

85-27-13433
01/85

Mapsheet 82K/4W
117°58'W, 50°08'N
57.5'W, 05.5'N

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| SUB-RECORDER RECEIVED |
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| VANCOUVER, B.C. |

REPORT ON THE HEAVY MINERAL
STREAM GEOCHEMISTRY OF THE
WESTERN X-10 CLAIM BLOCK,
SLOCAN MINING DIVISION

WESTERN X-10 4411(7)

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,433

For: Cruiser Minerals Ltd.
By: Brian V. Hall, M.Sc.
Date: October 10, 1984

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1.0 INTRODUCTION

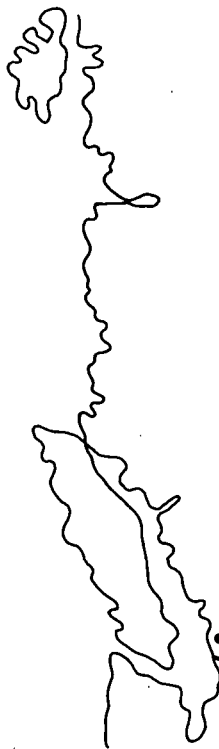
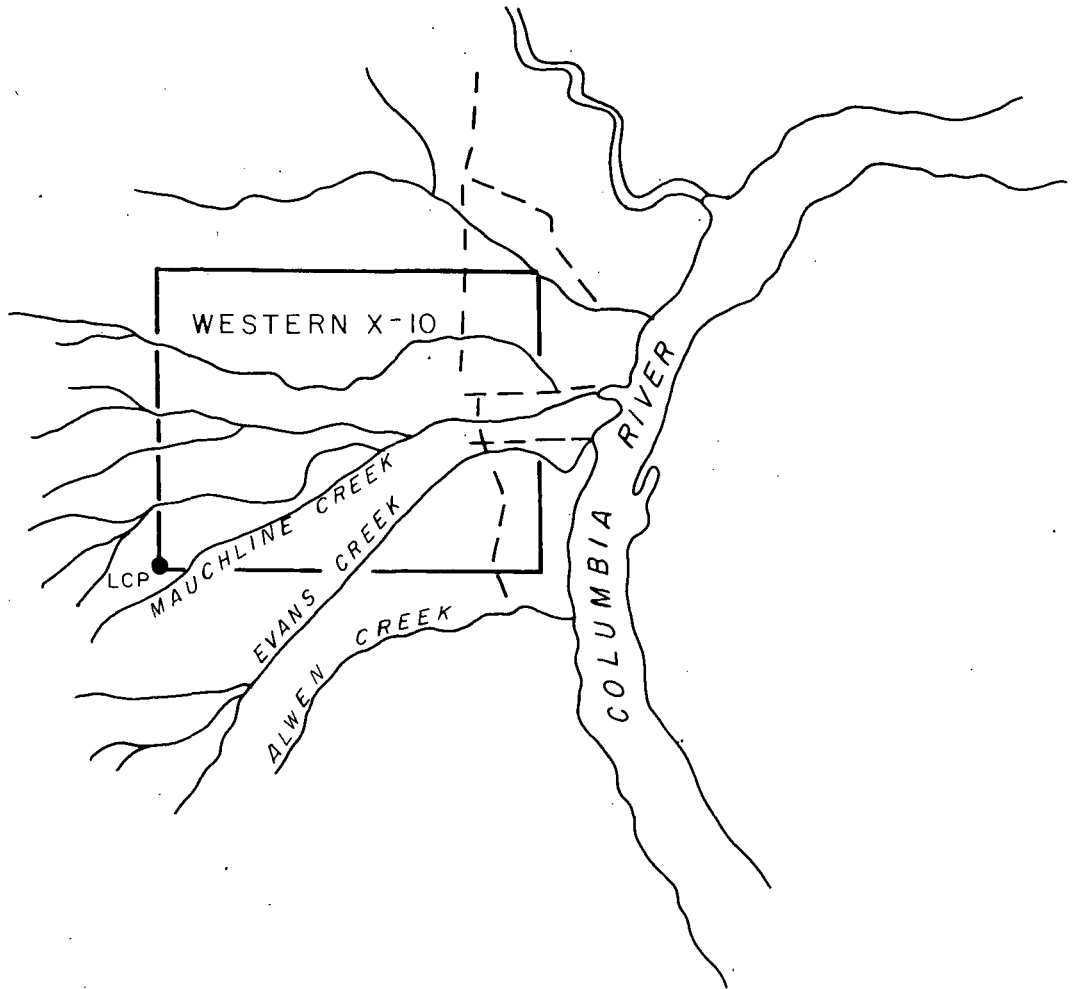
At the request of M. Kangro, President of Cruiser Minerals Limited, a preliminary evaluation of the Western X-10 Claim Block was undertaken. A total of thirty-three stream sediment samples were collected for heavy mineral separation and analyzed for Au, Hg, As, Sb, Th, Ni, Ag, Pb, Zn, Cu, Mo and Cr. The samples were collected from all major streams at roughly 500 m intervals. This yielded an approximate density of one sample every 150 square metres.

