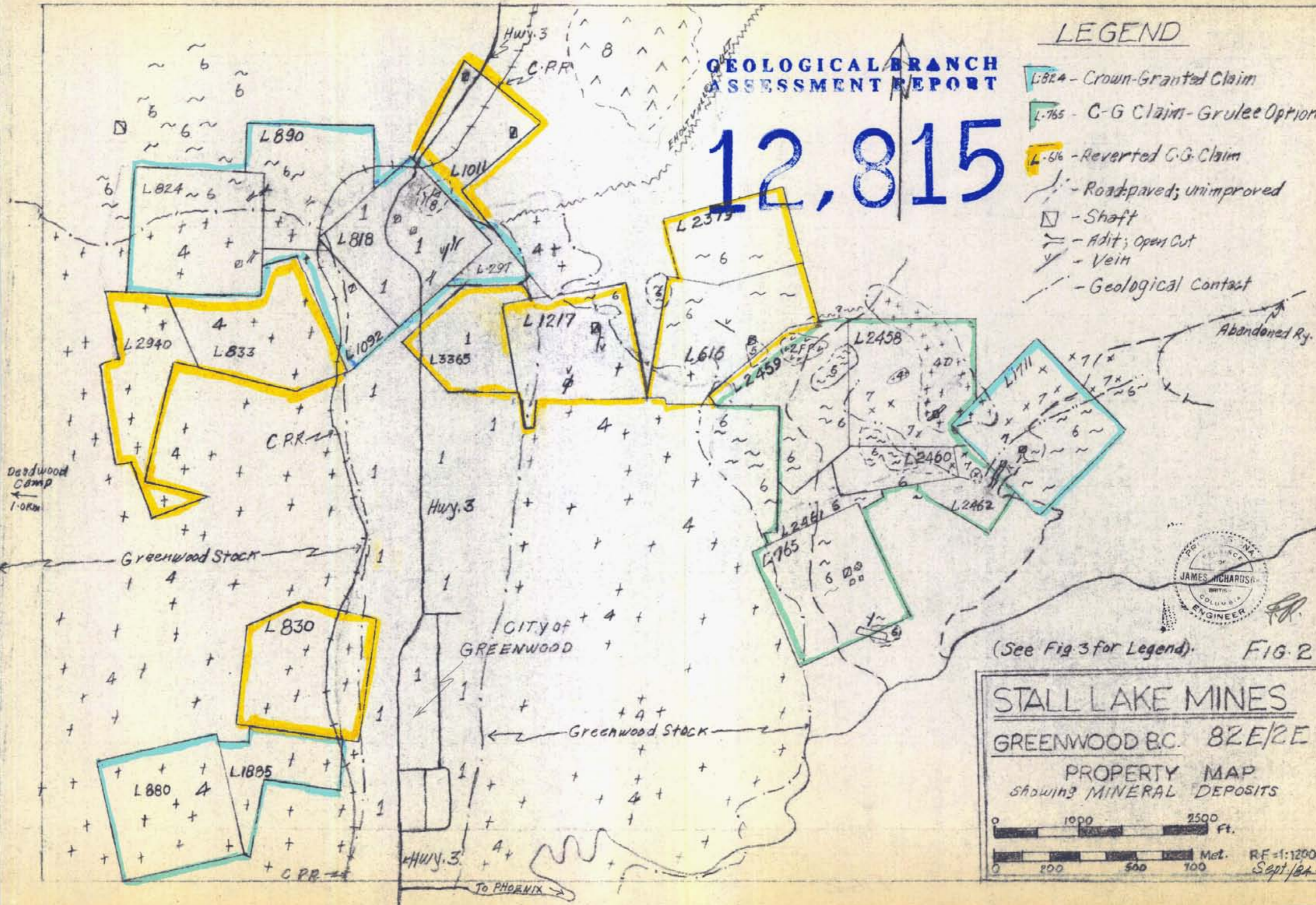
CONTOUR INTERVAL 100 FEET
 Elevations in Feet above Mean Sea Level
 North American Datum 1927
 Transverse Mercator Projection

**GEOLOGICAL BRANCH
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LEGEND

- L-824 - Crown-Granted Claim
- L-765 - C-G Claim-Grulee Option
- L-616 - Reverted C-G-Claim
- Road-paved; unimproved
- Shaft
- Adit; Open Cut
- Vein
- Geological Contact



(See Fig 3 for Legend) **FIG. 2**

STALL LAKE MINES
GREENWOOD B.C. 82E/2E
PROPERTY MAP
 Showing MINERAL DEPOSITS

0 1000 2500 Ft.
 0 200 500 100 Met. RF=1:12000
 Sept/84



- LEGEND**
- QUATERNARY**
 1 Unconsolidated Sediments
- TERTIARY**
 2 Coryell Syenite; Feldspar Porphyry (FP)
 3 Extrusives: mainly Andesite (Xa)
- JURO-CRETACEOUS**
 4 Nelson Intrusions: Granodiorite, Minor Diorite
 5 Jurassic Ultrabasic Intrusives
- UPPER PALEOZOIC**
KNOB HILL GROUP
 6 Chert, local interlayered Greenstone
 7 Greenstone, local interlayered Chert
 8 Amphibolite

- SYMBOLS**
- Shaft
 - Tr. — Open Cut: Adit
 - Geological contact defined
 - - - Geological contact assumed
 - ▲ Bedding - tops known
 - △ Bedding - tops unknown

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

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FIG. 3

**STALL LAKE MINES
GREENWOOD BC PROPERTIES**

Geology from GSC Paper 79-59
 Map 1500A, with additions by J.R. (7/84)
 0 500 1000 1500 2000 2500 Feet
 0 100 200 300 400 500 600 700 Metres R.F. 1:12000
 Sept. 1984

SURPRISE
No 3
L 1776