The target was Au-mineralization similar to the Tillicum Mountain discovery 15 km to the southeast. The geological setting of Cretaceous plutonic activity (Caribou Creek Pluton), plus the possibility of carbonate rocks of the Milford Group (presently part of the Shuswap Metamorphic Complex) is similar to the Tillicum Mountain deposit (Roberts, W. and McClintock, J. 1984).

The economic considerations for the property are very good; 1) all weather road presently into the property, 2) the communities of Nakusp and Burton near at hand, 3) railhead relatively close (Revelstoke), and 4) power source nearby.

1.1 LOCATION AND ACCESS

The Western X-10 Claim Block is located on the west side of the Columbia River, approximately 19 km southwest of Nakusp. A portion of the abandoned community of Arrow Park occupies the easternmost part of the claim block.



• KAMLOOPS
• VANCOUVER
• KASLO
★ PROPERTY
• NELSON

Brian V. Hall
BRIAN V. HALL
1984

| |
|----------------------------------------|
| CRUISER MINERALS LTD. |
| WESTERN X-10 SLOCAN MINING DIVISION |
| LOCATION MAP |
| 0 1 2 KM |
| BY: B.V.H./r.w.r. DATE: AUG. 18/84 |
| FIG. 1 |

Access to the property is via an all weather road, which connects Arrow Park with the ferry crossing situated 5 km to the northeast (fig. 1).

1.2 PROPERTY HISTORY

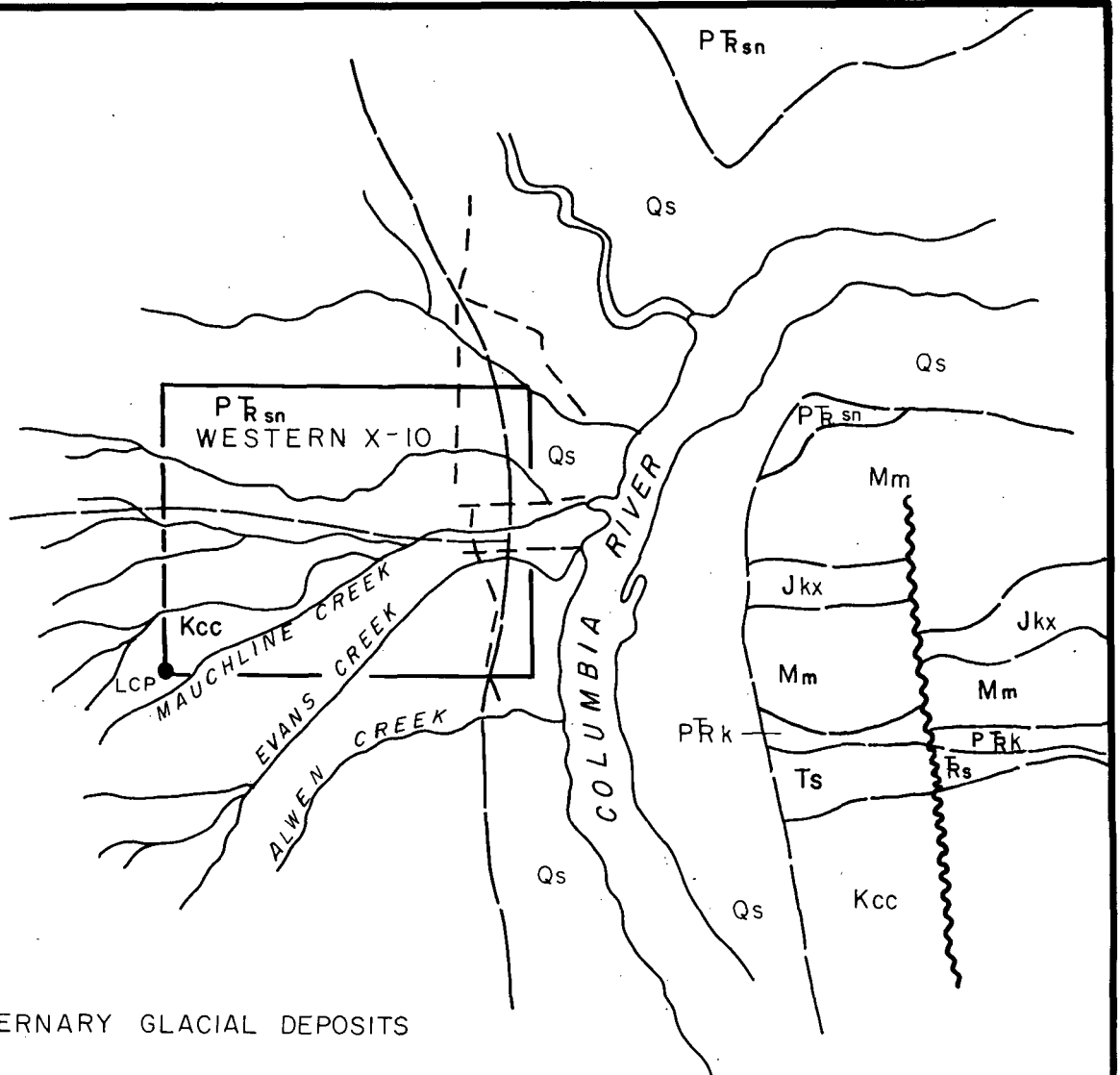
The property was staked originally as the Western X-10 Claim Block, (record number 3579(12)) on January 17, 1983. The property was sold to Cruiser Minerals Ltd. on May 16, 1983. On July 10, 1984 the claims were abandoned and the present Western X-10 Claim Block (record number 4411(7)) was staked on July 11-12, 1984. The claims are presently held in good standing by Cruiser Minerals Ltd., Suite 600, 890 West Pender Street, Vancouver, B.C.

Placer workings dating from before the 1930's were encountered on Mauchline Creek. Otherwise no record of any previous exploration work on the claim block is known.

2.0 GEOLOGY

According to regional mapping by the Geological Survey of Canada (Read, P.B., 1976) the property is underlain by rocks of the Caribou Creek Pluton and Shuswap Metamorphic Complex (Fig. 2).

The Caribou Creek Pluton occupies the southern half of the property. This intrusive body ranges in composition from granite to quartz diorite and is distinguished from the other members of the Nelson Batholith by the dominance of hornblende over biotite, and the presence of potash feldspar megacrysts. Approximately 12 km south of the property a K/Ar age of 69.6 Ma was obtained from a biotite (Read, P.B., 1976).

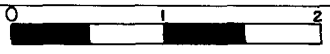


LEGEND:

- Qs QUATERNARY GLACIAL DEPOSITS
- Kcc CARIBOU CREEK PLUTON
- Jkx KUSKANAX BATHOLITH
- Rs SLOCAN GROUP
- PRk KASLO GROUP
- PRsn SHUSWAP METAMORPHIC COMPLEX
- Mm MILFORD GROUP



NOTE: COMPILED FROM READ, P.B., 1976

| | |
|---------------------------------------------------------------------------------------|--------|
| CRUISER MINERALS LTD. | |
| WESTERN X-10 | |
| SLOCAN MINING DIVISION | |
| REGIONAL GEOLOGY | |
|  | |
| BY: B.V.H./r.w.r. | |
| DATE: AUG. 18/84 | FIG. 2 |

The northern half of the property is underlain by an undivided sequence of rocks from the Shuswap Metamorphic Complex. Proximity to the Kaslo and Milford Groups suggest this portion of the Shuswap Metamorphic Complex may include Paleozoic and possibly Triassic strata. North of the property an easterly plunging antiform is defined by a distinctive assemblage calc-silicate marble with quartzite (Read, P.B., 1976). Consequently the structural setting of the northern portion of the property is on the south limb of this antiform.

Outcrop occupies less than 1% of the property and is restricted entirely to the westernmost portion of the property. Although geological mapping was not considered to be part of this project, some outcrops were observed during the course of the stream sediment sampling. In general these observations concur with the regional mapping by the Geological Survey of Canada. One small point of departure may be over the orientation of the contact between the Caribou Creek Pluton and Shuswap Metamorphic Complex. The Geological Survey of Canada has east-west trending contact, whereas a northwesterly trending contact seems to be more in order. In addition, the rocks belonging to the Shuswap Metamorphic Complex appear to be dominated by gneisses and muscovite bearing quartz-pegmatites.

3.0 GEOCHEMISTRY

3.1 METHOD

A total of thirty-three stream sediment samples were collected during the course of the fieldwork. The samples were all collected from the active portions of the streams from several different locations. After wet sieving to -20 mesh, 1 to 2 kgs of sample was placed in plastic bags and the excess water allowed to drain. The samples were then delivered to Acme Analytical Laboratories at 852 East Hastings Street, Vancouver, B.C. for analysis.

At the laboratory the samples were weighed, then dried. The heavy fraction of the sample (>2.96 gms/cm³) was concentrated by floating the lighter material (<2.96 gms/cm³) over a solution of tetrabromoform. The heavy portion of the sample was then dried and weighed. The heavy magnetic fraction was separated using a magnet and weighed, the non-magnetic heavy fraction was then pulverized to -150 mesh.

For the chemical analysis of As, Sb, Th, Ni, Ag, Pb, Zn, Cu, Mo and Cr 0.500 gms of the heavy non-magnetic fraction of the sample was digested in 3 mls of 3-1-3 HCl-HNO₃-H₂O at 95.C for one hour. The resulting solution was then diluted to 10 mls with distilled H₂O and analysed using Inductivity Coupled Argon Plasma. Background corrections were made and the values compared to prepared standards.

For the Au analysis ideally a 10.0 gm portion of the heavy non-magnetic fraction of the sample is used, however in most cases insufficient sample existed such that a smaller amount had to be

used. After weighing the sample was ignited overnight at 600 C. The sample was then digested with 35 mls of 3-1-3 HCl-HNO₃-H₂O at 95.C for one hour. The solution was then made up to a volume of 100 mls with distilled H₂O and a 80 ml aliquot extracted using 5 mls of the organic solvent MIBK. The resulting solution was made up to a volume of 100 mls with distilled H₂O and analysed by atomic absorption. Background corrections were made, and the values compared to prepared standards.

For the Hg analysis 0.500 gms of the heavy non-magnetic portion of the sample was digested with 3 mls of 3-1-3 HCl-HNO₃-H₂O at room temperature. The sample was then diluted with 10 mls of 20% hydrochloric acid - 5% stannous chloride. The Hg in the solution was then determined by cold vapour atomic absorption using a F & J Scientific Hg Assembly. Background corrections were made and the values compared to prepared standards.

3.2 RESULTS

Only one sample (B-15) was considered to be significantly anomalous for Au (670 ppb)(Fig. 3 and Appendix A). With the exception of sample B-1 (15 ppb) the remaining samples were at the detection limit (5 ppb). Unfortunately, sample B-15 was very low for the other elements.

However, located approximately 550 m upstream of B-15 was sample B-14 which was significantly high in Hg (120 ppm). Since the association of Au and Hg is well documented in epithermal Au-deposits such as Steamboat Spring, Nevada (White, D.E., 1981), the area

represented by samples B-14 and B-15 may warrant further exploration.

For Ag, Pb, Zn, Cu, Mo, Ni and Cr a concentration of high values occurred in the western portion of the property. The samples representing these values include B-2, 3, 4, 5, 6 and T-6. Two samples (B-4 and B-6) in particular appear to be significant. Sample B-4 had the highest values for Ag, Pb, Zn, Cu and Mo, with sample B-6 the highest for Ni and As, and second highest for Ag and Cr. In addition, the relative percentage of heavy minerals in proportion to the total sample, and the relative portion of the heavy magnetic fraction was also higher in samples at this side of the claim block (Appendix A).

Three possibilities exist for the cause of this anomalous concentration; 1) a change in bedrock, 2) polymetallic vein mineralization, or 3) placer concentration of the heavy fraction due to a greater stream velocity resulting from the steeper topography on this side of the claim block. The evidence concurs with all three possibilities, perhaps favouring the 2nd and 3rd. However the cause of these anomalous samples is not germane to the Western X-10- Claim Block since the source area in all likelihood is west of the claim block.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The heavy mineral sampling was successful in locating two areas of interest.

The first is represented by samples B-2, 3, 4, 5, 6 and T-6 is

located on the western portion of the claim block. High values for Ag, Pb, Zn, Cu, Mo, Ni and Cr were evident in most samples. However, the significance of this area is somewhat negligible since the source of the anomaly is off the property. In addition, the individual values for the elements are relatively small when compared to results from other areas.

The second area of interest is represented by two samples B-14 and B-15, which were quite high in Hg (120 ppm) and Au (670 ppb) respectively. Although these samples were not found to be anomalous for any other elements some follow-up work is justified, especially since the property is so easily accessible.

Since outcrop is all but absent in the area surrounding samples B-14 and B-15 the best approach would be using a combination of soil geochemistry and heavy mineral sampling. Heavy mineral samples should be collected at 100 m intervals beginning at sample B-15 and continuing up to sample T-6. This would confirm the anomalous nature of the area, plus cost effectively further isolate the area of interest. Soil sampling at intervals of 25 m on lines 50 m apart could be collected at the same time as the heavy mineral sampling. If collected at the same time the mobilization costs would be significantly reduced. In either case, the analysis of the soil samples should await the results of the heavy mineral sampling.

The approximate cost of the heavy mineral sampling should not exceed \$2,500.00. The soil sample collection would be another \$2,500.00 if done in conjunction with the heavy mineral sampling. Assuming the results of the heavy mineral sampling are positive. Then most likely

only half the soil samples would need to be analysed since the close spaced heavy mineral sampling should eliminate some ground. The approximate cost of the chemical analyses would be \$2,100.00, with an additional \$1,200.00 for report preparation.

Respectfully submitted,

Brian V. Hall

Brian V. Hall, M. Sc.

R E F E R E N C E S

Read, P.B. 1976. Lardeau West-Half Mapsheet. Geological Survey of Canada, Open File 432.

Roberts, W. and McClintock, J. 1984. Gold mineralization at the Tillicum Gold Property, southeastern British Columbia. Program with abstracts, Geological Association of Canada, Cordilleran Section Annual Meeting, February 20-21, 1984.

White, D.E. 1981. Active geothermal systems and hydrothermal ore deposits. Economic Geology, Seventy-fifth Anniversary Volume, pp. 392-423.

APPENDIX A - HEAVY MINERAL SAMPLE - RESULTS

| SAMPLE NUMBER | Au ppb | Hg ppm | As ppm | Sb ppm | Th ppm | Ni ppm | Ag ppm | Pb ppm | Zn ppm | Cu ppm | Mo ppm | Cr ppm | Sample | Heavy Portion | | (2.96gm/cm ³) | |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|---------------|------|----------------------------|------|
| | | | | | | | | | | | | | Weight | Non-Magnetic | | Magnetic | |
| | | | | | | | | | | | | | gms | gms | % | gms | % |
| B-1 | 15 | 20 | 4 | 2 | 13 | 10 | 0.3 | 5 | 86 | 14 | 1 | 22 | 409.79 | 15.90 | 3.88 | 0.40 | 0.10 |
| B-2 | 5 | 5 | 8 | 2 | 28 | 27 | 0.4 | 13 | 116 | 39 | 5 | 40 | 330.47 | 3.47 | 1.05 | 0.06 | 0.02 |
| B-3 | 5 | 5 | 9 | 4 | 5 | 68 | 0.3 | 10 | 133 | 33 | 6 | 49 | 350.40 | 13.00 | 3.71 | 0.30 | 0.09 |
| B-4 | 5 | 5 | 7 | 2 | 10 | 63 | 0.6 | 13 | 284 | 40 | 6 | 43 | 200.64 | 3.09 | 1.54 | 0.09 | 0.05 |
| B-5 | 5 | 5 | 4 | 2 | 10 | 73 | 0.4 | 10 | 97 | 30 | 5 | 56 | 335.55 | 2.56 | 0.72 | 0.14 | 0.04 |
| B-6 | 5 | 5 | 9 | 2 | 8 | 97 | 0.5 | 10 | 101 | 28 | 5 | 53 | 358.68 | 4.34 | 1.21 | 0.16 | 0.04 |
| B-7 | 5 | 5 | 9 | 2 | 25 | 26 | 0.2 | 11 | 83 | 14 | 1 | 39 | 462.67 | 3.47 | 0.75 | 0.04 | 0.01 |
| B-8 | 5 | 5 | 2 | 2 | 21 | 13 | 0.1 | 7 | 59 | 10 | 1 | 22 | 788.73 | 11.20 | 1.42 | 0.08 | 0.01 |
| B-9 | 5 | 10 | 7 | 2 | 18 | 10 | 0.1 | 1 | 94 | 11 | 1 | 27 | 815.55 | 3.67 | 0.45 | 0.06 | 0.01 |
| B-10 | 5 | 5 | 6 | 2 | 27 | 22 | 0.1 | 1 | 95 | 18 | 1 | 29 | 757.77 | 3.41 | 0.45 | 0.12 | 0.02 |
| B-11 | 5 | 5 | 2 | 2 | 14 | 16 | 0.1 | 10 | 72 | 25 | 3 | 33 | 538.96 | 8.30 | 1.54 | 0.10 | 0.02 |
| B-12 | 5 | 5 | 2 | 2 | 16 | 20 | 0.1 | 1 | 46 | 13 | 2 | 21 | 681.31 | 12.40 | 1.82 | 0.10 | 0.02 |
| B-13 | 5 | 5 | 4 | 2 | 28 | 25 | 0.1 | 4 | 64 | 30 | 2 | 42 | 839.28 | 2.35 | 0.28 | 0.06 | 0.01 |
| B-14 | 5 | 120 | 2 | 2 | 9 | 40 | 0.2 | 3 | 80 | 15 | 3 | 29 | 580.48 | 11.90 | 2.05 | 0.20 | 0.03 |
| B-15 | 670 | 5 | 2 | 2 | 13 | 18 | 0.1 | 1 | 39 | 10 | 2 | 22 | 650.53 | 12.10 | 1.86 | 0.07 | 0.01 |
| B-16 | 5 | 10 | 4 | 2 | 13 | 13 | 0.1 | 2 | 46 | 7 | 1 | 28 | 755.55 | 17.00 | 2.25 | 0.03 | 0.00 |
| B-17 | 5 | 5 | 4 | 3 | 20 | 20 | 0.1 | 1 | 45 | 14 | 1 | 24 | 770.37 | 10.40 | 1.35 | 0.19 | 0.02 |
| B-18 | 5 | 5 | 7 | 2 | 23 | 17 | 0.1 | 3 | 54 | 14 | 1 | 34 | 866.66 | 1.56 | 0.18 | 0.01 | 0.00 |
| B-19 | 5 | 5 | 6 | 2 | 21 | 14 | 0.1 | 4 | 55 | 14 | 1 | 26 | 1003.03 | 3.31 | 0.33 | 0.02 | 0.00 |
| B-20 | 5 | 10 | 4 | 2 | 25 | 12 | 0.2 | 2 | 63 | 7 | 1 | 24 | 794.52 | 5.80 | 0.73 | 0.06 | 0.01 |
| B-21 | 5 | 20 | 7 | 2 | 47 | 19 | 0.1 | 2 | 53 | 16 | 1 | 45 | 644.44 | 1.74 | 0.27 | 0.02 | 0.00 |

| SAMPLE NUMBER | Au ppb | Hg ppm | As ppm | Sb ppm | Th ppm | Ni ppm | Ag ppm | Pb ppm | Zn ppm | Cu ppm | Mo ppm | Cr ppm | Sample Weight | Heavy Portion (2.96gm/cm ³) | | | | |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------|------------------------------------------|------|----------|------|--|
| | | | | | | | | | | | | | | Non-Magnetic | | Magnetic | | |
| | | | | | | | | | | | | | | gms | % | gms | % | |
| T-1 | 5 | 5 | 9 | 2 | 26 | 18 | 0.1 | 1 | 64 | 11 | 1 | 48 | 1333.33 | 1.20 | 0.09 | 0.01 | 0.00 | |
| T-2 | 5 | 5 | 7 | 2 | 70 | 17 | 0.1 | 2 | 68 | 12 | 1 | 50 | 733.33 | 1.98 | 0.27 | 0.02 | 0.00 | |
| T-3 | 5 | 5 | 4 | 2 | 25 | 13 | 0.1 | 2 | 36 | 6 | 1 | 35 | 948.98 | 9.30 | 0.98 | 0.04 | 0.00 | |
| T-4 | 5 | 20 | 2 | 2 | 18 | 16 | 0.1 | 1 | 47 | 10 | 1 | 27 | 339.55 | 9.60 | 2.67 | 0.03 | 0.01 | |
| T-5 | 5 | 5 | 2 | 2 | 34 | 7 | 0.1 | 1 | 17 | 2 | 1 | 17 | 900.44 | 40.70 | 4.52 | 0.16 | 0.02 | |
| T-6 | 5 | 5 | 2 | 2 | 11 | 64 | 0.3 | 4 | 103 | 23 | 5 | 42 | 780.82 | 5.70 | 0.73 | 0.14 | 0.02 | |
| T-7 | 5 | 5 | 3 | 2 | 23 | 13 | 0.1 | 2 | 45 | 6 | 1 | 25 | 640.27 | 4.61 | 0.72 | 0.08 | 0.01 | |
| T-8 | 5 | 5 | 5 | 2 | 11 | 32 | 0.2 | 3 | 67 | 25 | 3 | 31 | 989.24 | 9.20 | 0.93 | 0.12 | 0.01 | |
| T-9 | 5 | 5 | 4 | 2 | 15 | 19 | 0.1 | 2 | 55 | 16 | 1 | 28 | 761.46 | 8.30 | 1.09 | 0.07 | 0.01 | |
| T-10 | 5 | 5 | 6 | 2 | 12 | 26 | 0.3 | 9 | 87 | 29 | 2 | 40 | 737.28 | 8.70 | 1.18 | 0.12 | 0.02 | |
| T-11 | 5 | 20 | 4 | 2 | 44 | 19 | 0.1 | 1 | 85 | 20 | 2 | 46 | 1188.88 | 1.07 | 0.09 | 0.02 | 0.00 | |
| T-12 | 5 | 5 | 3 | 2 | 18 | 13 | 0.1 | 5 | 36 | 10 | 1 | 20 | 951.80 | 23.70 | 2.49 | 0.16 | 0.02 | |

A P P E N D I X B

COST STATEMENT

WAGES

B.V. Hall
11 1/2 days at \$200.00 per day
May 31, July 6 (1/2 day), 9 - 13,
24, 26, October 6 - 8 1984

\$2,300.00

T.W. Hayes
5 days at \$125.00 per day
July 9 - 13, 1984

\$ 625.00

Total

\$2,925.00

ACCOMMODATION

Mount Koban Motel - Osoyoos
B.V. Hall, T.W. Hayes
July 9, 1984

\$ 44.94

DuMont Motor Inn - Nakusp
B.V. Hall, T. W. Hayes
July 10 - 12, 1984

\$ 118.77

Total

\$ 163.71

FOOD

B.V. Hall, T.W. Hayes
July 9 - 13, 1984

\$ 183.40

GAS

\$ 87.65

CHEMICAL ANALYSIS

33 Heavy Mineral Samples at \$24.75 per sample
Annalysed for Au, Hg, As, Sb, Th, Ni, Ag,
Pb, Zn, Cu, Mo and Cr

\$ 816.75

TRUCK RENTAL

\$ 245.25

OFFICE SUPPLIES

\$ 61.94

FIELD SUPPLIES

\$ 100.86

DRAFTING

\$ 127.33

TYPING

\$ 28.12

TELEPHONE

\$ 30.78

BUS FREIGHT

\$ 4.50

Grand Total

\$4,775.19

A P P E N D I X C

STATEMENT OF QUALIFICATIONS

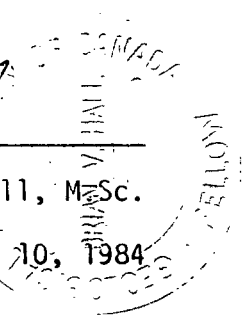
I, Brian V. Hall of R. R. 1, Bowen Island, B.C., V0N 1G0, do certify that:

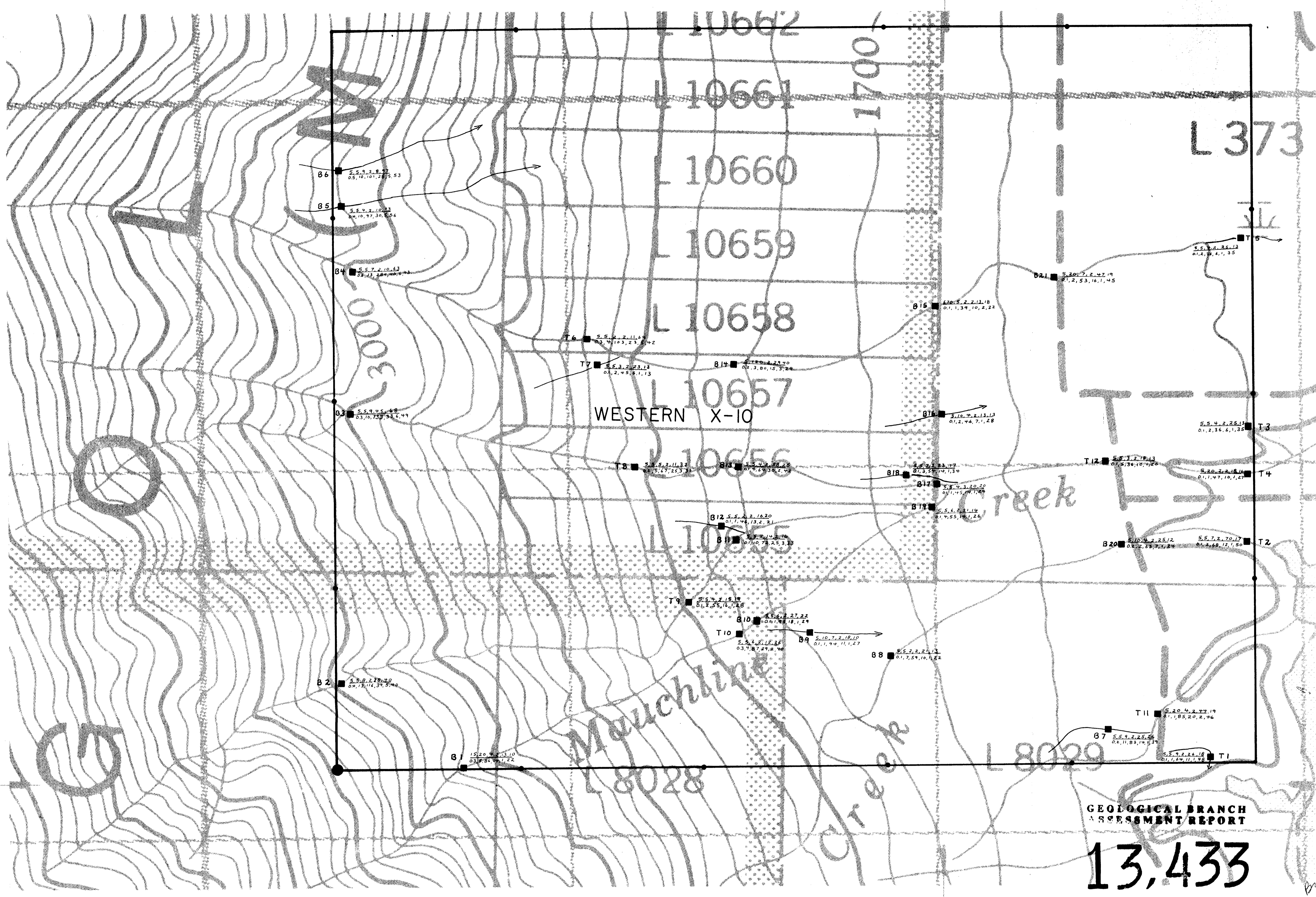
1. I am a graduate of the University of British Columbia (B.Sc. 1975) and the University of Waterloo (M.Sc. 1978).
2. I have practised my profession for the past six years.
3. I am a Fellow of the Geological Association of Canada.
4. I have no beneficial interest in the property discussed in this report, nor do I expect to receive any in the future.

Brian V. Hall

Brian V. Hall, M.Sc.

October 10, 1984





GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,433

Brown-Hell

LEGEND

- Legal corner post
- Identification post
- Au, Hg, As, Sb, Th, Ni
Ag, Pb, Zn, Cu, Mo, Cr

| |
|--------------------------|
| CRUISER MINERALS LTD. |
| WESTERN X-10 CLAIM BLOCK |
| SLOCAN MINING DIVISION |
| STREAM SEDIMENT |
| HEAVY MINERAL SAMPLES |
| DATE: August 18, 1984 |
| Page 3 |

NOTE: CLAIMS STAKED BY HIP CHAIN & COMPASS